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EFFECTS OF THE EU'S EASTERN ENLARGEMENT ON AUSTRIAN REGIONS

Regional expectations with regard to the consequences of the EU enlargement depend on the sectoral structure and factors of locational endowment in the respective region. In order to delimit the integration effects, these two determinants for development were derived in theory and bolstered by empirical facts. According to the findings, no major disruptions from any deep-going structural change need to be expected at regional level. Nevertheless, it will be advisable to focus the use of regional policy tools in some regions along the current external border, in order to alleviate possible negative effects. In addition, cross-border co-operation with bordering regions on the CEEC side should be intensified.

In view of the economic structure of Austrian regions, considerable differences can be pinpointed in local expectations from eastern enlargement. Differences between regions in terms of the manufacturing as much as services sectors are due primarily to the geographical clustering of favoured sectoral types[1], which concentrate on only a few political districts of Austria. Differences are also due to the lesser level of concentration of disadvantaged sectors, whereas sectors that are neutral to eastern enlargement are spread quite evenly across Austria.

Structural advantages derive mainly from an accumulation of advantaged sectors of manufacturers and providers of internationally tradable services; structural disadvantages are chiefly the result of a density of disadvantaged services covering regional markets and, to a more limited extent, a high exposure to disadvantaged manufacturing sectors. Typically, winners and losers from integration do not dominate the same region each time. Thus it cannot be assumed that necessary structural adaptation to the new framework will automatically occur through intraregional structural change. With a few exceptions, workers from sectors that experience problems with eastern enlargement will thus not easily (within a small geographical scope) change to sectors that benefit from integration. Eastern enlargement will thus have a polarising effect on the regional economic structure.

Regionally different effects of integration due to sectoral structure

Regions with considerable resources of human capital (Vienna, large- and medium-sized cities and towns, suburban regions)[2] benefit from their economic structure, as they have above-average employment in advantaged manufacturing as well as the tertiary sector (Table 1). The advantage is particularly large in Vienna and other cities and major towns[3] and their respective vicinity. Many medium-sized towns are winners thanks to their industrial structure, but suffer from deficits in terms of internationally tradable services. Regions with rich resources of human capital are also less exposed to predatory competition. However, the extent of disadvantaged sectors is only slightly below average

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[1] For a description of winners, losers and neutral sectors see Mayerhofer, P., Palme, G., "Development Opportunities Offered at Sectoral Level by EU Enlargement", Austrian Economic Quarterly, 2002, 8(1), pp. 28 39.

[2] For the regional types see *Palme* (1995).

[3] An exception is Salzburg, which cannot exploit the opportunities of cross-border exchange of regionally tradable services due to its remoteness from CEECs.

there, since major towns and cities show disproportionately large numbers not only of advantaged but also of disadvantaged services which are limited in their market coverage.

Table 1: Structural advantages and disadvantages in Austrian regions

	Potentially advantaged sectors				Potentially disadvantaged sectors			
	Total	Manufacturing	Services		Total	Manufacturing	Services	
			Internationally tradable	Regionally tradable			Internationally tradable	Regionally tradable
			Location quotient (Austria = 100)					
Economic regions								
Human capital-intensive	115.4	117.8	114.9	137.1	97.7	88.4	69.1	120.3
Viennal	137.9	156.0	129.6	194.3	101.5	69.4	46.4	151.0
Cities	106.7	117.4	104.8	118.7	91.6	96.3	68.1	102.5
Suburban regions	103.0	88.8	118.8	95.4	111.7	100.5	111.1	121.5
Medium-sized towns	88.4	100.1	78.2	46.0	74.6	91.1	81.0	48.8
Real capital-intensive	79.4	83.1	85.2	9.5	90.2	111.8	188.8	19.5
Intensive industrial regions	82.9	84.9	80.2	6.3	86.0	109.0	142.1	11.1
Intensive tourist regions	71.8	75.7	93.1	14.5	99.2	123.3	260.7	32.4
Rural	74.9	78.8	59.0	69.2	120.3	112.7	107.6	124.7
Extensive industrial regions	78.2	80.8	59.7	54.0	110.7	109.2	86.1	103.9
Touristic peripheries	68.2	70.4	65.0	62.9	117.6	113.7	156.6	105.8
Industrial peripheries	72.9	79.1	54.1	97.0	139.7	120.4	108.8	169.6
Border Regions								
Total	113.2	111.1	106.3	162.7	119.4	94.9	72.2	162.7
Urbanised	121.7	121.5	116.3	173.2	112.9	88.6	64.3	156.4
Rural	77.0	79.5	55.0	108.4	147.3	114.3	113.3	195.3
Non-border region	80.9	86.6	89.9	0.0	71.9	106.1	144.3	0.0
Austria	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: *Mayerhofer – Palme* (2001A), Institute for Regional Studies and Spatial Planning, Federation of Austrian Social Security Institutions, WIFO calcu-lations. Location quotient: ratio of regional to national employment shares in percent.

Real capital-intensive regions (intensive industrial and tourist regions) should benefit from eastern enlargement only to a limited extent, mainly because they are in general distant from the CEEC borders, so that their providers of regionally tradable services have little opportunity to profit from integration. For the same reason, real capital-intensive regions have relatively few services sectors which are prone to pessimistic expectations, a fact that applies particularly to intensive tourist regions. On the other hand, some intensive industrial regions (mainly in the key economic areas of Upper Austria and Salzburg) enjoy structural prerequisites in manufacturing that will lead to above-average opportunities for them.

In the rural regions (extensive industrial regions, industrial and touristic peripheries), winning sectors are of similarly low importance as in the real capital-intensive regions; but these rural regions feature more sectors which are likely to be losers from integration. The problem is particularly serious in the rural areas of the CEEC border regions. These areas lost comparative location advantages in manufacturing already in the course of the eastern opening, and now the problems are compounded for regionally tradable services by their special difficulties to adjust to the break-up of markets which have so far been (nationally) segmented by the border. In view of their proximity to potential competitors and the great importance of regionally tradable services, the share of workers employed by potential loser sectors in the rural border regions is almost half as much again as the Austrian average.

The sectoral structure causes some regional polarisation in the expected consequences of integration. The greatest benefits will accrue to regions with rich resources of human capital, whereas regions with a greater emphasis on real capital will discover new opportunities in manufacturing. Rural border regions, on the other hand, will find that their providers of regionally tradable services will be exposed to predatory competition.

Nevertheless, the sectoral structure is just one (and typically not even the decisive) determinant of differences in the development of regions. According to a shift-share analysis, location factors have much greater impact on the growth of Austrian regions. Thus, the "regional component", which reflects the location factors, explains some 72 to 97 percent of the variation in regional employment growth rates, depending on the observation period and the level of aggregation (district, NUTS-III region, economic region; Table 2). A given sector may reach different levels of success depending on the prevailing location factors.

Location factors support the assessment of economic structure

Using an econometric growth equation, an attempt was made to determine the importance of location factors for the growth of per-capita GDP by Austrian districts in 1988-1995. The estimates of the equation were first applied to the determinants of the neo-classical growth model, a model which emphasises the role that capital accumulation, i.e., the propensity to invest (which is identical with the propensity to save in a closed model), plays in the growth of an economy (or region). With marginal productivity of capital decreasing as expected, the model produces a convergence expectancy: the lower the starting level of an economy (measured by the real GDP per capita or employee), the higher (other things being equal) the growth rate. Accordingly, the economy should grow faster in poorer countries (or regions) than in richer ones. The estimate produced by the neo-classical model for Austria (Model I, Table 3) confirms the importance of both factors with surprising clarity – surprising especially when considering the ambivalent background of previous studies: the coefficients for per-capita GDP at the start of the period investigated and for private investment show the algebraic signs predicted by theory, and they are highly significant in statistical terms. In 1988-1995, the poorer districts of Austria were actually catching up.

The assessment of regional perspectives by sector is further supported by location factors: regions with rich resources of human capital are much better endowed than rural regions with those location factors that are important for a knowledge-based economy.

Table 2: Importance of structural and regional components for employment growth

Parameter estimates on the basis of shift-share components, cross-section regressions

		Constant a	Coefficient b	$\overline{R}^2$
District level (n = 93)				
1980/1989	Structural component	0.04	0.68*	0.077
	Regional component	− 0.03	0.94***	0.838
1989/1993	Structural component	0.03	0.86*	0.092
	Regional component	− 0.01	0.98***	0.876
1995/1998	Structural component	0.02	0.68	0.017
	Regional component	− 0.01	0.99***	0.963
NUTS-III level (n = 35)				
1980/1989	Structural component	0.03	0.54*	0.087
	Regional component	− 0.01	0.86***	0.716
1989/1993	Structural component	0.02	0.88**	0.157
	Regional component	− 0.01	0.97***	0.799
1995/1998	Structural component	0.00	0.10	0.018
	Regional component	0.00	0.97***	0.967

Source: Institute for Regional Studies and Spatial Planning, Federation of Austrian Social Security Institutions, WIFO calculations. *** . . . significant at a level of 1 percent, ** . . . significant at a level of 5 percent, * . . . significant at a level of 10 percent.

Nevertheless, the neo-classical model fails to provide a satisfactory explanation for a substantial part of the variation of growth rates between Austrian districts[4]. As a consequence, further development determinants were added to the model, as proposed by the New Growth Theory, regional economics approaches and the New Economic Geography. The New Growth Theory allows for a wider definition of capital and includes human-capital variables (qualification, experience) in its growth models, thus ensuring that the yield of human capital will not necessarily diminish even in the long term. In these models, growth-founding innovation develops endogenously by targeted research carried out to exploit (temporary) monopolistic gains. The models use as their key determinants endowment with infrastructure and human capital as well as the agglomeration of research activities.

Regional economics approaches derive growth (i.a.) from the geographic agglomeration of economically relevant activities ("agglomeration effects"), assuming that the benefits thus generated may trigger self-enforcing development processes. Accordingly, regional differences in external economies of scale, which can be approximated empirically by variables such as the population density or the number of businesses, or by measures of (absolute) specialisation, will be (co-)responsible for differences in regional growth. In

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[4] Explanatory power ranging between 15 percent of the variation in the simplest model and one third in the more complex models is quite satisfactory for a cross-section analysis, especially when considering that it is intended to explain a rate of change by level variables and that the method of outlier adjustment does not "optically" improve results. If outliers are modelled by dummy variables (which is actually done in much of the literature) then the adjusted coefficient of determination is 0.31 in the basic model and about 0.5 in the complete model.

view of the fact that the impact of such external economies of scale varies between sectors, it is possible to deduce an impact of the sectoral distribution on regional growth.

The New Economic Geography no longer explains economic structure and regional specialisation as the (exclusive) result of a given factor endowment since it explicitly models factor mobility and factor accumulation. The direction into which agglomerative trends move depends on the interaction between centripetal and centrifugal forces. The model takes as its basis for regional growth the combined interplay between returns to scale and distance costs and thus emphasises not only the importance of the geographical location (transport cost) but also the influence of market size (or market access). Measures for accessibility and indicators of market potential (demand at a given location weighted by distance) are approximations for such regional development factors. In order to account for (centrifugal) agglomeration costs, the respective variables are modelled in quadratic functional form.

The explanatory power of a model expanded by location factors (Model II, Table 3) is more than double that of the neo-classical model. In addition, the algebraic sign of the link between per-capita growth (as the result of "regional competitiveness") and the location factors derived from theory (as determinants of competitiveness) corresponded to theoretical expectations in 1988-1995. Greater accumulation of capital, good regional endowment with human capital and infrastructure, benefits obtained from agglomeration and access to promising markets may be viewed, together with a favourable sectoral structure, as statistically proven determinants of regional competitiveness in Austria[5].

Table 3: Growth equations for Austrian districts

Growth rate of per-capita GDP 1988-1995

	Model I	Model II	Model III	Model IV
Constant	1.295***	1.359***	+ 2.828***	+ 1.778***
Per-capita GDP 1988	− 0.310***	− 0.547***	− 0.795***	− 0.660***
Investment per employee	+ 0.382***	+ 0.345***	+ 0.201	+ 0.331***
University-educated persons	−	+ 0.193**	+ 0.106	+ 0.249**
National demand potential	−	+ 0.078*	+ 0.200**	+ 0.079*
Share of employee in internationally tradable services	−	+ 0.142**	+ 0.131	+ 0.186**
Population density	−	+ 0.387***	− 0.176	+ 0.383**
Square of population density	−	− 0.086***	+ 0.039	− 0.085**
Dummy for border region	−	−	− 2.205**	−
Dummy for border district	−	−	−	− 0.809
Proximity to border × per-capita GDP		−	+ 0.382*	+ 0.449
Proximity to border × investment per employee		−	+ 0.111	− 0.094
Proximity to border × university-education persons		−	− 0.009	− 0.189
Proximity to border × demand potential		−	− 0.144	− 0.141
Proximity to border × internationally tradable services		−	− 0.025	− 0.207
Proximity to border × population density		−	+ 0.920***	− 0.067
Proximity to border × square of population density		−	− 0.192***	+ 0.048
$\overline{R}^2$	0.146	0.331	0.340	0.302
F	8.52	7.21	4.03	3.54
White Test	12.88*	42.09	60.36	41.57

Source: WIFO calculations. OLS and HCE estimators, logarithmic functional form. *** . . . significant at a level of 1 percent, ** . . . significant at a level of 5 percent, * . . . significant at a level of 10 percent. Proximity to border: in model III "border region", in model IV "border districts".

No influence was wielded by a location's geographical position in the eastern border region (defined as a travel distance of not more than 90 minutes from the next CEEC centre) or its situation as a direct border district. These regions do not differ from the average in their performance, and did not do so even back in the early days of eastern opening. The same roughly applies to regional differences in the effects of the development determinants modelled and introduced by interaction variables for the border regions and, in the extended models (Models III and IV, Table 3), the direct border districts. In the (larger) border region (Model III), agglomeration benefits have a greater effect than in the rest of Austria. This is the only highly significant deviation and a result that does not come as a surprise considering the geographical location of most major agglomerations in this region. Of lesser influence (and weaker statistical significance) on growth in the border region is the initial performance level, so that the convergence mechanisms were less effective than in the rest of Austria. No significant deviations were

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[5] In addition a high innovation propensity can be viewed as an essential factor of competitiveness, which is not, however, adequately modelled here.

found for the border districts (Model IV) where the same interactions apply equally as were identified for all Austrian districts.

Table 4: Determinants of regional competitiveness in Austrian Regions

	University-educated people	Before-tax wages (median)	Population density	Internationally tradable services	Agglomeration advantages of human capital-intensive sectors	Specialisation of manufacturing	Demand potential (market access)		Investment per employee
							National	International	
	1991 As a percentage of population	1999 In EUR	1991 Population per square km	1995	1995	1995 Herfindahl index	1995	1998	1995 In 1,000 €
				Percentage share of employees			Austria = 100		
Economic regions									
Vienna	7.0	1,862	3,695	19.2	15.5	0.027	2,689	86	12.5
Cities	7.5	1,826	1,726	17.4	9.4	0.030	307	111	11.4
Suburban regions	4.3	1,736	163	15.6	11.3	0.034	123	102	7.8
Medium-sized towns	3.6	1,761	578	11.5	6.6	0.044	94	107	8.7
Intensive industrial regions	2.8	1,780	83	6.4	6.8	0.036	91	125	7.9
Intensive tourist regions	2.6	1,601	36	2.9	2.6	0.073	62	117	8.2
Extensive industrial regions	2.4	1,673	80	5.9	5.7	0.036	48	91	7.2
Touristic peripheries	2.5	1,544	45	4.2	3.2	0.045	31	92	7.2
Industrial peripheries	2.3	1,538	64	6.2	3.6	0.040	34	83	6.7
Combined economic regions									
Human capital-intensive	6.3	1,819	2,185	17.2	12.0	0.031	1,274	98	11.0
Real capital-intensive	2.7	1,723	68	5.3	5.5	0.048	82	123	8.0
Rural	2.4	1,608	68	5.6	4.6	0.039	40	89	7.1
Border regions									
Total	5.6	1,780	1,808	14.4	10.5	0.034	1,124	99	10.3
Urbanised	6.4	1,819	2,419	16.9	12.6	0.030	1,529	88	11.1
Rural	2.3	1,574	67	5.4	4.5	0.039	37	82	7.0
Non-border region	3.9	1,750	473	10.1	6.7	0.042	111	127	8.9
Austria	4.3	1,782	93	7.6	5.8	0.043	100	100	9.5

Source: Stastics Austria, Federation of Austrian Social Security Institutions, WIFO calculations. Herfindahl index: sum of squared employment shares of regions in terms of total employment in Austria.

In view of the distribution of beneficial location factors across Austria's regions, no fundamental revision is necessary with regard to the advantages and disadvantages derived from the sectoral analysis:

- Regions with rich resources of human capital are not only better endowed with potential "winners" on a sectoral level, but they also have more of those location factors that strengthen future regional competitiveness (Table 4). It is only in terms of the international demand potential that the factor analysis finds disadvantages compared to the sectoral analysis. These demerits are due to the geographical proximity of some major towns (especially for Vienna) to the CEECs and the markedly lower income rates in these countries. Nevertheless, this disadvantage is mitigated by the high economic dynamism of these countries.

- The rural border regions are not only focused on (now heavily contested) regional markets, but they also are much less well-endowed with location factors of importance for an international knowledge economy.

- Expectations for real capital-intensive regions are considerably better due to their endowment with favourable location determinants. In terms of external economies of scale and specialisation advantages this regional type keeps pace with human capital-intensive regions; its research and development deficits can be compensated by networking with (nearby) cities and towns.

The expectation of benefits for the human capital-intensive regions and disadvantages for rural (border) regions as deduced from the analysis of structural and locational factors is contradicted by employment growth in the 1990s. In regions with rich human capital resources, employment growth, at 0.7 percent p.a., was significantly below the average in 1989-2000 (Table 5). At 1.5 percent p.a., rural (border) regions, on the other hand, recorded more than double that rate after the eastern opening. Using sta-

Regional development in the 1990s affected by special factors

bility tests based on regression analysis, we investigated whether the opening of the eastern border (1989) was linked to a structural break[6] in regional dynamics.

It was found that the locational advantages of Austrian regions have not changed fundamentally (such as would have been the case if the traditional west-east differential in growth had been reversed), and the eastern border region has not achieved any significant improvement. Nevertheless, regional development trends have shifted significantly between regions after the opening of the eastern border (Table 6). With rural regions developing rapidly after 1989 (after finding their employment share stagnate in the 1980s), this points at a statistically significant structural break in the long-term employment dynamics. On the other hand, regions with rich human capital resources, favoured by their economic structure, after gaining shares in the 1980s, lost much of their ground thereafter. Thanks to progress in productivity, GDP in the human capital-intensive regions, nevertheless, grew at least at the same pace as the Austrian average in the first half of the 1990s (with the exception of large cities).

In spite of high employment dynamics in rural (border) regions, no substantial structural improvement occurred here, apart from a few exceptions. No continuous upgrading of competitiveness from the eastern opening could be found in these regions. The marked growth in employment was not consequent to the eastern opening, but the result of centrifugal forces emanating mostly from the domestic market (Table 7): the decentralisation of urban manufacturing even beyond the near suburban regions, the expansion of traditional services and commercial providers (especially construction) from rural regions to the city markets, and a general catching up of rural areas in producer services. Accordingly, the positive development that rural border regions experienced in the 1990s cannot be used as evidence for their future performance after enlargement, such as is current practice in the ongoing debate. It is almost impossible to foresee the extent to which the centrifugal forces mentioned will be able to compensate for disadvantages of rural (border) regions from the sectoral structure and location endowment in a future, liberalised trade regime.

Rural regions will develop in close step with urban regions. Positive effects should be the more likely in the rural regions the better the urban regions are able to exploit the opportunities of EU enlargement. In addition, centrifugal forces are not equally effective in all parts of the rural border regions – as is shown by the regional pattern of employment growth in the 1990s, when parts of the regions along the north-eastern border (Mühl-, Wald- and Weinviertel) and in the south grew at a lower than average rate (Figure 1).

Differences will be due primarily to the proximity or distance to (larger) cities, as is reflected in the national demand potential. Whereas geographically "favoured" border regions are likely to experience continued growth, the effect of centrifugal forces should be rather minor for "peripheral" rural regions. Although no dramatic structural problems are expected in these regions, they may well find that their economic attractiveness is subject to continuous erosion – the more so given that, in a highly developed country such as Austria, "competitive" location factors will gain in importance over comparative location advantages.

In the 1990s, employment developed in line with a regional pattern that did not reflect the structural and locational conditions mentioned above. Rural border regions grew at more than double the speed of human capital-intensive regions. Considering that this development was not closely associated with the eastern opening, conclusions from the structural analysis need not be revised. What's more, dynamic employment growth in the rural regions did not lead to structural improvements: the cities and towns and their surrounding usually managed to make greater progress in their productivity.

Rural regions will grow the better the more urban regions are able to exploit their opportunities from EU enlargement. Yet remote rural regions will hardly profit from those positive "trickling-down effects". Accordingly, peripheral rural border regions and districts in cities that experience problems in integrating foreigners should be awarded the highest priority in regional policy efforts.

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[6] A structural break in a statistical sense is found when the relative employment dynamics of a given region (cumulated growth difference to the Austrian average) systematically deviate from a linear trend. A test proposed by *Chow* (1960) to identify such deviations essentially compares the residual of a trend estimation across the entire period of investigation with those obtained from a separate estimation across subperiods. Two approaches are available:

- Separate estimates are calculated for each of the two subperiods (1983-1989, 1989-2000) and for the overall period (1983-2000); an F test then finds whether the estimates differ significantly.
- One trend estimation is calculated for the entire period (1983-2000), and the assumed structural break (1989) is explicitly modelled by a "spline function" (using a dummy variable).

These variants of the test have only marginally different characteristics and produce essentially similar results. Nevertheless, both types of the test were run for the regional groupings studied here. A significant structural break was diagnosed only when it was indicated by both procedures.

Table 5: Regional dynamics in the 1990s

	Employment 1989-2000	Gross value added per capita 1988-1995
	Average year-to-year percentage change	
Economic regions		
Human capital-intensive	+ 0.7	+ 5.9
Vienna	+ 0.2	+ 6.1
Cities	+ 0.7	+ 5.4
Suburban regions	+ 0.2	+ 6.2
Medium-sized towns	+ 0.9	+ 6.0
Capital-intensive	+ 0.8	+ 5.7
Intensive industrial regions	+ 0.7	+ 5.7
Intensive tourist regions	+ 0.9	+ 5.6
Rural	+ 1.5	+ 6.0
Extensive industrial regions	+ 1.4	+ 6.0
Touristic peripheries	+ 1.3	+ 6.0
Industrial peripheries	+ 1.7	+ 6.0
Border regions		
Non-border region	+ 1.0	+ 5.8
Eastern border region	+ 0.7	+ 6.0
Rural	+ 1.6	+ 6.1
Austria	+ 0.9	+ 5.9

Source: *Mayerhofer − Palme* (2001B), Institute for Regional Studies and Spatial Planning, Federation of Austrian Social Security Institutions, Statistics Au stria, WIFO calculations.

Table 6: Stability tests of employment dynamics in Austrian regions, 1983-2000

Test for structural break in 1989

		Test based on subsample regressions				Test based on dummy variables		
		1983-1989	1989-2000	1983-2000	Significance 1989	Trend	Trend deviation after 1989	Significance 1989
		Coefficients for trend estimations				Coefficients for trend estimations		
Combined economic regions								
Human capital-intensive	↓	+ 0.0014**	− 0.0013**	− 0.0005	5.689**	+ 0.0019*	− 0.0031**	3.074*
Real capital-intensive	↑	− 0.0052**	− 0.0008	− 0.0021**	7.019***	− 0.0062**	+ 0.0051**	2.841*
Rural	↑	− 0.0004	+ 0.0074**	+ 0.0050**	4.197**	− 0.0010	+ 0.0083**	3.211*
Economic regions								
Vienna	→	− 0.0016	− 0.0063**	− 0.0049**	1.253	+ 0.0001	− 0.0062*	1.682
Cities	↓	+ 0.0027	− 0.0020**	− 0.0002	6.542**	+ 0.0014	− 0.0036**	11.319***
Suburban regions	↑	+ 0.0111**	+ 0.0142**	+ 0.0132**	2.852*	+ 0.0121**	+ 0.0021	3.646*
Medium-sized towns	→	− 0.0031**	+ 0.0008	− 0.0006	1.241	− 0.0044*	+ 0.0050	1.433
Intensive industrial regions	→	− 0.0050**	− 0.0013	− 0.0025**	3.332**	− 0.0060**	+ 0.0045	1.300
Intensive tourist regions	↑	− 0.0055**	− 0.0005	− 0.0015**	5.833**	− 0.0058**	+ 0.0052**	6.312**
Extensive industrial regions	→	− 0.0010	+ 0.0063**	+ 0.0041**	2.200	− 0.0017	+ 0.0078*	1.986
Touristic peripheries	↑	− 0.0018	+ 0.0051**	+ 0.0028**	5.544**	− 0.0013	+ 0.0061**	10.713***
Industrial peripheries	↑	+ 0.0025*	+ 0.0110**	+ 0.0079**	2.965*	+ 0.0007	+ 0.0104**	4.977**
Border region								
Non-border region	→	+ 0.0010**	+ 0.0019**	+ 0.0016**	2.767*	+ 0.0005	+ 0.0013	0.493
Eastern border region	→	− 0.0006**	− 0.0010**	− 0.0009**	2.767*	− 0.0002	− 0.0007	0.493
NUTS-I regions								
Eastern Austria	→	− 0.0019*	− 0.0024**	− 0.0021**	0.343	− 0.0013	− 0.0011	0.212
Southern Austria	→	− 0.0039**	− 0.0005	− 0.0016*	1.098	− 0.0043	+ 0.0036	0.758
Western Austria	→	+ 0.0045**	+ 0.0032**	+ 0.0036**	1.917	+ 0.0042**	− 0.0012	0.834

Source: Institute for Regional Studies and Spatial Planning, Federation of Austrian Social Security Institutions, WIFO calculations. − ↓ . . . structural break in 1989, followed by negative development, → . . . no structural break in 1989, ↑ . . . structural break in 1989, followed by positive development. *F* test: *** . . . significant at a level of 1 percent, ** . . . significant at a level of 5 percent, * . . . significant at a level of 10 percent.

Table 7: Employment trends in the 1990s, by sectors

	Manufacturing		Construction		Total market services		Public services	
	1989-1994	1995-1998	1989-1994	1995-1998	1989-1994	1995-1998	1989-1994	1995-1998
				Average year-to-year percentage change				
Economic regions								
Human capital-intensive regions	− 2.6	− 1.0	+ 2.7	+ 5.7	+ 1.9	+ 2.1	+ 2.8	+ 0.4
Vienna	− 3.1	− 3.8	+ 2.6	+ 16.3	+ 1.1	+ 1.8	+ 2.3	− 0.7
Cities	− 3.2	+ 2.8	+ 1.5	− 3.6	+ 1.3	+ 0.5	+ 2.8	+ 0.3
Suburban regions	− 0.5	− 1.1	+ 4.6	+ 0.0	+ 4.0	+ 5.0	+ 4.2	+ 3.5
Towns	− 3.4	− 0.6	+ 3.0	− 1.2	+ 3.2	+ 2.9	+ 4.2	+ 2.8
Real capital-intensive regions	− 1.5	+ 0.6	+ 2.2	+ 0.7	+ 2.6	+ 1.3	+ 3.2	+ 2.8
Intensive industrial regions	− 1.6	+ 1.3	+ 2.1	+ 0.9	+ 2.7	+ 1.9	+ 3.3	+ 3.0
Intensive tourist regions	− 1.3	− 1.8	+ 2.3	−	+ 2.5	+ 0.4	+ 3.1	+ 2.5
Rural regions	− 0.6	− 0.1	+ 3.2	+ 2.0	+ 3.1	+ 3.2	+ 4.2	+ 3.9
Extensive industrial regions	− 0.6	+ 0.0	+ 4.0	+ 2.2	+ 3.1	+ 3.5	+ 3.9	+ 4.0
Touristic peripheries	− 1.9	− 0.4	+ 2.3	+ 1.8	+ 3.2	+ 1.8	+ 3.4	+ 3.7
Industrial peripheries	+ 0.0	− 0.2	+ 2.6	+ 1.8	+ 3.2	+ 3.9	+ 5.0	+ 3.8
Border regions								
Urbanised	+ 1.1	− 1.2	+ 2.5	+ 7.7	+ 1.7	+ 2.1	+ 2.8	+ 0.0
Rural	+ 1.9	− 0.2	+ 3.4	+ 1.4	+ 3.4	+ 3.6	+ 4.3	+ 3.9
Non-border region	+ 1.2	+ 0.3	+ 2.8	+ 0.0	+ 2.5	+ 1.7	+ 3.3	+ 2.6
Austria	− 2.0	− 0.4	+ 2.7	+ 4.0	+ 2.1	+ 2.0	+ 3.0	+ 1.1

Source: Federation of Austrian Social Security Institutions, WIFO calculations.

Against this background, an initiative taken by the European Commission with a view to developing the regions along the eastern border of the EU (within the scope of the recently adopted "Action Plan for Border Regions") is welcomed. However, at € 195 million for 23 generously defined "border regions" (six states in Austria alone), additional funds thus made available are hardly adequate. As a consequence, efforts should, on the one hand, be taken to focus resources from structural funds and community initiatives towards activities to prepare the regions for eastern enlargement. On the other hand, it is recommended to concentrate funds to those places along the border that are expected to have serious problems with integration of the CEE countries. These are in particular "peripheral" rural border regions which, due to their geographical location, are unable to compensate for the expected increase in competitive pressure through gains from suburbanisation or greater shares in city markets. Similarly, the focus also needs to be on social issues arising from the free movement of labour, which in turn may exert pressure on the labour and housing markets in the cities near the border (and specifically in some districts of Vienna).

Apart from responding to special problems, it appears indispensable to take action for all regions in order to exploit the opportunities offered by enlargement. The networking of economic players on both sides of the border can be supported primarily by cross-border co-operative ventures; these will be particularly efficient when they trigger external effects yet channel them into an institutionalised level (such as regulated networks) to avoid any "free rider" behaviour. Investment and innovation should be encouraged and facilitated, since new knowledge benefits not just the innovator but also the other partners in a network. Cross-border networks should focus on the local conditions prevailing in each subregion.

In Vienna and other cities, co-operation within research and development networks should be strengthened, with the chief emphasis on universities as sites of education, training and research. Communication barriers between science and economy should be broken down in order to ensure that research results are promptly applied and implemented.

Vienna, as the capital city of Austria, could also position itself as an international centre for producer oriented services, either as a transaction centre in a new border-spanning area (perhaps focussing on South-eastern and Central Europe, in conscious contrast to the Berlin transaction centre) or as a special high-quality centre for producer oriented services supplementing those offered by neighbouring cities and towns in the candidate countries (such as Bratislava, Györ, Brno). The better Vienna and its counterparts are

Economic policy strategies should be regionally differentiated

Within the frame of a proactive strategy to prepare for EU enlargement, cross-border co-operative ventures should be established and institutionalised in networks. Co-operation with CEEC regions should be customised for each region and should aim at an ongoing improvement of key location factors: cities should intensify research and development efforts, real capital-intensive regions should aim at cost advantages, and rural border regions could specialise in utilising endogenous resources.

integrated in international passenger transport and telecoms systems (especially in central Europe), the better will they be able to meet expectations and provide these services.

Figure 1: Dependent employment

Status as of end of July; average year-to-year percentage change in 1989-2000
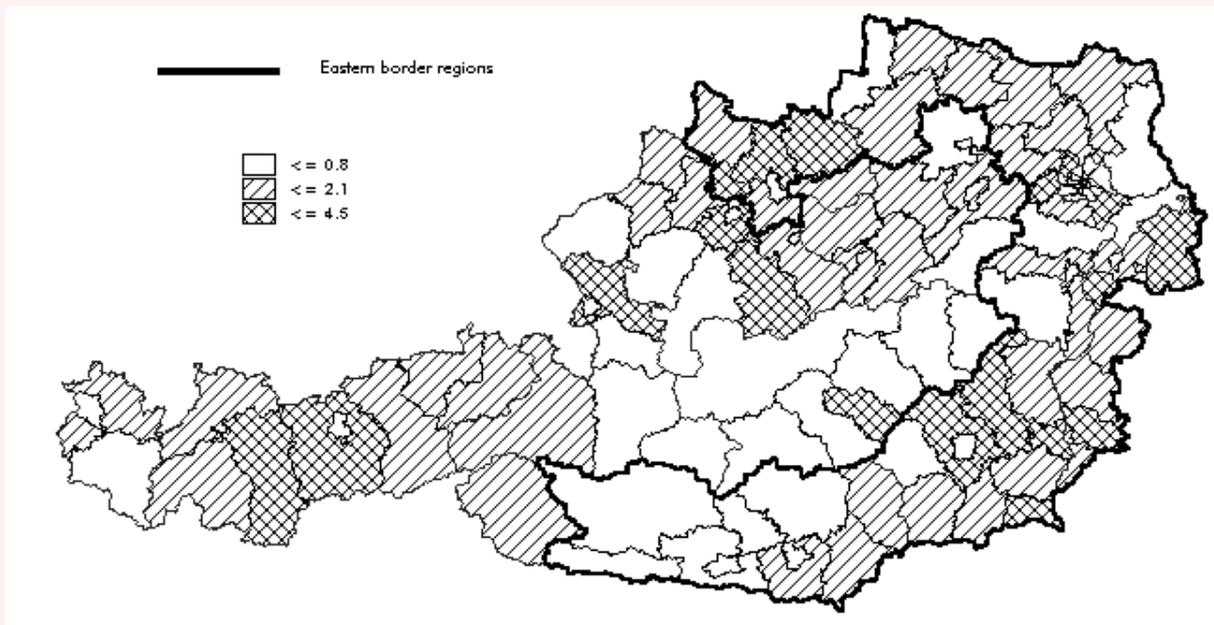
Source: Federation of Austrian Social Security Institutions, WIFO calculations.

Intensive industrial regions would do well to establish cross-border production networks in order to exploit the advantages of an intensive vertical division of labour with CEEC regions, and to improve their competitive standing also on western markets. Austrian investment in industrial parks in the CEECs would facilitate co-ordination.

Intensive tourist regions could utilise collaborative benefits within the scope of a horizontal division of labour with the CEECs, by offering cross-border service packages.

Last but not least, rural regions could devote more resources to small-scale cross-border collaboration within the scope of sustainable resource-based development strategies. Specifically, a promising track would be for the food, leisure and tourism industries to process natural resources into combined products based on the principles of sustainability. Cross-border networks help expand the options available for product differentiation. It might be useful to bundle the required management and organisation capacities in "competence centres" for rural development.

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Effects of the EU's Eastern Enlargement on Austrian Regions – Summary

The issue studied was which regions can expect to enjoy net benefits and in which regions disadvantages will outweigh advantages. The assessment was made on the basis of the regions' economic structure as well as endowments with location factors. In terms of sectoral structure, the analysis was based on the geographical distribution by sectoral typologies which were derived theoretically and supported by empirical data. Location factors identified as being important were obtained from a growth equation in terms of economic development of Austrian districts. Both aspects delivered quite similar regional patterns.

Regions with a large pool of human capital (large and medium-sized cities and towns, suburban regions) not only have more sectors which are potential beneficiaries, but they are also better endowed with location factors which are important for future regional competitiveness. It appears that the metropolis of Vienna is particularly favoured. On the other hand, rural border regions feature not only more sectors which will be subject to greater competitive pressure upon EU enlargement, but they are also markedly less well endowed with those location factors that are important for an international knowledge economy. In these border regions, predatory pressure will be experienced by service companies which have so far operated on nationally segmented regional markets, because EU enlargement will break these up and will force them to operate across borders. But not all the rural border regions will be confronted with serious problems: those not too far away from larger towns will be more easily able to compensate for job losses. The greatest disadvantage will be suffered by rural border regions situated in remote locations where the impact of larger towns will no longer be felt. Examples would be regions in the south of Austria or in the north-west of Lower Austria and north of Upper Austria (Waldviertel, Mühlviertel). In these regions suffering from long-term structural problems, the economic basis may well be further eroded, although no dramatic development need to be expected in general. The EU's eastern enlargement will not trigger, but only accelerate the structural change at regional level.

Border regions should be given aid selectively. The emphasis should be put on regions with the greatest need for action. Accordingly, it is recommended to concentrate regional policy tools on those marginal rural regions which are least able to handle destructive competition. Similarly, urban districts which may have problems integrating foreign workers should be given equal aid focus. Nevertheless, "proactive" preparatory strategies should be used for all regions, in order to improve international competitiveness. Measures should primarily aim at intensifying cross-border cooperation in order to exploit collaborative advantages such as are offered mainly by regions at the EU's external border. Depending on the locational circumstances, cooperative ventures need to be specified by regions. In larger towns, the greatest emphasis should be devoted to research and development collaboration. Industrial and tourism regions with a high level of fixed assets should strengthen their vertical and horizontal division of labour with the CEECs in order to reduce costs. Rural border regions should enter into neighbourhood cooperations to exploit resources.

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