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EMU And The Industrial Specialization Of European Regions

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EMU AND THE INDUSTRIAL SPECIALISATION OF EUROPEAN REGIONS

**Paper to be presented at the 40th European Congress of the
European Regional Science Association,
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— Preliminary paper / June 2000 —

Abstract:

The formation of the currency union reduces transaction costs thereby increasing interregional trade links, changing the centrality of regions relative to other regions, and increasing (price) competition between regions. Each of these lines of influence affects the interregional division of labour, i.e., the industrial specialisation of regions. In an opposite direction, industrial specialisation of regions itself may significantly affect the susceptibility of regions to region-specific shocks, and the centre-periphery differential of regional incomes. It is influenced considerably by the integration process, and it determines what the results of this process on regions are. However, it is not yet clear what exactly will be the results of EMU with respect to specialisation since theoretical considerations (particularly on the base of the “new economic geography”) lead to rather contradicting predictions and empirical evidence on the process of European integration so far is sparse and inconclusive.

1. Introduction

The European Monetary Union (EMU) is a major institutional reform that substantially changes all kinds of economic relations. Thus European regions are likely to be affected, too. This raises the question whether all European regions will participate in the expected welfare benefits to a similar degree. Potentially, the integration process could also render an increased instability of regional development and rising divergence of regional incomes. Hence, there might be winners and losers to the integration process.

This paper is to discuss the relationship of the creation of EMU and the division of labour between European regions. It is likely to be a mutual relationship: On the one hand, EMU will deeply influence the division of labour and, hence the location of industries in space and the specialisation of regions. On the other hand, the way the division of labour is organised in European space will at least partially decide on the effects EMU is going to have on European regions. In section 2 of this paper I will explain why, in my view, regional specialisation matters when assessing the likely regional effects of EMU. Section 3 contains a review of theoretical approaches for explaining industrial location and regional specialisation. Section 4 reviews the empirical evidence which exists so far on regional specialisation (including some preliminary own results). Section 5 concludes in that it discusses some perspectives of EMU for European regions.

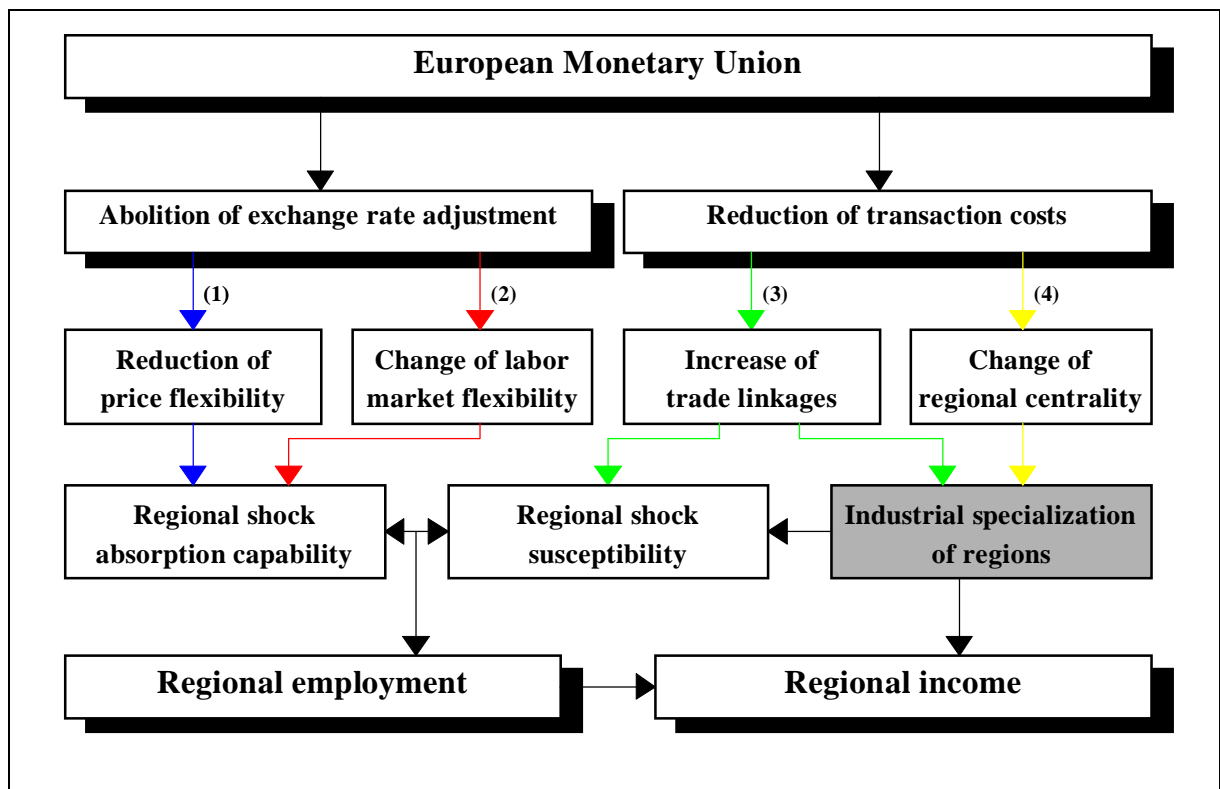
2. Regional specialisation— a clue determinant for EMU effects on regions

The creation of the European Monetary Union results in two major effects: it eliminates the possibility of adjusting national nominal exchange rates and it reduces transaction costs connected to the existence of different currencies (i.e. costs of information, conversion and hedging). These two effects exert several rather divergent influences on regional employment and on regional incomes. However, analysing the divergent lines of influence one finds the way regions are specialised on certain industries to be a clue determinant in several of these. In order to prove this I would like to show, in a somewhat stylised way, four major lines of influence (figure 1).

(1) Reduction of price flexibility: To start with, the abolition of national exchange rates by reducing the possibilities of quick price responses on asymmetric shocks particularly influences the performance of regional labour markets. Within the analytical framework of the *theory of optimal currency areas* it is maintained that exchange rates are useful tools for macroeconomics adjustment in the case of asymmetric shocks. Such shocks require a

response of real exchange rates, either by adjusting nominal exchange rates or else by adjusting nominal goods and factor prices. If nominal wages and prices are sticky and factor mobility is low, the adjustment of nominal exchange rates may be crucial in order to evade an increase of unemployment. Accordingly, a currency union reduces the opportunities to react to shocks by adjusting exchange rates and this endangers the risk of unemployment.

Figure 1 — Effects of EMU on income and employment of European regions — four major lines of influences



Source: Own presentation

With EMU, of course, it is not the regions but the states that lose the possibility of nominal exchange rate adjustments. However, this also reduces the capabilities of regions to react to shocks, at least if seen in connection with the loss of autarky in the field of monetary policy. For adjustments of the external nominal exchange rate can help changing internal price relations: Suppose a large region of a country is hit by a severe asymmetric shock (e.g., because of a depression in a branch on which the region is highly specialised) that would require a decrease of goods and factor prices in this particular region. If wages and prices are sticky downward and all other mechanisms of adjustment (e.g., factor mobility) are also hampered, a way out would be the depreciation of the exchange rate of the particular country and hence a real decrease of all wages and prices within that country. As

a consequence, goods and factors prices in those parts that are not hit to a similar degree by this shock are too low to be in equilibrium and increase. If due to a certain degree of money illusion the real wage loss by the import-induced inflation in the shocked region is not equalised, than relative prices and goods within the country have been changed by way of a nominal exchange rate depreciation.

To put it more broadly: in countries with few flexibility grades and rather divergent regional structures, another monetary and exchange rate policy might be useful than in quite flexible and homogenous countries. A certain degree of inflation may in the former countries help overcoming the downward flexibility constraints – though only as long as a certain degree of money illusion persists (cf. Mauro, Prasad, Spilimbergo 1999). The inversion of this conclusion yields that the loss of monetary and exchange rate autarky may duly put additional strain on the need to enhance labour market flexibility in general and, more specifically, on regional labour markets, too.¹

(2) *Change of labour market flexibility*: This leads to a second line of influence: The additional strain put forward by EMU may foster changes of European labour markets on the national as well as on the regional level. Up to now, in preparing for EMU, steps in opposing directions have been taken by the European administration and governments of the member states. On the one hand, some efforts, particularly on the European level, tend to stifle competition. By claiming the need of a ‘social dimension’ of EMU in order to protect European workers against ‘unfair’ competition and ‘wage dumping’, the EU opted for European minimum standards for working conditions. Thereby, the capabilities of regions to absorb asymmetric shocks without an increase of unemployment have been reduced. On the other hand, the national governments of the member states have, at rather different scope, taken measures to deregulate and decentralise their labour markets, e.g., by a reduction in the stringency of collective wage agreements, and by increasing working time flexibility. Although up to now, in most countries, these attempts at reforming labour market institutions have been rather half-hearted, future progress in this field may spur regional labour market flexibility and increase the shock absorbing capabilities. This would

¹ Looking for support for these theses, one finds some studies that underline the regional differentiated effects of exchange rate and monetary policies. Thus, Carlino and DeFina (1998) and Ramaswamy and Sloek (1997) have found monetary policy by itself to create asymmetric shocks to the regions of the currency area concerned, as it is not neutral in its effects. Also, Carlino, Cody, Voith (1990) and Milton (1994) calculated the exchange rate susceptibility of regions finding a severe impact of exchange rate changes on regional growth rates and export performances. An observation of the OECD Economic Survey (1989/90) that depreciations resulted in greater real income losses for Italy’s Mezzogiorno than for its North, due to the South’s low export propensity and high import dependency, does not contradict the above argument. These income losses may have been necessary in order to avoid an even lower export rate or higher import rate and thereby even larger unemployment.

particularly be true, if an increase of institutional variety within national employment systems would allow for more appropriate reactions on region-specific shocks.

In fact, the significance of regional non-adjustment for the explanation even of current regional unemployment in Europe has been stressed repeatedly (more recently by Adam 1996, Obstfeld and Peri 1998, Dohse, Krieger-Boden, and Soltwedel 1999).² A major feature is that wage policy at large is not region-specific; productivity growth in the prosperous regions creates opportunities for wage increases which are copied by the less successful regions raising their unit labour costs. Moreover, institutions such as welfare and unemployment benefit systems, minimum wages, dismissal protection laws, working-hour regulations, even regulations on shopping hours, are mostly shaped at the national level and are usually uniform within a given country. Hence, they produce the same side-costs of labour in all regions irrespective of different regional records of labour productivity. In EMU, due to the loss of monetary and exchange rate autarky (see above influence line 1), the need for an adjustment at regional labour markets in the case of asymmetric shocks becomes even more urgent. Whether a broader regional diversity of labour market institutions can be achieved (e.g., by opt-out clauses to nation-wide regulations or by a decentralisation of institutions and institutional competition) or whether pressures toward greater Europe-wide uniformity of labour market institutions will succeed, is thus of major significance for the future evolution of regional unemployment.

(3) *Increase of trade linkages:* Turning to the effects of the reduction of transaction costs by EMU, a third line of influence on regions may be sketched. As EMU reduces the number of currencies it decreases transaction costs within the area concerned. This decrease reduces the economic distances between regions and is likely to influence deeply the extent and the direction of trade flows. There is no doubt in academic discussions that trade between EMU member states will be intensified furthermore. By this process, the symmetry of shocks between regions may rise: any shock that will hit a certain region or country will be passed on to all other regions and countries much more quickly than before by way of increased backward and forward trade linkages. This could contribute to a synchronisation of regional business cycles within EMU (Frankel and Rose 1998). The regional susceptibility to asymmetric shocks would decline, no enhancement of regional shock absorption capabilities would be needed, and a Europe-wide reaction on shocks would suffice to offset adverse effects on (regional) employment. If this would prove true, the criteria of the theory of optimum currency areas would depend on the accomplished

² The most elucidating examples to this respect are East Germany and the Italian Mezzogiorno. In both cases, the devastating high unemployment rates of the problem regions compared to other parts of the country are not reflected in a correspondingly differentiated wage structure.

state of integration (i.e. be endogenous) and the monetary union would create its own success.

Yet, there are still further effects to be considered. The intensification of trade has implications on the regional division of labour. On the one hand, integration reduces the degree of autarky of each country involved in the process, as it increases the number of suppliers for each specific good, an aspect that has been stressed particularly in the older literature on integration in the tradition of Schumpeter. Thereby, monopolistic or oligopolistic markets become less likely, the price competition increases, the efficiency of the production process rises, output increases, and the opportunities for gaining producer's rents are reduced. By this increased competition, the location of industries and the regional specialisation is affected, and regional incomes may rise. What is more, integration impels producers to force innovations in order to avoid the increasing price competition, and hence even spurs the growth rate of regional incomes. As can be drawn from the "theory of endogenous growth", this process is supported by the increase of efficiency in the R&D sector (e.g. by the avoidance of redundancy) which makes a higher innovation rate attainable. On the other hand, the general increase of trade links will render possible to take advantage of scale economies which once more affects the regional division of labour and the specialisation of regions. As the "new economic geography" suggests, a reduction of transaction costs changes the location of industries, yielding concentration and/or deconcentration processes of certain industries. The degree of industrial specialisation of regions, however, influences their shock susceptibility: The more specialised a region is on a specific branch, the more it is hit by sector-specific shocks of this very branch. Thus, if EMU leads to an increase of specialisation of regions, as for instance Krugman (1993) thinks, this may impede *cet. par.* the record of regional employment. By contrast, an increase of diversification of the regions within EMU, which is expected for instance by Emerson et al. (1990) and Frankel and Rose (1998), may improve it. Moreover, the kind of industrial specialisation of a region also influences the regional income, since different industrial branches in a world of non-homogenous products and oligopolistic markets offer different opportunities of gaining income.

(4) *Change of regional centrality:* In this process of re-arranging the location of industries and the specialisation of regions, each specific region will have to find its specific place, and much will depend on where this region is situated geographically: As the inner borders within EMU loose significance, some regions that are situated at the periphery of their respective countries but at the centre of EMU may gain centrality, i.e. the capability to take advantage of scale economies. Other regions situated at the utmost periphery at external

borders of EMU ought to have less good prospects and may thus lose centrality, particularly such regions that had been central within their former economic entities.

Having sketched out these four lines of influence of EMU on European regions, it has to be underlined that this, of course, is no complete list of influences. For instance, *political interventions* also are likely to play a role. Thus we observe a broad discussion on the need of new accommodating stability funds (Sachs and Sala-i-Martin 1991, Obstfeld and Peri 1997, von Hagen and Hammond 1998, Belke and Gros 1998) as well as on the need to increase the existing structural funds in order to achieve more cohesion between European regions. We will not go into this discussion here.

Summarising this chapter on the regional effects of EMU on European regions, we find that in the aftermath of EMU regional employment is decisively influenced by the change of the regions exposure to asymmetric shocks and by their capability to cope with these shocks. To some degree but not exclusively regional employment is thereby dependent on the way industrial specialisation of the regions changes. More directly, the change of industrial specialisation decides on regional incomes which are, however, also influenced by the regional employment record. The industrial specialisation of regions is hence of major significance in the process of integration for regional employment as well as for regional incomes. It is influenced considerably by the integration process, and it determines what the results of this process on regions are. Yet, these relations are by no means simple and linear ones. It seems thus much worthwhile, to get a deeper insight in the factors and mechanisms that shape the industrial specialisation of regions.

3. Regional specialisation — what the ‘new economic geography’ tells about it

The theoretical back-ground to considerations on the industrial specialisation of regions is prepared by various strands of theory, e.g., neo-classical trade theory with its comparative advantage approach in the tradition of Ricardo, Heckscher, Ohlin, and Samuelson, location economics in the tradition of von Thünen, Weber, Lösch, and Isard, and polarisation theories in the tradition of Perroux, Myrdal, Hirschman, and Kaldor. Moreover, in recent years the so-called *new economic geography* emerged, linking items of these traditional theories to those of new trade theory. NEG takes interest in the location of industries in space, and more particularly in agglomeration and de-agglomeration processes. As characteristic innovations, NEG takes into consideration scale economies, inhomogeneity of products, and, hence, incomplete markets, transportation or transaction costs, factor mobility and, hence, endogeneity of factor endowments. In the models of NEG, the

regional division of labour and the industrial specialisation of regions is the result of locational decisions. Mobile factors choose their location according to existing centripetal and centrifugal forces (table 1).

The centripetal forces work toward an agglomeration of factors in few economic centres driving a circular cumulative process by which agglomeration tends to get self-reinforcing. They are closely connected to the existence of scale economies and inhomogeneous products. Thus one may distinguish

- technical increasing returns to scale internal to a firm (e.g., due to a depression of fixed costs),
- economies of localisation external to a firm but internal to a certain industry (forward and backward linkages such as a large industry-specific market, proximity to important industry-specific suppliers, supply of specific labour qualifications, or specific knowledge spillovers),
- economies of urbanisation that are purely external (e.g., more general information and knowledge spillovers),
- home market effects and price index effects that are particularly important to NEG models, and that will be explained instantaneously.

Table 1 — Centripetal and centrifugal forces in the new economic geography

Centripetal forces	Centrifugal forces
Technical scale economies (internal to a firm)	Immobile factors
Localisation economies (internal to an industry)	Congestion costs
Urbanisation economies (purely external)	
Home market effect	Price competition effect
Price index effect	

Source: Krugman (1998), own compilation.

By contrast, the centrifugal forces that increase as agglomeration increases act toward a de-agglomeration of factors. Such forces are

- immobile factors whose prices increase as they get increasingly scarce (e.g., ground, sometimes labour),
- congestion costs (e.g., air congestion, sticky traffic, high criminal rates),
- competition effects that are also particularly important to NEG models.

The relationship between centripetal and centrifugal forces is not fixed. Rather, it changes, as the degree of integration increases, or, what is assumed to be the same, as transaction costs decrease. In order to see how the balance of these forces changes in the process of integration it is useful to have a closer look on the mechanism of NEG models (for an excellent survey see Fujita, Krugman and Venables 1999).

NEG models are general equilibrium models without “loose ends”, hence we have goods and labour markets, utility and production functions, incomes, prices, and wages, and conditions on equilibrium. Generally, NEG models assume an economy with two production sectors. The so-called agricultural sector produces one homogenous product with a constant-returns technology on a perfectly competitive market, and the so-called manufacturing sector produces a large variety of non-homogenous products with an increasing returns technology. Due to this IRS technology, each variety is produced exclusively at one location. Concerning goods markets, NEG models usually build on the work of Dixit and Stiglitz (1977) considering a two stages utility function (choice between the agricultural and the manufacturing product / choice between the different varieties of the manufacturing good) and assuming a love for variety of consumers. Transport costs take the form of iceberg costs. Usually, two factors are taken into consideration, one immobile factor called “farmers” producing the homogenous good, and one mobile factor called “workers” producing the manufacturing good. These factors get all income associated to production as profits are excluded. The latter mobile factor is assumed to be the engine of any agglomeration process: due to migrations of this factor, the factor endowment of the destination region is improved which increases its attraction as a location for other manufacturing activities which once more leads to in-migration of workers driving a circular cumulative process.³ Yet, agglomeration only takes place, if the centripetal forces are not outweighed or superimposed by the centrifugal forces.

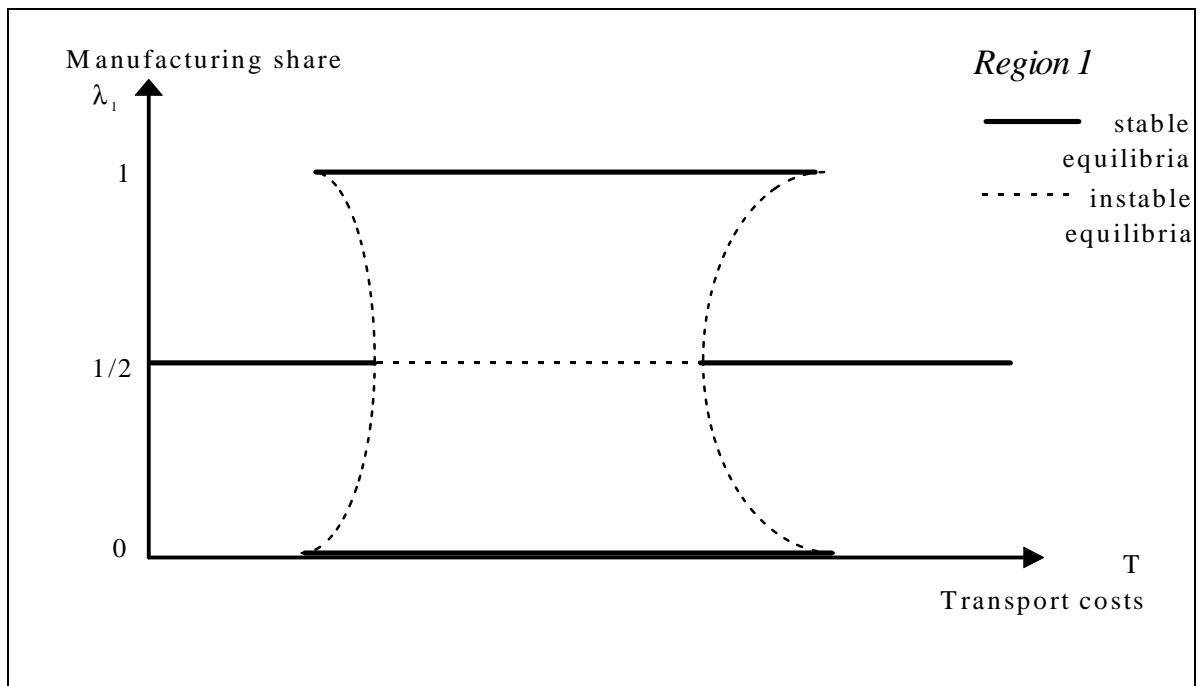
Decisive to the agglomeration process are real wage differentials between regions that determine the migration decision of workers in the NEG world: Workers migrate to the region with the highest real wage. Real wages in a region, however, depend on the scale of the region’s manufacturing sector and on the general level of transport costs in a positive as well as in a negative direction:

³ Some NEG models assume other engines of agglomeration, e.g., migration of firms instead of workers (Venables 1996, Markusen and Venables 1999), or factor accumulation due to endogenous growth.

- The higher a region's share of the manufacturing sector is, the higher are the sales on the home market that can be obtained without any loss to transport costs, and, hence, the higher are its nominal wages and its real wages, too (*home market effect*, centripetal).
- The higher a region's share of the manufacturing sector is, the more of its consumption goods originate from the region itself without having to bear any loss to transport costs, the lower is thus its price index and the higher its real wages (*price index effect*, centripetal).
- The higher a region's share of the manufacturing sector is, however, — and the lower thus its price index —, the higher is the price competition in the region exerting pressure on the level of wages, too, and the lower are hence real wages (*price competition effect*, centrifugal).

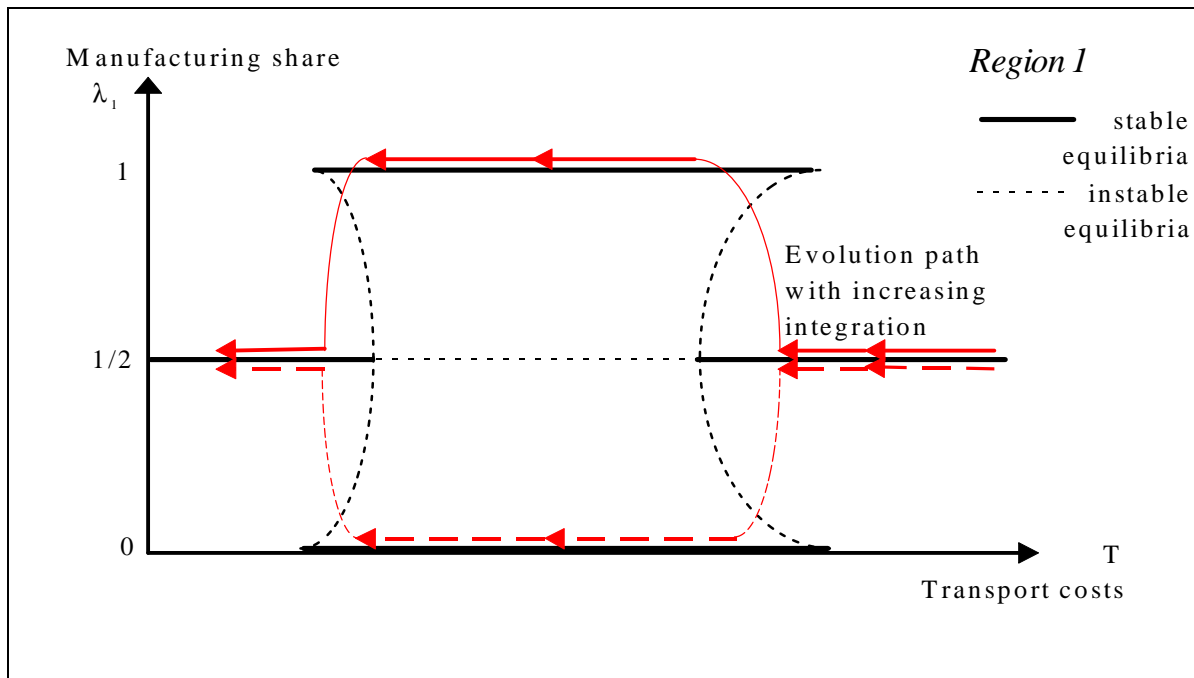
All three effects are the less significant the lower the level of transport costs is. The degree to which these three effects depend on transport costs diverges and depends on the significance of the manufacturing sector as compared to the agricultural sector as well as on the elasticity of substitution between the manufacturing varieties. If we then consider the transport costs to change due to an integration process, the stationary NEG models become dynamic and describe agglomeration as well as de-agglomeration (figure 2a):

Figure 2a — Centrifugal and centripetal forces at different levels of transport costs



Source: Fujita, Krugman, Venables (1999)

Figure 2b — Evolution path with increasing integration — the U-curve



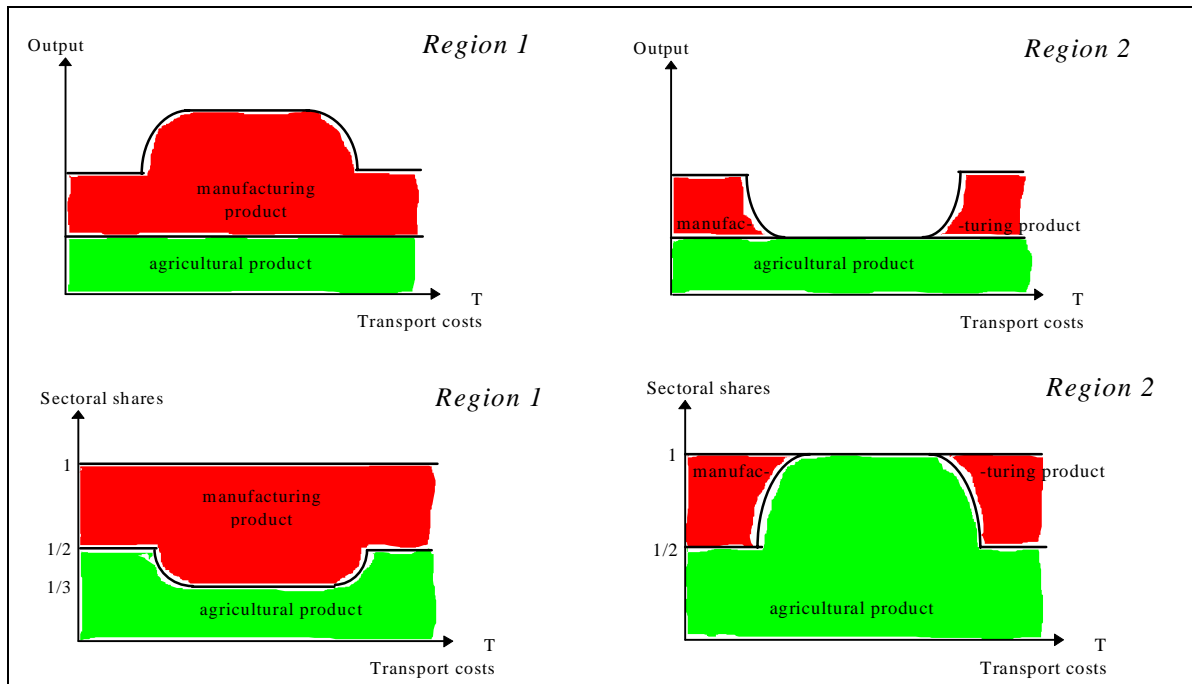
Source: Fujita, Krugman, Venables (1999)-. Ottaviano and Puga (1997)

With transport costs being really high, the competition effect proves to be extremely significant superimposing both other effects. In this case, we get a stable spatial equilibrium, i.e., the symmetric solution where both regions are endowed equally with workers and manufacturing firms. With the transport costs achieving a medium level, the symmetric equilibrium gets unstable, and we get two other stable equilibria with extreme solutions: all workers and firms either concentrated in region 1 or region 2. Finally, with transport costs approaching zero (or with including further centrifugal forces into the model), the outcome may once more be the symmetric solution. In-between, we find two transition zones with five equilibria, three stable and two instable.

Following an evolution that is characterised by increasing integration / decreasing transport costs (figure 2 b), we would start with an autarky situation where manufacturing products are produced symmetricly in both regions. When moving to a situation with medium transport costs the centripetal forces would prevail driving an agglomeration process toward one of the extreme solutions where all manufacturing takes place in just one region. By this process, a core-periphery divide would emerge with the economic centre or core

region getting specialised in the manufacturing sector, i.e., the increasing returns sector with monopolistic competition and high income potential, and the other, peripheral region getting specialised in what is left, the agricultural sector, i.e., the constant returns sector with perfect competition and low income potential (figure 3). Moving on with integration toward a situation with low transportation costs, the centrifugal forces would become more and more predominant signalling the turn to a process of de-agglomeration (see, e.g., Krugman and Venables 1995).⁴

Figure 3 —Regional specialisation at different levels of transport costs — 2 sectors/2 regions



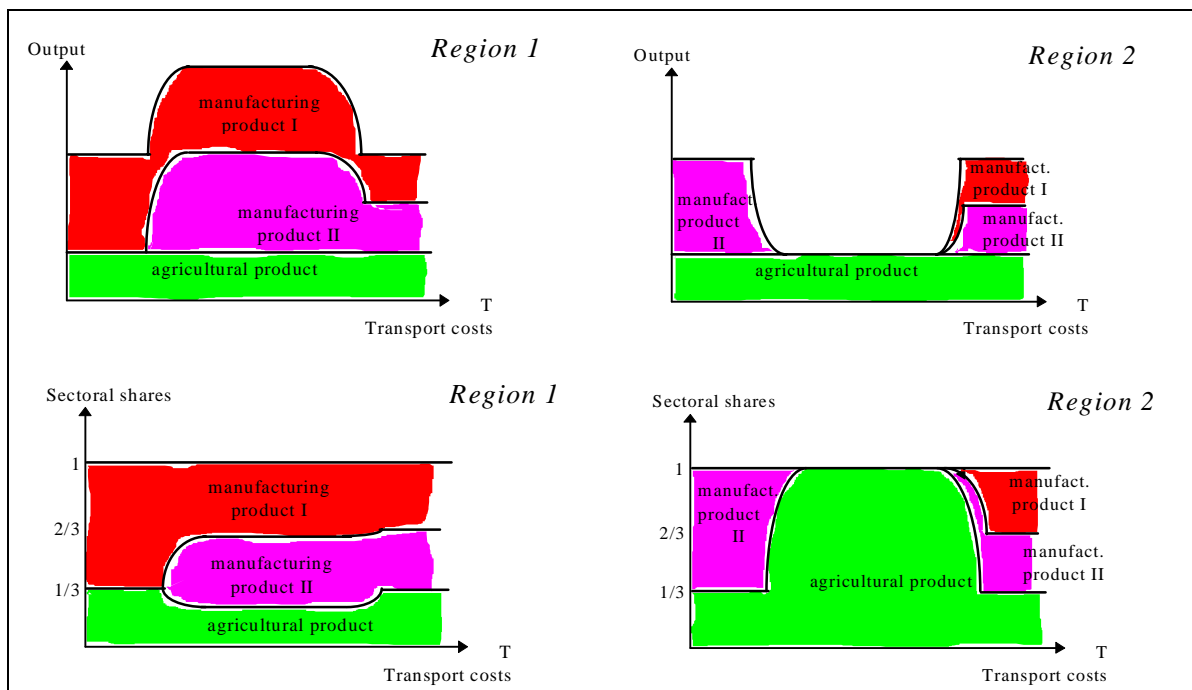
If one takes into consideration two different varieties of the manufacturing good, the analysis becomes more differentiated (figure 4). As in the former case, in a state of autarky with very high transport costs each region produces each good and each variety in a symmetric way, and in a state of extreme concentration at a medium level of transport costs all manufacturing takes place in just one region raising regional specialisation dramatically. However, if we move on to a state with very low transport costs, there is no return to the symmetric solution, instead we find each region getting specialised in one

⁴ Dluhosch (2000) stresses the significance of such centrifugal forces, most particularly the influence of competition. Growing competition due to integration may act toward an increasing split of production into components which may be manufactured at various scattered locations. Hence, integration may not “per se promote a centre-periphery pattern” but rather “provide the opportunity to reap the benefits of a finer (vertical) division of labour which can be shared among trading partners.” (p. 158)

variety of the manufacturing good. By this location of industries, it is possible to take advantage of scale economies, most particularly of those that are inherent to a firm or a branch, whereas the centrifugal forces, particularly the price competition effect and the effect resulting from the competition for immobile factors, are eased to a certain degree.

To put it more broadly, the theoretical story of regional specialisation becomes the more complex the more regions and the more industries are included, particularly if their production technologies differ with respect to returns to scale. Accordingly, the described process of agglomeration and de-agglomeration does not affect all these industries to the same degree. Thus, the specific industry mix in the regions and, hence, the degree and nature of specialisation of regions will change in the course of integration. First, industries with high increasing returns will start moving from the periphery to the core. Others with lower

Figure 4 —Regional specialisation at different levels of transport costs — 3 sectors/2 regions



increasing returns will follow later when transportation costs have declined a bit further. Constant returns-industries will simply stay where they are. As transport costs decline from a medium to a low level, the increasing returns industries will relocate to regions with low production costs i.e. the peripheral regions. By this process, the increasing returns

industries will tend to develop clusters, each at only few locations, instead of becoming dispersed evenly. More specifically, these clusters may refer to certain varieties of a good rather than to different branches. Hence, many regions will then dispose of some of these industries and will be able to take advantage of their income potential. Still, the regional specialisation may increase (Ottaviano and Puga 1997, Puga 1999), at least if observed at the level of varieties.⁵

To complete the view on regional specialisation, it has to be stressed that, of course, location decisions are taken in an interaction between such agglomeration-inducing forces outlined in NEG and traditional natural and comparative advantages outlined in Ricardian, and Heckscher-Ohlin-Samuelson models,⁶ and it cannot be stated *ex ante* which of these influences may dominate the other. Comparative advantages are of specific relevance if regions are considerably heterogenous with respect to factor endowments (referring to immobile factors), if industries with a constant returns to scale technology predominate, and if the degree of integration is high.

From these theoretical considerations, it becomes quite evident that regional specialisation, according to its specific nature, may exert different influences on the evolution of the regions: An increasing specialisation of some regions on industries with high increasing returns will lead to an increase of their respective regional income, whereas the specialisation of other regions on constant returns-industries will offer them no potential for income growth. Also, other specific characteristics of the industries on which a region is specialised, may influence the income potentials of the region. The OECD (1987), for instance, distinguishes five categories of industries: scale-intensive industries, science-based industries, industries producing differentiated goods, labour-intensive industries, and resource-intensive industries. Each of these categories may offer the regions in which they are located quite divergent perspectives with respect to income and growth

4. Regional specialisation — facts and figures for European regions

Reconsidering the relationship between the creation of EMU and regional specialisation as outlined in section 2 of this paper, the question occurs whether specialisation really is as important as has been argued. In the literature, there are several studies on the growing

⁵ It has to be considered, that an increasing regional specialisation at the level of varieties may look like decreasing specialisation /increasing diversification at the level of industries. So, the observation of an increase or decrease of regional specialisation may depend on the sectoral breakdown chosen for the observation.

⁶ In NEG models, in general, space is assumed to be homogenous.

synchronization of business cycles as a result of growing trade relations and closer exchange rate regimes. They seem to suggest that any shocks which hit a country are passed on to other countries much more quickly due to growing forward and backward trade linkages. Frankel and Rose (1998) estimated for OECD countries (including EU member states, USA, Canada and Japan) that the closer trade links grew in the course of time the more synchronized were the business cycles of the countries under consideration. Artis and Zhang (1997 and 1999) analysed the correlation of OECD countries' business cycles with the US and the German business cycle, respectively. They found that for European countries the correlation was particularly higher to the German than to the US cycle after the European Monetary System had been erected. All these studies do not cover the regional level. Yet, as trade linkages are likely to be even more important on a regional than on a national level, the above findings should all the more apply for regions. These investigations may cast some doubts on the significance of regional specialisation for regional shock susceptibility and, hence, on the significance of its influence on regional employment, even though they do not prove regional specialisation to be irrelevant.⁷

There is much less doubt on the role regional specialisation plays for regional income. However, there is a severe lack of empirical evidence on this topic. Compared to the increasingly sophisticated theoretical approaches of NEG (with differing outcomes dependent on the model chosen and its specific assumptions) empirical analysis is lacking. This applies for econometric tests on the relevance of NEG models⁸ as well as for more general investigations on the evolution of specialisation in the course of integration. And this applies even for the case of Western Europe, although the West European integration process as an economic experiment without precedent in modern economic history offers a promising field of research. The creation of EMU, to this respect, may be accounted as another step of increasing integration.

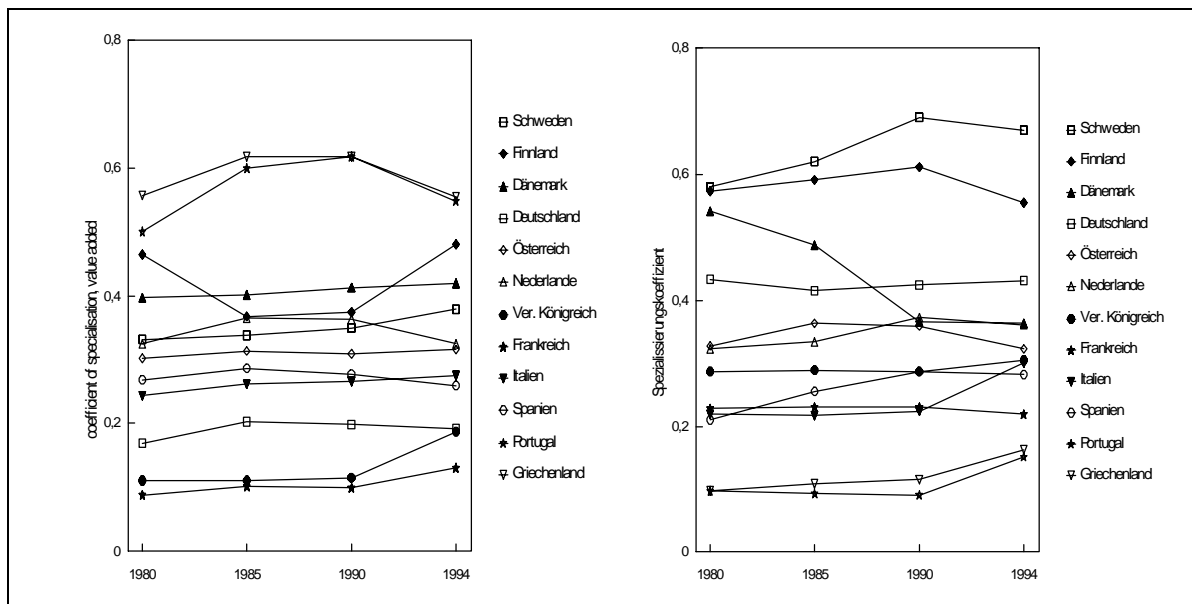
Most investigations on specialisation in Europe refer to the national level and study in particular the manufacturing sector. According to these investigations, overall specialisation of EU member states seems to have increased in the 1970s and 1980s, starting from a remarkably low level at the end of the 1960s as compared to US states (Hufbauer and Chilas 1974, Molle and Boeckhout 1995, Amiti 1999, Brühlhart 1998, Walz

⁷ Specialisation is not taken into consideration in these estimates, so one cannot exclude that the synchronisation of business cycles was the result of decreasing specialisation. However, as other results (see below) show that specialisation rather increased than decreased, this explanation does not look very convincing.

⁸ See, however, the work by Davis and Weinstein (1996, 1999) who tested the relevance of home market effects and found them to be significant in the case of (Japanese) regions, but not in the case of (OECD-) countries.

1999). A comprehensive new study on country specialisation and industrial location, also, finds an overall increase of specialisation and concentration of industries since the 1980s, though at a very slow pace, and as the result of quite divergent processes, some acting toward concentration others toward dispersion of industries (Middelfart-Knarvig, K.H., H.G. Overman, S.J. Redding, and A.J. Venables 2000). Some own estimates reveal even more ambiguity, particularly with respect to the 1990s (figure 5). The EU Commission, so far, maintains that the European integration process has led to only few changes in the degree of specialisation of member states, and to a steady, yet very slow catching-up of the low-income states.⁹

Figure 5 —Coefficients of specialisation¹⁰ for value added and employment in Europe



Brülhart (1998) also revealed that increasing returns industries tend to be highly localised (which he concludes from the observation of low intra-industry trade between these industries).¹¹ By contrast, some labour-intensive industries are still much more evenly

⁹ See the Commission's reports on Europe 2000+, on cohesion in the EU, on the socio-economic situation of EU regions, and on the competitiveness of European industry (EU-Commission 1995, 1996, 1999a, 1999b).

¹⁰ $s = \sum_i^n |a_i - b_i|$, where a_i are industrial shares of the economy under investigation, and b_i are industrial shares of a reference economy, and where $0 \leq s \leq 2$.

¹¹ In order to classify industries with respect to the scale of their returns Brülhart followed the classification scheme by Pratten (1988). A number of studies analyse the characteristics of industries with respect to the relevance of scale economies applying methods either on the measurement of economies of scale within industries (e.g., Pratten 1988, Oliveira Martins, Scarpetta and Pilat 1996) or on the degree of localisation

dispersed across European countries. This, however, according to Brülhart, may simply reflect a delayed process of agglomeration and localisation in these sectors. Brülhart concludes that industries with high increasing returns tend to agglomerate even at a still low degree of integration, whereas industries with lower increasing returns start entering a process of agglomeration at a much higher degree of integration.

Regarding the evolution of specialisation on a regional level, there is still a severe lack of empirical results which is primarily due to a lack of data on European regions, particularly on the spatial division of labour and the location of industries in a sufficiently disaggregated regional and industrial break-down, and covering a sufficient number of years. Hence, Helg et al (1995) and de Nardis et al (1996) determine that European regions are much more specialised on few industries than EU member states (and therefore are more explicitly affected by asymmetric shocks) but they do not analyse the change of this pattern in the course of the integration process. Molle (1980), Brülhart (1998), and Walz (1999) find for the 1970s and 1980s, respectively, that the manufacturing sector as a whole became more localised which may indicate an increase of regional specialisation. Krieger, Thoroe and Weskamp (1985), Waniek (1995), and Brülhart (1998) reveal for the 1970s and 1980s, respectively, that, simultaneously, the concentration of the manufacturing sector at existing agglomeration centres diminished. Also, Bode (1999), in an analysis of West Germany, found a trend toward deconcentration. One may conclude, that the manufacturing sector seems to have withdrawn from the centres toward the periphery though not in a process of dispersion but rather by creation of new manufacturing centres.

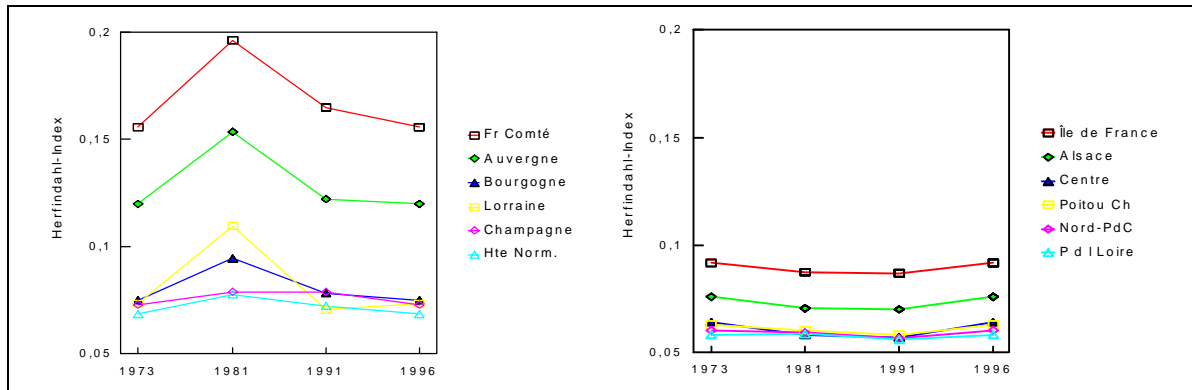
However, these investigations refer to the manufacturing sector as a whole. They need to be supplemented by more detailed analyses of regional specialisation within the manufacturing sector, and, also, within the services sector. A first effort into this direction has been submitted by Hallet (2000). He finds regional specialisation to have been decreasing since the 1980s (which admittedly may be due to a statistical bias arising from an insufficient sectoral break-down of the data base¹²). Like Middelfart-Knarvik et al. (2000), he finds any process of concentration of industries to be very slow. Hence, these results stress the need to analyse regional specialisation for even longer time periods, covering two or more decades, and with an even more detailed industrial break-down.

(e.g., Ellison, Glaeser 1997, particularly for France see Maurel and Sédillot 1999). For an overview see Junius 1999.

¹² Hallet (2000) used existing data by Eurostat which are broken down into 17 sectors, including agriculture, 9 industrial branches, and 5 service branches.

To appropriately analyse the spatial division of labour and the location of industries, however, requires to take recourse to nationally available data for EU member states, since no such data set at the European regional level exists that is internationally comparable. Therefore, we started a project of collecting and exploiting such data at least for a number of selected countries. So far, we have employment figures for France for some selected years from 1973 to 1996 broken down into 21 regions and 30 manufacturing branches. Thereupon, Herfindahl indices have been calculated which compare a given regional structure to a situation where all industries have equal shares (figure 6). By this figures, we find that most regions over a period of more than 20 years show almost no variation at all with respect to specialisation (whereas some regions exhibit an evolution which may be taken as an inverted u-curve). However, calculating Gini indices which refer to the similarity of a regions' structure to the average structure of France as a whole, reveals another picture (figure 7): according to these figures, specialisation in most regions seems to have decreased, particularly in regions which had been most specialised in the early 1970s. We may conclude, that these Gini indices do not so much indicate a decrease of regional specialisation but rather an increase of the specialisation of France as a whole, and such a result is in line with the results quoted above on the specialisation of EU member states. At any rate, much more research on this topic is needed in order to get more clear-cut results, and to find out whether a certain general pattern of specialisation in the course of increasing integration can be detected.

Figure 6—Regional specialisation in France, Herfindahl indices¹³



¹³ $h = \sum_i^n (a_i)^2$, where a_i are industrial shares of an economy under investigation, $1/n \leq h \leq 1$

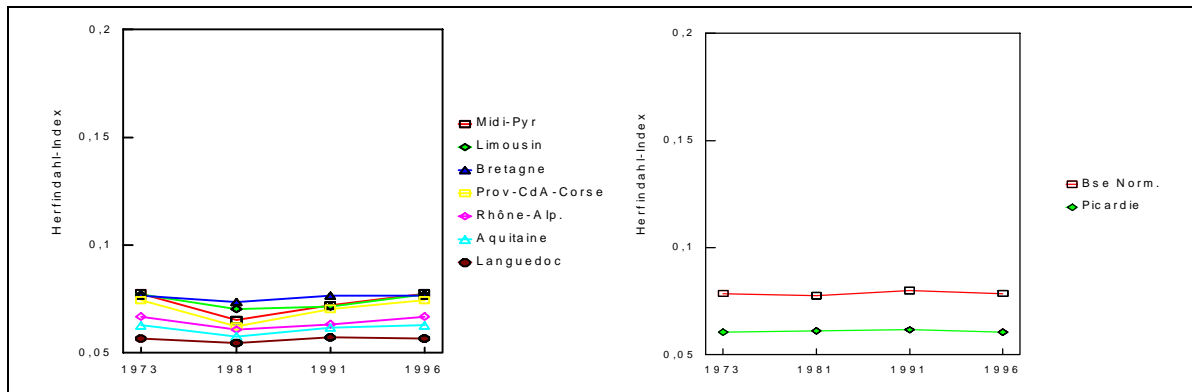
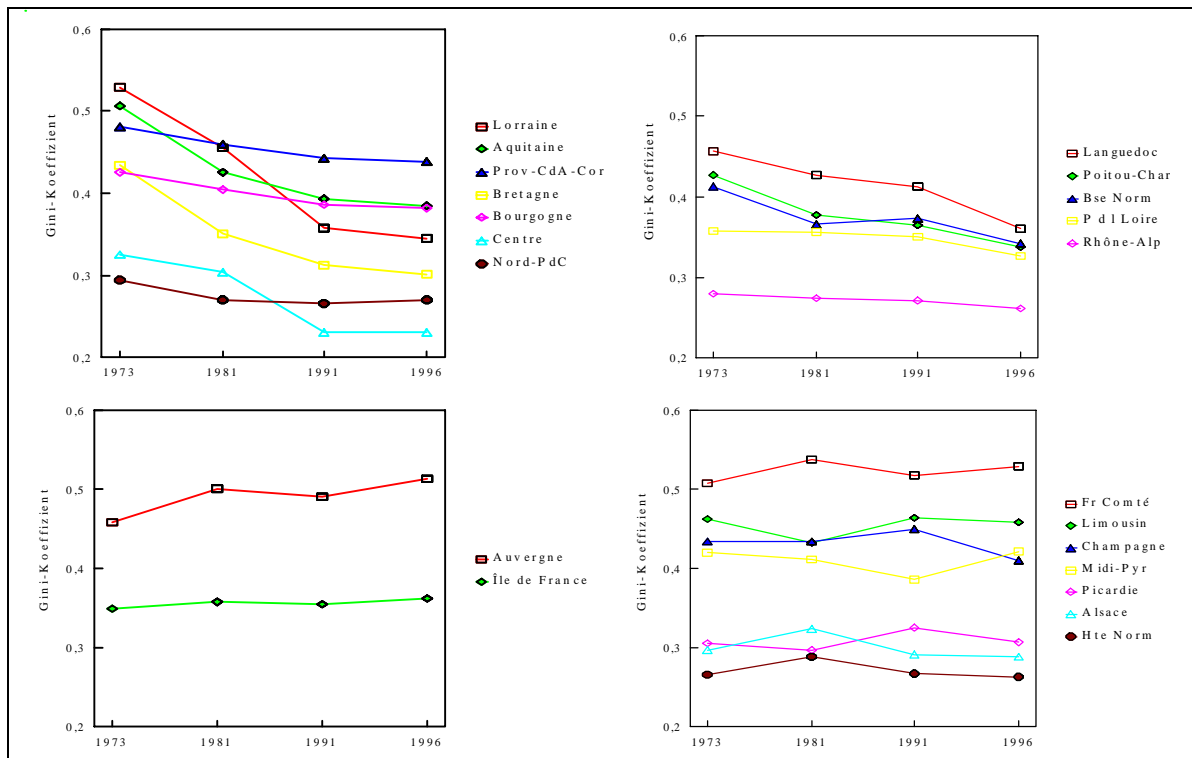


Figure 7—Regional specialisation in France, Gini indices¹⁴



To this respect, it will also become even more important to analyse in-depth the nature of the regional specialisation. To know that regions are highly specialised does not tell all. Regions may be specialised on industries with increasing returns technology, e.g., information technology industries, or, due to natural advantages, on industries with localised inputs, e.g., mining, iron and steel industry, or simply on what is left, industries with constant returns technology, e.g., food production, textiles, and it is sure to make a difference with respect to regional income and growth, on which of these industries the region is specialised. Information on the nature of regional specialisation given, it may then be possible to analyse the relation between specialisation and regional income. New

¹⁴ Based on locational coefficients.

promising methods have been developed transforming the well-known shift-share-analysis (e.g., Garcia-Mila and McGuire 1993, Esteban 2000, Möller and Tassinopoulos 2000).

5. Conclusions: Regional specialisation in Euroland

A major conclusion of this paper is that on the potential regional effects of EMU as another step within the process of European integration there are much more questions than reliable answers. *Cum grano salis*, it may be stated:

- The overall benefit to EMU will be highly positive, due particularly to an enhanced exploitation of scale economies and a spurred competition that increases efficiency.
- The division of labour between regions in Euroland is likely to change, though perhaps at a slow pace which aggravates distinguishing between the effects of the various progressive integration steps in the EU (e.g., enlargements, completion of the Single Market, EMU). Taking together the theoretical considerations and the sparse empirical evidence, it seems a bit more probable that the specialisation of regions may increase rather than decrease.
- Such an overall outcome, however, will most likely be the result of rather divergent evolutions: Some increasing returns industries that have been highly concentrated in European central regions seem to deconcentrate by withdrawing from these centres and forming new clusters in more peripheral regions. Some labour-intensive industries that have been located rather dispersed so far, seemingly tend to form clusters, too. The centres seem to become attractive for entirely new activities with high scale economies (e.g., localisation economies), particularly in the field of services.
- With respect to regional susceptibility to asymmetric shocks, the outcome is open to question: While regional specialisation seemingly increases thus making asymmetric shocks at a regional level more likely, the speed of passing shocks from one region to another by way of trade linkages increases, too, acting toward a synchronisation of regional business cycles.
- With respect to effects of EMU on regional income perspectives the outcome is ambiguous, too: While on the one hand, some IRS industries get more scattered across space thus improving the income potential of peripheral regions, others get more concentrated.

With a sufficiently detailed data set on European regions, and with investigations, on the one hand, on the relation between increasing integration and the degree and nature of regional specialisation, and, on the other hand, the relation between the degree and nature

of regional specialisation and regional income, we hope to be able to provide some more explicit answers on regional specialisation and on the potential winners and losers in Euroland.

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