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Working Paper

The Impact of Economic Integration on Employment - An Assessment in the Context of EU Enlargement

IZA Discussion Papers, No. 919

Provided in Cooperation with:
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Suggested Citation: Fertig, Michael (2003) : The Impact of Economic Integration on Employment - An Assessment in the Context of EU Enlargement, IZA Discussion Papers, No. 919, Institute for the Study of Labor (IZA), Bonn

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DISCUSSION PAPER SERIES

IZA DP No. 919

The Impact of Economic Integration on Employment – An Assessment in the Context of EU Enlargement

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October 2003

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

The Impact of Economic Integration on Employment – An Assessment in the Context of EU Enlargement

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Discussion Paper No. 919
October 2003

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IZA Discussion Paper No. 919
October 2003

ABSTRACT

The Impact of Economic Integration on Employment – An Assessment in the Context of EU Enlargement*

This paper is motivated by the idea that the enlargement of the European Union is only one part of an overall process, known as economic integration, which characterizes the involvement of European economies into the global division of labor. Therefore, the paper aims at providing a quantitative and qualitative assessment of the impact of economic integration on employment and labor market dynamics in current EU-member and candidate countries. The ultimate aim of this analysis is the provision of forecasts for future labor market developments in the context of EU-enlargement. To this end, we investigate this nexus not only on an economy-wide level, but analyze whether the impact of integration varies for different *sectors* (automotive and financial services) of the economy. The estimation results suggest that future integration processes lead to an increase of economy-wide employment in the accession countries and a small, if any, rise in this outcome variable in the current EU-countries. Moreover, it could be expected that unemployment rates in the accession countries will decline somewhat, whereas those of the current EU-member states will probably experience an increase. Finally, it is very likely that the structure of employment will shift further towards a higher share of service sector employment.

JEL Classification: E24, F02

Keywords: factor analysis, panel data, sectoral case studies

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* The author is grateful to Adam Strzyz for research assistance, to Christoph M. Schmidt for helpful comments and to Lisa Schlepper for valuable support.

1. Introduction

Enlargement of the European Union towards Central and Eastern Europe is already on its way and several studies have analyzed the expected benefits and cost of it. Overall, these studies conclude that existing member states as well as accession countries will experience higher benefits than cost, with the latter country group benefiting more from enlargement. One focus, so far, has been on the expected population movements from Central and Eastern Europe in the course of enlargement and its expected impact on labor markets in the existing EU countries.

For instance, FERTIG (2001) and FERTIG AND SCHMIDT (2000) analyze the expected immigration to Germany after enlargement using a variety of modeling and estimation approaches for this phenomenon. Both papers conclude that the expected migration flows from the accession countries to Germany are very moderate. BOERI AND BRÜCKER (2001) study the impact of EU-enlargement on labor markets in the current member states focusing on trade, foreign direct investment, and migration. A main conclusion of the paper is that trade and capital movements are very unlikely to lead to an equalization of factor prices (especially wages). Their analysis suggests that despite the incentives for migration induced by this process, a rather low inflow of migrants from the accession countries can be expected and that this inflow will display only moderate effects on wages and employment.

This paper is motivated by the idea that the enlargement of the European Union is only one part of an overall process, known as economic integration, which characterizes the involvement of European economies into the global division of labor. Migration, trade and foreign direct investment are important dimensions of this integration process. However, they reflect only part of the overall story. Economic integration is also associated with a common regulation framework in the respective countries, reduced uncertainty, more integrated financial markets, economies of scale and other aspects leading to a more favorable environment for economic activity.

The upcoming enlargement of the European Union towards Central and Eastern Europe will in all likelihood results in a further boost of economic integration in Europe. Whereas the consequences of a higher degree of economic integration have found considerable attention in the literature on economic growth (see also below), there exists no comprehensive analysis so far on the consequences for employment in Europe.

This paper, therefore, aims at providing a quantitative and qualitative assessment of the impact of economic integration on employment and labor market dynamics in current EU-member and candidate countries. The ultimate aim of this analysis is the provision of forecasts for future labor market developments in the context of EU-enlargement. In this endeavor, the primary tool are quantitative analyses of labor-market related outcome measures for the current member countries. The results from these investigations are then used as a frame of reference for a qualitative assessment of expected labor market developments once the accession candidates have joined the European Union.

In order to provide a comprehensive picture of the various impacts of economic integration on labor market developments, we analyze this nexus not only on an economy-wide level, but investigate whether the impact of integration varies for different *sectors* of the economy. To this end, the impact of European integration on the level and the structure of employment in the *automotive* and the *financial services* sector is investigated in our empirical analysis and the results are compared with the overall, economy-wide developments. These sectors have

been chosen because they are both important parts of the manufacturing and the services sector, respectively. Furthermore, they are homogenous enough to be confident that the impact of economic integration on employment-related outcomes can be pinned down reliably.

Any comprehensive quantitative analysis following this route is confronted with three major challenges. Stripped down to its basics, it is decisive to find answers to the following three questions:

1. How do we *measure* economic integration and the different speed of this process over time?

2. How can we *isolate* the impact of economic integration on employment and labor market dynamics from confounding factors in a country- or sector-specific context?

3. How can we *extrapolate* the results for the period after EU-enlargement?

In principle, we are interested to find an answer to the question: What would have happened to the level and structure of employment if the degree of European economic integration had been different but everything else had stayed unchanged? This is the *counterfactual question* of the analysis at hand. What makes answering this question so complicated is the fact that the situation implied by this question is clearly unobservable. One could observe a specific set of countries under a specific degree of economic integration only once but not under different regimes. Therefore, one has to construct an *observable counterpart* to this unobservable situation by invoking suitable identification assumptions. In other words, the lacking observability of this counterfactual situation generates the necessity to find an adequate *benchmark situation*. A natural candidate for this is the historical precedent provided by the enlargement of the European Union towards Spain, Greece and Portugal in the 1980's.

In consequence, in our empirical analysis, we compare the impact of economic integration within the European Union across countries/sectors *and* across time with a specific focus on the three countries who joined the European Union during the 1980s. More precisely, we estimate the impact of our integration measure (which is estimated in an auxiliary step, for more details see below) on labor market outcomes utilizing a longitudinal cross-country dataset for 13 EU member states (EU-15 without Belgium and Luxembourg due to data constraints) and a time period covering 1980-2000. In this analysis, we intend to control for several potentially important confounding factors. To achieve this objective, we assume that the isolated impact of economic integration on several employment-related outcome measures can be identified in a linear panel model which controls for other observable characteristics of the countries under investigation.

It is important to emphasize, that this analysis is deliberately constrained to existing member states since the radical change in the political system of the accession countries in the beginning of the 1990s and the economic transition process following this change renders a comparable analysis for these countries unfeasible. The final question regarding the consequences for the enlargement towards Central and Eastern Europe is therefore: What can we learn from the experiences of existing member states for the expected developments in the accession countries once they will have joined the European Union? This clearly involves a double extrapolation problem, over time and over space. In such an endeavor, additional assumptions regarding the structural stability of the derived results are inevitable. However,

without such assumptions it is impossible to devise a rigorous analysis which is able to establish a robust relationship between economic integration and its impact on employment.

The remainder of this paper is organized as follows. The next section provides a brief discussion of the relationship between economic integration and employment and offers an overview on the major contributions in the existing literature. Section 3 contains a detailed description of our empirical analysis and section 4 presents the results. Finally, in section 5 we discuss the implications of these results with respect to the expected developments of employment-related outcomes within the enlarged European Union with a specific focus on the expected situation in the accession countries.

2. Economic Integration and Employment

The potential consequences of the progress in global and regional economic integration in the second half of the twentieth century have found increasing attention in the economic literature. Overall, global economic integration is often perceived as an important factor for growth (see e.g. WORLD BANK (2003)). Therefore, the received literature comprises several studies on the impact of integration on economic growth. However, there is nothing comparable for the impact of integration on employment, except some contributions regarding the relationship between economic integration and regional labor market dynamics (see e.g. DECRESSIN AND FATAS (1995)). As will become transparent from the discussion below, the literature on the effect of integration for structural or sectoral dynamics is rather slim.

Clearly, GDP growth and employment are closely related. Yet, the specific link and the true causal direction between these two variables are not fully understood. However, it is instructive to consider the growth literature in more detail, in order to understand the potential caveats of an analysis considering the impact of integration on employment.

Examples of theoretical and empirical integration research with a focus on growth effects (see WALZ (1997) for a survey) comprise BALASSA (1961), BALDWIN (1993), HENREKSON ET AL. (1997), LANDAU (1995) and WALZ (1998). The contributions to this literature emphasize several channels through which progress in economic integration unfolds growth enhancing effects. Among the most important channels are: Internal and external economies of scale, faster technological progress (economies of scale in the R&D-sector), enhanced competition, reduced uncertainty, lower cost of capital due to integrated financial markets and, in general, a more favorable environment for economic activity.

One of the most contentious issues in this literature is the distinction between *permanent* and *temporary* growth effects. Permanent growth effects lead to a change in the steady-state growth rate, i.e. a steeper slope of the economy's growth path. By contrast, temporary growth effects result in an upward-shift of the growth path, leaving its slope unchanged in the long-run. Therefore, after a certain transition period the growth rate moves back to its original steady-state level. This distinction largely moves along the lines of endogenous vs. neo-classical growth theory. In neo-classical growth theory economic integration does not affect the steady-state growth rate. Economic integration, therefore, has only temporary effects. Under certain conditions permanent growth effects are possible in endogenous growth theory, though, which decisively depends on the possibility of knowledge to disseminate internationally. If this condition holds, economic integration induces a scale effect in the research and development sector which could lead to permanent growth effects and possibly to intersectoral and international reallocation effects.

BADINGER (2001) investigates temporary versus permanent growth effects of economic integration for the EU-countries over the period 1950-2000 in a dynamic growth accounting framework. In this endeavor, the author constructs a measure of integration which allows him to discriminate between global integration as well as European integration. The author finds only temporary growth effects. However, these level effects were substantial. According to these results *per capita* GDP of the EU would have been around one fifth lower today, if there had been no economic integration. Furthermore, the estimation results of this paper suggest that this effect is largely driven by GATT-related liberalizations.

Among the most important channels of the impact of economic integration on employment are certainly labor or job mobility and product market competition. On the one hand, these developments are often perceived as enforcing labor market flexibility. On the other hand, however, they are also viewed as a factor of erosion of social standards and a threat to the traditional European welfare state. Since labor is not very mobile in Europe (see e.g. FERTIG AND SCHMIDT (2002)), the effects of integration on labor markets operate mainly through product market integration. ANDERSEN ET AL. (2000) investigate empirically the wage formation process among EU countries. Their results indicate that economic integration is changing labor market structures, induces wage convergence and stronger wage interdependencies. This process, however, is rather slow. Furthermore, the results of this paper do not support the hypothesis that international integration leads to a "race to the bottom" or rapidly erodes domestic labor markets standards.

Evidence presented by KRUEGER (2000) suggests that the demand for social protection rises when countries are more open, and therefore subject to more severe external shocks. The U.S. experience with state workers' compensation insurance programs is offered as an example of enduring differences in labor market protections in highly integrated regional economies with a common currency. ANDERSON (2001) examines the possibilities of financing public consumption and social security expenses by general (wage) taxation in an economy which becomes more integrated in international product markets. The model presented in this paper demonstrates that due to the negative externality induced by taxation, the financing of social security via general taxation in the context of integration decisively depends on the institutional structure of the labor market. Furthermore, increased international integration inducing more product market competition implies that it becomes more costly to maintain welfare systems financed by general taxation.

Regarding the relationship between European integration and unemployment, BLANCHARD AND WOLFERS (2000) demonstrate that Europe's high unemployment can largely be attributed to an interaction between unfavorable macroeconomic policies and real rigidities in the labor market. The authors investigate the interdependencies of shocks like the decline in growth of total factor productivity, high real interest rates and adverse shifts in labor demand together with institutional rigidities like the rather generous European unemployment insurance system, relatively strong employment protection regulations and rather high labor taxation.

In a theoretical contribution GRUENER AND HEFEKER (1999) explore how European Monetary Union will change the wage bargaining behavior of national labor unions. The authors model the impact of national inflation aversion and labor disputes on the performance of national labor markets under different monetary arrangements. The results of their model suggest that a common central bank raises inflation and unemployment if it acts as conservatively as national central banks. However, unemployment falls in countries that previously tied their monetary policy to the German *Bundesbank*.

Another strand of the literature is analyzing the impact of integration on industry related employment developments. For instance, SPATZ AND NUNNENKAMP (2002) analyze the labor market effects of increasing integration in the automobile sectors of Germany, Japan and the United States. Their results suggest that low-skilled workers and labor intensive subsectors of the automobile industry in traditional locations experienced decreasing wage and employment prospects in this process. However, there is also considerable heterogeneity between the three countries. For instance, the employment record and the world-market performance of US automobile producers were relatively poor compared to their German and Japanese competitors.

MELACHROINOS (2002) examines the dynamics of manufacturing-employment change in thirteen European Union countries between 1978 and 1996. The empirical results indicate that the geography of manufacturing-employment has remained almost unchanged during this period. Furthermore, the moderate increase in industrial specialization across economies pose little, if any, threat to the stability of the present map of manufacturing distribution. This suggests that the integration process has not affected the relative competitiveness of manufacturing adversely, neither in peripheral nor in core countries.

Finally, MIDELFART-KNARVIK AND OVERMAN (2002) investigate how European integration is changing the location of industry and the role of national and EU subsidy programs in this process. The authors demonstrate that countries and regions within the EU are becoming more specialized, but that this process is rather slow. They find no evidence of polarization at the national only at the regional level. Furthermore, their results indicate that national subsidy programs do not have a substantial impact in this process. For instance, European Structural Funds expenditures impinge upon on the location of industry, most importantly by attracting industries that are research and development intensive. Interestingly, this process often counteracts countries' comparative advantage, since in the majority of cases, these subsidies attract research and development intensive industries to countries and regions with a rather low endowment of skilled labor.

Each of these contributions provides valuable insights into different aspects of the nexus between economic integration and employment-related outcome variables. However, a rigorous quantitative analysis of the impact of higher economic integration and observed labor market outcomes for the European countries is still missing. Therefore, the next section provides such an investigation.

3. The Empirical Framework

This section of the report aims at contributing to knowledge on the relationship between integration and employment in Europe by estimating the relative contribution of an adequately constructed measure of economic integration to observed economy-wide labor market developments. Furthermore, the results of this analysis are compared to the findings of a comparable investigation for two different sectors, the automotive industry[1] and the financial services sector[2].

[1] The automotive industry comprises the manufacture of transport equipment *(ISIC Rev. 2)* or the manufacture of motor vehicles, trailers, semi-trailers and other transport equipment *(ISIC Rev. 3)*.

[2] The financial services sector comprises financing, insurance, real estate and business services according to the *ISIC Rev. 2* classification.

It is important to emphasize that the data base is quite problematic. There are rather large gaps in the time series for specific countries and some potentially important variables (e.g. wages) are missing completely. This made the imputation of a small number of data points in some years necessary. The data sources for our analysis comprise EUROSTAT, the OECD, various volumes of national statistical yearbooks and the LABORSTA database of the ILO.

The empirical strategy pursued in this section is to learn from experiences of current EU-members with integration processes in the past. The experiences of the southern enlargement countries Greece, Spain and Portugal will be at the focus of this empirical investigation. These results will then form the framework for a discussion of expected labor market developments after the enlargement of the European Union towards Central and Eastern Europe. A similar approach is utilized by FERTIG (2001) to assess the migration potential after EU-enlargement.

Such a comprehensive quantitative analysis faces two major conceptual problems. Firstly, we have to find an adequate *measure* of the level and speed of economic integration over time. In the next sub-section we will, therefore, estimate an *index of economic integration* for all 13 sample countries (EU-15 without Belgium and Luxembourg due to data constraints) in an auxiliary first step of the analysis. The predicted value of this integration index will then be used as the central explanatory variable in a panel regression model which aims at explaining different indicators for labor market developments in our sample countries. In this second step of the quantitative analysis, it is decisive to control for other confounding factors of this labor market indicators to ward off fallacious conclusions regarding the relative importance of the impact of economic integration. To this end, we will utilize the specific feature of our longitudinal dataset which enables us to control for a comprehensive set of country- and year-specific effects as well as for other observable characteristics of the sample countries.

3.1 Measuring Integration

In a fist step, we estimate a measure of economic integration for our European Union sample countries by utilizing different indicators of integration in the world markets for each country and every year (1980-2000) in *factor analysis* framework[3]. The idea of factor analysis goes back to the work of SPEARMAN (1904) (for an introduction see HARMAN (1976) or RENCHER (1998)). The principal objective is to find a small number q of common factors that linearly reconstruct the p original variables (i.e. $p>>q$). More formally, the aim of factor analysis is to estimate the following linear model

$$(1) \quad y_{ij} = z_{i1}b_{1j} + z_{i2}b_{2j} + \ldots + z_{iq}b_{qj} + e_{ij}$$

where y_{ij} denotes the value of the ith ($i=1,..,n$) observation on the jth variable ($j=1,\ldots,p$), z_{ik} is the ith observation on the kth common factor ($k=1,\ldots q$), b_{kj} denotes a set of linear coefficients called the *factor loadings*, and e_{ij} is similar to a residual called the jth *unique factor*. Everything except the left-hand-side variable has to be estimated. Therefore, model (1) has an infinite number of solutions in case more than one factor is retained. Once the factors and their loadings have been estimated they have to be interpreted which is an admittedly

[3] In a similar analysis, ANDERSON AND HERBERTSSON (2003) estimate the degree of globalization using a factor analysis approach.

subjective process. In the case at hand, we retain only one factor which will be interpreted as an index of economic integration within the EU.

In our empirical application of the factor analysis concept, we utilize the following variables for each year between 1980 and 2000 (Data source: Publicly available data on economic freedom from the Frasier Institute) and the 13 sample countries:

- Index of freedom of citizens to own foreign currency bank accounts (domestically and abroad)
- International trade tax revenues as percentage of exports plus imports
- Index of restrictions in foreign capital market exchange (Index of capital controls among 13 IMF categories)
- Index of interest rate controls and similar regulations that lead to negative real interest rates
- Trade volume, i.e. mean of the sum of imports and exports

These variables are the observations for the y_{ij} variable in equation (1). Note that the higher the values of any of the mentioned indices the more open or integrated are the corresponding economies. Due to missing data for Belgium and Luxembourg we had to drop these two countries from the sample. Therefore, the analysis is performed for the remaining 13 EU-member states and the period 1980-2000 which yields 273 observations. The original data on the index of freedom to own foreign currency bank accounts, the international trade tax revenues, the index of capital controls and the index of interest rate controls were available only in five year intervals (1980, 1985, 1990, 1995 and 2000). Therefore, the remaining years were interpolated assuming constant growth rates for each variable.

The results of the estimation procedure are reported in **Table 1**. One observes a pronounced drop in the eigenvalue of the second compared with that of the first factor. Based on these results we retained one factor and estimated its factor loadings.

Table 1: Results of Factor Analysis for EU-Countries

Factor	Eigenvalue	Difference	Proportion	Cumulative
1	2.124	1.891	1.041	1.041
2	0.233	0.140	0.114	1.155
3	0.093	0.280	0.046	1.201
4	-0.187	0.035	-0.092	1.109
5	-0.222	.	-0.109	1.0

The results of the estimation procedure are reported in **Table 2**. *Uniqueness* is the proportion of variance for the respective variable which is *not* explained by the factor. These coefficients are estimated using the squared-multiple correlation coefficients and provide an assessment of the unique factor e_{ij} in equation (1). This variable could be either pure measurement error or it could represent something which is measured accurately in the particular variable but not by any other of the variables. As a rule of thumb, values over 0.6 are not very good, values over 0.8 are unacceptable

Table 2: Estimated Factor Loadings for EU-Countries

Variable	Factor Loadings	Uniqueness
Freedom to own foreign currency bank accounts	0.833	0.306
Trade tax revenues	0.550	0.698
Restrictions in foreign capital market exchange	0.688	0.526
Avoidance of interest rate controls	0.564	0.682
Trade volume	0.579	0.665

The results from **Table 2** suggest that the retained factor loads heavily on the index of freedom to own foreign currency bank accounts. The factor loading for the index of restrictions in foreign capital market exchange is also quite high, whereas this factor loads similarly on the other three variables.

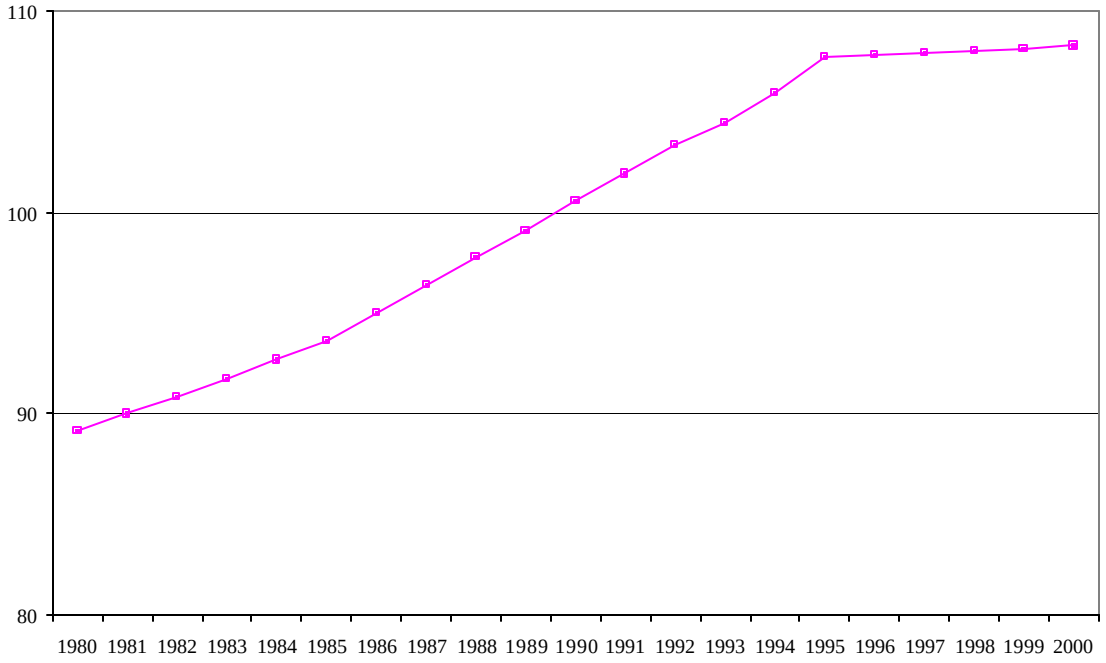
As a final step, we utilize the estimated factor loadings to create a new variable which is called the *score* of the factor analysis and is comparable to the predicted value of the dependent variable in a regression analysis. **Table 3** provides the resulting scoring coefficients for each of the variables in the dataset. These scoring coefficients are all positive and resemble the estimated factor loadings.

Table 3: Scoring Coefficients for EU-Countries

Variable	Scoring Coefficients
Freedom to own foreign currency bank accounts	0.473
Trade tax revenues	0.131
Restrictions in foreign capital market exchange	0.245
Avoidance of interest rate controls	0.134
Trade volume	0.164

This score for each year and every country is our *index of integration* which will be used in the subsequent analysis. Precisely, we transformed the score which has a mean of zero and a standard deviation of one, into a variable with mean 100 and standard deviation 10 to receive a more straightforwardly interpretable variable. The development of this (transformed) index over time is depicted in **Figure 1**.

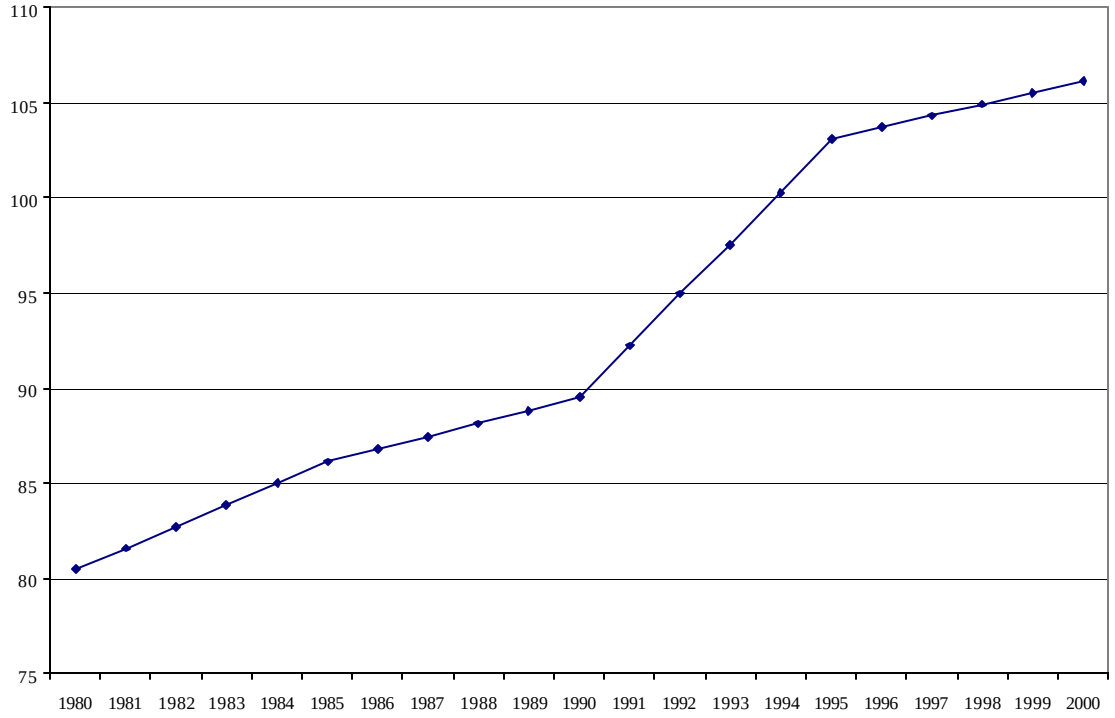
Figure 1: Index of Economic Integration, 1980-2000



The estimated index of economic integration for all European countries increases constantly and by almost two standard deviations during the period 1980 to 2000. However, the slope is much steeper in the years before 1995 than thereafter. Furthermore, the increase in our index of economic integration is also slightly higher in the years following 1985 than in the first half of the 1980s. These heterogeneous developments over time reflect the already high level of integration reached among current EU-countries in the late 1990s and suggests that the growth of integration decreases with the level of this variable. In other words, the higher the level of economic integration, the lower the marginal increase.

However, the picture for Greece, Portugal and Spain, which joined the European Union during the 1980's looks somewhat differently. **Figure 2** depicts the development of the estimated integration index over time for these southern enlargement countries. These countries started at a considerably lower level of integration in the 1980s and experienced a steady increase as well.

Figure 2: Index of Economic Integration for Greece, Spain and Portugal, 1980-2000



However, **Figure 2** reveals that the major boost in integration for these countries did not happen directly after joining the EU, but in the 1990s. This suggest that it took some time for these countries between the enlargement of the EU towards southern Europe in the mid-1980s and their ability to take advantage of the possibilities to participate to a larger extent in world markets.

In the next subsection we utilize this integration index in an empirical analysis regarding the impact of economic integration on various labor-market related outcome measures. To this end, we first describe the details of our approach and discuss the empirical results thereafter.

3.2 Integration and Employment in the EU

The second step of our empirical study comprises an analysis of the impact of the estimated integration index on several labor market related variables. Specifically, we employ the following variables as outcome measures:

- The economy-wide level of *employment* relative to the population, for both genders together as well as for men and women separately (in %).
- The *unemployment* rate (in %) for both genders together as well as for men and women separately.

- The level of employment and the share (in %) of employment (relative to total employment) in the automotive and the financial services sector (separately) as a measure of the *structure of employment*.

The central explanatory variable is the integration index. To receive a comprehensive picture of the impact of integration on the outcome variables, we utilize

- the *level* of the estimated index of economic integration to model the long-term impact of integration on the outcome measures;
- the *change*, i.e. the first-difference over time, in the integration index to capture the impact of short-term fluctuations in integration on the outcome measures; and
- an *interaction term* of both of these measures with an indicator variable for Greece, Spain and Portugal (southern enlargement countries) to investigate potential deviations of the impact of integration for those countries which joined the EU in the mid-1980s.

Furthermore, to avoid fallacious conclusions with respect to the relative importance of the integration index in explaining observed labor market developments, we control for a variety of potentially important confounding factors. Specifically, we employ the following variables on the right-hand side of our panel regression model:

- A set of *country-fixed effects* which aim at capturing the impact of country-specific confounding factors that do not change substantially over time (e.g. labor market institutions or the population age-structure).
- A set of *year-fixed effects* which aim at capturing the impact of differences which are constant across countries but different across years.
- A linear *time trend* which aims at capturing the impact of unobserved confounding factors that change steadily over time like e.g. a secular trend in employment or unemployment figures due to technological change.
- The one-period *lagged GDP per capita* which aims at capturing the impact of changes in demand[4].
- The growth rate of economy-wide *investment* (in %) which aims at capturing the impact of changes in the capital stock of the economies.

Table A.1 in the Appendix provides some summary statistics for all of the variables in our sample. In estimating the relative importance of these explanatory variables the following reduced-form regression model for $i = 1,\ldots 13$ (EU-15 countries excluding Belgium and Luxembourg) and $t = 1,\ldots, 21$ (period 1980-2000) is applied[5]:

$$(2)\quad Y_{it} = a_i + g_t + b_1 Index_{it} + b_2 \Delta Index_{it} + b_3 Index_{it} \cdot South + b_4 \Delta Index_{it} \cdot South + d' X_{it} + e_{it}$$

[4] We also tested the growth rate of *stock of vehicles* (for the automotive sector only) as a more direct measure of product demand. The results, however, do not change, neither in qualitative nor in quantitative terms.

[5] We also estimated a dynamic panel data model using the Arellano-Bond estimator. However, probably due to the small sample size, the results of these estimations are very volatile in response to changes in the specification. Therefore, we decided to maintain the robust model of equation (2).

with $\Delta Index_{it} = Index_{it} - Index_{it-1}$ being the first difference over time of the integration index. Y_{it} denotes the outcome measures, the employment related variables and the vector X_{it} denotes additional control variables explained above. The dummy variable *South* indicates the southern enlargement countries of the 1980s, i.e. Greece, Portugal and Spain and e_{it} denotes the error term of the model. The parameters a_i are country-fixed effects, g_t denotes the year-fixed effects and the $b's$ are the coefficients measuring the impact of the central variables of interests on the outcome measures. All these unknown parameters have to estimated.

Regarding the interpretation of estimated coefficients it is worth emphasizing that the parameter b_1 measures the *overall* reaction of the dependent variable in response to a unit-change in the integration index. Since this parameter is identified by all other EU-countries apart from Greece, Spain and Portugal, it is also the impact of the integration measure on the respective outcome variables for this country group. The parameter b_3 of the interaction term between the index and the indicator for the southern enlargement countries provides the difference compared to b_1 in the reaction of Y in response to a unit-change in the integration index. In other words, changes in the integration index are translated into changes in the outcome measures of the southern enlargement countries by $(b_1 + b_3)$, whereas such changes affect the respective outcomes of the other EU-countries by b_1 only. Naturally, these interpretations assume that all other explanatory variables remain constant.

4. Empirical Results

The following tables report the results of estimating equation (2) for several employment-related outcome measures. **Table 4** contains the estimation results for economy-wide relative employment levels serving as the dependent variable. The first panel of this table reports the estimation results for both genders, the second and third panel those for men and women respectively.

Table 4: Results for Economy-Wide Relative Employment Levels

	Relative total employment		**Relative employment men**		**Relative employment women**	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Integration index	0.087	1.19	0.052	1.40	0.033	0.89
Delta integration index	-0.009	-0.04	-0.051	-0.41	0.045	0.36
Integration index for southern enlargement countries	0.371	**5.24**	0.180	**4.99**	0.196	**5.38**
Delta integration index for southern enlargement countries	-0.012	-0.03	0.025	0.11	-0.063	-0.28
Growth rate of investment	0.047	1.01	0.025	1.06	0.024	0.98
Lagged GDP *per capita*	0.002	**7.46**	0.001	**7.13**	0.001	**7.50**
Time trend	-0.804	**-5.98**	-0.493	**-7.22**	-0.313	**-4.53**
Country-fixed effects	Yes		Yes		Yes	
Year-fixed effects	Yes		Yes		Yes	
F-Test for joint significance	**4.07**		**4.90**		**5.09**	

Notes: Number of observations: 260. Bold numbers are statistically significant at a 95% significance level or higher.

The estimation results of **Table 4** indicate no statistically significant impact of economic integration on long-term relative employment levels in all EU member states except Greece, Spain and Portugal. The estimated coefficients reported in the first row of **Table 4** are far from being statistically significant. On the other hand, however, the results suggest a *positive* long-term impact of economic integration on relative employment – for both genders as well as for men and women separately – in the southern enlargement countries. An increase of one standard deviation in the level of economic integration (all other things equal) yields a rise in total relative employment of, on average, around 3.7 percentage points in this country group.

The results of **Table 4**, furthermore, indicate that short-term fluctuations in the integration measure do not play any substantial role in explaining economy-wide relative employment levels. The estimated coefficients for the change in the integration measure are statistically insignificant. The last two panels of the table suggest that the positive employment effect of higher integration is slightly higher for women than for men in Greece, Spain and Portugal.

Irrespective of gender, a higher level of lagged GDP *per capita* yields an increase in relative employment levels, whereas the estimated coefficient for the time trend indicates a negative secular trend in employment during the sample period. Finally, the results of the F-test for joint significance of the regressors of the model reveal that the explanatory power of the three models in **Table 4** is satisfactory. Overall, the results of this analysis suggests that in the long-run higher economic integration leads to a positive employment effect which varies quantitatively between different country groups.

Table 5 contains the results of estimating equation (2) with unemployment rates as the outcome measures. In the long-run, larger levels of economic integration tend to *increase* unemployment rates in all EU-member states except the southern enlargement countries. Since the differential impact of the level of integration for the latter country group is oppositely signed and larger in absolute magnitude, integration *reduces* unemployment in Greece, Spain and Portugal. Quantitatively, a 1% increase in the level of the integration measure raises overall unemployment rates by, on average, around 0.12 percentage points, whereas it decreases unemployment rates in Greece, Spain and Portugal by approximately 0.05 percentage points (all other things equal). Furthermore, the magnitude of these effects is much more pronounced for men in the rest of the EU, whereas it is essentially equal (around 6%, on average) in Greece, Spain and Portugal.

Again, all coefficient estimates for short-run fluctuations in the integration index turn out to be statistically insignificant in both country groups. This suggests that short-term changes in the integration measure do not impinge upon unemployment rates. Furthermore, larger growth rates of investment and higher values of lagged GDP *per capita* exhibit a statistically significant negative impact on unemployment rates, thereby reducing unemployment rates considerably. The impact of investment growth is much more pronounced for men than for women, whereas the magnitude of the estimated effect of lagged GDP per capita is essentially the same for both genders.

Finally, the estimated coefficient for the time trend reveals a significant positive secular trend in unemployment rates across all European countries during the 1980s and 1990s. This is in line with the stylized fact that unemployment rates in the European Union rose almost constantly during the sample period. In general, the results reported in **Table 5** suggest a rather heterogeneous impact of economic integration on observed unemployment rates across current EU-member states.

Table 5: Results for Unemployment Rates

Variable	**Total unemployment**		**Unemployment men**		**Unemployment women**	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Integration index	0.121	**3.03**	0.17	**4.20**	0.036	0.75
Delta integration index	0.197	1.45	0.10	0.76	0.277	1.71
Integration index for southern enlargement countries	-0.174	**-4.47**	-0.23	**-5.90**	-0.100	**-2.16**
Delta integration index for southern enlargement countries	0.077	0.33	0.06	0.23	0.173	0.61
Growth rate of investment	-0.096	**-3.76**	-0.13	**-5.12**	-0.047	-1.53
Lagged GDP *per capita*	-0.002	**-10.67**	0.00	**-11.25**	-0.002	**-7.95**
Time trend	0.556	**7.52**	0.55	**7.41**	0.557	**6.34**
Country-fixed effects	Yes		Yes		Yes	
Year-fixed effects	Yes		Yes		Yes	
F-Test for joint significance	**9.16**		**10.58**		**5.67**	

Notes: Number of observations: 260. Bold numbers are statistically significant at a 95% significance level or higher.

Table 6 reports the estimation results for the level and the share of employment in the automotive sector. The left panel of **Table 6** indicates a statistically significant and quantitatively substantial *negative* long-term impact of higher economic integration on this outcome measure in all European countries. However, automotive employment in the southern enlargement countries suffers considerably less than that in the rest of the EU. On average, a one standard deviation increase in the level of the integration measure decreased employment in the automotive sector in all countries except Greece, Spain and Portugal by 34,500 employees, whereas the latter countries experienced a decline of only around 7,900 individuals (all other things equal).

Table 6: Results for the Level and Share of Employment in the Automotive Sector

Variable	**Total employment in automotive sector**		**Share of employment in automotive sector**	
	Coefficient	t-value	Coefficient	t-value
Integration index	-3.486	**-6.93**	-0.013	**-3.51**
Delta integration index	3.621	**2.12**	0.010	0.81
Integration index for southern enlargement countries	2.660	**5.43**	0.005	1.34
Delta integration index for southern enlargement countries	-4.801	-1.61	-0.019	-0.85
Growth rate of investment	0.717	**2.22**	0.003	1.22
Lagged GDP *per capita*	0.002	1.01	0.000	-0.97
Time trend	0.926	1.00	0.011	1.54
Country-fixed effects	Yes		Yes	
Year-fixed effects	Yes		Yes	
F-Test for joint significance	**3.35**		0.90	

Notes: Number of observations: 260. Bold numbers are statistically significant at a 95% significance level or higher.

In the short-run, however, the estimated coefficient for the change in the integration index indicates that this long-term pattern is more than offset in the rest of the EU member states, while there is no significant differential impact of this variable in the southern enlargement countries. The F-test for joint significance of the estimated coefficients suggests that the model explains the patterns of employment in the EU-automotive sector quite well.

The results for the share of employment in the automotive sector – reported in the second panel of **Table 6** – suggest that the process of economic integration not only impinges upon the level of industry-specific employment but also on its relative importance. The statistically significant *negative* estimate for the level of the integration index indicates that a 1% increase in the integration measure reduces, on average, the share of employees in the automotive sector by 0.01 percentage points, all other things equal, in the EU-countries except Greece, Spain and Portugal. For the latter country group the coefficient estimate for the long-term impact of integration is insignificant. Therefore, the long-run effect in these countries is essentially zero.

Furthermore, short-term fluctuations as measured by the change in the integration index over two consecutive years do not display any significant effect at all. Overall, the explanatory power of the model for the share of employment in the automotive sector is very weak. Finally, **Table 7** reports the results of the same exercise with the level and the share of employment in financial services being the outcome measures.

Table 7: Results for the Level and Share of Employment in the Financial Services Sector

Variable	**Total employment in financial services sector**		**Share of employment in financial services sector**	
	Coefficient	t-value	Coefficient	t-value
Integration index	13.746	**2.85**	0.047	**3.01**
Delta integration index	-78.958	**-4.82**	-0.202	**-3.77**
Integration index for southern enlargement countries	-17.520	**-3.74**	-0.051	**-3.34**
Delta integration index for southern enlargement countries	82.779	**2.90**	0.410	**4.39**
Growth rate of investment	-3.730	-1.21	-0.006	-0.62
Lagged GDP *per capita*	-0.062	**-2.99**	0.000	0.20
Time trend	45.731	**5.14**	0.245	**8.40**
Country-fixed effects	Yes		Yes	
Year-fixed effects	Yes		Yes	
F-Test for joint significance	**9.91**		**55.18**	

Notes: Number of observations: 260. Bold numbers are statistically significant at a 95% significance level or higher.

In sharp contrast to the automotive industry, the estimation results for the financial services sector display a statistically significant *positive* impact of integration on the level as well as the share of employment in financial services and a significantly *negative* deviation in the southern enlargement countries. The estimated coefficients suggest an overall increase of, on average, around 13,700 employees, whereas for the mid-1980s enlargement countries the net effect is a decrease of approximately 3,800 employees in response to one standard deviation rise in the level of the integration index. Furthermore, a 1% increase in the integration index yields, on average, a 0.05 percentage points increase in the financial services employment share, and basically a zero effect for Greece, Spain and Portugal (again holding all other variables constant).

Furthermore, short-term fluctuations in economic integration display a substantial impact on the level as well as the share of financial services employment in both country groups. Interestingly, these short-run fluctuations counteract the long-term impact of integration by a much larger magnitude suggesting a rather strong response of these outcome measures to short-term changes in economic integration. Furthermore, one observes a positive time trend and a statistically negative impact of lagged GDP *per capita*. Overall, the results of the F-tests for both models indicate a rather high explanatory power.

5. The Projected Impact of Enlargement on Employment

This section provides a qualitative assessment of the expected impact of a further integration of European economies induced by the enlargement of the European Union towards Central and Eastern Europe. This assessment focuses on economy-wide as well as sector-specific employment-related outcomes and is based on the empirical results derived in the last section.

The ultimate aim of the empirical analysis in the preceding section was the provision of a frame of reference for forming sound expectations on the likely impact of the enlargement of the European Union. It seems safe to argue, that the process of enlargement will induce another upward shift in the level of economic integration, especially for the accession countries. If the developments which we observed in the past remain stable and the structure of the relationship between integration and labor market outcomes after the enlargement of the European Union towards Central and Eastern Europe does not change substantially, it is very likely that the current accession candidates resemble – at least qualitatively – the observed developments of past accession countries from southern Europe.

Therefore, the *structural stability* of the relationship between economic integration and labor market developments, which was pinned down in section 3, is the decisive assumption, upon which the results of this sub-section rest. If this assumption is violated, the following forecasts might be rendered invalid. Naturally, without any assumption the formation of expectations is impossible. Furthermore, it is worth noting, that the empirical analysis demonstrated short-term fluctuations in integration to exert an impact on labor market developments which can be quantitatively substantial. Therefore, the expectations formulated below should be perceived as reflections of the long-term relationship between economic integration and labor market-related outcomes.

Finally, we would like to emphasize, that the expected developments will certainly *not* be distributed uniformly across all countries, existing EU-members as well as accession countries. Rather, we would expect heterogeneous developments depending on the level of integration into the world economy already reached by the respective country, and also on its GDP *per capita* and investment rates. Along the same lines, one should not expect that all groups of employees will experience the same impact of integration with respect to their labor market opportunities. Rather, changes in employment and unemployment will probably affect different employees to a varying extent, with skill groups being the most likely dimension of heterogeneity.

A careful extrapolation of the results of our empirical investigation suggests that future integration processes lead to an increase of economy-wide (relative) employment in the accession countries and a small, if any, rise in this outcome variable in the current EU-countries. Moreover, it could be expected that unemployment rates in the accession countries will decline somewhat, whereas those of the current EU-member states will probably experience an increase (see also below).

Regarding the structure of employment, the estimation results reported in the last section support the perception that most EU-countries underwent a transition process to service sector dominated economies. In the course of economic integration, employment in the financial services sector substantially increased. If this sector is representative for the complete services sector, then employment in the latter will benefit from future integration processes as well. However, the speed of this process as well as the extent to which it has unfolded its consequences, varies considerably between the countries investigated. Therefore, we would

expect a larger beneficial impact of future integration processes on employment in the (financial) services sector for existing EU-member states than for the accession countries.

The growing role of services in all European economies is in all likelihood the result of both demand and supply factors. On the demand side, the major impetus has come from firms that have substituted the production of company-related services "in-house" by purchasing them from other companies. On the supply side, the main factors have probably been technological change and product market deregulation. Higher levels of integration are typically associated with fiercer competition in product markets. Since labor mobility is rather low within Europe, product markets are the primary channel through which integration unfolds its impact on the level and structure of employment. Therefore, the regulation of product markets will be of prominent relevance for the employment related impact of further integration processes.

Furthermore, from the empirical results presented in the last section, it should have become transparent that employment in the rather "traditional" automotive industry suffered from integration during the last two decades. It is not unlikely that the experiences of the automotive industry can be transferred to the majority of sectors in manufacturing as well. The decline in the level and the share of employment in the automotive industry of current EU-member states is probably a reflection of a shift of low-skilled jobs to regions with lower wages. If this is true, low-skilled workers in the current EU-member states are the group of employees that can be expected to suffer the most from the integration induced expected rise in unemployment rates.

Overall, economic integration in the past exhibited a beneficial impact on European economies, not only in terms of economic growth (see section 2) but also regarding employment. However, the analyses conducted in this paper also revealed that there is a considerable heterogeneity in benefits across countries and in all likelihood also across different groups of employees within one country. Therefore, the rather optimistic view on the impact of enlargement with respect to labor market developments expressed in this sub-section should not be taken as a guarantee that each country and every employee will gain from future integration processes. Rather, there will be winners and losers, on the country- as well as the individual-level.

Finally, we would like to draw attention to another challenge with which European economies will have to cope in the near future and which might confound the expected impact of future integration, the consequences of demographic change. Although it is very likely that the economic effects of population ageing due to demographic change will exert interactions with and repercussions on the process of economic integration, the interrelationship between demographic change and economic as well as social integration processes is still waiting for a comprehensive research study. Therefore, our future line of research will address this nexus.

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Appendix

Table A.1: Descriptive Statistics

Variable	Mean	Standard-deviation	Minimum	Maximum
	All countries in sample:			
Relative total employment	42.42	7.68	23.70	68.92
Relative employment men	24.97	3.27	17.74	39.56
Relative employment women	17.46	4.95	5.96	29.35
Total unemployment rate	9.17	4.41	1.50	24.20
Unemployment rate men	8.24	4.15	1.40	20.20
Unemployment rate women	10.66	5.97	1.50	31.40
Total employment in automotive sector	144.05	214.09	0.91	891.20
Total employment in financial services sector	877.96	959.16	69.00	4272.00
Share of employment in automotive sector	0.81	0.61	0.04	2.43
Share of employm. in financial services sector	7.90	3.01	2.24	16.26
Integration index	100.54	9.72	78.36	116.34
Delta integration index	0.95	1.25	-0.85	4.23
Integr. index for southern enlargement count.	21.61	39.76	0.00	108.21
Delta int. index for southern enlargement count.	0.30	0.83	-0.33	4.23
Growth rate of investment	3.06	6.10	-19.58	28.68
Lagged GDP *per capita*	15,939.14	5,545.80	5,462.49	28,610.03
Time trend	10.50	5.78	1.00	20.00
	Southern enlargement countries only:			
Int. index for southern enlargement count.	93.64	9.06	78.36	108.21
Delta int. index for southern enlargement count.	1.28	1.33	-0.33	4.23

Number of observations: 260. See text for a description of variables.

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