The Effects of Globalization on Wages, Employment, and Wage Share in Austria*

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1. Introduction

The aim of this paper is to empirically analyze the impact of globalization – as measured by the trade and capital flows – on the labor market outcomes in Austria. In the last fifteen years there has been a significant increase in the globalization of the Austrian economy through an increase in exports, final imports, intermediate imports, and outward foreign direct investment (FDI). The integration of the Central and Eastern Europe (CEECs) to the European economic sphere, added a new dimension to the globalization of the Austrian economy, although Austrian trade and FDI towards Western Europe also increased significantly during this period. Austria is one of the relatively most integrated Western high wage-countries to the low-wage East. Its geographical proximity as well as historical ties and its small size played a role in this fast integration.

The increase in unemployment (from 3.8% in 1989 to 5.8% as of 2006 albeit a decline again to 4.1% as of 2008) and wage moderation in the meantime attracted public attention to globalization, and in particular Eastern enlargement. Although the Austrian firms have been able to increase their profitability during Eastern Enlargement,[1] whether the gains have been shared with labor is being debated. The stylized facts of the labor market developments raise some doubts: Since the 1980s industrial employment is decreasing, and total employment is stagnant in spite of the jobs created in services. The opposite trend in domestic employment compared with the increasing foreign affiliate jobs is particularly striking. In the meantime real wages have stagnated in the total economy particularly since the mid 1990s in striking contrast to the strong improvement in labor productivity.

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The service wages are even slightly declining in the last five years on average. As a combination of these developments (in employment, wages, and productivity), the functional income distribution has been changing at the expense of labor in the last three decades. The wage share (labor compensation/gross value added in non-agricultural sector) declined from a level of 65.2% in 1978 to 50.9% as of 2005. Guger and Marterbauer (2004) argue that rationalization waves and the decline in employment reduced the bargaining power of the workers; the increased international competitive pressures determined the conditions of wage bargaining; and the flexibilization of the labor market through outsourcing, increased temporary work contracts, new working time arrangements and part-time employment also created pressures. In this study we focus on the effects of globalization to analyze how much of this decline is related to increased imports, outsourcing in particular, and Austrian outward FDI. We pay particular attention to the possible different effects of integration with the developed countries vs. the CEECs and the other low wage countries.

The decline in labor share is not specific to Austria.[2] Breuss (2007) finds that increased trade with the East and FDI in general cause a decline in the labor share in the developed EU countries. Recently the mainstream international institutions like OECD and IMF also could not stay indifferent to this development and addressed the issue, which is motivated by the increasing public discontent. OECD (2007) cites the 2005 Eurobarometer opinion poll, which shows that more people have a negative than a positive view of globalization and ”relocation of jobs to countries where wages are lower“ was the most frequently cited consequence of globalization. In OECD Employment Outlook (2007) Rodrik’s (1997) analysis pointing at the negative effects of globalization on labor is now playing an important role albeit with a delay of 10 years. OECD (2007) addresses that there has been a downward trend in the wage share, which has coincided with rapid growth in trade and FDI, but nevertheless they add an excusing remark afterwards that many other factors such as technological change, capital deepening and changes in the industry mix of output can contribute to that fall.

IMF (2007) find that globalization (measured by changes in export and import prices, offshoring, and immigration) had a negative effect on the labor share in developed countries, but they cite globalization as one of several factors, and emphasize technological change and labor market policies as other important factors. However what is not discussed in these studies is that it is quite hard to disintegrate the technology shocks from trade induced technological change. The reverse is also true. Technological change facilitates international transactions through lower costs and thus generates the conditions for globalization. Interestingly in the study of IMF (2007) the skilled labor share[3] declines much more due to globalizati-

on and in particular offshoring, and the technological change effect is less, although for the unskilled labor the effect of globalization is much smaller than the effect of technological change. Another interesting finding is that in small European countries, the effects of offshoring and trade prices are much larger than in large countries, and the contribution of immigration is the smallest, and even smaller than the effect of offshoring in these countries. This is an important difference, since the IMF report indeed makes an effort to underscore the importance of globalization by focusing on the finding indicating a much larger negative effect of immigration than the other components of globalization, namely trade and offshoring. However this is not the case in the small economies according to the findings in the same report. Also in small European countries the effect of globalization in total is as large as the effect of technology.

In this paper first we estimate the effects on employment and wages, and then combining the effects on both wages and employment we calculate the cumulative effects on the functional income distribution, i. e. the wage share. The estimations are made for a panel of sectors, which are subject to trade or FDI flows. The effects are separately estimated for low and high skilled sectors, industry vs. services, and blue vs. white collar workers.

Section 2 discusses the data and methodological issues. Section 3 presents the stylized facts of globalization and labor market outcomes in Austria. Section 4 and 5 present the estimation results about the effects of FDI and trade on employment, wages, and the wage share. Section 6 concludes.

2. Data, estimation methodology and specification of the equations

The empirical analysis is based on the panel data of the sub-sectors of industry and services. In order to account for different impacts on skilled vs. less skilled labor, separate estimations are made for low vs. high skilled sector groups and for white-collar vs. blue-collar workers.[4]

Regarding the trade effects we use exports and imports of the sector, but to avoid multicollinearity problems we first estimate the import effects alone. Since the origin or destination of trade, whether it is a low wage or high wage country with similar factor composition may affect the direction of the impact, we differentiate imports from developed countries (high wage countries), the CEECs and South Eastern Europe (the East from now on),[5] and the rest of the world (primarily other low wage countries). Next regarding imports it is important to distinguish whether they are intermediate inputs or final consumption goods. Therefore we additionally distinguish intermediate vs. final good imports from different origins. Inter-

mediate import penetration (intermediate imports/domestic consumption) is a proxy for transnational outsourcing in the sector. Then we estimate a specification with total trade intensity (exports/output + imports/domestic consumption).

The effects of outward FDI on the labor market outcomes at home is measured by the effects of employment in the foreign affiliates of Austria (weighted by the share of the Austrian firm) in each sector disaggregated as affiliates in developed countries and the East[6]. The sectors are defined according to the sector of the foreign affiliate.

Due to differences in the availability of trade and FDI data, separate equations will be estimated for trade and FDI effects. FDI data is available only at the level of 1-digit NACE classification and for the period of 1993-2004, whereas disaggregated trade data is available at 2-digit level for the period of 1988-2005.

Thus the equations (1) and (2) to be estimated for FDI effects on employment and wages take the following form respectively:[7]

(1a) $$ll_{i,t} = \beta_i + \beta_t + \beta_l ll_{i,t-1} + \sum_{j=0}^{1} \beta_{wj} lwr_{i,t-j} + \sum_{j=0}^{1} \beta_{qj} lqr_{i,t-j} + \sum_{j=1}^{2} \beta_{kj} lknonict_{i,t-j} + \sum_{j=1}^{2} \beta_{kictj} lkict_{i,t-j} + \sum_{c} \sum_{j=1}^{2} \beta_{fcnj} lf_{c\ i,t-j} + \varepsilon_{t,i}$$

and

(2a) $$lwr_{i,t} = \alpha_i + \alpha_t + \alpha_w lwr_{i,t-1} + \sum_{j=0}^{1} \alpha_{lj} ll_{i,t-j} + \sum_{j=1}^{2} \alpha_{kj} lknonict_{i,t-j} + \sum_{j=1}^{2} \alpha_{kictj} lkict_{i,t-j} + \sum_{c} \sum_{j=1}^{2} \alpha_{fcnj} lf_{c\ i,t-j} + \varepsilon_{t,i}$$

where ll_i, lwr_i, lqr_i, $lknonict_i$, $lkict_i$, lf_{ci} are the employment, real wage (labor compensation, deflated by sectoral producers price index), real value added, real non-ICT capital stock, real ICT capital stock, and foreign affiliate employment in sector i respectively, and all are in logarithms. The sector index i=1,…,12 for industry[8] i=13,…,20 for services, i=1,…,20 for total economy, and t=1996-2005. β_t and α_t are time dummies, accounting for exogenous technology shocks not captured by the ICT capital stock, policy changes and other institutional factors such as employment taxes, employment legislation that may affect labor demand, the economy wide labor market conditions that affect workers' outside options, an alternative economy wide wage, the institutional factors that may affect the bargaining power like union density, collective bargaining coverage, structural change in the composition of employment. The effects of major changes in industrial relations after privatization will also be reflected in the time dummies. c is the affiliate country index corresponding to affiliates in de-

veloped countries vs. the East. Lags of the explanatory variables and the dependent variable will be used to account for short vs. longer run effects. The capital stock and foreign affiliate data ends in 2004; in order to be able to estimate the effects including 2005, we will use the first and second lags of these variables. Since the effect of both capital accumulation and FDI on labor markets make require a long adjustment process using deeper lags makes also economically sense.

For the import effects we estimate the following equations for employment and wages:

(1b) $$ll_{i,t} = \beta_i + \beta_t + \beta_l ll_{i,t-1} + \sum_{j=0}^{1} \beta_{wj} lwr_{i,t-j} + \sum_{j=0}^{1} \beta_{qj} lqr_{i,t-j} + \sum_{c}\sum_{n}\sum_{j=0}^{1} \beta_{mcnj} mq_{cn\ i,t-j} + \varepsilon_{t,i}$$

and

(2b) $$lwr_{i,t} = \alpha_i + \alpha_t + \alpha_w lwr_{i,t-1} + \sum_{j=0}^{1} \alpha_{lj} ll_{i,t-j} + \sum_{j=0}^{1} \alpha_{qj} lqr_{i,t-j} + \sum_{c}\sum_{n}\sum_{j=0}^{1} \alpha_{mcnj} mq_{cn\ i,t-j} + \varepsilon_{t,i}$$

where i=1,…,21 for manufacturing[9]), t=1990-2005, mq_{cni} is import penetration ratio in sector i (import/domestic consumption of sector i), c is the origin of country index for imports corresponding to developed countries, the East, and the rest of the world, n is the index for the type of goods, i.e. intermediate or final imports. Real value added is included in the wage equation to account for labor productivity, since capital stock is not available at the 2-digit level. In the wage equation in addition to employment import penetration is treated as endogenous variable.

Finally we estimate a specification with total trade intensity, by using the current and lagged value of total trade intensity (exports/output + imports/ domestic consumption,)

$\sum_{c}\sum_{j=0}^{1} \alpha_{xcj} tq_{c\ i,t-j}$ instead of import penetration variable in equation 1b and 2b.

Based on these estimation results we then calculate the long run coefficients using the contemporaneous and lagged effects and the speed of adjustment for the vector of explanatory variables. The wage share effects are then calculated based on the long run effects on wages and employment. For example the effect of foreign employment n the wage share is, $\frac{\partial \ln(ws)}{\partial \ln f} = \frac{\alpha_f(1+\beta_w)+\beta_f(1+\alpha_l)}{1-\beta_w\alpha_l}$ where the α and β's are the long run coefficients. This expression incorporates the effect of foreign affiliate employment on wages discounted by the effect of wages on employment and

the effect of foreign affiliate employment on employment amplified by the effect of employment on wages.

3.1 The globalization of the economy

As of 2005, 17.4% of Austria's non-agricultural exports are going to Eastern and South Eastern Europe (10 new member states, Croatia, Turkey, referred as East from now on), and 13.1% of non-agricultural imports are coming from there. What is more striking is the increase in the volume of Austria's trade with the East. Despite this fast growth of trade with the East, Austria's trade surplus with the East improved in many sectors. Austria's proximity to the East also facilitated transnational outsourcing significantly. Nevertheless even for Austria, the observed overall increase in outsourcing is due mainly to the increase in outsourcing to other high-wage countries. Table 1 shows the cumulative change in the export/output (of only non-agricultural tradable sectors) and import/domestic consumption ratios during 1990-2005 (in %-points).[10]

Regarding sectoral differences, intermediate imports from developed countries and the East increased much faster than the increase in final goods particularly in high skilled manufacturing, whereas in low skilled sectors final goods imports from developed countries and the East increased slightly faster. The increase in imports from the rest of the world is mostly due to the increase in final goods imports in the low skilled manufacturing industry.

Table 1: Cumulative %-point change in export and import ratios (1990-2005)

	Manufacturing		Total
	Low-skilled	High-skilled	
Exports/output to:			
Developed countries	14.99	9.44	12.63
East	9.37	11.08	10.57
Rest of the world	0.53	0.50	0.88
Intermediate imports/domestic absorption from:			
Developed countries	5.41	7.36	7.32
East	3.09	5.33	4.57
Rest of the world	0.65	0.30	0.49
Final imports/domestic absorption from:			
Developed countries	5.82	0.63	3.28
East	4.90	2.59	3.35
Rest of the world	2.51	0.53	1.22

Table 2: Cumulative % change in the foreign affiliate employment (1995-2004)

	Industry		
	Low skilled	High skilled	Total
Developed	63.70	96.35	83.03
East	81.88	252.55	177.01
	Services		
	Low skilled	High skilled	Total
Developed	208.15	47.52	161.50
East	86.56	824.46	302.85
	Total Economy		
Developed			117.79
East			241.01

Austria's international trade with the East is dominated by intra-firm trade. Almost 70% of Austria's imports from the East and 22% of exports are trade within a multinational enterprise.[11] Similar to the developments in trade, Austrian FDI is also increasing from early 1990s onwards to both the developed countries and the East, with the increase towards the latter being higher. Austria's total FDI stock in the East as of 2004 is 38.0% of its total FDI stock. Austrian FDI is predominantly in services, but the ten biggest Austrian investors in the NMS represent a mix of financial and industrial capital. Regarding FDI outflow the banking sector makes up 30% of the total.[12]

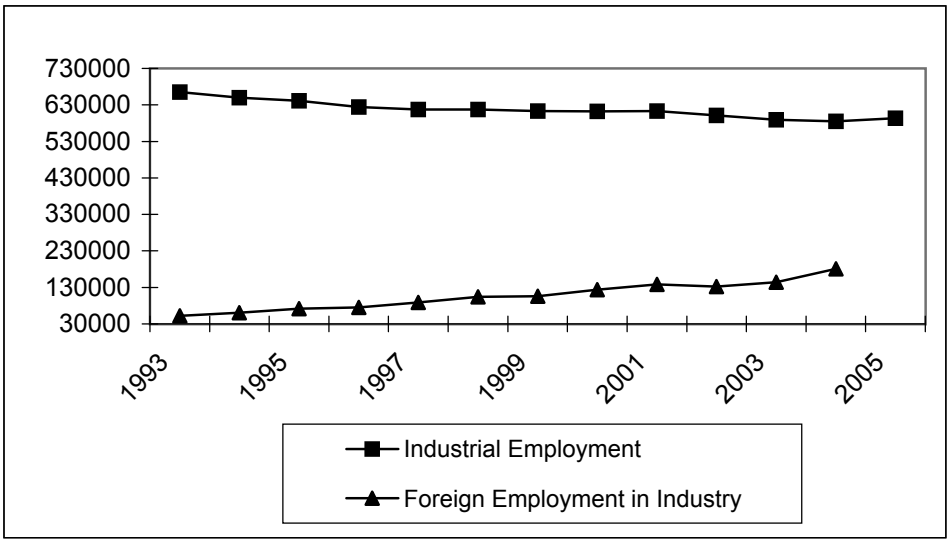
Table 2 shows the cumulative % change in foreign affiliate employment during 1995-2004. The share of the employment in the foreign affiliates of Austria in the East in the total employment in foreign affiliates is 71.9% as of 2004, and is much higher than that of the affiliates in the developed countries (24.4%). Particularly in the high skilled services sectors the share of the East increases to 91.9%. Employment in the affiliates of Austria in the East increased 190.9% in industry and 302.8% in services during 1995-2004. The increase in the employment in the foreign affiliates in the East in the high skilled services has been phenomenal, but this also reminds us of the importance of company take-overs via market-seeking horizontal FDI in sectors like banking.

3.2 The developments in wages, employment, and the wage share

How did the labor markets perform during this period of major internationalization? Table A1 (see annex) shows the average annual change (compound average) in the labor market variables for the sub-periods during 1976-2005 (for the non-agricultural sector).

As opposed to the positive growth in value added, since the 1980s industrial employment is decreasing, whereas total (non-agricultural) employment is stagnant (a mere increase of 0.7% per year during 1990-2005) and employment in services is increasing, mainly due to high skilled services. Figure 1 plots the striking opposite trend in domestic industrial employment compared with the increasing foreign affiliate employment. There is also a negative correlation between the decline in employment in manufacturing and the increase in overall import penetration (-0.30), and in particular import penetration from the East (-0.36).

Figure 1: Domestic and foreign affiliate employment, industry (1993-2005)

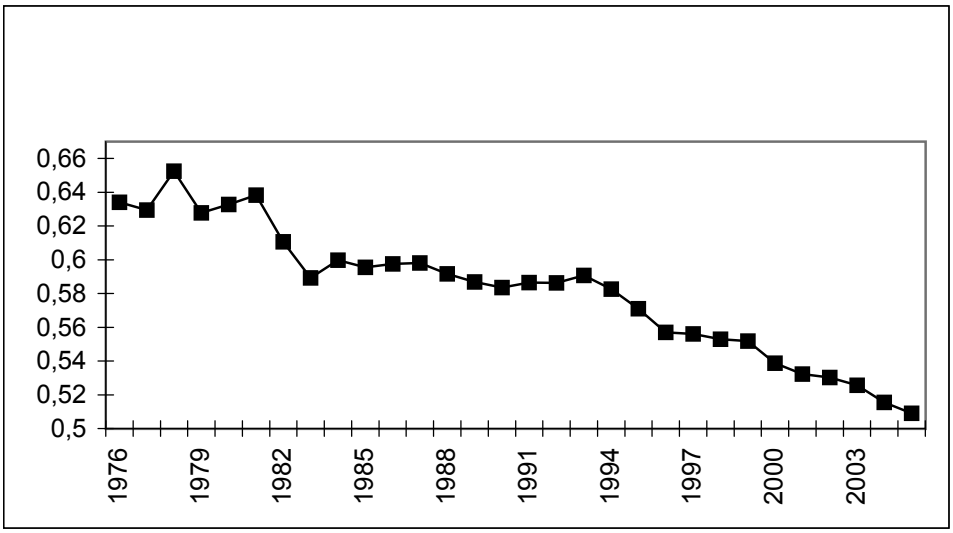


In parallel to the unfavorable developments in employment, real wages (per employee, deflated by CPI) have been stagnating in the total economy (non-agricultural) except for a short recovery during 1985-89. In the last five years (2000-05) there has been even a decline in the service sector wages (-0.4% per year).[13] Although the integration of Austria to the global economy seems to have affected employment much more than real wages and although the changes across sectors in wages are much more similar than in employment, the degree of wage moderation points at significant changes in labor's bargaining power in the 1980s and then further since the second half of the 1990s. The extent of wage moderation becomes clearer when we compare the % change in product wages (deflated by PPI) vs. labor productivity (real value added per employee): in the aggregate economy as well as in manufacturing real wage increases

exceeded the productivity increases during the 70s, but have lagged behind productivity afterwards with few exceptions.

These developments have led to a significant erosion in the share of labor since the late 1970s with a further acceleration since mid-1990s. The wage share declined from a level of 65.2% in 1978 to 50.9% as of 2005 (see Figure 2).

Figure 2: Wage share 1976-2005 (%, total economy)



4. Estimation results: FDI effects

4.1 Employment

Table 3a shows the cumulative effect of each explanatory variable on employment in total industry and total economy calculated as the long run coefficients (based on the significant coefficients in the estimation of equation 1a) multiplied by the actual change in the explanatory variable. This combines statistical and economic significance. A memo item in the last line reports the actual change in employment.

In total manufacturing an increase in foreign affiliate employment in the East has a significant negative long run effect on employment in the same sector in Austria. The same effect takes place in the total economy and in both the low and high skilled sectors. These results indicate that the increase in affiliate employment in the East over the period of 1995-2004 has resulted in a decline of 6.96% in employment, which means a loss of 43402 jobs in industry in Austria during 1996-2005. 14 Similarly the cumu-

lative number of jobs that were lost in the total economy are estimated to be 155488 over 10 years (a decline of 5.97% in 2005 compared to 1995). To put it differently each job that has been created additionally over this period in the Eastern affiliates of Austria has substituted 0.53 jobs in net terms in industry, and 0.58 jobs in the total economy (as a ratio to jobs created in the Eastern affiliates in all sectors). These are the net effects showing the net of the jobs lost due to substitution and jobs created due to complementary and scale effects. These numbers are overestimating the actual change in employment, which has declined 4.9% in industry, and increased 7.3% in total economy. But they indicate that for a given positive effect of growth and a negative effect of technical change, employment would have declined 6.96% less in industry if there had been no Austrian foreign investment in the East in this period.

At the level of the total economy, the employment of blue collar workers seems to be more affected by the rise of employment in the Austrian foreign affiliates relative to the white collar workers. But interestingly the workers working in the higher skilled sectors are more affected than those working in the lower skilled sectors; however employment declines in both sector groups due to capital outflow.

Regarding the control variables, while growth of value added as well as non-ICT capital has a positive effect on employment, the growth of ICT capital has a negative effect on employment growth in industry reflecting the effects of labor saving technical change. The effect is highly significant in spite of the existence of time dummies. In the total economy the effect of ICT capital as well as non-ICT capital is insignificant, whereas growth remains significant. The technical change in this case is only captured by the time dummies. Employment does not seem to be responsive to changes in wages.

Time dummies remain significant despite the presence of capital stock as an explanatory variable. This captures not only the ongoing structural change but also other exogenous technical change effects that are not reflected by the capital stock.

If we compare our results with the previous research results, the negative effects of Eastern affiliate employment is consistent with the findings in Bellak and Altzinger (2001), and the survey evidence in Marin (2004), but she finds no negative effect of affiliate wages. Regarding Falk and Wolfmayr (2007), for industry they find no significant effects both at sectoral and firm level. One difference is that they cover only the Eastern employment in the five NMS. The more important difference is the use of lags. While they do not use lagged effects, we find that this makes a difference in the results. They use the Arellano-Bover/Blundell-Bond system estimator, but our results using the same estimator with lagged effects also indicate a negative effect of affiliate employment in the East. However, Falk

Table 3: Cumulative % change effects (1996-2005)

a) Employment: Cumulative % change during 1996-2005 due to:

	Industry	Total econ.
Real wage	0.00	0.00
Real value added	18.90	11.59
Non-ICT Capital	0.69	0.00
ICT Capital	-20.97	0.00
Foreign affliate employment-developed countries	0.00	0.00
Foreign affliate employment-east	-6.96	-5.97
Foreign employment total cumulative %change effect	-6.96	-5.97
Memo item: Actual cumulative % change in employment	-4.89	7.32

b) Wage: Cumulative % change during 1996-2005 due to:

	Industry	Total econ.
Employment	3.35	-3.31
Non-ICT Capital	0.93	0.00
ICT Capital	0.00	0.00
Foreign affliate employment-developed countries	-7.23	0.00
Foreign affliate employment-east	-17.93	0.00
Foreign employment total cumulative %change effect	-25.17	0.00
Memo item: Actual cumulative % change in wages	12.86	3.91

c) Wage share: Cumulative %-point change during 1996-2005 due to:

	Industry	Total econ.
Non-ICT Capital t-1	0.75	0.00
ICT Capital t	-4.32	0.00
Foreign affliate employment-developed countries	-4.74	0.00
Foreign affliate employment-east	-13.18	-1.82
Foreign employment total cumulative %change effect	-17.92	-1.82
Memo item: Actual cum. %-point change in wage share	-8.24	-4.80

and Wolfmayr (2007) also mention that aggregate studies might be hiding important firm level adjustment processes, to which we also agree. Based on firm level data they find no significant effect of affiliate employment on parent companies' employment. While this reflects the direct effects on the parent companies, the sectoral results incorporate also the indirect results at the sectoral level, where negative effects seem to be dominating according to the results of our study.

4.2 Real wages

According to the estimation results, employment in the foreign affiliates in the East as well as in developed countries have a significant negative effect on wages in industry, but no effect in the total economy. Table 3b shows the cumulative effect of each explanatory variable on wages in industry and total economy, calculated as the long run coefficients multiplied by the actual change in the explanatory variable. In terms of economic significance, the increase in the affiliate employment in the East and in developed countries resulted in a 17.9% and 7.2% cumulative decline in real wages in industry during the period of 1996-2005 respectively. Thus altogether real wages would have increased 25.2% more in industry if there had been no Austrian foreign investment in this period.

Although estimations for sub-sectors must be interpreted with care due to the low number of observations included, they still point at some interesting results: in the total economy the increase in affiliate employment in developed countries has a negative effect in low skilled sectors (including both low skilled industry and service sectors), whereas there is a negative wage effect of Eastern affiliate employment in high skilled sectors. There is evidence of some positive effect of affiliate employment in the East on wages in services sectors as well as on wages in the low skilled sectors. This could be explained by a positive scope effect and skill upgrading in the low skilled or services sectors, which have a complementary relation to Eastern affiliate employment. Based on the regression results for blue and white collar workers, there is only evidence of a negative wage effect for blue collar workers due to foreign affiliate employment in industry.

Again the time dummies remain significant and are mostly negative, indicating the significance of institutional factors as well as possible negative threat effects of capital mobility that is not necessarily reflected in the volume of actual transactions.

4.3 Wage share

Combining the long run effects on employment and wages, we get the joint effect of the changes in capital stock (ICT and non-ICT) and the employment in foreign affiliates of Austria. Based on the calculated long run coefficients for the wage share, Table 3c reports the cumulative %-points effect[15] of the actual change in the explanatory variable. These effects are partial effects for a given level of value added.

In industry the increase in employment in the foreign affiliates of Austria in the East and the developed countries has resulted in a cumulative decline of 13.2%-points and 4.7%-points in the wage share respectively during 1996-2005 (thus a total of -17.9%-points). These results overestimate the

8.2%-points actual decline in the wage share, however the direction is suggestive. Overall in the total economy the increase in the Eastern affiliate employment has resulted in a 1.8%-point decline in the wage share.

5. Estimation results: trade effects

5.1 Employment

Table 4a shows the cumulative effect of each explanatory variable on employment in total industry and in sub-pools of high vs. low skilled manufacturing sectors, calculated as the long run coefficients (based on the significant coefficients in the estimation of equation 2a) multiplied by the actual change in the explanatory variable.

Intermediate import penetration by the East has a significant negative long-run effect on employment in total manufacturing. The effect is specific to the high skilled sectors. However due to low number of cross sections the estimations for sub-sector groups must be discussed with caution. In low skilled sectors it seems that intermediate import penetration by the East is leading to positive employment effects via scope changes. Intermediate import penetration by the developed countries has a positive effect in total manufacturing, and in particular high skilled sectors, but a negative effect in low skilled sectors. Final imports from the East also have a negative effect in low skilled sectors. In total manufacturing both types of imports from the rest of the world have a positive employment effect, indicating the dominance of scale effects to substitution effects and the presence of a complementary relationship.

In terms of economic significance, it is estimated that intermediate import penetration from the East, which increased 4.6%-points during 1990-2005 in manufacturing, has resulted in a cumulative decline of 20.7% in total manufacturing employment, which actually decreased 16.5% during 1990-2005. Overall summing up all the import effects we find a net effect of 1.6% decline in manufacturing employment due to total imports (11104 jobs). The effect is minor, nevertheless employment would have decreased 1.6% less in manufacturing without imports.

The results for the blue and white collar workers hint at an expected finding: The cumulative effect of imports on blue collar workers' employment in manufacturing is negative and on white collar workers it is positive.

Although the effect of imports are mixed, when the effect of exports are also incorporated, we find a positive total trade effect in total manufacturing, however only regarding trade with the rest of the world. The positive effects of exports and negative effects of at least some import components seem to cancel out with respect to the effect of trade with developed countries or the East.

Table 4: Cumulative % change effects (1990-2005)

a) Employment: Cumulative % change during 1990-2005 due to:

	Manufacturing		
	Low skilled	High skilled	Total
Real wage	0.00	0.00	0.00
Real value added	3.85	0.00	0.00
Intermediate imports from industrial countries	-5.87	15.01	8.44
Final imports from industrial countries	0.00	0.00	0.00
Intermediate imports from East	17.22	-47.55	-20.67
Final imports from East	-15.25	0.00	0.00
Intermediate imports from rest of the world	7.72	0.00	5.28
Final imports from rest of the world	0.00	0.00	5.36
Total cumulative %change effect of imports	3.82	-32.53	-1.59
Memo item: Actual cumulative % change in employm.	-27.72	-6.77	-16.49

b) Wage: Cumulative % change during 1990-2005 due to:

	Manufacturing		
	Low skilled	High skilled	Total
Employment	0.00	0.00	0.00
Real value added	3.50	0.00	9.19
Intermediate imports from industrial countries	0.00	-10.97	-7.27
Final imports from industrial countries	7.71	0.00	0.00
Intermediate imports from East	-0.70	6.22	4.07
Final imports from East	0.00	-9.10	0.00
Intermediate imports from rest of the world	-3.54	0.00	0.00
Final imports from rest of the world	8.44	1.73	2.97
Total cumulative %change effect of imports	11.92	-12.11	-0.23
Memo item: Actual cumulative % change in wages	28.75	40.16	37.97

c) Wage share: Cumulative %-point change during 1990-2005 due to:

	Manufacturing		
	Low skilled	High skilled	Total
Intermediate imports from industrial countries	-4.04	2.77	0.80
Final imports from industrial countries	5.31	0.00	0.00
Intermediate imports from East	11.38	-28.23	-11.38
Final imports from East	-10.51	-6.22	0.00
Intermediate imports from rest of the world	2.88	0.00	3.62
Final imports from rest of the world	5.81	1.18	5.71
Total cumulative %change effect of imports	10.83	-30.50	-1.25
Memo item: Actual cum. %-point change in wage share	-12.01	-9.93	-10.70

Finally we compare our results with those of previous research, although a strict comparison is not possible due to the differences in the period of analysis as well as methodological differences, particularly in the case of studies using individual data. Nevertheless, our results are consistent with the negative import effect in Winter-Ebmer and Zimmermann (1998), but we do not find higher effects in low wage industries. We find significant effect of imports different from Aiginger et al. (1996), but their study was for a much earlier period, based on individual data, and estimating unemployment. Our finding of negative effects on the blue-collar workers is however slightly comparable with their finding about higher effects for the more disadvantaged.

5.2 Real wages

Table 4b shows the cumulative effect of each explanatory variable on wages, calculated as the long run coefficients multiplied by the actual change in the explanatory variable. In total manufacturing intermediate imports from the East have a significant positive effect as opposed to the negative employment effect. This result might be indicating that intermediate import penetration from the East has resulted in substitution of domestic employment with foreign employment, but in the meantime has resulted in skill upgrading through a scope change particularly in the high skilled sectors. This result is consistent with the positive effect of intermediate import penetration from the East on white collar employment. However intermediate imports from developed countries have now a negative effect on total manufacturing wages as opposed to their positive effect on employment. This effect seems to be dominated by high skilled manufacturing sectors. It seems like in manufacturing intermediate imports from countries with similar level of development are generating more blue collar jobs than white collar jobs. Since these new blue collar jobs are lower paid jobs, the overall wage effect is negative. There is a positive effect of final imports from the rest of the world. At the sectoral level final imports from the East in high skilled sectors and intermediate imports from the rest of the world in low skilled sectors are creating negative wage effects, but for the total pool the effects are insignificant.

The total cumulative effect (economic significance) of imports is negligibly low albeit negative in total manufacturing. But the cumulative increase in intermediate import penetration from developed countries has resulted in a 7.3% decline in real wages during 1990-2005 in manufacturing, whereas intermediate import penetration from the East and final imports from the rest of the world has resulted in 4.1% and 3.0% increases respectively.

The results for the blue and white collar workers provide some interesting evidence about skill differentials. Intermediate imports from the East

have a negative effect on blue collar workers in manufacturing, but a positive effect on white collar workers. Overall the results again hint at an expected finding: The cumulative effect of imports on blue collar workers` wages in manufacturing is negative albeit low and on white collar workers is positive.

Taking into consideration also the exports, there are positive wage effects of trade with both the East and the rest of the world in total manufacturing and in the total economy. In manufacturing there is also a positive effect of trade with the developed countries. Regarding the cumulative effects, overall trade contributed 17.1% and 14.3% to the real wage growth in manufacturing and in the total economy respectively.

Again due to qualifications mentioned above about the employment effects, we compare the results with previous research. The findings are consistent with the negative import effect on blue-collar workers in Hofer and Huber (2003). They find no effect on white collar wages, but we find a positive effect of intermediate imports from the East. Aiginger et al. (1996) find a negative effect of imports from the East, which we also do, but only in the high skilled industries. Different from Winter-Ebmer and Zimmermann (1998), who find no effect of imports, we do find negative effects.

5.3 Wage share

Combining the long run effects on employment and wages, we get the joint effect of the changes in import penetration. Table 4c reports the cumulative %-points effect of the actual change in the explanatory variables for low and high skilled and total manufacturing (partial effects for a given level of value added).

Intermediate import penetration from the East resulted in a 11.4%-points cumulative decline in the wage share in manufacturing during 1990-2005 and intermediate import penetration from the developed countries as well as from the rest of the world and final imports from the rest of the world contributed positively. The increase in import penetration overall seems to have resulted in a rather minor deterioration in the wage share of 1.3%-points in manufacturing during the last 15 years. During this period the actual wage share has declined 10.7%-points in manufacturing.

6. Conclusions

There is evidence of significant negative effects of FDI on both employment and wages. The negative employment effect of Austria's investment abroad is primarily due to the rise in the employment in the foreign affiliates in the East. The negative wage effects are originating from affiliate employment in both the East and the developed countries in industry, but

no effect is found in the total economy. The outcome is also a deterioration of the wage share. The results are not limited to workers in low skilled sectors; there are also negative effects in high skilled sectors. But it is mostly the blue collar workers who are negatively affected from outward FDI.

Regarding the import effects, intermediate import penetration from the East has a negative impact on manufacturing employment, but a positive effect on wages. This seemingly conflictual finding indicates that intermediate import penetration from the East has resulted in substitution of domestic employment with foreign employment, but in the meantime has resulted in skill upgrading through a scope change. Contrarily, intermediate import penetration from the developed countries has a positive employment and a negative wage effect. Intermediate manufacturing imports from developed countries to Austria are complementing less skilled workers and generating more blue collar employment, and thereby lower paid jobs in Austria. Manufacturing imports from the rest of the world have positive employment as well as wage effects, indicating the dominance of a complementary relationship. As a result, intermediate import penetration from the East resulted in a significant decline in the wage share in manufacturing but intermediate import penetration from the developed countries and overall imports from the rest of the world contributed positively. The total effect is still negative although rather low. Regarding skill differences in the effects of imports, both wages and employment in the high skilled sectors seem to have lost more. But in general the negative effects are limited to the blue-collar workers' wages and employment, whereas white collar workers are positively affected by imports.

Although the effect of imports are negative, when the effect of exports are also incorporated, we find a positive impact of total trade on employment in total manufacturing, however only regarding trade with the rest of the world. The positive effects of exports and negative effects of imports seem to cancel out each other in the case of trade with developed countries or the East. Regarding wages, there are positive effects of trade with all country groups.

It is not easy to compare the total trade and FDI effects, since they not only come from different estimations but they also use different levels of aggregation. But it is unlikely that exports offset negative import and FDI effects. These results indicate that the aggregate effects do matter and are negative albeit the presence of winners and losers, as opposed to what is often argued in the policy conclusions of the international organizations.

It could be said that these results are nevertheless reflecting a relatively short period of 10-15 years, and thus only incorporating the substitution effects, and the stages where scope and scale effects are expected have not arrived yet. However, this may also be an excuse to postpone sharing the increased prospects for growth with labor. Moreover labor market out-

comes are persistent. Negative employment effects generate long term unemployment problems as well as a secular decline in labor's bargaining power. So it would be too optimistic for labor to hope for a time when the gains would eventually be shared more equally.

The presence of robust negative effects of intermediate import penetration from the East and outward FDI and the insistence in anti-labor policy recommendations are showing that capital is enjoying asymmetrically from the benefits of openness via an uncontrolled mobility to exploit lower wages, poor working conditions or lower taxes elsewhere.

However, openness and regional integration can be also managed in a way that benefits both the richer and poorer partners, if trade and investment flows are designed as part of an egalitarian and growth-oriented international economic policy. In the European context, labor in the old and new member states as well as the accession countries have more common ground than they currently exploit. Indeed the host country effects of FDI and intermediate export penetration in the West have not necessarily brought positive aspects for labor in the Eastern European countries. Their wage moderation has taken the form of modest wage increases in parallel with phenomenal productivity increases and significant job losses in manufacturing.[16] This common ground must combine the ruling out of destructive wage (and tax) competition with a coherent and coordinated EU-wide policy for social and economic convergence. Labor in the East can only be convinced to stop seeing lower wages as an advantage and as the only way to attract private FDI from the West, if there is a systematic EU policy on regional convergence and social cohesion, which requires an economically relevant EU budget.

This defines new roles and tasks for the trade unions in each country, since they will be the political agents who have strong incentives and the power to push for such a shift in policy at the EU level. The task is not easy, since this also requires overcoming the coordination failure among the trade unions in different countries. The way until there is a rocky road, and before achieving big victories the trade unions in Austria and elsewhere in the old Member States must start with looking for ways of supporting the trade union movement in the new Member States. Positive experiences and improvements in working conditions can arise particularly if the trade unions organized in different affiliates of the same multinational company find ways of communicating and building solidarity networks.

Endnotes

1 Altzinger (2006).
2 Harrison (2002); Diwan (2001); Epstein (2000); Guscina (2006); Stockhammer et al. (2009).
3 IMF (2007) presents a country panel at the aggregate level. The study claims that the income share of skilled workers rose by choosing the indicator as the share of skilled wage bill in economy wide value added, rather than the alternative indicator, which is the share of skilled wage bill in the skilled sectors' value added, which is also mentioned in the paper. According to the latter indicator the labor share of skilled workers is also falling in Europe and Japan.
4 See the full report at http://www.arbeiterkammer.at/pictures/d66/Globalisierung_und_Verteilung.pdf for details of data and sectoral classifications.
5 16 countries including the 10 Eastern European new member states as well as five non-member South Eastern Europe (Croatia, Albania, Bosnia-Herzegowina, Serbia-Montenegro, Macedonia), and Turkey are grouped to account for arms length trade.
6 20 countries including the 10 Eastern European new member states as well as five non-member South Eastern European countries, and four European countries of the Community of Independent States (Russia, Ukraine, White Russia, Moldavia).
7 We estimate the dynamic equation in first difference form in order to transfer out the fixed effects, and use a generalized method of moments technique as in Arrelano and Bond (1991) to overcome the bias that will result in the coefficient of the lagged dependent variable due to differencing. We also compute standard errors that are robust to the existence of sector specific serial correlation. Additionally, the real wage is treated as an endogenous variable in the employment equation, and in the wage equation employment, capital stock, and foreign employment are treated as endogenous.
8 Industry includes 11 manufacturing sectors and mining and quarrying.
9 The trade data for services include only the services trade associated with merchandise trade, e.g. the software development service that is incorporated in the export or import of a CD for a computer program, which is only a small part of total trade in services. Unfortunately the total service trade data is available only in the current account statistics, but the sectoral classification is not based on NACE; furthermore the data is not disaggregated as final vs. intermediate and also not disaggregated with respect to countries. To avoid underestimating the trade effects in services, we restrict the discussion here to manufacturing only. Furthermore there are important outliers in computing equipment, which might be due to a classification problem, therefore it is excluded. It constitutes only 0.2% of employment as of 2005.
10 In this section regarding all data about exports and imports, we refer only to the trade of the sectors as a ratio to the output of the tradable sectors. To be consistent with our working sample, we are excluding computing equipment in these figures, as mentioned in section 2.
11 Marin (2004).
12 Havlik et al. (2005).
13 The decline starts even earlier in the high skilled services, where real wages have declined 0.4% per year during the last 10 years (1995-2005).
14 We checked the robustness of these results by using an alternative dynamic estimation technique (Arellano-Bover/Blundell-Bond system estimator), and these effects are robust in the specification using the lags for industry, but not for the total economy.
15 Based on the long run elasticities for the wage share, we calculate the % change effect and finally express these effects in %-points, which makes more sense in the case of the wage share.
16 Onaran (2008); Onaran, Stockhammer (2008).

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Abstract

This paper estimates the employment and wage effects of foreign trade and Austrian outward FDI on employment, wages, and the wage share in Austria. There is evidence of significant negative effects of imports and FDI on both employment and wages. The results are not limited to workers in low skilled sectors. Particularly workers in high skilled sectors experience negative effects. There are also negative effects on white collar workers, particularly due to outward FDI. Even after we take into consideration the positive export effects, it is unlikely that exports offset negative import and FDI effects.

The negative employment effect of Austria's investment abroad is primarily due to the rise in the employment in the foreign affiliates in the East. The employment in foreign affiliates in developed countries seems to have a negative effect in services only, which could be interpreted as the horizontal FDI effect. The negative wage effects are originating from affiliate employment in both the East and the developed countries in industry, but no effect is found in the total economy. There is evidence of some positive wage effect of affiliate employment in the East in services sectors. Bringing together these effects we find that the increase in employment in the foreign affiliates of Austria has resulted in a deterioration of the wage share with the effect originating from both country groups in industry, and only from the East in the total economy. Growth of value added as well as non-ICT capital has a positive effect, and technological change (the growth of ICT capital) has a negative effect on employment growth in industry. Technological change effects only blue collar workers' employment. Technological change also results in a decline in the industry wage share.

Regarding import effects, in aggregate total imports also have a negative impact on both employment and wages, and thereby on the wage share in manufacturing as well as the total economy (non-agricultural tradable sectors). The negative impact on employment is particularly due to intermediate import penetration from the East. However, intermediate import penetration from the East has a positive effect on wages (in both manufacturing and the total economy), which might be indicating that intermediate import penetration from the East has resulted in substitution of domestic employment with foreign employment, but in the meantime has resulted in skill upgrading. Intermediate import penetration from the developed countries also has a negative impact on both employment and wages in the total economy. In manufacturing as well as the total economy imports from the rest of the world have positive employment and wage effects.

Table A1: Annual % change in labor market outcomes (compound average)

	Wage share	Real value added	Employment	Real Wage	Real Wage blue collar*	Real wage white collar*	Employment blue collar*	Employ-ment white collar*
TOTAL ECONOMY								
1976-1980	-0.03	2.80	1.45	2.09	na	na	na	na
1980-1985	-0.62	1.26	-0.31	0.33	na	na	na	na
1985-1990	-0.20	3.22	1.37	2.08	na	na	na	na
1990-1995	-0.21	2.29	0.78	1.11	na	na	na	na
1995-2000	-0.54	3.19	1.05	0.28	0.60	2.16	-0.23	1.03
2000-2005	-0.49	1.74	0.33	-0.19	0.13	-0.53	-0.39	0.63
1990-2005	-0.47	2.40	0.72	0.40	0.37	0.81	-0.31	0.83
TOTAL INDUSTRY								
1976-1980	0.51	2.93	0.49	2.49	na	na	na	na
1980-1985	-1.11	0.78	-2.57	0.73	na	na	na	na
1985-1990	-0.02	2.86	-0.50	2.68	na	na	na	na
1990-1995	-0.11	0.93	-2.03	1.74	na	na	na	na
1995-2000	-1.57	4.31	-0.93	1.08	1.32	1.06	-1.30	0.34
2000-2005	-0.09	1.62	-0.62	0.58	0.70	0.15	-1.69	-1.77
1990-2005	-0.66	2.28	-1.19	1.13	1.01	0.61	-1.49	-0.72
TOTAL HIGH SKILLED INDUSTRY								
1976-1980	0.74	6.70	1.80	2.86	na	na	na	na
1980-1985	-0.74	1.23	-2.00	1.10	na	na	na	na
1985-1990	-0.35	4.92	0.87	2.80	na	na	na	na
1990-1995	-0.34	2.29	-1.70	1.94	na	na	na	na
1995-2000	-1.76	5.17	-0.02	1.15	1.14	0.77	-0.50	1.73
2000-2005	0.28	2.35	0.14	0.39	0.60	0.12	-1.31	-2.70
1990-2005	-0.68	3.26	-0.53	1.16	0.87	0.44	-0.91	-0.51
TOTAL LOW SKILLED INDUSTRY								
1976-1980	0.31	0.21	-0.48	2.07	na	na	na	na
1980-1985	-1.43	0.39	-3.01	0.33	na	na	na	na

1985-1990	0.21	0.88	-1.69	2.33	na	na	na	na
1990-1995	0.13	-0.61	-2.35	1.45	na	na	na	na
1995-2000	-1.32	3.20	-1.83	0.78	1.41	1.16	-1.90	-1.42
2000-2005	-0.58	0.59	-1.45	0.64	0.77	0.44	-2.00	-0.52
1990-2005	-0.67	1.05	-1.88	0.96	1.09	0.80	-1.95	-0.97
TOTAL SERVICES								
1976-1980	-0.19	2.75	1.98	1.89	na	na	na	na
1980-1985	-0.36	1.42	0.81	0.19	na	na	na	na
1985-1990	-0.20	3.34	2.17	1.89	na	na	na	na
1990-1995	-0.15	2.71	1.81	0.99	na	na	na	na
1995-2000	-0.23	2.85	1.66	0.11	0.30	2.45	0.31	1.14
2000-2005	-0.60	1.77	0.59	-0.39	-0.03	-0.53	0.21	0.96
1990-2005	-0.37	2.44	1.35	0.23	0.14	0.95	0.26	1.05
TOTAL HIGH SKILLED SERVICES								
1976-1980	-0.51	3.40	2.48	1.74	na	na	na	na
1980-1985	-0.73	2.36	2.19	-0.07	na	na	na	na
1985-1990	-0.44	3.26	2.37	1.65	na	na	na	na
1990-1995	-0.53	2.83	1.79	0.86	na	na	na	na
1995-2000	0.03	2.85	2.52	-0.34	0.52	3.47	1.51	1.48
2000-2005	-0.64	2.03	0.94	-0.43	0.41	-0.61	0.99	1.10
1990-2005	-0.42	2.57	1.75	0.03	0.47	1.41	1.25	1.29
TOTAL LOW SKILLED SERVICES								
1976-1980	0.09	1.88	1.52	1.91	na	na	na	na
1980-1985	0.05	0.04	-0.55	0.07	na	na	na	na
1985-1990	0.14	3.46	1.96	2.15	na	na	na	na
1990-1995	0.48	2.53	1.84	1.18	na	na	na	na
1995-2000	-0.68	2.84	0.68	0.50	0.32	-0.12	-0.46	0.33
2000-2005	-0.51	1.36	0.18	-0.43	-0.22	-0.35	-0.35	0.61
1990-2005	-0.27	2.24	0.90	0.42	0.05	-0.23	-0.41	0.47

*1995-2005
**1993-1994
na = not available

Zusammenfassung

Die Studie untersucht die Effekte der Zunahme der österreichischen Direktinvestitionen in das Ausland sowie der Importe und Exporte Österreichs auf die inländische Beschäftigung, die Löhne und Gehälter, sowie auf die funktionale Einkommensverteilung (Lohnquote) für den Zeitraum 1993-2004 (aktive Direktinvestitionen) bzw. 1988-2005 (Außenhandel). Die genannten Effekte werden getrennt ermittelt für die Gesamtwirtschaft, die verarbeitende Industrie und den Dienstleistungssektor. Das Ausland wird aufgegliedert in Industriestaaten, osteuropäische Länder und sonstige Schwellen- und Entwicklungsländer. Eine weitere Differenzierung erfolgt nach Branchen hoher und niedriger Qualifikation der Beschäftigten bzw. nach ArbeitnehmerInnen mit hoher Qualifikation (Angestellte) und niedriger Qualifikation (ArbeiterInnen).

Die Studie bestätigt, dass besonders österreichische aktive Direktinvestitionen und Importe einen ausgeprägt negativen Effekt auf die inländische Beschäftigung haben, zu einem geringeren Ausmaß auch negative Verteilungseffekte. Die negativen Auswirkungen sind nicht auf ArbeiterInnen in den Niedrigtechnologiebranchen beschränkt, sondern treffen zunehmend auch höher qualifizierte ArbeitnehmerInnen in den Hochtechnologiebranchen. In aggregierter Betrachtung der Effekte von ADI, Importen und Exporten ist davon auszugehen, dass die negativen Effekte von ADI und Importen durch die positiven Exporteffekte nicht ausgeglichen wurden.