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in the regions of Europe:
A bit of theory and
some evidence**

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Hamburgisches Welt-Wirtschafts-Archiv (HWWA)
Hamburg Institute of International Economics
Neuer Jungfernstieg 21 - 20347 Hamburg, Germany
Telefon: 040/428 34 355
Telefax: 040/428 34 451
e-mail: hwwa@hwwa.de
Internet: <http://www.hwwa.de>

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FLOWENLA Discussion Paper

Migration and convergence in the regions of Europe: A bit of theory and some evidence

Riccardo Faini *

FLOWENLA Discussion Paper 9
<http://www.eastwestmigration.org>

* Ministry of Economy, University of Brescia, CEPR and IZA

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December 2003

**Channelled East-West labour migration
in the frame of bilateral agreements**

1. Introduction

In spite of substantial efforts to promote economic cohesion, regional disparities among EU countries remain quite substantial. A comparison with the US is fairly instructive. In the second half of the nineties, the coefficient of variation of income per capita across 50 NUTS1 regions in the EU was almost double than across the 49 states of the continental US. The dispersion in unemployment rates was even larger, 0.55 in the EU against 0.24 in the US.

The aggregate figures do not fully convey the size of territorial disparities within the EU. In 2000, the latest year for which a fully comparable set of data is available, income per capita – in purchasing power standards - in Inner London was approximately two and half times larger than the EU-15 average. Conversely, GDP per head in the Greek region of Ipeiros was less than 50 percent of the European value. Disparities are somewhat less pronounced at the national level, but far from negligible. Even if we neglect Luxembourg, income per capita ranges from 119 per cent of the EU average in Denmark to around 68 percent in Portugal and Greece. These large, and sometimes persistent, gaps in GDP per person reflect both differences in productivity and in labour market performance. National unemployment rates cover a broad range from 13.1 percent in Spain to 2.3 percent in the Netherlands. At the regional level the gap is substantially wider, from 24.8 in Calabria in Italy to 1.2 percent in Utrecht in the Netherlands. Perhaps more disturbingly, in Europe high unemployment regions tend to coincide with low income per capita regions. Poverty and unemployment become two faces of the same coin.

We would expect these large differentials in income and employment conditions to foster substantial migratory flow from low income and high unemployment regions toward high income and low unemployment regions. They do not. With the exception of the UK, internal migration flows represent a much smaller share of resident population than in the US, despite the much greater variability in the income and employment outcomes in Europe.

Would greater mobility among European regions foster convergence ? Should policy therefore act to encourage migration within Europe or, at the very least, within member countries ? These are some of the questions that I intend to investigate in this paper¹. Surprisingly enough, the role of migration in favouring convergence does not seem to be a major priority for European policy-makers. The European Commission second progress Report on Economic and Social Cohesion lists

¹ I do not focus therefore on the causes of the limited mobility in Europe, for which there is a fairly broad literature (see Braunerhjelm et al. (2000) for a survey).

a broad set of factors that hamper cohesion, but fails to mention the lack of mobility among them. Similarly, the sixth periodic Report on the Social and Economic Situation and Developments of the Regions in the EU notes – in a text box – that migration may be associated with faster convergence, but then does not pursue the issue any further. Only the demographic implications of migration are considered. By and large, when it comes to policy initiatives, European policy-makers hold a somewhat schizophrenic attitude toward labour mobility. Finance ministers may sometimes lament the lack of mobility as hampering the ability of regions to adjust to idiosyncratic shocks². Their colleagues in other ministries however seem to be quite reluctant to engage on this issue.

The remainder of this paper is organized as follows. In the next section, we present a brief theoretical interlude to assess whether the policy-makers diffidence toward mobility is grounded in economic analysis. We then consider in section 3 some simple graphical evidence to assess whether migration is indeed associated with convergence. A more structured econometric analysis is then presented. Section 4 looks at the implications of our analysis for enlargement. Conclusions and policy implications are presented in the last section of the paper.

2. A brief theoretical interlude

a) the standard growth model

Standard growth models typically predict that migration favour convergence. In the Solow model, income convergence takes time, and considerably so, at least according to existing empirical evidence. Backward regions are poor because of their more limited endowment of physical and human capital relative to labour. To converge, poor regions need to save and invest with a view to raising their capital labour ratio toward the level in relatively rich regions. However, if factors are perfectly mobile convergence can be achieved instantaneously. If, say, labour migrates from capital poor regions to capital rich regions until real wages are fully equalized, regional economies will immediately reach their steady state equilibrium with the same capital labour ratio and income levels. Clearly, in this simple world, factor mobility is key to achieve convergence. Neglecting such a factor would be a major omission.

² Interestingly enough, a DG ECFIN paper (EC, 2001) takes a much more positive view of the role of labour mobility in

*b) the new geography theory*³

The new geography theory offers however a very different set of predictions. Consider a simple model with two regions, labelled North and South. The gist of the recent geography literature can be summarized in Fig. 1. In the presence of economies of scale, the relative wage in the North is an increasing function of the share of population living in that region. This is represented in the PP schedule. The stronger the scale economies, the steeper the PP schedule. With constant returns to scale the PP schedule would be perfectly horizontal. Regarding mobility, the other main key ingredient of a geography model, the assumption is that the share of population living in the North is an increasing function of the wage there. This relationship is captured by the positively sloped schedule SS. If workers are immobile, the population shares are fixed and the schedule SS is simply vertical.

We have two polar cases. In the polarization outcome, returns to scale are significant and mobility is sufficiently high. Workers will then tend to be concentrated in just one location. This is the case depicted in Fig.1a. The interior equilibrium is not stable. Let us start at the intersection point between the two schedules and suppose that an additional worker moves to the North. It is easy to check that the wage will increase in the North, prompting additional workers to move to the North. The influx of migrants will further boost the wage in the North, causing additional migration. The only stable equilibrium is one where all workers have moved to just one region. However, with moderate returns to scale, or with limited labour mobility, the relative slopes of the PP and the SS schedules will change (fig. 1b) and the equilibrium at the intersection point will be stable. This is the dispersion outcome. The two regions will tend to specialize to exploit the existence of economies of scale, provided that transport costs are not prohibitive⁴.

The model can be easily extended to a growth context (see Baldwin 1999, Faini, 1996), but the basic conclusion will not change. To sum up, the new geography models predict quite consistently that greater factor mobility is likely to be associated with the polarization outcome, with poorer regions being at risk of being depopulated. In this approach therefore regional development policy should not aim at fostering labour mobility, but rather should create the conditions for self-sustained

fostering convergence.

³ This paragraph draws heavily on Braunerhjelm et al. (2000).

⁴ Similarly, with constant returns to scale and different factor endowments, economic activity will be dispersed across regions, but trade and specialization will now be determined by basic comparative advantage forces.

growth in backward regions. This conclusion however is only tentative given that, with a few noticeable exceptions, welfare analyses are conspicuously absent from the new geography models.

c) back to basics: regional shocks and stagnation

Polarization and dispersion are not the only possible outcomes. There is also a third possibility, which has been somewhat neglected in the more theoretical literature but fully investigated in the seminal paper by Blanchard and Katz (1992). Suppose that constant returns to scale prevail and that capital and labour are immobile among regions, at least in the short run. Equilibrium wages are then determined in Fig. 2 by the intersection of a vertical labour supply curve and a downward sloping labour demand schedule. Suppose now that, following an idiosyncratic shock, the labour demand schedule shifts inward to the dotted line. There are many possible equilibria. If both capital and labour are immobile and wages are rigid, equilibrium will be at point A'' with the remaining labour force being unemployed. With flexible wages, but still immobile factors, the equilibrium will be at A', with full employment but lower wages. In both cases, therefore, regional income will fall compared to the initial position. With immobile factors, there will be no equilibrating mechanism and the region will fall behind the rest of the country. This is the regional stagnation outcome. Even if capital is mobile, but labour is not and wages are rigid, the new equilibrium will feature unemployment. There will be, by assumption, no labour migration, while wage rigidity will prevent capital from moving into the region. Once again, the outcome will be regional stagnation. The basic message from this third case is simple⁵. Limited factor mobility and lack of agglomeration gains are not necessarily associated with an homogeneously distributed level of activities among regions. Lack of factor mobility, particularly in the presence of factor price rigidities, can lead to a prolonged period of regional stagnation.

Factor mobility and labour market flexibility play therefore a key role in determining the final outcome. With nominal wage rigidity, a regional shock will lead to unemployment (point A' in Fig. 2), prompting mobile workers to migrate. If labour is immobile, regional unemployment will tend to persist. Blanchard and Katz argue that the first pattern fits the US case, while in Europe lack of

⁵ We have neglected the case where wages are flexible and capital is mobile. In this case, the fall in wages to A' would prompt capital to move into the region until the labor demand is shifted back to its original position. This is obviously not what we find in Europe, where idiosyncratic shocks are known to have persistent effects on unemployment. However, this is not what we find in the US either, where idiosyncratic shocks tend also to have persistent effects on total employment. The inescapable conclusion seems to be that both in Europe and in the US either wages are not very flexible or capital is not highly mobile. If we were in a situation with flexible wages and mobile capital, regional shocks would not have persistent effects.

labour mobility is associated with high unemployment persistence. The issue does not arise only at the regional level. The adoption of a common currency in 12 European countries means that exchange rate fluctuations can no longer be used to cushion national economies from the impact of idiosyncratic shocks. In the absence of both labour mobility and wage flexibility, unemployment may then tend to be quite persistent at the national level as well.

d) is migration an unmitigated blessing ?

Even in the Blanchard and Katz framework, factor mobility is not necessarily a full blessing. We just need to allow for labour market distortions to show that greater factor mobility will not necessarily be associated with a better regional outcome. In what follows we consider a number of such cases ⁶. We argue that, in the presence of labour market distortions, labour market reforms are therefore key to ensure that greater factor mobility is truly beneficial.

- a) The regional wage curve. Consider the traditional labour model where trade unions set the wage as a function of unemployment. In fig. 3, we represent the labour market equilibrium as the intersection of a standard labour demand schedule (LL) and a wage curve (ww). In the absence of factor mobility, figure 3 could also be used to represent the labour market equilibrium at the regional level. Adding factor mobility to the picture is however likely to modify the wage unemployment trade off: indeed, for any given level of wages, a larger flow of immigration (emigration) will be associated with a higher (lower) unemployment rate. This will affect the position of the wage curve. Consider first the case of the more advanced region (the North). An increase in the wage there would make the North a more attractive destination for potential migrants, but would also raise unemployment with a negative impact on the propensity to immigrate. If migration is relatively more responsive to wages than to unemployment, an increase in wages in the North would then have a more pronounced impact on unemployment compared to the no migration case. As a result, the wage schedule would shift to the left resulting in a lower equilibrium wage. The analysis for the backward region in the South could proceed along fairly similar lines. One additional consideration is however in order. Suppose – as in Obstfeld and Peri (1999) – that, say for social reasons, regional policy is geared to keep unemployment in the South within acceptable bounds and this is achieved through the creation of new public sector or public enterprises jobs. National trade unions will therefore be much less concerned about the

⁶ The models are only briefly sketched in the text. See the appendix for a more comprehensive presentation.

impact of higher Southern wages on unemployment there. Moreover, they will have an incentive to raise wages in the South simply to discourage migration toward the North. Summing up, under plausible conditions, factor mobility could well result in a higher wage in the South and in a lower wage in the North, thereby exacerbating regional disparities in labour demand. The policy message is fairly simple: greater factor mobility may not be of much help if it does not come with adequate reforms in the functioning of the labour market.

- b) The impact on the reservation wage. Consider a two sector model with a formal unionized sector and an informal sector. In the simplest monopoly union model, union wages will be determined as a mark-up on the informal sector wage. However, because of decreasing returns to scale, the wage in the informal sector is assumed to be a function of aggregate labour supply and, hence, of migration. Let w^*_i be the reservation wage in region i in the absence of migration. Suppose now that migration takes place only between the informal sectors in the two regions. A larger flow of migration from the South toward the North would lower the informal wage in the North and raise it in the South. In equilibrium, the reservation wage in each region will be a linear combination of w^*_N and w^*_S . If we further assume that $w^*_N > w^*_S$, we can easily see that, compared to the no migration case, the equilibrium wage will be lower in the North and higher in the South.
- c) The role of capital mobility. We have so far focussed mostly on labour mobility, while acknowledging that capital mobility may also play a crucial role in fostering convergence. However, this is not necessarily true in presence of labour market distortions. Consider for instance the case of a national trade union that act as a discriminating monopolist and must set wages in both the backward and the advanced region. With no capital mobility, regional wages will be set according to local labour market conditions. If however firms are able to shift production across regions as a function of relative regional costs, then labour demand in each region will be a positive function of the wage in the other region. In words, employments in the two region substitute for each other, i.e. an increase in w_i prompts firms to move to the other region. Following standard multiproduct monopolist theory (see Tirole, 1989, p. 70), a national trade union would set both regional at a relatively higher level compared to the case of immobile firms. Moreover, as argued in Faini (1999), there are good reasons to believe that the wage rate will increase more in the South than in the North, with an ultimate negative impact on employment convergence.

By and large, the message of all these models is very simple. Factor mobility is not an unmitigated blessing. If labour market distortions are pervasive, greater labour or capital mobility may well act to strengthen the impact of such distortions. The policy implications of course is not to give up on the objective of lowering the barriers to factor mobility, but to address existing labour and product market distortions as well. In the first model, for instance, policy-makers should make a clear commitment not to offer public sector jobs to compensate for the employment depressing impact of unionized wages. Similarly, fostering regional rather than national wage setting – a measure repeatedly advocated by the Broad Economic Policy Guidelines issued by the European Council - would work some way in alleviating the distortions associated with a multiregional monopoly union.

3. The evidence on convergence and mobility

The basic facts about regional convergence in Europe are well-known and only need to be briefly mentioned at this stage. First, convergence among regions – at the NUTS2 level – has not progressed in the last decade. Even if we exclude the new German Länder, the standard deviation across regions of GDP per head in PPS fluctuated around 28.5 between 1995 and 2000 and around 26.5 in the first part of the decade (the two series are not comparable). Second, cohesion countries did significantly better than the EU average. From table 1, we see that from 1988 to 2001 GDP per head rose steadily relatively to the EU average in all four cohesion countries, with Ireland overtaking – at least in GDP terms – the rest of the Union. Portugal slippages in 2000 owes most to macroeconomic imbalances. Similarly, the Greek figure for 2001 reflects the new population census. The third main finding is that objective 1 region performed somewhat less satisfactorily, particularly so in non cohesion countries (Table 2).

Taken together, these findings highlight the contrast between the experience of cohesion countries - where regional inequalities in productivity and unemployment conditions are more limited and, as a result, even national wage setting would not be much of a nuisance – and the cases of Italy and, to some extent, also Germany – where large regional disparities together with the prevalence of national wage setting are more likely to penalize the backward regions in an otherwise relatively prosperous economy. They seem to suggest therefore that labour market distortions played a non negligible role in affecting the regional convergence process. The data in table 2 broadly conform to this pattern.

The hesitant progress toward convergence is confirmed by the standard graphical representation where regions are ranked on the vertical axis as a function of their growth performance and on the horizontal axis as a function of their starting level of income. The origin is defined to coincide with the EU, namely a region on the origin would have the same initial level of income and the same growth performance as the EU. For convergence to occur, a region must be located either in the second quadrant (with a higher starting point and a lower growth) or in the fourth quadrant (with a lower starting point but a better growth performance). We consider two periods (1980-89 and 1990-99) and two indicators (GDP per capita and labour productivity). Our graphical evidence (figures 4a-d) shows that convergence was more pronounced during the first period. We also see that convergence in labour productivity was more significant than for GDP per capita. Recalling that GDP per capita is identically equal to labour productivity times the employment rate we interpret this finding as showing that employment rates have been broadly diverging and take this result as further evidence of the impact of labour market conditions in determining regional performance. A fairly intriguing finding is that on average only half of the observations fall in the two convergence quadrants. The percentage is somewhat higher when convergence is measured in terms of labour productivity (with 56 and 55 percent of regions converging in the eighties and in the nineties respectively). For income per capita, the percentage of regions in the “right” quadrants is somewhat lower, 51 and 47 per cent in the first and in the second decade. Overall, therefore, around half of the regions have been on a divergent path, prompting many researchers (Boldrin and Canova, 2001) to conclude that regional policy has been largely ineffective..

Table 3 provides further – perhaps unneeded - evidence that mobility is substantially lower in the EU than in other OECD countries. The data must be treated with some caution given that regional entities are not typically comparable across countries. Still, they show that, with the exception of the UK, the conventional wisdom of a limited mobility in Europe happens, as it often does, to be true. The most striking facts are the low mobility and the limited regional wage dispersion in countries such as Italy and Belgium – and also to a lesser extent in Germany and Spain – despite the very pronounced disparities in regional unemployment. Once again, this finding highlights the crucial role of labour market conditions in affecting the regional outcome.

For the purpose of this paper, the central question is whether greater mobility is associated with convergence. We speak about association, knowing too well that causation could run both ways. While, as predicted by the standard growth model, factor mobility should boost the speed of the

convergence process, it could well be that regions that suffer from poor growth performance will be characterized by large outward migration. In the latter case, however, the relationship would be negatively signed. A finding of a positive and significant relationship could then be safely interpreted as indicating that the causality runs from factor mobility to convergence.

In what follows we use two different measures of mobility: the rate of net outward migration and the total migration turnover, both as a ratio to the regional population. The second indicator is meant to capture the positive income effects that a significant two-way flow of workers with other regions may entail. We focus on four countries – Italy, Germany, Spain, and the UK – that exhibit significant regional disparities and ask whether mobility and convergence are positively correlated. Table 4 reports some descriptive evidence. Again we distinguish four different cases: a) regions that are initially relatively poor and grow at a faster rate than the EU, b) regions that are initially relatively rich and grow at a slower pace than the EU, c) regions that are initially relatively poor and grow at a slower pace than the EU, d) regions that are initially relatively rich and grow at a faster rate than the EU. The first two groups can be said to exhibit convergence, the other two do not. For each of these four cases, we show in table 4 the median⁷ value of our two mobility indicators for the eighties and for the nineties⁸.

Consider first the rate of net outward migration during the eighties. The first row of Table 4 shows that this variable is positive for regions in the first group and negative for regions in the second category. This is exactly what the standard convergence model would predict. If countries are initially poor they will lose population but will grow faster and tend to converge. The opposite holds for initially rich countries in the second group. We also see that for regions that are in the wrong quadrant and fail therefore to converge, migration has the wrong sign. For instance, non converging poor regions attract population (Andalusia?). By and large, the pattern in the first line of table 4 is fairly consistent with our initial expectation. Unfortunately, however, this same pattern is not replicated in the second decade.

Regarding total migration turnover, we see that, as expected, the median value of the indicator is somewhat higher for the regions that happen to converge, suggesting that also total rather than simply net migration may have a role to play in fostering convergence.

⁷ Looking at the mean rather than at the median would not change in any way the gist of our results.

⁸ Given the exceedingly small number of observations, we do not report the relevant statistics for the regions belonging to the fourth group.

We can try to summarize the findings so far through some simple econometric analysis. In what follows, we define a dichotomic variable that takes a value of 1 if the region happens to converge (i.e. if it belongs to the first two groups) and zero otherwise. We then estimate a logit model as a function of our mobility indicator and a set of dummy variables that capture whether the observation corresponds to an objective 1 region or to a cohesion country. The results are presented in Table 5. While they are not intended to uncover causality, they nonetheless show that at least during the eighties mobility was positively associated with productivity convergence. The relationship weakens considerably during the nineties and is at any rate much less strong for net migration than for total migration turnover. The reason seems to be that while convergence patterns have shifted somewhat, the pattern of regional migrations appears to quite persistent (fig. 5). Finally, we also fail to detect a significant differential effect for objective 1 regions or for regions belonging to cohesion countries.

4. Implications for EU enlargement

As noted in the European Commission second progress report on economic and social cohesion, enlargement will radically change the landscape of regional disparities within the EU. First, the gap between the number of people living in regions with a per capita GDP below 75 percent of the EU average will increase from 68 million – 18 percent of the total population in EU15 – to 116 million, 25 percent of the enlarged union population. Second, disparities will rise substantially, with the gap in per capita GDP between the 10 percent of population living in the most prosperous regions and the 10 percent of living in the least favoured ones more than doubling.

Enlargement will also aggravate the pattern of labour market problems. In 2001, unemployment rates in accession countries stood at 14.5 percent, almost double the already high level, 7.5 percent, in EU15. Additionally, long term unemployment accounted for a larger share of total unemployment in accession countries than in the EU15, 51.4 versus 42.6 percent. Finally, both female and youth unemployment also stood at significantly high levels. Taken together, these figures suggest that structural labour market problems are pervasive in accession countries.

A combination of a substantial income gap and significant weaknesses in the structure of labour markets may hamper the convergence process in accession countries. It will require that regional policy makes a much more determined effort than in the past to tackle existing distortions.

Achieving rapid convergence toward the EU norm will not be the only objective of regional policy for accession countries. Addressing internal disparities will also represent a significant challenge⁹. Table 6 shows that interregional differentials in both income per capita and in unemployment rates are relatively large in the larger accession countries, even when compared to a country like Italy with a long standing and pervasive history of regional disparities. For instance, the coefficient of variation of per capita GDP was higher in the accession countries, with the only exception of Poland, than in Italy. The dispersion of regional unemployment rates however was considerably lower than in Italy, but substantially large relatively to EU standards (see also table 3). By and large, therefore, accession countries are not immune from problems of internal regional disparities. The findings in the previous section suggest that fostering internal labour mobility may go some way in tackling this problem.

5. Conclusions

Theory is fundamentally ambiguous as to the impact of factor mobility on convergence. Even if we disregard the new geography approach and focus on more traditional models, we find that mobility is not an unmitigated blessing. Indeed, in the presence of widespread labour market distortions, greater factor mobility may worsen the income and employment plights of relatively poor regions. However, as already underscored in the text, this finding must not be taken – by no means – to imply that the removal of the barriers to factor mobility should not be a priority on the agenda of policy-makers. Quite the opposite; our results underscore the need to tackle at the same time both the obstacles to mobility and the most severe distortions in the labour market.

Given the ambiguities of theory, one is forced to resort to empirical analysis. The latter however is not free of pitfalls. We have seen in particular how the causation between mobility and convergence could run both way. Nonetheless, the finding of a positive relationship can be interpreted as a relative safe indication that greater mobility favour convergence. Our results provide some support to this view. They also highlight that even accession countries may need to foster mobility to address their own, non negligible, regional disparities. Still, the preliminary nature of our findings and the relatively limited sample of our analysis call however for considerable caution in drawing any firm conclusions.

⁹ See Iara and Traistaru (2003) for an analysis of regional disparities in Hungary.

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Table 1

Relative GDP in cohesion countries, 1988-2001

(in PPS, per head, EU15 = 100)

	Greece	Spain	Ireland	Portugal
1988	58.3	72.5	63.8	59.2
1991	60.1	78.7	74.7	63.8
1994	65.2	78.1	90.7	69.5
1997	65.9	79.9	103.7	73.3
2000	67.7	82.2	115.2	68.0
2001	64.7*	84.1	117.9	69.0

*: provisional figure

Source: European Commission (2003)

Table 2

Relative GDP in objective 1 regions, 1995-2000

(in PPS, per head, EU15 = 100)

Objective 1 regions in:	1995	2000
Belgium	76	71
Germany	74	72
Greece	66	68
Spain	65	69
France	59	59
Ireland	93	115
Italy	68	68
Netherlands	83	80
Austria	71	73
Portugal	70	68
UK	74	74
All objective 1 regions	70	71

Source: European Commission (2003)

Table 3

Regional wage dispersion and migration in selected OECD countries

	Coefficient of variation of regional hourly earnings 1995	Gross internal migration (share of population)	Coefficient of variation of regional unemployment
Belgium	8.0	1.27	49
Germany	13.7	1.24	48
Spain	11.7	0.60	35
France	18.4	1.49	22
Italy	9.4	0.50	68
Netherlands	4.9	1.61	24
Portugal	19.5	0.54	30
Sweden	19.3	1.61	21
UK	19.3	2.30	43
US	16.7	2.22	24

Table 4

Convergence patterns and mobility indicators

(median values)

	Convergent and poor	Convergent and rich	Divergent and poor
Net emigration rate 1980	0.19	-0.78	-0.97
Net emigration rate 1990	-0.19	-0.56	0.38
Migration turnover 1980	11.6	12.6	10.8
Migration turnover 1990	14.2	13.8	11.4

Table 5

Convergence and mobility: a logit analysis

Dep. Variable: 1 if region converges, 0 otherwise

	1980	1990	1980	1990
Obj. 1 dummy	0.27	0.45	0.75	0.67
	(0.62)	(0.55)	(0.79)	(0.64)
Cohesion dummy	0.70	0.64	0.36	0.01
	((0.64)	(0.58)	(0.76)	(0.64)
Migration turnover	0.04	0.003		
	(0.017)	(0.013)		
Net migration			0.25	0.01
			(0.19)	(0.10)
N. of observations	54	55	48	49

Robust standard errors in parenthesis

Table 6

Regional disparities in the accession countries

(coefficient of variation)

	Czech Repub.	Hungary	Poland	Slovak Rep.	Italy
Per capita GDP	46	36	22	55	26
Unemployment	45	55	18	38	76

Source: own calculations from EC (2003)

Figure 1a
Regional polarization

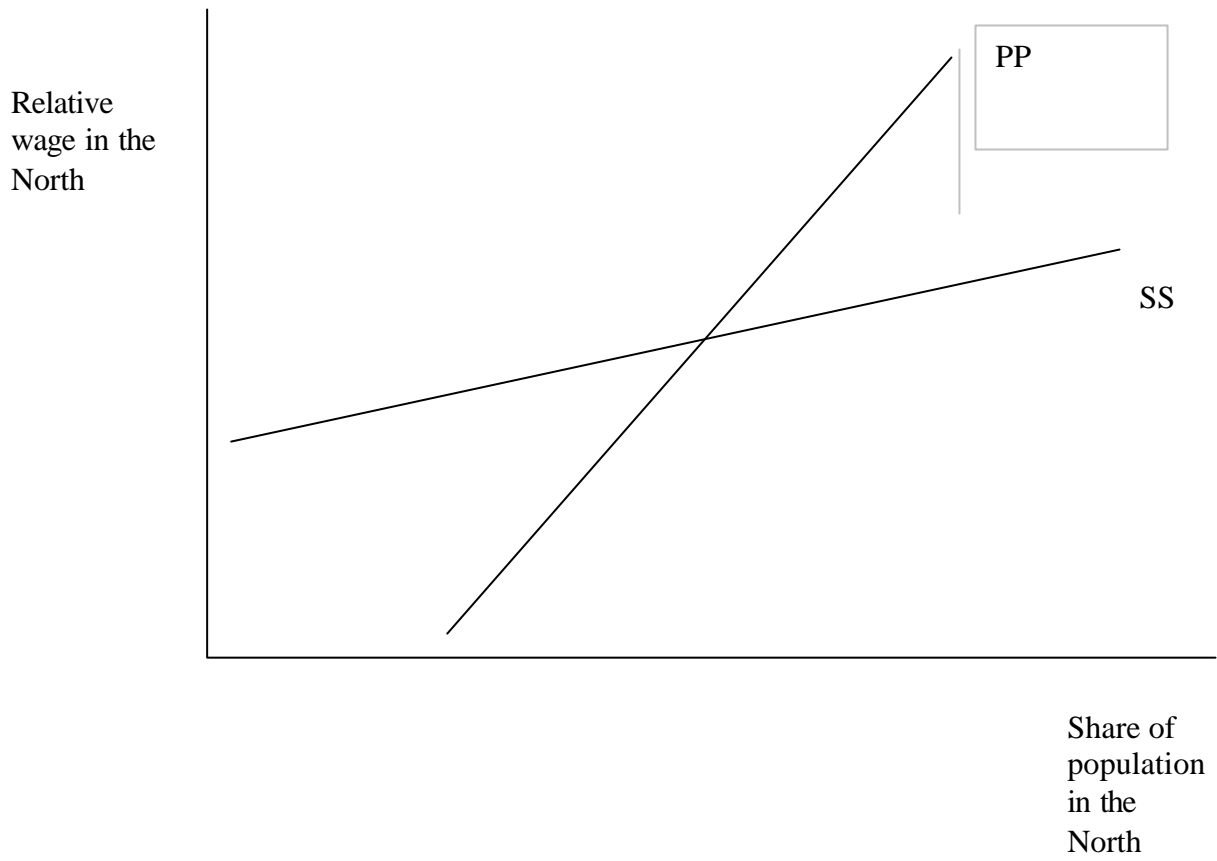


Figure 1b
Regional dispersion

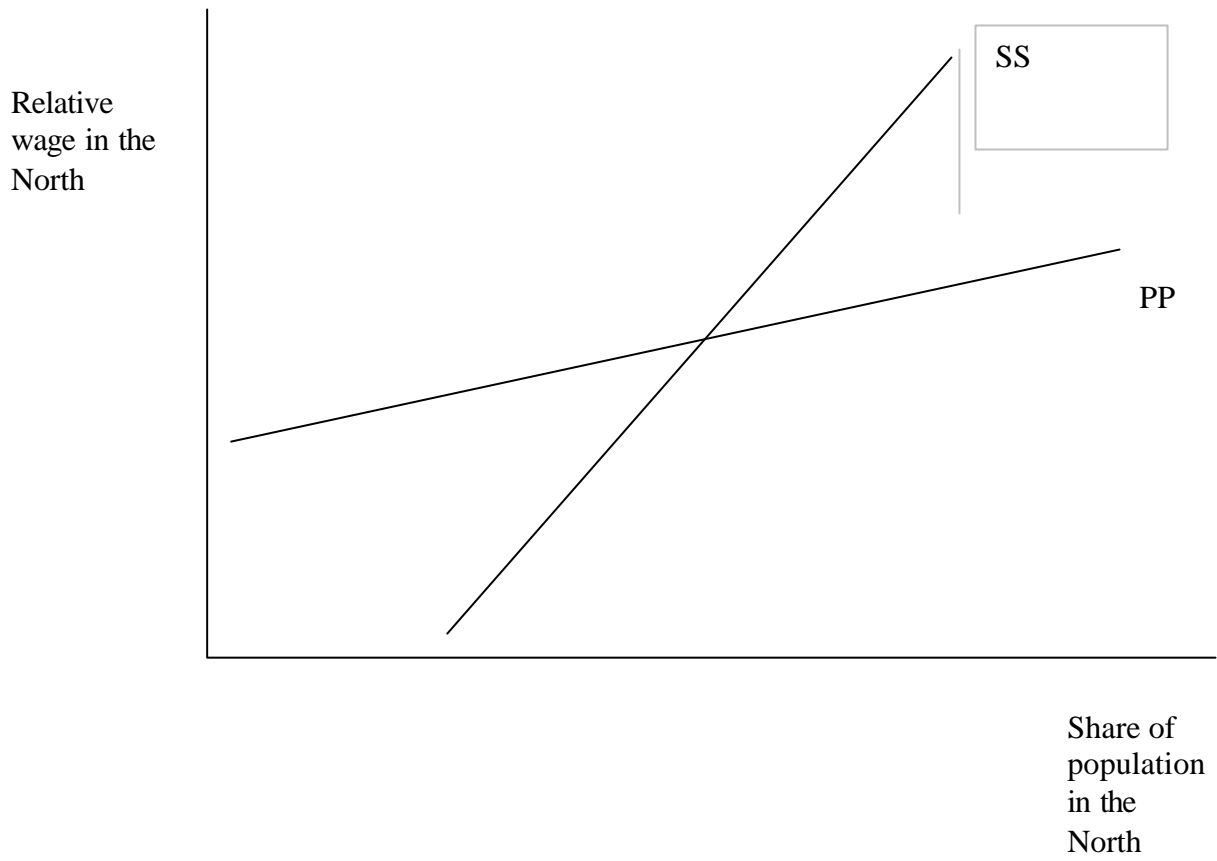


Figure 2

The effect of a labor demand shock

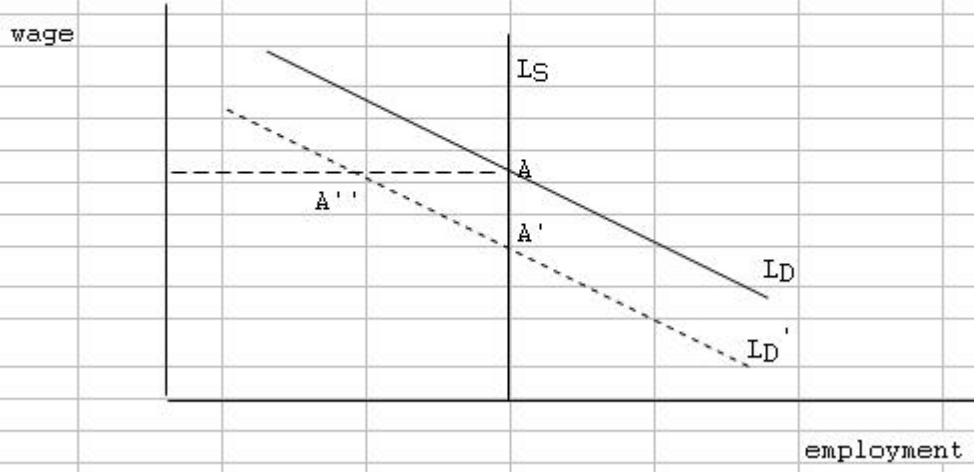


Figure 3

Labour market equilibrium

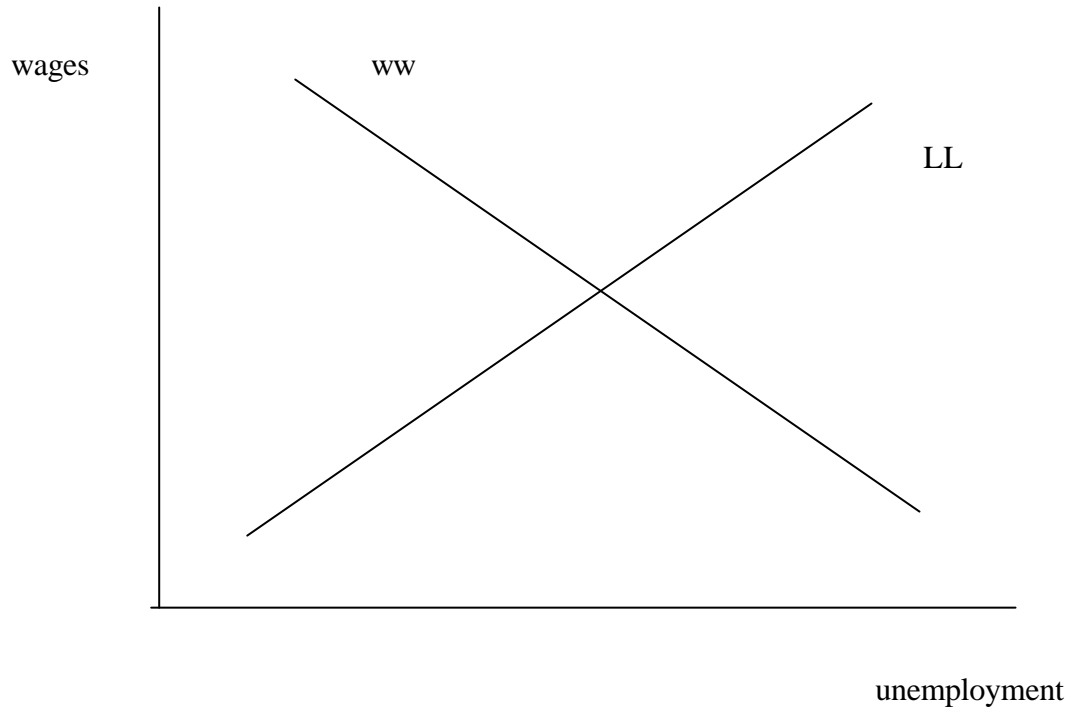


Figure 4 a

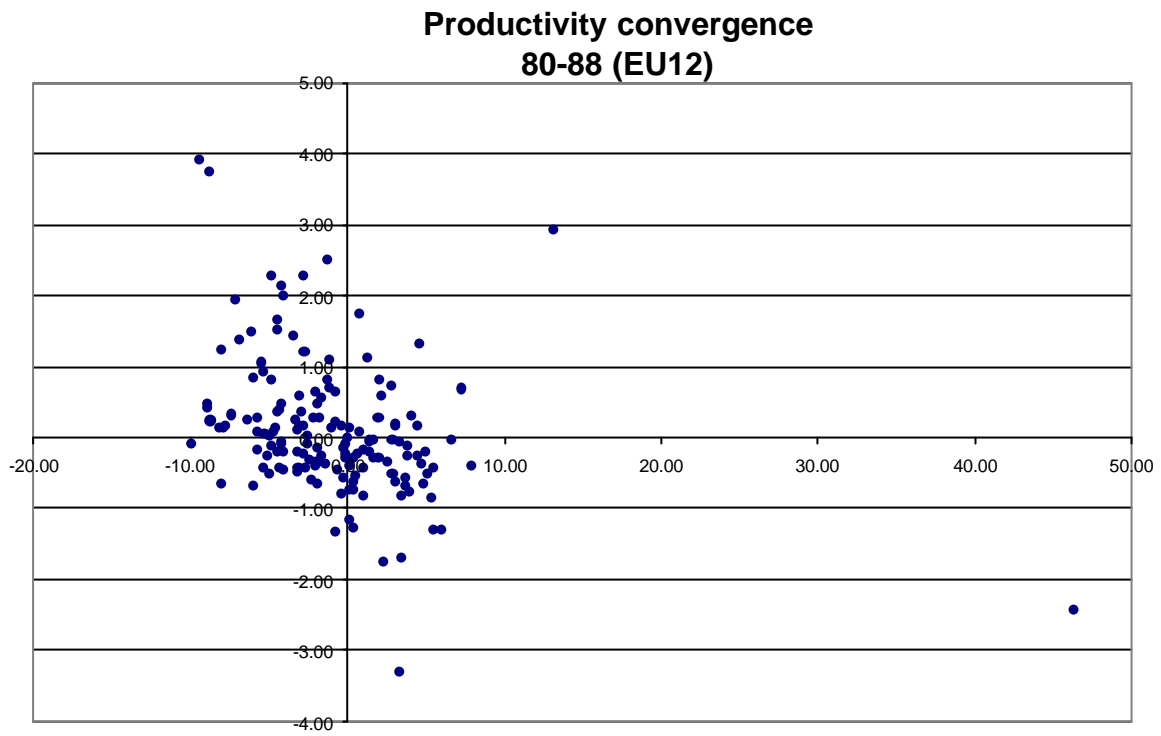


Figure 4b

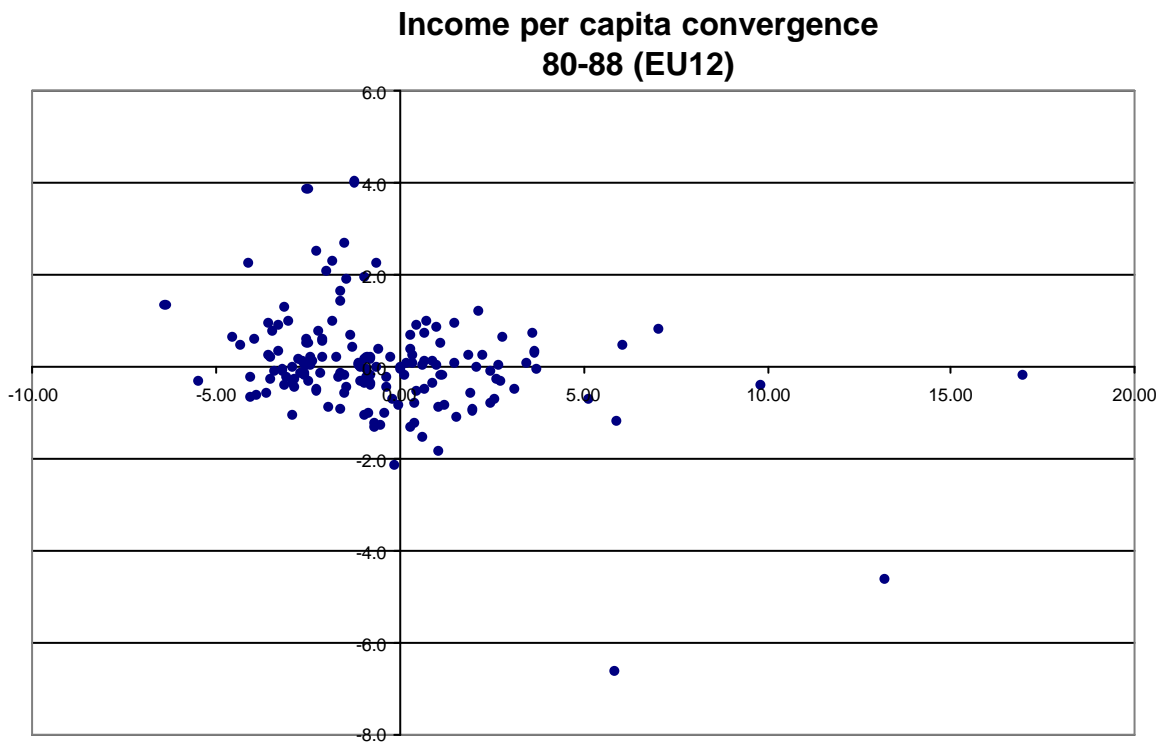


Figure 4c

**Productivity convergence
89-96 (EU12)**

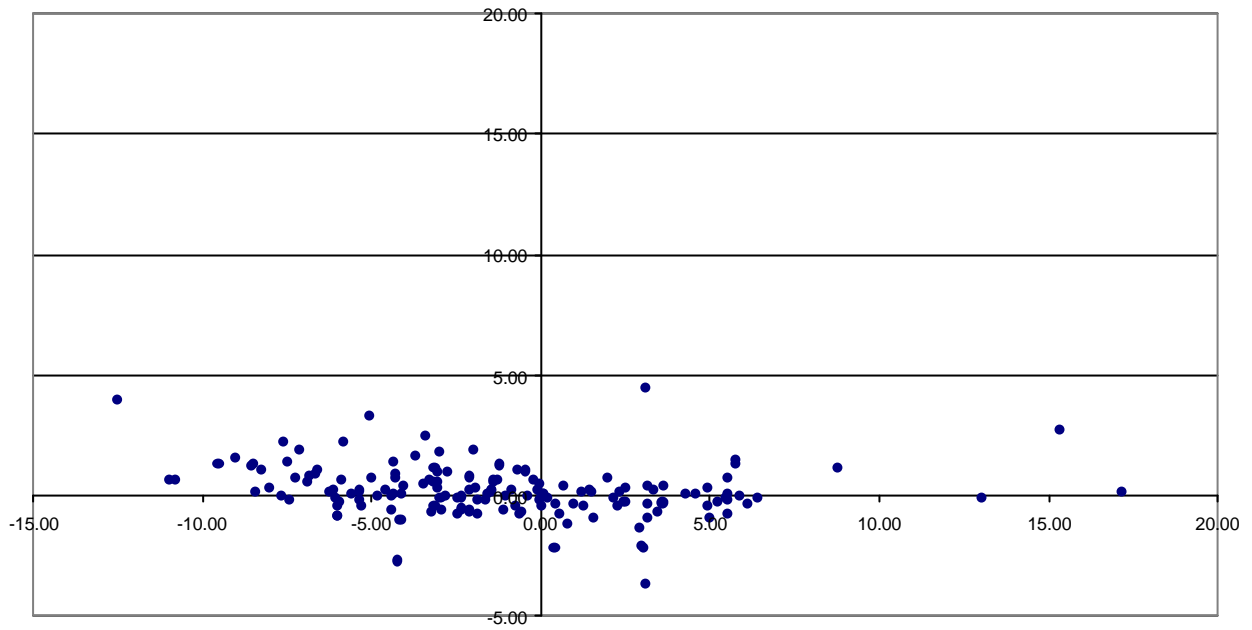


Figure 4d

**Income per capita convergence
90-96 (EU12)**

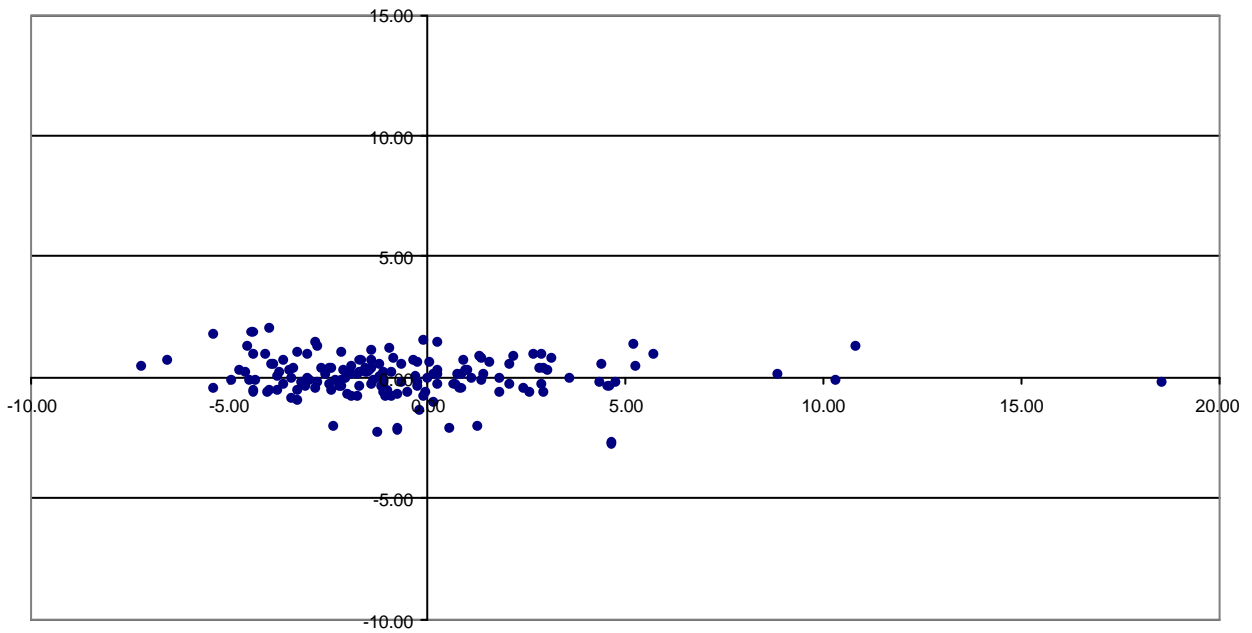


Figure 5 a

Persistence of migration: total turnover

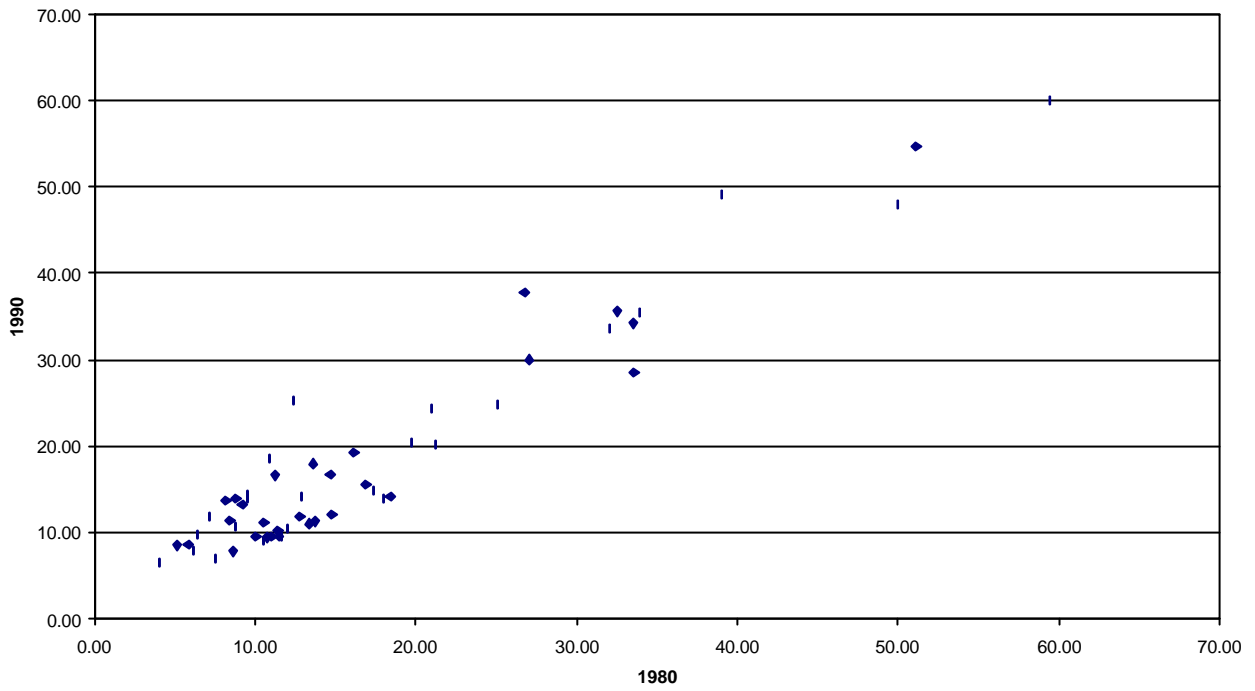


Figure 5b

Migration persistence: net flows

