The Effect of ICT Investment on the Relative Compensation of High-, Medium-, and Low-Skilled Workers: Industry versus Country Analysis

Very preliminary version

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In this paper I analyze the effects of ICT on compensation shares of high-, medium- and low-skilled workers. Using the large EU KLEMS dataset with 13 countries and 23 separate industries I investigate the effect of ICT in a large set of industrialized countries. The results show that, when this kind of analysis is done, the Skill-Biased Technological Change hypothesis has to be rejected if single countries are analyzed with an industry panel. On the other hand, there is evidence that technological change is a strong cause of changes in the relative compensation shares in single industries, when industries are analyzed with country panels for each industry and no linearity between skill and technology is assumed.

Keywords: ICT, Skill, Income Inequality, Labor Demand

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1 Introduction

Over the last two decades a discussion about the causes of the increasing demand for high-skilled workers has led to a large literature on the rising income inequality of the different skill groups. While some authors argue that labor market institutions are the reason of the observed trends, other claim that outsourcing and increased international trade are the leading force. A widely accepted third argument sees technological progress which favors higher skilled workers as the main driving force behind the increasing relative wages of high skilled workers. In this study the hypothesis of technological change as the source of increasing wage dispersion and polarization of wages is analyzed by estimating the effect of information and communication technology (ICT) investments on the relative compensation shares of high-, medium- and low-skilled workers within and across industries and countries.[1]

In this paper I use the EU KLEMS dataset and estimate share equation with the fixed effects estimator as the econometric procedure. The large EU KLEMS dataset allows me to asses this hypothesis and the commonly used economic approach for 13 industrialized countries and 23 industries for up to 30 years. Furthermore the data enables analyses for three different skill groups: high-, medium-, and low-skilled workers. A classical claim for the proof of skill-biased technological change is that technological change has to have similar effects on industrialized countries. Due to the coverage of the dataset this can now be analyzed for a large set of countries. Furthermore it allows estimating the effect of ICT on relative compensation shares for separate industries with a large country panel.

One broad finding of this paper is that the impact of technological change on relative compensation shares is more clearly visible if one estimates a share equation across the same industry in different countries as opposed to the standard approach of estimating a share equation within one country across many industries. Thus the same industries in different countries are more equal than all industries within one country if the countries are similar enough. Due to the different production and task structures this can explain the polarization of incomes which is observable in many advanced countries.

[1] See Lemieux (2008) and Machin and Van Reenen (2007) for reviews of this discussion.

2 The Data

The data source of this study is the EU KLEMS dataset in its newest version of March 2008[2]. Its purpose is originally to measure economic growth and productivity. Thus it includes many measures of different capital inputs as well as labor input for three skill groups as well as age and gender groups. The data is available for most European countries and other advanced countries such as the US, Japan, Australia and South Korea. Furthermore the data is industry based, containing a large set of industries on several aggregation levels. The coverage varies by country, by industry and for the individual variables. The longest series cover the time span from 1970 to 2005. The variables used in this study are listed in table 2. The set countries used in this study are listed in table 1. The set of industries are described in table 3. The 23 industries used here cover most of the countries' private economic activity including service sectors. Sectors which are mostly public are left out of the analysis.

The dataset contains several capital stock variables. As a proxy for technological development ICT investments is applied.[3] ICT is considered as office and computing equipment, communication equipment and software. This should be the closest proxy for the technological change described by the skill-biased technological change literature. Data for $R\&D$, which is also commonly used in the literature Machin and Van Reenen (1998), is also available within a dataset linked to the EU KLEMS, but only on a more aggregate level for all industries other than manufacturing. Especially for the service sectors ICT investments will mirror more closely the technological process compared to $R\&D$.

The relative compensation shares are the shares of all wages and salaries including all costs that are covered by the employer of the respective skill group. The skill groups are defined by the level of education of the workers. As educational systems vary across the relevant countries the definitions of who belongs to which skill groups differ slightly. Generally, workers with a college degree are measured as high-skilled workers, workers with upper secondary education, some college or a vocational degree are counted as medium-skilled, and workers with at most secondary education or no formal qualifications are counted as low-skilled workers.[4]

[2] Detailed information on the dataset can be found on the web page www.euklems.net or in Timmer, O'Mahony and van Ark (2007).

[3] In the EU KLEMS this is 'real gross fixed capital formation' of ICT assets.

[4] A detailed description of the definitions of skill levels for each country can be found in Timmer, van Moergastel, Stuivenwold, Ypma, O'Mahony and Kangasniemi (2007), page 28.

Countries	times periods
Australia	1982 - 2005
Austria	1980 - 2005
Czech Republic	1995 - 2005
Finland	1970 - 2005
Germany	1991 - 2005
Italy	1970 - 2005
Japan	1973 - 2005
Korea	1977 - 2005
Netherlands	1979 - 2005
Slovenia	1995 - 2005
Sweden	1995 - 2005
United Kingdom	1970 - 2005
United States	1970 - 2005

Table 1: Set of countries analyzed in this study.

Variable	Abbreviation	Description
Real Value Added	Y	$\frac{va}{va\_p} * 100$
Real Gross Fixed Capital Stock	K	k_gfcf
ICT Investments	K^{ICT}	iq_ict
Relative Compensation Shares	Share	labhs, labms, labls

Table 2: Discription of Relevant Variables.

Industries
Mining and Quarrying
Food, Beverages and Tobacco
Textiles, Textile, Leather and Footwear
Wood and of Wood and Cork
Pulp, Paper, Printing and Publishing
Coke, refined petroleum and nuclear fuel
Chemicals and chemical
Rubber and plastics
Other Non-Metallic Mineral
Basic Metals and Fabricated Metal
Machinery, Nec.
Electrical and Optical Equipment
Transport Equipment
Manufacturing Nec.; Recycling
Electricity, Gas and Water Supply
Construction
Wholesale and Retail Trade
Hotels and Restaurants
Transport and Storage
Post and Telecommunications
Financial Intermediation
Real Estate, Renting and Business Activities
Other Community, Social and Personal Services

Table 3: Set of industries analyzed in this study.

Average Annual Percentage Changes

	High-Skilled	Medium-Skilled	Low-Skilled	K^{ICT}/VA
Australia				
1982-1990	8.4	-1.6	-1.0	8.7
1991-2000	3.7	-0.8	-1.4	16.4
2001-2005	2.0	1.2	-2.4	21.7
Austria				
1981-1990	2.9	1.4	-4.5	7.0
1991-2000	3.1	0.0	-2.8	14.9
2001-2005	2.0	0.0	-2.8	9.0
Czech Republic				
1996-2000	1.4	-0.3	-1.5	29.2
2001-2005	2.9	-0.5	-7.6	-0.6
Finland				
1971-1980	0.8	4.3	-2.3	15.8
1981-1990	2.8	2.1	-4.1	10.9
1991-2000	2.1	0.6	-4.4	10.3
2001-2005	0.9	0.9	-4.6	2.9
Germany				
1992-2000	2.0	-0.3	-0.6	11.4
2001-2005	2.3	-0.8	0.9	6.6
Italy				
1971-1980	1.4	0.1	-2.4	7.3
1981-1990	2.5	0.2	-10.0	8.4
1991-2000	5.4	-0.4	-13.2	10.4
2001-2005	6.5	-1.1	-14.9	1.9
Japan				
1981-1990	2.7	1.1	-5.1	12.6
1991-2000	2.1	0.5	-6.8	6.8
2001-2005	2.7	-0.6	-7.3	7.1
Korea				
1971-1980	-0.1	2.7	-2.3	n.a.
1981-1990	0.9	1.3	-3.2	7.9
1991-2000	2.4	-0.1	-6.4	18.7
2001-2005	3.2	-2.4	-8.8	-4.6
Netherlands				
1981-1990	2.2	0.6	-6.2	11.0
1991-2000	3.9	-0.3	-2.6	13.5
2001-2005	5.6	-0.6	-9.0	8.9
Slovenia				
1996-2000	3.6	-0.3	-5.0	19.9
2001-2005	2.9	-0.5	-3.9	4.7

Table 4: Average Annual Percentage Changes in relative Compensation Shares and ICT-Investment over Value Added by Time Period and Country

Average Annual Percentage Changes

	High-Skilled	**Medium-Skilled**	**Low-Skilled**	K^{ICT}/VA
Sweden				
1981-1990	1.0	-0.3	0.1	n.a.
1991-2000	3.4	0.2	-3.9	n.a.
2001-2005	3.3	-0.4	-3.9	1.5
UK				
1971-1980	14.8	2.0	-3.5	7.8
1981-1990	6.2	1.9	-6.2	11.0
1991-2000	5.3	0.0	-7.9	14.5
2001-2005	0.3	0.1	-1.8	7.4
US				
1971-1980	3.1	1.1	-6.1	41.5
1981-1990	3.1	-0.6	-5.6	25.7
1991-2000	1.7	-0.8	-3.6	31.0
2001-2005	1.6	-1.2	-3.2	9.2

Table 5: Average Annual Percentage Changes in relative Compensation Shares and ICT-Investment over Value Added by Time Period and Country

3 Estimation Methods

This analysis follows a standard approach to estimate demand shift for skill groups due to technological progress by employing a relative share equation derived from a translog cost function. The cost function is set up as[5]

$$\begin{aligned} ln\, C_{i,t} &= \alpha + \sum_{j\in h,m,l} \beta_{ji}\, ln\, w_{j,i,t} + \sum_{j\in h,m,l}\sum_{j'\in h,m,l} \beta_{jj'}\, ln\, w_{j,i,t}\, ln\, w_{j',i,t} \\ &+ \beta_Y\, ln\, Y + \sum_{j\in h,m,l} \beta_{jY}\, ln\, w_{j,i,t}\, ln\, Y_{i,t} + \beta_{K^{ICT}}\, ln\, K^{ICT}_{i,t} \\ &+ \sum_{j\in h,m,l} \beta_{jK^{ICT}}\, ln\, w_{j,i,t}\, ln\, K^{ICT}_{i,t} + \beta_K\, ln\, K_{i,t} \\ &+ \sum_{j\in h,m,l} \beta_{jK}\, ln\, w_{j,i,t}\, ln\, K_{i,t} + \sum_{j\in h,m,l} \beta_{ju}\, ln\, w_{j,i,t}\, u_{j,i,t} + u_{c,t}. \end{aligned}$$

Here the costs are a function of the prices of the variable input, wages (w) of high- (h), medium- (m), and low- (l) skilled workers, output or value added (Y), fixed capital (K) and ICT-capital investments (K^{ICT}). The function is set for time period t and for industry or country j.

The function can be simplified by some homogeneity restrictions and by normalization to the low-skilled workers' wages. Under Shepard's lemma the translog cost function leads to

[5] This cost function follows closely the setup of Adams (1999) who derives the share equation in great detail. Chennells and Van Reenen (1999) and Sanders and ter Weel (2000) give an overview of this approach and review a whole number of studies which have a similar setup.

the following cost share equation for high- and mediums- skilled workers.

$$share_{jit} = \alpha + \sum_{j \in h,m} \beta_{w_j} \, ln \, \frac{w_j}{w_l} + \beta_K \, ln \, K_{i,t} + \beta_Y \, ln \, Y_{i,t} + \beta_{K^{ICT}} \, ln \, K_{i,t}^{ICT} + u_{j,i,t} \quad (1)$$

The relative cost shares are thus a function of relative wages, value added, capital and ICT capital. Clearly the wages are endogenous in this setup. Unfortunately there are no convincing instruments. As it is argued in other studies which follow a similar econometric setup, such as Berman et al. (1994), Machin and Van Reenen (1998), or O'Mahony et al. (2008), I replace the relative wage shares by year dummies. These time dummies are supposed to capture the effects relative wages and macroeconomic shocks, but as a drawback they might also capture some of the variation from the technological progress which is otherwise measured by the variable for ICT-capital. The estimation equation thus takes on the following form.

$$share_{jit} = \alpha + \beta_K \, ln \, K_{i,t} + \beta_Y \, ln \, Y_{i,t} + \beta_{K^{ICT}} \, ln \, K_{i,t}^{ICT} + \eta D_t + u_{j,i,t} \quad (2)$$

where D_t are the time dummies.

If the restriction (3) holds then the share function has constant returns to scale and it can be reduced to equation (4) which is is dependent on the relative values of input factors to output.

$$\beta_Y = -\left(\beta_K + \beta_{K^{ICT}}\right) \quad (3)$$

$$share_{jit} = \alpha + \beta_{KY} \, ln \left(\frac{K_{i,t}}{Y_{i,t}} \right) + \beta_{K^{ICT}Y} \, ln \left(\frac{K_{i,t}^{ICT}}{Y_{i,t}} \right) + \eta \, D_t + u_{j,i,t} \quad (4)$$

This condition was tested, but only for some industries and countries constant returns seem plausible. The values test-statistics (F-distributed) can be found in table **??** by country and in table **??** by industry. Generally the hypothesis of constant returns to scale can be rejected if the test-statistic is greater than 2.5. This is the case for most industries and countries, separated by skill group. Thus the main focus of this paper is on the estimation without the assumption of constant returns to scale.

The main part of this study is to estimate equation (2) for each country across industries and for the individual industries across countries using the fixed effects estimator. Thus the industry and country specific effects are controlled for. Some of these industry or country specific effects can be institutions which also influence the relative wage share of the skill groups. Thus the variation between the industries and countries caused by institutions is controlled for and only the changes in institution across time within industries and countries remains. In comparison to the first difference for example by Machin and Van Reenen (1998) which also controles for within group effects the fixed effects estimator is more efficient.

Next to estimating equation (2) I also estimate the model with constant returns to scale as in equation (4), but this is only party relevant as mentioned above. As many other studies employ a constant returns to scale share equation these result may help to compare studies. O'Mahony et al. (2008) use this kind of equation and estimate it for several skill groups in France, the UK and the US for a similar time frame. As they also find structural breaks in the first half of the 1990s, I also estimate the share equation for the time before 1990 and after 1995. In order to account for the differences in industry size each industry is weighted by its share of total labor compensation in 1995.

4 Estimation Results

Following the hypothesis of skill-biased technological change the ICT coefficient $\beta_{K^{ICT}}$ should be positive and significant when high-skilled workers' compensation share are analyzed. The expectations of $\beta_{K^{ICT}}$ are less clear for the case of medium- and low-skilled worker compensations shares. The traditional idea of skill-biased technological change implies a somewhat linear relationship between skill and the positive effect of technological change. So one would expect a negative $\beta_{K^{ICT}}$ for the analysis with low-skilled workers' compensation shares, and no clear result for medium-skilled workers' compensation shares. More recent micro-level studies find a polarization of compensation shares of the skill groups.[6] In these studies it is argued that especially since the 1990s the relative wage shares of medium-skilled workers is decreasing due to ICT while the relative wage shares for low-skilled workers are not or much less affected by ICT. Here the line of argumentation is that the tasks of medium-skilled workers are in general more easily replaceable by ICT and low-skilled workers are only marginally affected by ICT due to their task structure. Thus we would expect no effect of ICT on the low-skilled workers compensation shares and a negative and significant effect on the medium-skilled compensation shares.

4.1 Estimation Results by Country

Tables (6) to (8) show the results for the fixed effects estimation of equation (2) for the 13 countries in the sample. Using this equation on the panel data by comparing countries assumes that the technology is similar across industries within a country. The estimations coefficients are very different across countries. Only for Australia, Austria, Italy, Japan, and Korea the ICT coefficient $\beta_{K^{ICT}}$ is the way it was expected, namely positive and highly significant. In Finland, and the Netherlands the coefficient is negative and significant at least at the one percent level. ICT seems to have no significant effect on the high-skilled wage share in the Czech Republic, Germany, Slovenia, Sweden, the UK and the United States.

Clearly one could argue that the technologies in these countries differ and that there might be clusters of countries which are more technologically advanced and thus ICT investments have different effects on the wage shares of workers. The composition of the three groups is nevertheless surprising. Also that the coefficients in the UK and the US have a non-significant is surprising when other studies are considered. For these countries studies have usually found a strong positive effect of ICT on the relative compensation of high-skilled workers.(Machin and Van Reenen (1998) and O'Mahony et al. (2008))

In order to compare the results to the studies mentioned above I also estimated the share equation with the assumption constant returns to scale. The results for high-skilled workers does not change much. The positive effect of ICT in Austria vanishes into insignificance and the in the UK ICT seems to have a negative effect on the share. This result needs to be taken cautiously as only for Germany, Finland and Slovenia the test for constant returns to scale of

[6] These findings are given in the light of the task literature of Autor et al. (2003). Autor et al. (2008) find polarizing wage structures for the US, Goos and Manning (2007) for the UK and Spitz-Oener (2006) for Germany.

the high-skilled wage share is not rejected.[7]

In order to analyze whether ICT contributes to a polarization for the relative incomes by education equation (2) is also estimated for medium- and low-skilled workers compensation shares. For Austria, Italy, Japan, Korea, UK, USA and Germany ICT investments have a negative impact on the relative compensation share of medium-skilled workers. This can be explained if one assumes that medium skilled workers tend to have jobs where their tasks are repetitive and can be replace by computers. Thus as they are substitutes their compensation shares decrease as ICT becomes cheaper. For the other countries the ICT investment coefficient of the regression for medium skilled workers is not significantly different from zero or even positive for Finland. With regards to the low-skilled worker compensation shares the coefficient for ICT investments is positive for Austria, Italy, Japan, USA, Germany, Netherlands and the Czech Republic. This is a bit surprising. The classical skill-biased technological change hypothesis assumed that low-skilled workers are substituted by ICT and would thus expect a negative coefficient here. This is only the case for Australia and Finland. The task approach assumes that for traditional low-skilled jobs such as cleaning or filling shelves ICT is not relevant for the wages and would thus predict an non-significant coefficient. A positive coefficient now indicates that their work is more complementary to ICT. For the estimation under the assumption of constant returns to scale the results remain basically the same. For the UK the effect ICT on the high-skilled workers compensation share turn negative while it positive in the case for medium-skilled.

For Austria, Italy, Japan, Korea, UK, USA and Germany the results show that ICT seems to have a polarizing effect on the relative compensation shares as high skilled are gaining and low-and medium-skilled share are driven together by ICT investment. Generally it is quite is quite surprising that these result are so heterogeneous. As these countries are all access the same technology it seems puzzling that ICT has such different effects on the relative skill groups wage shares.

4.2 Estimation Results by Industries

Another way to analyze the effect of ICT is to take each industry and pool over countries and thus control for country specific effects through the fixed effects estimation within one industry. The results of estimation of equation (2) by industry with a sample of the afore used countries are listed in tables (12) to (16)[8]. The results by industry are also heterogeneous, but may be explainable by the differences in technology within the industries.

Results which fit the predictions made before coming from the task literature can be found for the industries *Chemicals*, *Transport and Storage* as well as *Post and Telecommunications*. Here the effect of ICT is positive and significant for the high-skilled wage shares, negative for the medium and insignificant for the low-skilled wage shares. In these industries ICT leads to a polarization of the relative compensation share across countries. A polarization can

[7] See table (**??**) for the test results of the constant returns restriction by country.

[8] These results are robust to dropping all countries which are not available before 1983 and estimating only with data from Australia, Austria, Finland, Italy, Japan, Korea, Netherlands, UK and USA.

also be found, maybe even stronger, in *Pulp, Paper, Printing and Publishing*, *Coke, refined petroleum and nuclear fuel*, *Electrical and Optical Equipment* and *Transport Equipment*. Here the effect of ICT on the low-skilled workers wage share is positive. This could be explained by a different set of tasks in these industries for low-skilled workers which are complementary to ICT investments while medium-skilled workers seem to be substitutable by ICT.

For a large set of industries there is no effect of ICT investment on the high-skilled compensation share. This is true for *Food, Beverages and Tobacco*, *Rubber and plastics*, *Basic Metals and Fabricated Metal*, *Machinery, Nec.*, *Electricity, Gas and Water Supply*, *Wholesale and Retail Trade*, *Financial Intermediation* and *Real Estate, Renting and Business Activities*. In these countries ICT leads to a polarization on the bottom end of the distribution by skill-groups as the coefficients for ICT are negative and significant for the mediums-skilled workers regressions and positive and significant for the low-skilled. Within these industries the gains of the low-skilled due to ICT seem to be at cost of the medium-skilled whose compensation shares are negatively affected by ICT investments.

In the case of *Textiles, Textile, Leather and Footwear*, *Wood and of Wood and Cork*, *Manufacturing Nec.; Recycling* and *Construction* the low-skilled worker seem to be at a disadvantage compared to the high- and medium-skilled workers due to ICT. In these industries high- and medium-skilled workers have a positive development of their compensation share due to ICT while the low skilled are negatively influenced by the new technology. These results reflect the hypothesis of the skill-biased technological change hypothesis which expects a more linear effect of ICT. In *Construction* there is no positive effect of ICT on high-skilled wage share. Thuse there may be a tendency of polarization at the top due to ICT investment.

For the rest of the industries, namely *Mining and Quarrying*, *Other Non-Metallic Mineral*, *Hotels and Restaurants* and *Other Community, Social and Personal Services*, the results of the estimation are again quite different. In *Mining and Quarrying* ICT investments have a negative effect on the high-skilled compensation shares and a positive on the low-skilled workers share. In the latter industries ICT has no effect on development of the relative wage shares.

4.3 Estimation Results under the assumption of a Structural Break

Compared to other studies the afore mentioned results are surprising as they find a significant and positive effect of ICT on the high-skilled wage shares. O'Mahony et al. (2008) for example finds strong positive effects for the UK and the USA. Nevertheless they also test for structural breaks due to a de-skilling in the long run. They find structural breaks between 1991 and 1994. Thus I re-estimated all regressions for the time period before 1991 and 1995 to 2005. I do this only for Australia, Austria, Finland, Italy, Japan, Korea, Netherlands, UK and USA, as here the times series are long enough before 1991. These results can be found by country in tables 22 to 24 and by industry in tables 25 to 32.

For the high-skilled wage shares the effect of ICT on the wage share has changed for Australia, Austria, Finland, Japan and the USA. In these countries there was a significant positive effect in the time before 1992 which changed into a non-significant or even a negative effect after 1994. In Italy there was a negative effect of ICT on the high-skilled wage share before 1992 which changed into a positive effect in the last decade. In the Netherlands there was also a negative effect on the high-skilled wage share before 1992 which then turned non-significant. So there seems to be some kind of lesser effect of ICT in the recent time which could speak for some kind of technological adaption process or learning.

The results for medium-skilled workers are more heterogeneous. For Italy and the US there is a clear negative effect of ICT on the wage shares in both time periods while for Austria and Japan the trend turned from negative to positive or insignificant. In the UK there was a positive effect before 1992 but no effect after 1995.

In Austria and the USA there seems to have been a positive impact of ICT on the low-skilled workers wage shares throughout both time periods while in the UK, the Netherlands, Australia and Finland the effect of ICT on the wage share of low-skilled workers improved from negative or insignificant to insignificant or positive. Only in Italy and Japan the effect of ICT turned from positive to insignificant in the last decade.

Again there is no persistent picture across countries even by considering that the effects changed over time. This can be now due to a different timing in technology adaptation. One also has to bear in mind that the number of observations is quite reduced for the last time period as only 11 time periods are available. Thus the precision of the estimation is reduced.

The same exercise is done again by industry. For almost all industries, except *Machinery, Nec.*, *Financial Intermediation*, and *Other Services*, ICT investments had a positive effect on the relative wage share of high-skilled workers until the early 1990s. This holds for manufacturing industries, but also for trade or service industries. This is in line with the literature about skill-biased technological change. After the mid 1990s the effect of ICT on the high-skilled compensation shares then vanished or even turned negative for all industries. This suggest again that the advantage of the high-skilled workers diminished as all workers and possibly also organizational structures adapted.

The results for medium-skilled workers is again more heterogeneous. Only in *Construction* there is a positive effect of ICT investments on their wage share for the whole time period. For *Real Estate*, *Food, Beverages and Tobacco* and *Rubber and Plastics* there is negative effect of ICT throughout the whole available time period. For *Mining and Quarrying,Pulp, Paper, Printing and Publishing*, *Chemicals*, *Electrical and Optical Equipment*, *Transport Equipment* and *Post and Telecommunication* the effect of ICT turned from negative before 1992 to insignificant after 1994 or even positive in the case of *Financial Intermediation.*

For a lot of industries the effect ICT on the low-skilled wage shares improved from insignificant or negative to positive. This is the case for *Food, Beverages and Tobacco*, *Wood,Metals, Machinery, Nec. Wholesale and Retail Trade*, *Hotels and Restaurants* and *Transport and Storage*. In other cases an earlier negative effect turned into insignificance after the mid 1995. Only for a few industries, mainly service industries, a former positive effect of ICT on the low-skilled compensation share turned insignificant in the last decade. So especially in manufacturing industries the negative effect of ICT investments in the earlier phase of the new technology implementation weakened over time. Again also for the industry analysis the last decade is measured with less percision as the time series are much shorter.

5 Conclusion

This paper analyzed the effect ICT investments on relative compensation shares of high-, medium- and low-skilled workers in 23 private industries of 13 industrialized countries. The analysis thus included a much larger number of countries than studies before and also covers much of the complete private sector opposed to studies that focus on manufacturing. It was found that there is no persistent effect of ICT investments on the relative wage shares across countries. Nevertheless there seem to be strong effects of ICT investments in single industries across countries on the relative shares. Thus I argue that the effect of technology changes should be measured on the industry level as opposed to the country level as within industries the tasks for the individual skill groups should be more similar than across industries within one country.

On the industry level there is evidence that observed polarization in some countries may be driven by the different task structures in the industries. In almost all industries medium-skilled workers are negatively affected by ICT, while there are mixed results for high- and low-skilled workers. In order to understand the differences across industries it will be necessary to analyze the tasks of the different skill groups within each industry on the micro level. Furthermore allowing for a structural break shows that the effect of ICT on the relative skill-demands has changed over the last 30 years. Before the 1990s ICT had a positive effect on the relative wage-shares of high-skilled workers in almost all industries, which has changed to insignificance after the mid 1990s. Also the mostly negative effect on the low-skilled workers compensation share turned insignificant or even to positive. This suggests that firms and workers have adapted to the new technology and that the linear effect suggested by the hypothesis skill-biased technological change was not persistent over time. After the mid 1990s technology seems to lead more to a polarization at the lower end of the income distribution as medium-skilled worker compensation share tend to be affected more negatively by ICT while low-skilled workers now gain in their wage shares.

To clearly understand the differences and similarities across industries it should be found out how the tasks for each skill group differ across industries. This will be especially interesting for the medium and low-skilled workers tasks. Since there are no common micro analyses possible and understanding of the differences across industries can broaden the findings by the task approach of Autor et al. (2003), autor08, Spitz-Oener (2006) and Goos and Manning (2007) to a larger international level.

Australia			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	5.158^{***}	0.0876	-5.246^{***}
	(0.561)	(0.207)	(0.602)
Y	10.46^{***}	1.987^{***}	-12.45^{***}
	(1.478)	(0.546)	(1.587)
K	-9.418^{***}	-6.536^{***}	15.95^{***}
	(1.831)	(0.676)	(1.966)
N	552	552	552
R^2	0.637	0.635	0.494
Austria			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	1.006^{***}	-2.868^{***}	1.861^{***}
	(0.290)	(0.389)	(0.266)
Y	-0.914	3.010^{**}	-2.095^{**}
	(0.836)	(1.123)	(0.767)
K	11.96^{***}	-17.93^{***}	5.964^{***}
	(0.907)	(1.218)	(0.832)
N	598	598	598
R^2	0.608	0.648	0.881
Czech Republic			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.0480	-0.183	0.203^{*}
	(0.202)	(0.212)	(0.0936)
Y	-0.783	0.287	1.132^{***}
	(0.429)	(0.449)	(0.199)
K	1.041	0.0975	-2.104^{***}
	(0.758)	(0.795)	(0.352)
N	253	253	253
R^2	0.589	0.208	0.811
Finland			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-1.114^{***}	2.188^{***}	-1.074^{***}
	(0.207)	(0.289)	(0.205)
Y	2.887^{***}	-0.924	-1.963^{***}
	(0.427)	(0.596)	(0.423)
K	-1.266	-5.916^{***}	7.183^{***}
	(0.704)	(0.982)	(0.697)
N	797	797	797
R^2	0.900	0.816	0.972
Germany			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.009	-1.740^{***}	1.841^{***}
	(0.220)	(0.401)	(0.517)
Y	0.0146	1.625	-1.785
	(0.486)	(0.855)	(1.101)
K	-0.280	-6.912^{***}	7.044^{***}
	(0.894)	(1.570)	(2.020)
N	322	345	345
R^2	0.759	0.649	0.330

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 6: Results for Australia, Austria, Czech Republic, Finland, and Germany for Regressionequation (2)

Italy			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	1.418^{***}	-2.520^{***}	1.103^{***}
	(0.314)	(0.330)	(0.0952)
Y	6.895^{***}	-10.79^{***}	3.894^{***}
	(0.834)	(0.878)	(0.253)
K	-13.29^{***}	13.03^{***}	0.265
	(1.083)	(1.140)	(0.329)
N	828	828	828
R^2	0.346	0.324	0.709
Japan			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	2.720^{***}	-4.806^{***}	2.085^{***}
	(0.280)	(0.645)	(0.436)
Y	4.120^{***}	-8.998^{***}	4.878^{***}
	(0.310)	(0.714)	(0.483)
K	-3.499^{***}	8.238^{***}	-4.739^{***}
	(0.738)	(1.701)	(1.149)
N	759	759	759
R^2	0.885	0.495	0.895
Korea			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	1.456^{***}	-1.960^{***}	0.504
	(0.377)	(0.396)	(0.429)
Y	0.592	-1.792^{**}	1.200
	(0.547)	(0.575)	(0.623)
K	-0.592	7.030^{***}	-6.438^{***}
	(0.700)	(0.736)	(0.798)
N	667	667	667
R^2	0.773	0.390	0.735
Netherlands			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-1.226^{***}	-0.643	1.869^{***}
	(0.271)	(0.466)	(0.283)
Y	0.777	-6.387^{***}	5.609^{***}
	(0.583)	(0.999)	(0.606)
K	8.898^{***}	-17.14^{***}	8.242^{***}
	(1.003)	(1.721)	(1.045)
N	621	621	621
R^2	0.736	0.459	0.835
Slovenia			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.446	-0.670	0.224
	(0.577)	(0.577)	(0.327)
Y	-0.0140	0.631	-0.617
	(1.683)	(1.681)	(0.952)
K	-1.262	-2.722	3.984^{***}
	(1.712)	(1.710)	(0.968)
N	253	253	253
R^2	0.468	0.225	0.445

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 7: Results for Italy, Japan, Korea, Netherlands, and Slovenia for Regressionequation (2)

Sweden			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-1.084	0.384	0.700
	(0.644)	(0.823)	(0.448)
Y	2.511^{**}	-4.660^{***}	2.149^{***}
	(0.791)	(1.012)	(0.550)
K	0.937	3.532	-4.468^{**}
	(2.001)	(2.560)	(1.392)
N	299	299	299
R^2	0.675	0.336	0.899

UK			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.743	-1.716*	0.974
	(0.426)	(0.807)	(0.580)
Y	7.396^{***}	-17.03^{***}	9.635^{***}
	(0.865)	(1.640)	(1.179)
K	1.000	-4.332^{**}	3.332^{**}
	(0.764)	(1.448)	(1.040)
N	828	828	828
R^2	0.815	0.714	0.925

USA			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.314	-4.965^{***}	1.666^{***}
	(0.180)	(0.507)	(0.149)
Y	3.525^{***}	-14.24^{***}	1.440^{***}
	(0.370)	(0.729)	(0.306)
K	4.960^{***}	-1.979^{***}	9.275^{***}
	(0.532)	(0.247)	(0.440)
N	828	828	828
R^2	0.921	0.645	0.935

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 8: Results for Sweden, UK, and USA for Regression equation (2)

Australia			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	5.249^{***}	0.0224	-5.271^{***}
	(0.567)	(0.216)	(0.602)
$\frac{K}{Y}$	-13.34^{***}	-3.717^{***}	17.06^{***}
	(1.466)	(0.559)	(1.557)
N	552	552	552
R^2	0.628	0.601	0.494
Austria			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.264	-1.772^{***}	1.508^{***}
	(0.320)	(0.440)	(0.269)
$\frac{K}{Y}$	5.521^{***}	-8.423^{***}	2.902^{***}
	(0.839)	(1.152)	(0.706)
N	598	598	598
R^2	0.498	0.530	0.872
Czech Republic			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.0396	-0.188	0.224^{*}
	(0.200)	(0.210)	(0.0942)
$\frac{K}{Y}$	0.767	-0.0823	-1.417^{***}
	(0.450)	(0.471)	(0.211)
N	253	253	253
R^2	0.588	0.208	0.806
Finland			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-1.171^{***}	2.705^{***}	-1.535^{***}
	(0.198)	(0.283)	(0.203)
$\frac{K}{Y}$	-1.710^{***}	-1.840^{*}	3.550^{***}
	(0.509)	(0.727)	(0.523)
N	797	797	797
R^2	0.899	0.807	0.969
Germany			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.0346	-3.031^{***}	3.145^{***}
	(0.189)	(0.365)	(0.460)
$\frac{K}{Y}$	0.0111	1.245	-1.197
	(0.491)	(0.929)	(1.169)
N	322	345	345
R^2	0.758	0.604	0.277

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 9: Results for equation 4 for Australia, Austria, Czech Republic, Finland, and Germany

Italy			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	1.802^{***}	-2.499^{***}	0.696^{***}
	(0.298)	(0.311)	(0.0987)
$\frac{K}{Y}$	-10.44^{***}	13.19^{***}	-2.753^{***}
	(0.757)	(0.790)	(0.251)
N	828	828	828
R^2	0.334	0.324	0.648
Japan			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	3.013^{***}	-5.293^{***}	2.280^{***}
	(0.283)	(0.644)	(0.431)
$\frac{K}{Y}$	-7.072^{***}	14.19^{***}	-7.117^{***}
	(0.473)	(1.077)	(0.721)
N	759	759	759
R^2	0.878	0.480	0.894
Korea			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	1.174^{***}	-2.594^{***}	1.420^{***}
	(0.354)	(0.377)	(0.414)
$\frac{K}{Y}$	-1.437^{*}	5.127^{***}	-3.690^{***}
	(0.580)	(0.619)	(0.679)
N	667	667	667
R^2	0.771	0.369	0.719
Netherlands			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-1.395^{***}	-0.161	1.556^{***}
	(0.289)	(0.546)	(0.338)
$\frac{K}{Y}$	1.943^{**}	$2.755*$	-4.698^{***}
	(0.667)	(1.263)	(0.782)
N	621	621	621
R^2	0.699	0.251	0.762
Slovenia			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.447	-0.665	0.218
	(0.576)	(0.578)	(0.335)
$\frac{K}{Y}$	-0.847	-1.341	2.187^{*}
	(1.452)	(1.458)	(0.844)
N	253	253	253
R^2	0.467	0.217	0.413

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 10: Results for equation 4 for Italy, Japan, Korea, Netherlands, and Slovenia

Sweden			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-1.130	0.399	0.732
	(0.644)	(0.821)	(0.448)
$\frac{K}{Y}$	-1.361	4.255^{**}	-2.894^{***}
	(1.147)	(1.462)	(0.798)
N	299	299	299
R^2	0.673	0.336	0.899
UK			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.879^{*}	2.380^{**}	-1.501^{*}
	(0.446)	(0.902)	(0.621)
$\frac{K}{Y}$	-2.059^{**}	3.393^{*}	-1.334
	(0.797)	(1.610)	(1.110)
N	828	828	828
R^2	0.776	0.608	0.905
US			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.412	-0.232	0.644^{**}
	(0.211)	(0.371)	(0.220)
$\frac{K}{Y}$	-1.403^{**}	1.081	0.322
	(0.488)	(0.857)	(0.508)
N	828	828	828
R^2	0.886	0.157	0.850

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 11: Results for equation 4 for Sweden, UK, and USA

Mining and Quarrying

Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-0.760***	-0.461	1.247***
	(0.195)	(0.254)	(0.317)
Y	-1.540	-7.280***	8.921***
	(0.934)	(1.215)	(1.515)
K	5.663***	1.219	-6.854***
	(1.072)	(1.400)	(1.745)
N	327	328	328
R^2	0.785	0.667	0.825

Food, Beverages and Tobacco

Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.542	-4.752***	4.209***
	(0.293)	(0.495)	(0.623)
Y	1.557	-9.364***	7.797**
	(1.354)	(2.290)	(2.882)
K	-0.351	-3.477*	3.753
	(0.967)	(1.633)	(2.055)
N	332	333	333
R^2	0.701	0.773	0.815

Textiles, Textile, Leather and Footwear

Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	3.341***	1.340*	-4.670***
	(0.292)	(0.536)	(0.672)
Y	-6.579***	-12.67***	19.20***
	(0.929)	(1.707)	(2.137)
K	2.464**	-3.952*	1.488
	(0.888)	(1.631)	(2.042)
N	327	328	328
R^2	0.718	0.713	0.774

Wood and of Wood and Cork

Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.800***	0.995***	-1.797***
	(0.176)	(0.288)	(0.384)
Y	-1.882*	-5.539***	7.286***
	(0.905)	(1.483)	(1.977)
K	2.093	-12.90***	10.67***
	(1.160)	(1.903)	(2.537)
N	331	332	332
R^2	0.721	0.791	0.820

Pulp, Paper, Printing and Publishing

Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	2.027***	-3.518***	1.485**
	(0.262)	(0.491)	(0.568)
Y	-0.959	1.430	-0.517
	(1.180)	(2.212)	(2.560)
K	-0.638	-8.565***	9.213***
	(1.057)	(1.982)	(2.293)
N	332	333	333
R^2	0.821	0.654	0.806

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 12: Results for Separate Industries

Coke, Refined Petroleum and Nuclear Fuel			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.391*	-1.513***	1.129*
	(0.176)	(0.417)	(0.483)
Y	1.229***	-0.654	-0.563
	(0.239)	(0.565)	(0.655)
K	-0.702	-5.809***	6.490***
	(0.573)	(1.356)	(1.571)
N	327	328	328
R^2	0.812	0.535	0.715

Chemicals and Chemical			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	2.210***	-2.577***	0.366
	(0.225)	(0.571)	(0.586)
Y	0.182	-2.035	1.894
	(0.715)	(1.812)	(1.858)
K	-0.842	-1.796	2.544
	(1.131)	(2.867)	(2.939)
N	332	333	333
R^2	0.862	0.415	0.719

Rubber and Plastics			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.301	-4.284***	3.942***
	(0.296)	(0.513)	(0.675)
Y	2.723**	-1.637	-1.032
	(1.021)	(1.771)	(2.332)
K	-4.350**	-0.588	4.715
	(1.416)	(2.454)	(3.231)
N	325	326	326
R^2	0.749	0.715	0.775

Other Non-Metallic Mineral			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.295	-0.806	0.507
	(0.265)	(0.434)	(0.599)
Y	-1.649	-9.732***	11.32***
	(0.968)	(1.592)	(2.194)
K	0.691	8.478***	-9.205***
	(1.191)	(1.956)	(2.696)
N	331	332	332
R^2	0.698	0.761	0.786

Basic Metals and Fabricated Metal			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-0.507	-1.741**	2.226**
	(0.297)	(0.528)	(0.712)
Y	2.874**	0.523	-3.336
	(0.885)	(1.577)	(2.126)
K	-5.941***	-7.805***	13.65***
	(1.141)	(2.034)	(2.742)
N	332	333	333
R^2	0.712	0.741	0.777

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 13: Results for Separate Industries

Machinery, Nec.			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-0.220	-1.401**	1.616**
	(0.397)	(0.450)	(0.606)
Y	3.957***	2.043*	-5.992***
	(0.838)	(0.949)	(1.278)
K	-4.200**	-4.396*	8.467***
	(1.562)	(1.768)	(2.381)
N	332	333	333
R^2	0.759	0.616	0.795
Electrical and Optical Equipment			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	1.609***	-4.222***	2.601***
	(0.254)	(0.422)	(0.478)
Y	5.583***	-1.276	-4.286***
	(0.523)	(0.870)	(0.985)
K	-5.090***	5.733***	-0.727
	(0.886)	(1.473)	(1.669)
N	332	333	333
R^2	0.907	0.561	0.826
Transport Equipment			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	1.179***	-3.711***	2.527***
	(0.276)	(0.349)	(0.420)
Y	2.028**	5.480***	-7.512***
	(0.762)	(0.964)	(1.160)
K	-12.67***	-4.226*	16.87***
	(1.376)	(1.740)	(2.094)
N	332	333	333
R^2	0.770	0.671	0.820
Manufacturing Nec.; Recycling			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	2.244***	0.459	-2.698***
	(0.285)	(0.396)	(0.536)
Y	-3.021**	-11.91***	14.90***
	(1.051)	(1.458)	(1.970)
K	-4.550***	11.80***	-7.285***
	(1.054)	(1.467)	(1.982)
N	329	330	330
R^2	0.609	0.717	0.747
Electricity, Gas and Water Supply			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.442	-2.249***	1.819***
	(0.281)	(0.294)	(0.395)
Y	2.989**	6.296***	-9.188***
	(1.140)	(1.192)	(1.601)
K	-5.585***	-11.67***	17.18***
	(1.390)	(1.454)	(1.952)
N	332	333	333
R^2	0.711	0.568	0.756

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 14: Results for Separate Industries

Construction			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-0.247	0.821**	-0.575*
	(0.203)	(0.266)	(0.267)
Y	2.185**	-8.619***	6.510***
	(0.684)	(0.894)	(0.897)
K	-1.467	-4.953***	6.054***
	(1.141)	(1.482)	(1.485)
N	330	331	331
R^2	0.624	0.762	0.874
Wholesale and Retail Trade			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.184	-2.260***	2.079***
	(0.322)	(0.466)	(0.543)
Y	3.638*	-12.96***	9.239***
	(1.624)	(2.345)	(2.737)
K	-6.898***	9.040***	-2.137
	(1.579)	(2.282)	(2.664)
N	332	253	333
R^2	0.648	0.225	0.666
Hotels and Restaurants			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.591	-0.807	0.207
	(0.304)	(0.412)	(0.579)
Y	-2.625	2.220	0.440
	(1.866)	(2.538)	(3.563)
K	7.613***	-2.101	-5.545*
	(1.419)	(1.930)	(2.709)
N	330	331	331
R^2	0.632	0.659	0.707
Transport and Storage			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	1.451***	-0.883*	-0.571
	(0.240)	(0.361)	(0.491)
Y	1.783	-17.84***	16.12***
	(1.696)	(2.555)	(3.474)
K	1.559	-0.363	-1.220
	(1.146)	(1.726)	(2.347)
N	332	333	333
R^2	0.669	0.769	0.786
Post and Telecommunications			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	2.764***	-3.548***	0.804
	(0.256)	(0.435)	(0.504)
Y	3.546***	5.705***	-9.058***
	(0.870)	(1.477)	(1.710)
K	-3.125	-6.504*	8.983**
	(1.736)	(2.933)	(3.396)
N	332	333	333
R^2	0.833	0.461	0.700

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 15: Results for Separate Industries

Financial Intermediation			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.185	-1.144***	0.947**
	(0.479)	(0.343)	(0.347)
Y	2.253	0.852	-3.178***
	(1.213)	(0.869)	(0.878)
K	0.807	-5.861***	5.092***
	(1.449)	(1.040)	(1.050)
N	332	333	333
R^2	0.811	0.766	0.621
Real Estate, Renting and Business Activities			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	-0.190	-1.229***	1.416***
	(0.354)	(0.287)	(0.247)
Y	-3.340	1.209	2.081
	(2.865)	(2.324)	(2.000)
K	-1.414	14.44***	-13.07***
	(2.165)	(1.756)	(1.512)
N	332	333	333
R^2	0.772	0.548	0.758
Other Community, Social and Personal Services			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
K^{ICT}	0.0960	-0.478	0.367
	(0.447)	(0.382)	(0.601)
Y	12.25***	-5.483***	-6.725**
	(1.738)	(1.485)	(2.336)
K	-3.138	7.338***	-4.317
	(1.664)	(1.420)	(2.233)
N	332	333	333
R^2	0.665	0.446	0.678

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 16: Results for Separate Industries

Mining and Quarrying

Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.839***	-0.303	1.167***
	(0.197)	(0.264)	(0.317)
$\frac{K}{Y}$	3.304***	5.844***	-9.204***
	(0.848)	(1.136)	(1.361)
N	327	328	328
R^2	0.776	0.634	0.822

Food, Beverages and Tobacco

Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.515	-4.493***	3.977***
	(0.292)	(0.539)	(0.651)
$\frac{K}{Y}$	-0.806	1.085	-0.333
	(0.896)	(1.652)	(1.993)
N	332	333	333
R^2	0.699	0.729	0.796

Textiles, Textile, Leather and Footwear

Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	3.400***	2.512***	-5.898***
	(0.285)	(0.612)	(0.735)
$\frac{K}{Y}$	2.807***	2.802	-5.592**
	(0.811)	(1.740)	(2.089)
N	327	328	328
R^2	0.717	0.606	0.715

Wood and of Wood and Cork

Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.781***	1.305***	-2.084***
	(0.174)	(0.325)	(0.407)
$\frac{K}{Y}$	1.417	-1.206	-0.163
	(0.860)	(1.605)	(2.009)
N	331	332	332
R^2	0.720	0.729	0.794

Pulp, Paper, Printing and Publishing

Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	1.992***	-2.672***	0.676
	(0.248)	(0.490)	(0.558)
$\frac{K}{Y}$	-0.764	-5.436**	6.223**
	(1.011)	(1.993)	(2.271)
N	332	333	333
R^2	0.821	0.617	0.792

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 17: Results for Separate Industries

Coke, Refined Petroleum and Nuclear Fuel			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.300	-0.720	0.428
	(0.166)	(0.412)	(0.468)
$\frac{K}{Y}$	-1.494***	1.073	0.402
	(0.229)	(0.570)	(0.646)
N	327	328	328
R^2	0.811	0.483	0.697
Chemicals and Chemical			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	2.224***	-2.634***	0.409
	(0.227)	(0.584)	(0.592)
$\frac{K}{Y}$	-2.509**	5.092*	-2.620
	(0.866)	(2.229)	(2.260)
N	332	333	333
R^2	0.859	0.387	0.711
Rubber and Plastics			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.393	-3.843***	3.426***
	(0.290)	(0.515)	(0.674)
$\frac{K}{Y}$	-2.817**	6.925***	-4.085
	(0.928)	(1.653)	(2.164)
N	325	326	326
R^2	0.747	0.698	0.765
Other Non-Metallic Mineral			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.354	-0.624	0.276
	(0.253)	(0.417)	(0.574)
$\frac{K}{Y}$	1.254	10.23***	-11.43***
	(0.935)	(1.542)	(2.124)
N	331	332	332
R^2	0.698	0.759	0.785
Basic Metals and Fabricated Metal			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.235	0.125	-0.368
	(0.267)	(0.494)	(0.669)
$\frac{K}{Y}$	-2.760**	0.245	2.461
	(0.982)	(1.819)	(2.463)
N	332	333	333
R^2	0.687	0.696	0.736

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 18: Results for Separate Industries

Machinery, Nec.			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.236	-1.537***	1.764**
	(0.395)	(0.456)	(0.610)
$\frac{K}{Y}$	-3.634***	0.205	3.453*
	(0.996)	(1.149)	(1.537)
N	332	333	333
R^2	0.759	0.601	0.789
Electrical and Optical Equipment			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	1.366***	-4.249***	2.880***
	(0.249)	(0.405)	(0.463)
$\frac{K}{Y}$	-7.811***	5.428***	2.399**
	(0.456)	(0.740)	(0.846)
N	332	333	333
R^2	0.903	0.561	0.824
Transport Equipment			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	1.556***	-3.613***	2.054***
	(0.329)	(0.349)	(0.475)
$\frac{K}{Y}$	0.227	-0.877	0.673
	(0.893)	(0.948)	(1.289)
N	332	333	333
R^2	0.668	0.665	0.767
Manufacturing Nec.; Recycling			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	2.259***	0.458	-2.708***
	(0.293)	(0.396)	(0.539)
$\frac{K}{Y}$	-1.742*	11.61***	-9.892***
	(0.848)	(1.144)	(1.558)
N	329	330	330
R^2	0.583	0.717	0.742
Electricity, Gas and Water Supply			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.638*	-1.555***	0.926*
	(0.258)	(0.284)	(0.379)
$\frac{K}{Y}$	-4.322***	-7.200***	11.43***
	(1.181)	(1.299)	(1.737)
N	332	333	333
R^2	0.708	0.517	0.730

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 19: Results for Separate Industries

Construction			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.254	1.000***	-0.743*
	(0.202)	(0.293)	(0.290)
$\frac{K}{Y}$	-1.818**	4.565***	-2.896**
	(0.652)	(0.945)	(0.938)
N	330	331	331
R^2	0.624	0.710	0.850
Wholesale and Retail Trade			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.167	-2.294***	2.129***
	(0.324)	(0.471)	(0.555)
$\frac{K}{Y}$	-5.221***	12.42***	-7.159**
	(1.363)	(1.983)	(2.335)
N	332	333	333
R^2	0.643	0.468	0.650
Hotels and Restaurants			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.438	-0.788	0.339
	(0.317)	(0.410)	(0.581)
$\frac{K}{Y}$	8.489***	-2.210	-6.322*
	(1.476)	(1.914)	(2.713)
N	330	331	331
R^2	0.596	0.659	0.701
Transport and Storage			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	1.272***	-0.172	-1.105*
	(0.241)	(0.415)	(0.508)
$\frac{K}{Y}$	1.419	0.195	-1.638
	(1.174)	(2.020)	(2.472)
N	332	333	333
R^2	0.651	0.682	0.761
Post and Telecommunications			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	2.793***	-3.587***	0.811
	(0.259)	(0.438)	(0.503)
$\frac{K}{Y}$	-6.886***	-1.374	8.123***
	(0.940)	(1.592)	(1.830)
N	332	333	333
R^2	0.829	0.452	0.700

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 20: Results for Separate Industries

Financial Intermediation			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	0.222	-1.219**	0.982**
	(0.487)	(0.387)	(0.356)
$\frac{K}{Y}$	-1.160	-2.108*	3.346***
	(1.346)	(1.068)	(0.983)
N	332	333	333
R^2	0.804	0.702	0.599
Real Estate, Renting and Business Activities			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.158	-1.320***	1.477***
	(0.354)	(0.299)	(0.253)
$\frac{K}{Y}$	0.371	9.235***	-9.615***
	(1.755)	(1.481)	(1.253)
N	332	333	333
R^2	0.770	0.507	0.745
Other Community, Social and Personal Services			
Variable	High-Skilled	Medium-Skilled	Low-Skilled
$\frac{K^{ICT}}{Y}$	-0.0737	-0.503	0.562
	(0.477)	(0.382)	(0.631)
$\frac{K}{Y}$	-7.981***	6.616***	1.279
	(1.585)	(1.267)	(2.095)
N	332	333	333
R^2	0.616	0.444	0.643

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 21: Results for Separate Industries

Split samples into two groups: before 1992 and after 1994

Country	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Australia						
K^{ICT}	0.960**	-0.491	-0.00622	-0.150	-0.954***	0.641
	(0.365)	(0.433)	(0.186)	(0.375)	(0.284)	(0.584)
Y	6.061***	1.238	-0.272	-3.825**	-5.788***	2.587
	(1.304)	(1.575)	(0.664)	(1.363)	(1.016)	(2.123)
K	1.343	4.764*	-1.316*	-5.096**	-0.0276	0.332
	(1.246)	(2.058)	(0.635)	(1.781)	(0.971)	(2.774)
N	207	253	207	253	207	253
R^2	0.834	0.778	0.865	0.322	0.806	0.673

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Country	High-Skilled		Medium-Skilled		Low-Skilled	
Austria						
K^{ICT}	1.109**	-2.526***	-2.404***	1.728**	1.295*	0.798*
	(0.347)	(0.515)	(0.646)	(0.616)	(0.523)	(0.369)
Y	1.569	1.293	-3.535*	-2.868	1.965	1.575
	(0.951)	(1.666)	(1.769)	(1.993)	(1.433)	(1.194)
K	5.800***	2.900	-4.170	-11.30***	-1.630	8.404***
	(1.513)	(1.821)	(2.816)	(2.178)	(2.281)	(1.305)
N	253	253	253	253	253	253
R^2	0.429	0.467	0.753	0.207	0.870	0.568

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Country	High-Skilled		Medium-Skilled		Low-Skilled	
Finland						
K^{ICT}	0.331**	-1.762*	0.168	1.165	-0.499**	0.598
	(0.110)	(0.694)	(0.183)	(0.619)	(0.172)	(0.347)
Y	1.857***	3.096**	-4.049***	-1.792	2.192***	-1.304*
	(0.383)	(1.080)	(0.642)	(0.962)	(0.603)	(0.540)
K	-0.558	2.055	-7.111***	-3.516	7.670***	1.461
	(0.507)	(2.368)	(0.848)	(2.110)	(0.797)	(1.185)
N	452	253	452	253	452	253
R^2	0.918	0.445	0.919	0.458	0.969	0.913

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 22: Results for the split sample between 1992 and 1994 for Australia, Austria, and Finland

Split samples into two groups: before 1992 and after 1994

Country	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Italy						
K^{ICT}	-0.218**	7.714***	-1.077***	-7.697***	1.296***	-0.0172
	(0.0780)	(1.223)	(0.115)	(1.227)	(0.0952)	(0.0570)
Y	-0.327	15.78***	-2.149***	-16.08***	2.476***	0.296
	(0.189)	(3.506)	(0.279)	(3.516)	(0.231)	(0.163)
K	3.211***	-26.62***	-3.759***	27.66***	0.548	-1.037***
	(0.353)	(3.640)	(0.520)	(3.650)	(0.431)	(0.170)
N	483	253	483	253	483	253
R^2	0.203	0.408	0.645	0.397	0.748	0.599
Japan						
K^{ICT}	1.091***	0.134	-2.032***	-1.096	0.940**	0.963
	(0.236)	(0.669)	(0.516)	(0.990)	(0.343)	(0.527)
Y	1.612***	1.400	-2.923***	-4.498*	1.311**	3.098**
	(0.328)	(1.479)	(0.716)	(2.189)	(0.475)	(1.166)
K	-0.654	3.582	3.675*	-5.942	-3.020**	2.360
	(0.659)	(2.624)	(1.440)	(3.883)	(0.955)	(2.069)
N	414	253	414	253	414	253
R^2	0.850	0.771	0.541	0.165	0.911	0.813
Korea						
K^{ICT}	-0.143	0.207	0.485	-0.279	-0.343	0.0714
	(0.503)	(0.653)	(0.515)	(0.686)	(0.682)	(0.377)
Y	5.267***	-1.920	2.015**	-1.935	-7.282***	3.854***
	(0.719)	(1.868)	(0.736)	(1.963)	(0.975)	(1.078)
K	-3.066***	1.447	5.119***	10.10**	-2.053	-11.55***
	(0.855)	(3.254)	(0.875)	(3.420)	(1.159)	(1.879)
N	322	253	322	253	322	253
R^2	0.420	0.792	0.674	0.397	0.731	0.806

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 23: Results for the split sample between 1992 and 1994 for Italy, Japan, and Korea

Split samples into two groups: before 1992 and after 1994

Country	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Netherlands						
K^{ICT}	-0.579**	-0.396	0.0137	-0.796	0.565	1.192***
	(0.194)	(0.647)	(0.645)	(0.713)	(0.557)	(0.246)
Y	-1.363***	2.611	-0.969	-3.318	2.332*	0.707
	(0.362)	(1.647)	(1.200)	(1.816)	(1.037)	(0.625)
K	4.142***	-1.141	-19.08***	1.413	14.93***	-0.272
	(0.742)	(2.702)	(2.463)	(2.980)	(2.129)	(1.026)
N	276	253	276	253	276	253
R^2	0.712	0.590	0.678	0.344	0.814	0.692
UK						
K^{ICT}	-0.0971	-1.121	1.752*	0.186	-1.655**	0.936**
	(0.463)	(0.802)	(0.851)	(0.757)	(0.619)	(0.317)
Y	10.69***	1.385	-23.13***	-4.415*	12.45***	3.030***
	(1.102)	(2.111)	(2.028)	(1.993)	(1.473)	(0.835)
K	5.792***	-3.096	-7.951***	1.888	2.159	1.208
	(0.880)	(2.078)	(1.620)	(1.962)	(1.177)	(0.821)
N	483	253	483	253	483	253
R^2	0.763	0.491	0.786	0.216	0.930	0.759
USA						
K^{ICT}	1.578***	-0.909	-4.653***	-3.466***	1.297***	0.588*
	(0.170)	(0.759)	(0.761)	(1.032)	(0.184)	(0.275)
Y	2.073***	3.856***	-12.15***	-4.355**	2.580***	-0.390
	(0.466)	(1.133)	(1.055)	(1.634)	(0.505)	(0.411)
K	3.094***	2.338	-2.875***	0.320	9.051***	2.018**
	(0.646)	(1.794)	(0.277)	(0.691)	(0.701)	(0.650)
N	483	253	483	253	483	253
R^2	0.931	0.626	0.625	0.580	0.939	0.404

***,**,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 24: Results for the split sample between 1992 and 1994 for Netherlands, UK, and USA

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Mining and Quarrying						
K^{ICT}	1.397***	0.330	-1.295**	0.354	-0.103	-0.684
	(0.260)	(0.574)	(0.461)	(0.677)	(0.556)	(0.614)
Y	-1.096	-2.922	-8.312***	3.861	9.409***	-0.939
	(1.055)	(2.996)	(1.870)	(3.534)	(2.255)	(3.200)
K	5.748***	3.552	1.094	-1.669	-6.841**	-1.883
	(1.024)	(3.862)	(1.816)	(4.555)	(2.189)	(4.126)
N	143	99	143	99	143	99
R^2	0.783	0.558	0.726	0.234	0.823	0.690
Food, Beverages and Tobacco						
K^{ICT}	1.096***	-0.235	-2.066**	-1.363**	0.970	1.598*
	(0.260)	(0.717)	(0.723)	(0.496)	(0.768)	(0.699)
Y	0.0234	4.404	-5.242	8.039**	5.219	-12.44***
	(1.531)	(3.549)	(4.261)	(2.458)	(4.523)	(3.461)
K	-4.510**	1.329	-13.84**	6.622**	18.35***	-7.951*
	(1.603)	(3.353)	(4.461)	(2.322)	(4.736)	(3.269)
N	148	99	148	99	148	99
R^2	0.708	0.531	0.783	0.432	0.838	0.723
Textiles, Textile, Leather and Footwear						
K^{ICT}	1.554***	0.315	1.946**	-0.0325	-3.500***	-0.283
	(0.210)	(0.884)	(0.680)	(0.500)	(0.696)	(0.945)
Y	1.498	-0.0368	7.728**	-2.773*	-9.227**	2.810
	(0.839)	(2.155)	(2.711)	(1.217)	(2.776)	(2.302)
K	-5.494***	-3.407	-27.73***	-3.188	33.23***	6.595
	(0.894)	(4.226)	(2.890)	(2.387)	(2.959)	(4.515)
N	143	99	143	99	143	99
R^2	0.759	0.518	0.838	0.351	0.882	0.623

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 25: Results for the split sample between 1992 and 1994 for *Mining and Quarrying*, *Food, Baverages and Tabacco*, and *Textiles, Textile, Leather and Foorwear*

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Wood and of Wood and Cork						
K^{ICT}	1.050***	-0.110	1.418***	-1.849**	-2.468***	1.959**
	(0.121)	(0.505)	(0.285)	(0.619)	(0.352)	(0.654)
Y	-0.890	3.388	-5.563**	-2.266	6.453**	-1.122
	(0.720)	(1.953)	(1.695)	(2.391)	(2.094)	(2.528)
K	-1.622	-6.469	-22.27***	-1.329	23.89***	7.798
	(0.928)	(4.508)	(2.183)	(5.519)	(2.697)	(5.835)
N	147	99	147	99	147	99
R^2	0.826	0.656	0.892	0.310	0.903	0.694
Pulp, Paper, Printing and Publishing						
K^{ICT}	1.796***	0.980	-3.084***	-1.419	1.288*	0.439
	(0.217)	(0.935)	(0.599)	(0.806)	(0.617)	(0.754)
Y	-0.761	-6.748	-6.315*	6.618*	7.076*	0.130
	(1.037)	(3.511)	(2.868)	(3.026)	(2.957)	(2.830)
K	-1.384	-0.608	-13.83***	-0.0253	15.21***	0.634
	(1.057)	(3.637)	(2.920)	(3.135)	(3.011)	(2.931)
N	148	99	148	99	148	99
R^2	0.860	0.492	0.775	0.166	0.867	0.676
Coke, Refined Petroleum and Nuclear Fuel						
K^{ICT}	1.259***	-0.439	0.869	0.0993	-2.128**	0.339
	(0.150)	(0.353)	(0.737)	(0.302)	(0.763)	(0.248)
Y	1.124***	2.058***	-3.899***	0.566	2.775**	-2.624***
	(0.208)	(0.566)	(1.020)	(0.485)	(1.055)	(0.398)
K	-1.328*	3.077	-8.440**	0.0198	9.769***	-3.096
	(0.511)	(2.803)	(2.508)	(2.401)	(2.595)	(1.969)
N	143	99	143	99	143	99
R^2	0.893	0.665	0.642	0.115	0.761	0.767

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 26: Results for the split sample between 1992 and 1994 for *Wood and of Wood and Cork*, *Pulp, Paper, Printing and Publishing*, and *Coke, refined petroleum and nuclear fuel*

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Chemicals and Chemical						
K^{ICT}	1.404***	-0.613	-3.269***	-0.0507	1.865*	0.664
	(0.167)	(0.569)	(0.753)	(0.602)	(0.762)	(0.517)
Y	0.985*	7.101***	-8.399***	-3.526	7.414***	-3.575*
	(0.381)	(1.845)	(1.716)	(1.952)	(1.738)	(1.677)
K	-3.698***	9.991*	1.550	2.126	2.148	-12.12**
	(0.899)	(3.994)	(4.048)	(4.225)	(4.098)	(3.629)
N	148	99	148	99	148	99
R^2	0.896	0.802	0.612	0.233	0.762	0.743
Rubber and Plastics						
K^{ICT}	1.101***	-0.715	-3.429***	-2.108***	2.328*	2.823***
	(0.256)	(0.689)	(0.844)	(0.575)	(0.952)	(0.589)
Y	1.772*	6.192*	0.257	-3.303	-2.029	-2.889
	(0.844)	(2.354)	(2.782)	(1.964)	(3.140)	(2.013)
K	-3.939**	-12.16**	-9.894*	11.76**	13.83**	0.406
	(1.360)	(4.259)	(4.484)	(3.554)	(5.060)	(3.642)
N	141	99	141	99	141	99
R^2	0.788	0.682	0.680	0.317	0.753	0.757
Other Non-Metallic Mineral						
K^{ICT}	1.471***	-0.798	1.362*	-0.228	-2.832***	1.026
	(0.184)	(0.621)	(0.529)	(0.497)	(0.618)	(0.693)
Y	-3.495***	1.418	-11.74***	-3.430	15.23***	2.012
	(0.609)	(2.906)	(1.750)	(2.328)	(2.043)	(3.245)
K	0.937	-5.190	16.97***	10.59***	-17.91***	-5.401
	(0.922)	(3.457)	(2.650)	(2.770)	(3.094)	(3.861)
N	147	99	147	99	147	99
R^2	0.804	0.654	0.801	0.316	0.839	0.663

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 27: Results for the split sample between 1992 and 1994 for *Chemicals and chemical*, *Rubber and plastics*, and *Other Non-Metallic Mineral*

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Basic Metals and Fabricated Metal						
K^{ICT}	0.738***	-1.734*	0.0433	-1.987**	-0.781	3.721***
	(0.192)	(0.795)	(0.613)	(0.701)	(0.667)	(0.811)
Y	0.991	10.30**	4.669**	-5.828*	-5.660**	-4.470
	(0.513)	(3.178)	(1.633)	(2.800)	(1.779)	(3.242)
K	-6.078***	-10.75*	-22.60***	9.996*	28.67***	0.754
	(0.829)	(4.401)	(2.640)	(3.878)	(2.876)	(4.489)
N	148	99	148	99	148	99
R^2	0.819	0.657	0.823	0.330	0.869	0.734
Machinery, Nec.						
K^{ICT}	0.506	-2.837**	0.885	1.539	-1.391	1.298*
	(0.342)	(1.031)	(0.690)	(0.922)	(0.870)	(0.582)
Y	2.049***	6.118*	6.646***	-3.640	-8.695***	-2.478
	(0.587)	(3.042)	(1.183)	(2.722)	(1.491)	(1.718)
K	-6.182***	7.933	-22.42***	-8.066*	28.60***	0.133
	(1.561)	(4.486)	(3.146)	(4.014)	(3.965)	(2.533)
N	148	99	148	99	148	99
R^2	0.815	0.671	0.793	0.325	0.847	0.709
Electrical and Optical Equipment						
K^{ICT}	2.065***	-0.660	-3.477***	0.793	1.413*	-0.132
	(0.247)	(0.826)	(0.618)	(0.776)	(0.677)	(0.603)
Y	0.758	3.730**	1.794	-4.634***	-2.552	0.904
	(0.701)	(1.196)	(1.751)	(1.124)	(1.917)	(0.873)
K	-6.079***	5.217	1.731	1.971	4.348	-7.188***
	(1.505)	(2.691)	(3.760)	(2.529)	(4.118)	(1.963)
N	148	99	148	99	148	99
R^2	0.877	0.849	0.648	0.612	0.805	0.765

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 28: Results for the split sample between 1992 and 1994 for *Basic Metals and Fabricated Metal*, *Machinery, Nec.*, and *Electrical and Optical Equipment*

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Transport Equipment						
K^{ICT}	0.859**	-2.717**	-2.374***	0.614	1.514**	2.103**
	(0.287)	(0.863)	(0.413)	(0.980)	(0.532)	(0.683)
Y	6.428***	5.565*	6.172***	-0.838	-12.60***	-4.727*
	(0.836)	(2.583)	(1.202)	(2.933)	(1.550)	(2.044)
K	-10.61***	6.925	-13.54***	4.687	24.15***	-11.61***
	(1.955)	(3.645)	(2.813)	(4.139)	(3.627)	(2.885)
N	148	99	148	99	148	99
R^2	0.784	0.690	0.774	0.125	0.851	0.766
Manufacturing Nec.; Recycling						
K^{ICT}	1.400***	-1.693*	0.312	0.882	-1.712*	0.810
	(0.287)	(0.758)	(0.472)	(0.552)	(0.671)	(0.704)
Y	4.183***	4.947	-7.009***	-10.47***	2.826	5.521*
	(1.029)	(2.802)	(1.691)	(2.038)	(2.404)	(2.601)
K	0.988	3.777	11.16**	8.369**	-12.14*	-12.15***
	(2.360)	(3.498)	(3.877)	(2.544)	(5.511)	(3.246)
N	145	99	145	99	145	99
R^2	0.580	0.646	0.733	0.403	0.711	0.724
Electricity, Gas and Water Supply						
K^{ICT}	0.935***	0.105	-0.537	0.468	-0.398	-0.573
	(0.227)	(0.833)	(0.426)	(1.069)	(0.469)	(0.804)
Y	3.832***	2.697	9.627***	-3.775	-13.46***	1.078
	(1.126)	(2.953)	(2.116)	(3.792)	(2.330)	(2.852)
K	-7.702***	12.22***	-13.85***	-7.160	21.55***	-5.062
	(1.167)	(3.229)	(2.192)	(4.146)	(2.414)	(3.119)
N	148	99	148	99	148	99
R^2	0.790	0.612	0.657	0.198	0.817	0.449

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 29: Results for the split sample between 1992 and 1994 for *Transport Equipment*, *Manufacturing Nec.; Recycling*, and *Electricity, Gas and Water Supply*

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Construction						
K^{ICT}	1.340***	-4.058***	0.875*	4.589***	-2.215***	-0.531
	(0.220)	(0.927)	(0.377)	(1.128)	(0.440)	(0.666)
Y	2.376**	2.786	-10.10***	-1.629	7.728***	-1.157
	(0.770)	(2.570)	(1.324)	(3.126)	(1.544)	(1.847)
K	0.563	0.446	-8.250***	-6.727*	7.687***	6.281***
	(1.011)	(2.245)	(1.738)	(2.731)	(2.026)	(1.613)
N	146	99	146	99	146	99
R^2	0.806	0.623	0.870	0.270	0.907	0.768
Wholesale and Retail Trade						
K^{ICT}	1.671***	-3.048	-0.842	0.964	-0.829	2.084**
	(0.290)	(1.731)	(0.592)	(1.572)	(0.737)	(0.675)
Y	2.665	2.292	-26.49***	5.851	23.83***	-8.143***
	(1.908)	(6.065)	(3.899)	(5.506)	(4.855)	(2.365)
K	-5.280*	0.438	20.75***	-0.481	-15.47**	0.0437
	(2.277)	(5.705)	(4.653)	(5.180)	(5.794)	(2.224)
N	148	99	148	99	148	99
R^2	0.755	0.474	0.679	0.238	0.722	0.614
Hotels and Restaurants						
K^{ICT}	1.310***	-2.881***	-0.0840	-0.652	-1.226*	3.533***
	(0.177)	(0.815)	(0.473)	(0.471)	(0.573)	(0.674)
Y	-2.303	7.372	17.32***	-5.295	-15.02**	-2.077
	(1.557)	(4.847)	(4.156)	(2.803)	(5.032)	(4.005)
K	-1.657	13.47***	-11.04***	0.220	12.70***	-13.69***
	(1.125)	(3.665)	(3.004)	(2.120)	(3.637)	(3.029)
N	146	99	146	99	146	99
R^2	0.674	0.626	0.741	0.160	0.758	0.692

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 30: Results for the split sample between 1992 and 1994 for *Construction*, *Wholesale and Retail Trade*, and *Hotels and Restaurants*

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Transport and Storage						
K^{ICT}	2.062***	-2.093***	-0.703	-0.549	-1.359*	2.642***
	(0.211)	(0.502)	(0.649)	(0.430)	(0.649)	(0.652)
Y	2.353	11.55**	-19.05***	-7.240*	16.69**	-4.312
	(1.688)	(3.723)	(5.184)	(3.189)	(5.180)	(4.839)
K	-9.208***	17.32***	1.891	-11.94***	7.317*	-5.389
	(1.120)	(3.390)	(3.440)	(2.904)	(3.437)	(4.406)
N	148	99	148	99	148	99
R^2	0.849	0.653	0.798	0.462	0.876	0.536
Post and Telecommunications						
K^{ICT}	3.320***	-0.626	-4.836***	0.684	1.516*	-0.0578
	(0.237)	(0.840)	(0.713)	(0.810)	(0.759)	(0.691)
Y	0.658	5.560**	16.66***	6.055**	-17.32***	-11.61***
	(1.450)	(1.870)	(4.364)	(1.803)	(4.644)	(1.537)
K	-3.204*	-2.452	-17.92***	-4.245	21.12***	6.697*
	(1.449)	(3.988)	(4.362)	(3.845)	(4.641)	(3.279)
N	148	99	148	99	148	99
R^2	0.834	0.770	0.609	0.493	0.713	0.694
Financial Intermediation						
K^{ICT}	-0.790	-1.149	-1.224***	1.650*	2.014***	-0.501
	(0.405)	(0.744)	(0.303)	(0.710)	(0.293)	(0.418)
Y	-0.0825	10.13**	2.196**	-11.57***	-2.114**	1.441
	(1.045)	(3.045)	(0.782)	(2.906)	(0.757)	(1.712)
K	11.86***	0.716	-7.556***	-2.452	-4.300**	1.737
	(1.805)	(2.856)	(1.350)	(2.725)	(1.308)	(1.606)
N	148	99	148	99	148	99
R^2	0.817	0.789	0.652	0.714	0.761	0.441

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 31: Results for the split sample between 1992 and 1994 for *Transport and Storage*, *Post and Telecommunications*, and *Financial Intermediation*

Split samples into two groups: before 1992 and after 1994

Industry	High-Skilled		Medium-Skilled		Low-Skilled	
Variable	until 1991	1995-2005	until 1991	1995-2005	until 1991	1995-2005
Real Estate, Renting and Business Activities						
K^{ICT}	1.032*	-0.887	-2.098***	-5.710**	1.066***	3.599***
	(0.439)	(1.588)	(0.206)	(1.673)	(0.307)	(0.596)
Y	-21.65***	-3.932	5.712*	7.500	15.94***	-10.42*
	(5.603)	(9.916)	(2.631)	(12.51)	(3.913)	(4.455)
K	3.274	-17.73*	4.244**	138.3***	-7.518***	-16.27**
	(2.818)	(6.864)	(1.323)	(16.28)	(1.968)	(5.797)
N	148	142	148	99	148	99
R^2	0.696	0.424	0.577	0.656	0.792	0.634
Other Community, Social and Personal Services						
K^{ICT}	0.651	1.587	0.556	-1.896	-1.207**	0.310
	(0.357)	(1.296)	(0.359)	(1.111)	(0.437)	(1.120)
Y	5.749**	-5.915	-2.822	13.97*	-2.927	-8.057
	(1.735)	(6.488)	(1.744)	(5.565)	(2.122)	(5.608)
K	-4.591*	0.894	10.49***	5.785	-5.895*	-6.679
	(2.209)	(5.543)	(2.220)	(4.754)	(2.701)	(4.792)
N	148	99	148	99	148	99
R^2	0.733	0.400	0.706	0.196	0.862	0.495

***,** ,*: statistically significant at 1, 5, and 10 % level, respectively; standard errors in parentheses

Table 32: Results for the split sample between 1992 and 1994 for *Real Estate, Renting and Business Activities*, and *Other Community, Social and Personal Services*

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