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ON THE PATTERNS
OF EUROPEAN
PRODUCTION
FACTOR
MOBILITY*

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ABSTRACT: This paper analyses European labour mobility and capital movements and their relation to foreign trade both in the light of international trade theory and empirical evidence. Recalling the main proposition of classical theory of international economics, it is shown that whether capital mobility, migration and trade are substitutes or complements crucially depends on the way economies differ from each other. The empirical part of the paper is devoted to a comparative description of international production factor flows and their determinants within Europe during the 1970s and 1980s. The results show that factor flows inside Europe have stayed at a relatively low level and differences in European factor prices have remained large. In this sense the European economies are not yet very deeply integrated.

KEY WORDS: European integration, factor flows, labour migration, foreign trade

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TIIVISTELMÄ: Keskustelualoitteessa analysoidaan työvoiman ja pääoman liikkuvuutta Euroopassa sekä näiden tuotannontekijävirtojen suhdetta (komplementtaarisuus vs. korvaavuus) kansainväliseen kauppaan. Aihetta tarkastellaan sekä kansainvälisen kaupan teorian että tilastomateriaalin valossa. Johtopäätöksenä teoreettisesta keskustelusta on, että työvoiman ja pääoman liikkuvuuden sekä kansainvälisen kaupan suhde riippuu oleellisesti siitä, millä tavoin maat eroavat toisistaan. Eurooppaa koskeva empiirinen aineisto 1970- ja 1980-luvuilta osoittaa, että Länsi-Euroopan sisäinen tuotannontekijöiden liikkuvuus on ollut vähäistä. Erot reaali-palkoissa ja reaali-koroissa ovat säilyneet suurina. Tässä mielessä Länsi-Eurooppa ei ole vielä taloudellisesti kovin pitkälle integroitunut.

ASIASANAT: Euroopan integraatio, tuotannontekijävirrat, työvoiman liikkuvuus kansainvälinen kauppa

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1 INTRODUCTION

The free trade argument of the classical trade theory has become one of the most common, widespread and powerful policy recommendations that economics has produced. According to its well known basic propositions, international specialisation and free trade between countries should diminish relative productivity differences, guarantee optimal allocation of production factors within a free trade area and make all countries involved in trade better off. This argument has become the theoretical basis for the most important international agreements on economic policy coordination in this century. But the development of international trade theory as well as the experiences with free trade have made it increasingly clear that free trade alone may not be sufficient to realise all the potential welfare gains from international integration.

At present, more and more emphasis is put on the view that sufficient international mobility of capital and labour is a prerequisite for optimal allocation of production factors. While the economic theory of international production factor flows¹ has supported this development theoretically, the European integration process showed policy efforts subsequently changing from concentration on free trade to the establishment of an Internal Market within which capital movements and labour migration are liberalised.

Although European integration might profit from a general liberalisation of intra-European production factor flows, other recent political developments have raised increasing fears of mass immigration from outside Europe. The debate on German unification and the future role of Eastern European countries within the European integration process in particular revitalised the discussion on the relation between migration, capital movements and trade. Will the removal of trade barriers between Western and Eastern European countries reduce potential migration from Eastern Europe or rather tend to increase migration? Could mass migration be substituted by stimulating capital flows (promoting foreign direct investment and developing financial markets)?

This paper analyses labour mobility and capital movements and their relation to foreign trade in the light of international trade theory as well as from the point of view of evidence concerning Western Europe. Recalling the main propositions of classical international economic theory, we first show that whether capital mobility, migration and trade are substitutes or complements crucially depends on the way economies differ from each other.

Unfortunately, there is a serious lack of empirical evidence on the international production factor movements. The main emphasis of this paper lies therefore on a critical evaluation of macro-economic approaches regarding the relation between

¹ As usual, production factors are different homogenous categories of the productive ingredients available to an economy: labour, capital, land and natural resources, skills etc. If not mentioned otherwise, we will nevertheless make the simplest distinction between labour and capital only. Most of the results could easily be extended to models with multiple factors.

factor flows and trade. We devote the second part of this paper, however, to a comparative aggregate level description of international production factor flows and their determinants within Europe during the 1970s and 1980s². The patterns observable on a macro-level reveal that the relation between factor flows and their determinants differed quite distinctively between the investigated EC³ and EFTA countries (excluding Iceland and Liechtenstein). Moreover, they partly seem to contradict traditional economic reasoning. Furthermore, interesting features like the relative immobility of European labour and the increasing scale of capital flows allow us to draw some general conclusions concerning further economic integration prospects.

² The basic characters of labour and capital flows are of course closely related to firm- and industry-specific reasoning and should be studied from this point of view as well. In this paper we, however, concentrate on aggregate macroeconomic analysis only.

³ Instead of using the term "European Union" we use "European Community " (EC) in this paper because our main emphasis is in the 1970s and 1980s.

2 THEORETICAL PROPOSITIONS ON PRODUCTION FACTOR FLOWS

The classical theory of international economics has basically been a theory of trade with no scope for international factor mobility. Not until the 1960s did the observation of various impediments to trade lead to the introduction of factor mobility into the classical trade framework. A theory of production factor flows was developed, but it remained "classical" in sticking to the assumptions of classical trade theory. At the end of this chapter we shall sketch approaches that depart from the classical framework of differences in relative endowment.

2.1 Classical Trade Theory Approach

The international trade theory has its roots in the concept of "relative competitive advantage" originally developed by the 18th century's English businessman and economist David Ricardo (see Ricardo 1971). Ricardo studied a world of two countries (e.g. here Portugal and Germany) which produce two goods (e.g. here clothes and cars) with one internationally immobile production factor (e.g. labour). Ricardo demonstrated that, even if labour in one country is more efficient than in the other in the production of both goods, it may increase its wealth by specialising in the production of the good in which its relative production efficiency-lead is biggest. Assuming Portuguese labour to be relatively more efficient in producing clothes than cars, exporting clothes for cars would allow Portugal to increase its own and the other country's consumption. Therefore, not absolute, but relative competitive (comparative) advantages matter for realising Ricardo's world-wide gains from trade.

Ricardo's competitive advantage approach was taken up by Heckscher (1949) and Ohlin (1933) who together with Samuelson (1949) set up what is usually called the H-O-S world and has remained the "cornerstone" of international economics until now. While Ricardo just assumed (unexplained) differences in labour productivity between countries as the basis of comparative advantage, in the H-O-S framework countries differ from each other by different (given) relative endowments of internationally homogenous production factors (e.g. labour and capital). Thus endowment differences are supposed to generate the potential for gains from an international division of production and trade.

In the simplest version of the H-O-S model, two countries sharing the same technology are assumed to produce two goods in competitive markets with combinations of labour and capital inputs that are fixed for each good (fixed factor intensities). A definite relation between good and factor prices (wages and interest rates) is established. Factor prices are determined by the relative scarcity of the production factors, which results from the production structure. Thus, if in autarky both countries produce both goods and consumers share the same tastes, the good

which makes more intensive use of the respective country's relatively abundant factor will in this country be relatively cheaper than in the other economy.

Assume that Germany has a higher capital-labour ratio than Portugal (i.e. Germany is the relatively capital abundant and Portugal the relatively labour abundant country) and that the production of clothes makes relatively more intensive use of labour than the production of cars. In this case without international trade (i.e. assuming autarky) clothes are expected to be cheaper in Portugal than in Germany in terms of cars. The relatively scarce factor, German labour, should enjoy a higher wage level than Portuguese workers, while real interest rates are bound to be lower in autarky in Germany than in Portugal. Entering into international trade allows Germany to shift part of its production from the comparatively expensive manufacturing of clothes to the car industry in order to exchange cars for relatively cheap Portuguese clothes. Thereby capital would become relatively more scarce in Germany, German interest rates should increase (and wages fall) and the price of clothes in terms of cars would rise. The opposite would be true for Portugal, which would specialise in the clothes industry.

As a result, both countries can raise their overall consumption by engaging in international trade and specialisation of production. They would gain from an increase in trade until the production of both goods becomes equally expensive in both countries i.e. until good prices had equalised internationally. Due to the given definite relation between good and factor prices in competitive markets, with identical relative prices, wage levels and real interest rates have to equalise in both countries as well. This result, first specified in mathematical terms by Samuelson (1948), has become famous as the so-called (H-O-S) factor-price equalisation theorem. According to it, the degree of optimality of production factor allocation (and thus of integration) shows up in how equal production factor prices are internationally.

As far as factor flows are concerned, the basic prediction of classical trade theory is that within a perfect H-O-S world there is no need for international capital mobility and migration because trade is a sufficient form of economic integration. Realising endowment-based relative competitive advantages by exporting those goods whose production makes relatively intensive use of abundant factors should ensure an internationally optimal use of scarce factors and guarantee equalisation of real interest rates and wage levels⁴.

Although international trade intensified in the 1960s and 1970s and European countries became increasingly integrated economically, differences in relative goods and factor prices persisted. Correspondingly, various theoretical explanations were set forth amplifying the realism of H-O-S assumptions and results (see e.g. D. Neven 1989). In reality, impediments to trade (transport costs, tenability of goods, costs of

⁴ Indeed, the classical assumption of international immobility of production factors was not to deny the possibility of labour and capital flows but to view them to be relatively much more costly than trade only. In actual fact, migration of individuals has been shown to cause significant economic, social and cultural costs while capital is fully mobile only in the very long run. Shifting capital internationally arises costs, and if it is connected to other, locationally fixed factors, capital mobility may be partly impossible.

entering foreign markets, informational deficiencies, political impediments like tariffs and taxes) may prevent goods from being freely traded internationally and goods prices from equalising. Countries may specialise their production completely before good and factor prices equalise. Factor input intensities are likely to vary over time and therefore not necessarily be the same for all countries (factor price reversals). Capital and labour evidently remain far from being homogenous. In reality numerous different goods are produced with multiple factors, part of which may be location specific. If the number of factors is different from the number of goods produced, the relation between good and factor prices may lack definite determination. This too could explain the failure of factor prices to equalise absolutely (Dixit-Norman 1985)⁵.

Reservations to traditional H-O-S arguments point to the conclusion that although international trade should improve the international allocation of production factors, this is not a sufficient condition. International trade is therefore bound to equalise factor prices tendentially rather than absolutely. The more equal wage levels and interest rates become internationally, the smaller are the remaining incentives for further integration. Differences in relative factor prices representing internationally different marginal productivities of production factors indicate unrealised potentials for further economic integration.

With the previous arguments, we still retain to the assumption of endowment differences being the unique feature in which countries differ from each others. If we relax this assumption and allow for increasing returns to scale or market structures with limited competition or differences between technology available in countries, international trade may cease to equalise factor prices and therefore to reduce the need for international factor movements.

2.2 International Production Factor Mobility Approach

The pioneering work on international trade and factor mobility is generally attributed to Robert A. Mundell (1957). Mundell relaxed the assumption of classical trade theory that only commodities move freely. For his analyses, he used a traditional H-O-S two-country two-commodity two-factor model assuming that the production functions are homogenous of the first degree and they are identical in both countries, that the commodities require different proportions of factor inputs and that factor endowments are such as to exclude specialisation.

Mundell argued that factor movements were mainly driven by differences in factor prices (wage rates and returns on capital investments) and that therefore, if trade alone fails to equalise factor prices fully, factor movements could "do the job" instead. The

⁵ Ethier and Svensson (1986) argue that for factor price determination it is the number of international markets for goods and factors that has to be at least as large as the number of factors rather than the absolute equality of numbers of goods produced and factors used.

outflow of capital from the relatively capital abundant country would lead to a rise in the marginal product of capital and to a fall in the marginal product of labour in the sending country. The opposite effects would obtain in the capital receiving country respectively. If capital productivity were to remain higher in Portugal than in Germany in real terms, capital would therefore be expected to flow from Germany to Portugal, making Portuguese capital relatively less scarce and decreasing the relative price of capital (the real interest rate) in Portugal and respectively increasing it in Germany.

Mundell's analysis suggests that trade impediments should stimulate factor movements and that restrictions on factor movements should stimulate trade. Moreover, he demonstrated that direct investment may be a strategy of firms to overcome trade restrictions. Thus in his classical approach to factor mobility, Mundell identified capital flows to substitute for hampered trade.

Mundell restricted his original analyses of international factor mobility to the introduction of capital mobility within the classical H-O-S framework. But the same approach can easily be applied to labour movements. If labour reacts to differences in wage levels, it should be expected to migrate from relatively labour abundant to capital abundant countries thereby equalising persisting wage differentials. This similarity of arguments results in the interesting fact that, as long as H-O-S conditions apply and no mobility costs exist, mobility of either factor could guarantee factor price equalisation alone. If capital movements were liberalised fully but labour remained immobile, capital mobility alone should tend to equalise wage levels internationally. Capital mobility and migration are substitutes in a classical production factor mobility approach⁶.

While Mundell's classical treatment handled factor flows as a possibility to realise gains from international economic integration not achieved through trade due to trade impediments, it should be noted that factor mobility alone could theoretically guarantee internationally optimal allocation of resources even in complete absence of trade. Indeed, the simultaneous introduction of free trade and free factor flows alters one basic outcome of the traditional trade theory approach: with free mobility of factor flows relative competitive advantages lose importance while absolute advantages matter. If relative endowment differences in Portugal and Germany were such that Portugal had an absolute advantage in the production of both cars and clothes, and free trade and international specialisation had led to factor price equalisation, then reallocating capital from Germany to Portugal and shifting production of clothes from Germany to Portugal until Portugal loses its absolute advantage in the production of clothes would increase overall economic wealth. In this extreme case, trade has only been a second best solution, while nothing but the introduction of factor mobility would allow an efficient use of scarce resources⁷.

⁶ The outcome that labour and capital mobility may act as substitutes for each other and actually mobility of only one factor is needed for optimal factor allocation has led to an extensive discussion in the economic literature on which factor's mobility to restrict from a welfare point of view (Ramaswami argument). For a survey see Jones, Coelho and Easton (1986).

⁷ For a slightly different but more explicit derivation of this unorthodox result see Ethier (1986), who

In reality, similar to impediments to trade, important costs of factor mobility exist. The cost of capital mobility tends to fall with economic integration and the development of advanced capital markets. The cost of labour migration seems to stay high even once legal restrictions are abolished. This leads Straubhaar (1988) to criticise the assumption of a symmetry between capital and labour flows as far too simplifying. Straubhaar (1988, p.29) notes that "this limitation is also valid for most of the answers to the question as to whether international trade and international factor movements are substitutes or complements". The basic difference between migration and capital flows is that international labour migration involves the migration of the production factor (service) owner whereas capital can be moved abroad without any movement of the capital owner.

Introducing factor movements into a classical H-O-S world has basically meant to allow for another way of increasing production efficiency for a set of countries that originally differ with respect to relative factor endowments only. As long as significant international differences in marginal productivity of production factors exist, interest rates and salaries ought to differ from one country to another. Thus they constitute economic incentives for capital and labour to move across national borders and thereby to equalise factor prices internationally. While with perfect mobility in competitive markets each factor alone should be able to guarantee optimal reallocation of production factors, the existence of costs of factor movements should cause factor movements to increase factor price equalisation tendentially rather than absolutely. Migration, capital mobility and trade are expected to be substitutes. International differences in factor prices should indicate potential for further economic integration by at least one of the before mentioned means.

2.3 Modern Trade Theory

2.3.1 Survey on the Results of Modern Approaches

Besides introducing factor flows, the classical approaches to factor mobility hold to the traditional assumptions of trade theory that only concentrate on endowment differences as reasons for international trade. But more recent approaches originating from the so-called "new trade theory"⁸ allowed relaxation of these assumptions and derived quite different results. If countries are assumed to differ by persistent differences in production technology, if production faces increasing returns of scale or takes place in non competitive markets, trade and factor flows may accelerate comparative advantages rather than equalise them (see e.g. Song 1993). The relation between production factors and trade ceases to be universally definite, but in most of

handles it within a Ricardian world.

⁸ For a survey on the development of new trade theory see e.g. Kiezkowski (1985).

the cases examined production factors then become complements rather than substitutes (see Schmitz and Helmberger 1970, Chipman 1971, Purvis 1972, Markusen 1983, Markusen and Svensson 1985, Wong 1983 and 1986, Ethier 1986, Ethier and Svensson 1986 and Rauch 1991)⁹.

If a country disposes of a superior production technology, for example due to third, immobile, location specific production factors¹⁰, or due to patent protected innovations, equalisation of good prices alone may fail to equalise production factor compensations. The country would enjoy an absolute comparative advantage, regardless of its relative endowment of mobile capital and labour. Mobile factors would be expected to move to the technologically superior country until an immobile factor limited production growth and caused factor price differentials to vanish. The resulting increase in the country's endowment of mobile factors would allow for an extension of total production and lead to an extension of its exports. The movement of all mobile factors needed and trade are complements in this case.

A complementary rather than a substitutive relation between factor flows and trade may be observed as well if production sectors face increasing returns to scale. As long as production may be expanded under increasing returns to scale, factor movements will not reduce but increase comparative advantages leading to a complementary expansion of trade. To assume persistent increasing returns to scale on a national level may be criticised as fairly unrealistic. But these increasing returns to scale appeared within certain industries engaging in intra-industry production specialisation (which might explain the large share of intra-industry trade in international trade). The presence of intra-industry scale economies, all other things suiting the H-O-S assumptions, does not alter the traditional substitutability conclusion as far as inter-industry trade is concerned. But they cause intra-industry trade and factor mobility to be complements. If factors were to become more mobile between countries, this movement would reduce comparative cost differences, thereby reducing inter-industry trade but increasing intra-industry trade.

Markusen (1983) has shown that relaxing the perfect competition assumption and accounting for imperfect, asymmetric competition changes international trade and factor mobility so that they become complements rather than substitutes. Markusen concludes that "factors move to make endowments unequal and make each country relatively abundant (scarce) in factors used intensively in the production of domestically advantaged (disadvantaged) goods" (Markusen 1983).

⁹ In addition to the theoretical work on relaxing traditional assumptions, new explanations on economic integration were put forward in recent years that also result in a break with the substitution theorems. S.B. Linder (1961) predicted that the volume of trade will be the greatest between countries with similar capital-labour ratios and similar per capita incomes because potential exports were those goods for which a domestic market exists. Linder proposes that income is the dominant determinant of tastes. The range of goods for which domestic markets exist is determined by per capita income. Therefore he expects the amount of potential trade between countries to be greater the more equal their per capita incomes are. This should likewise apply to the intensity of factor movements.

¹⁰ For the formal treatment of a third, immobile factor in a classical production factor mobility approach see Kuhn and Wooton 1987. An introduction into the concept of third, immobile institutions (factors) competing for mobile factors is given by Siebert and Koop 1990.

Finally, as soon as selling a product abroad demands certain services to be supplied by specialised domestic labour in the country that the product is exported to, trade and migration become complements (see Wooton 1988 and 1991 and Straubhaar 1990).

2.3.2 Hypotheses

As a conclusion of the theoretical section we would like to formulate three hypotheses on the expected patterns of European factor flows.

1) Whether capital mobility, migration and trade are substitutes or complements crucially depends on the way European economies differ from each other. If differences are mainly due to relative endowments (i.e. the classical H-O-S assumptions apply), factor flows and trade should have shown basically substitutive relationships. If trade has increased, capital movements and migration should have a tendency to slow down, and vice versa. For economic integration to arise, the mobility of one factor should be sufficient¹¹. Migration and capital flows would be expected to have constituted substitutes for each other. On the contrary, if countries differ by persistently different levels of technology available, if producers face increasing returns to scale or produce in non-competitive markets, we expect factor mobility to increase trade and migration and capital flows to be complements. Complementary relationships should furthermore have shown up if countries predominantly engaged in intra-industry trade¹² or trade of services. In all these cases we would expect capital flows and migration to display complementary relationships.

2) In competitive markets, factor compensations (interest rates and wage levels) equal the marginal productivities of production factors in equilibrium. Differences in production factor payments account for the direction and intensity of factors flows. If, in Europe, differences in marginal productivity of production factors prevailed, we would expect corresponding differences in relative interest rates and wage levels. As long as those are greater than various mobility costs, capital and labour should have moved from where they were compensated relatively low to where their marginal productivity was relatively high. If endowment based H-O-S conditions apply, relative factor payment should be high where the respective factors are relatively scarce and factor movements should reduce factor price differentials. If technology differences were dominant, payments should be highest where factors are used most efficiently and factor flows would tend to increase differentials further. Relative factor price equalisation should measure to which extent countries managed to allocate their production factors optimally and became economically integrated in the classical sense of the term.

3) We would expect endowment based differences to determine trade and factor flows predominantly between countries which are not equal in their production structure but

¹¹ This, however, is specific for a 2x2x2 H-O-S-model.

¹² See empirical evidence concerning Europe in e.g. EC Commission (1988).

show comparatively similar economic development levels. The more technologically advanced the economies become, the more likely it is that the conditions of modern approaches apply. Therefore, our hypothesis is that mobility and trade patterns in Europe may change over time from purely substitutive to mainly complementary relationships.

3 EMPIRICAL ANALYSIS OF FACTOR MOBILITY IN EUROPE

One of the main reasons as to why there is still so little information on the actual volumes, structures and determinants of factor flows is the serious lack of appropriate, internationally comparative data. The following three sections on labour mobility, capital mobility and the relation between these factor flows and trade within Europe present and discuss available data for all member countries of the EC and EFTA (excluding Iceland and Liechtenstein). These chapters investigate the development of net factor mobility on a very aggregate macro-level and discuss the major hypothesis derived from theory without testing them, however, in a strict sense.

3.1 Labour Mobility

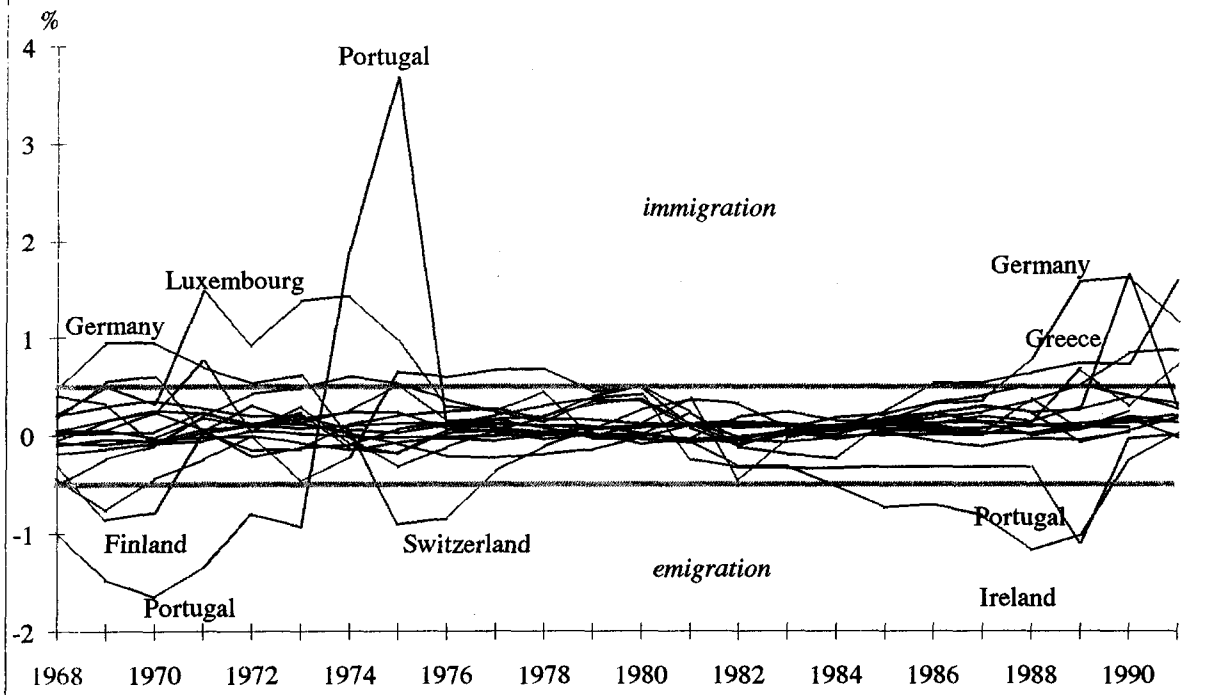
Free mobility of labour was introduced within the EC in 1957. Since then, citizens of EC member states have been allowed to work in any other member country in principle without facing legal restrictions, provided they received a job¹³. However, immigration from non-EC countries has been increasingly restricted in all European countries during the 1970s and 1980s. Excluding intra-Nordic labour movements (which have been free since 1954), the EFTA countries applied their relatively restrictive immigration control systems to intra-European migrations as well. As far as migration policies are concerned, volatile flows are expected within EC countries.

Following the hypothesis derived from international economics, differences in the economic fundamentals of countries induce changes in net migration. Unfortunately, there is practically no international data available where labour mobility would be separated from migration. Graph 1 shows total net migration as a percentage of average population for all European countries analysed. Most striking, international labour mobility has obviously been on a low and very balanced scale for practically all countries concerned during the last two decades. In most countries, the annual influence of net migration on the population size fluctuated within a band of $\pm 0,5$ % of average population and equalled out during the whole period considered.

Migration was a bit more intensive after the oil price shock in the mid 1970s partly due to increased return movements (see appendix 1) and net migration intensities seem to have increased somewhat in the late 1980s. The southern countries, except Portugal in the late 1980s, experienced positive net migration during practically the whole period of observation. Although the transition period of net mobility regulations ended

¹³ Actually, several impediments to free mobility have been removed gradually only or will fall with the further realisation of the European Internal Market. E.g. mutual recognition of diplomas and other working certificates has been granted incompletely only, certain professions and public jobs have been kept reserved for nationals only, tax systems have not been harmonised and social security rights are only partly assured (see e.g. Werner 1990). Notice that even with perfect integration people may still move across national borders and immigration and emigration need not slow down to zero, but we would expect net migration to come close to zero.

Graph 1. Net Migration Flows of Western European Countries in 1968-1991 as Percentage of Average Population



All countries of table 1 included, only the extreme cases marked by legend. Source: OECD Labour Force Statistics: own transformations

in 1988 for Greece when Greeks got full access to EC free mobility, the population of Greece increased in 1990 by almost 2 % due to net immigration. The Spanish and Italian migration balances have constantly been close to zero. Only Portugal "lost" by net emigration annually more than 1 % of its population in the late 1960s and early 1970s and again in the late 1980s. After the oil price shock and economic slump many Portuguese had to return and the net migration in Portugal amounted to plus 3,7 % in 1975. Simultaneously, Switzerland, as a typical immigration country, recorded a negative net migration of -0,9 % in 1975. Together with Portugal (-0,6 %) and the UK (-0,5 %), Switzerland (-1,4 %) was one of the few countries for which net migration showed a negative sign over the whole 1970s on average (column I in table 1). In the 1980s, however, the main net "exporters" of population were again more traditional emigration countries: Ireland with a net migration intensity of -6,5 % (!) and Portugal with -3,1 %.

Somewhat more detailed data exists for European countries on the size of the foreign population.¹⁴ The figures in table 2 show clear differences concerning the importance of foreigners in European economies although they are affected by third influences like differences in neutralisation policy. Central European countries have had a higher share of foreigners in the total population than the more peripheral and less developed European economies. The most industrialised European countries obviously continuously used the opportunity to boost their domestic labour force. Foreigners amounted in the 1980s to more than one fourth of the population in Luxembourg,

¹⁴ See SOPEMI, ann.; EUROSTAT, ann.

Table 1. European Migration Flows and their Determinants**a) Averages 1971 - 1980**

	Net migration	Real hourly wages	Real employees'	Hours worked	Operating
	in % of population	relative to Germany	compensation/hour	per 100 USD	surpluses
	I	II	relative to Germany	of GDP	per GDP, %
	I	II	III	IV	V
Austria	1,02	78,5	91,5	9,3	18,6
Belgium	1,05	86,0	106,2	7,6	21,3
Denmark	0,47	140,1	121,0	6,5	19,5
Finland	-0,62	89,1	92,3	8,3	18,0
France	1,13	71,3	95,0	7,9	19,8
W-Germany	2,55	100,0	100,0	8,2	18,7
Greece	2,71	23,3	19,4	24,7	38,2
Ireland	3,22	74,8	61,6	12,4	21,1
Italy	0,00	76,8	69,4	9,7	26,5
Luxembourg	7,52	105,0	98,6	8,4	16,6
Netherlands	2,48	104,8	116,4	7,2	20,4
Norway	1,10	130,6	148,0	5,4	14,0
Portugal	4,07	21,2	19,3	37,3	26,9
Spain	0,05	46,1	45,5	15,3	27,8
Sweden	1,06	134,2	136,9	6,5	14,0
Switzerland	-1,40	120,2	129,7	6,7	21,3
U.K.	-0,45	86,3	76,5	10,9	14,0

a) Averages 1981 - 1990

	Net migration	Real hourly wages	Real employees'	Hours worked	Operating
	in % of population	relative to Germany	compensation/hour	per 100 USD	surpluses
	I	II	relative to Germany	of GDP	per GDP, %
	I	II	III	IV	V
Austria	1,52	84,4	89,2	7,1	38,6
Belgium	0,49	87,3	110,9	5,6	26,4
Denmark	0,82	131,1	116,3	5,3	21,7
Finland	0,90	89,3	113,1	5,4	19,6
France	1,10	74,2	103,8	5,9	21,1
W-Germany	4,55	100,0	100,0	6,5	21,6
Greece	2,65	29,4	22,7	19,4	38,6
Ireland	-6,53	77,7	66,6	9,1	25,7
Italy	1,38	84,3	n.a.	n.a.	35,0
Luxembourg	3,60	99,7	101,0	7,1	15,1
Netherlands	1,80	105,2	100,0	6,2	28,3
Norway	1,34	130,5	113,4	5,1	22,5
Portugal	-3,17	20,5	18,4	27,1	33,6
Spain	0,00	54,4	53,2	9,8	34,2
Sweden	2,02	117,6	107,7	6,2	17,3
Switzerland	3,84	121,2	126,7	5,6	22,8
U.K.	0,32	79,6	73,1	8,6	18,4

(I) average annual net migration as a per cent of average population; (II) real hourly wage rates in manufacturing relative to the German level (in USD at 1985 prices and exchange rates); (III) real employee's compensation from National Accounts (in USD at 1985 prices and exchange rates) per hours worked relative to the German level; (IV) hours worked per 100 USD of GDP value (at 1985 prices and exchange rates); (V) operating surpluses (from the National Accounts) as a per cent of GDP (at 1985 prices and exchange rates). SOURCE: migration, employment and employees' compensation: OECD; population, GDP and exchange rates: the World Bank; (GDP) deflators: IMF; wage rates and hours worked: ILO; own calculations and estimations.

almost one fifth in Switzerland and from 5 to 10 % of the total population in Austria, Belgium, France, Germany and Sweden. The sizes of the foreign population were quite stable because the volume of net migration flows have been relatively low.

Stock data are often the only way to get more insight in to the patterns of labour mobility relative to total migration discussed above. Annex 1 contains information on the average annual change in the stock of foreign labour in the 1970s and 1980s for selected European countries. The figures indicate the share of labour in the total foreign population of the European countries analysed has been decreasing within the last 20 years. For example in Germany and France, although net total migration intensities have been positive in the 1970s and 1980s, the stock of foreign labour has actually fallen. Thus, an increasing part of migration shown in tables 1 and 2 has been for other than strictly economic reasons (e.g. reunification of families, educational purposes and seeking of asylum).

From the stock data on foreign labour provided in annex 1 additional information may be derived on the regional structure of migration in European countries. There are clear regional patterns in the structure of change in foreign labour. A large part of net labour movements in France, Belgium or Sweden is due to the migration of foreigners from neighbouring countries or places of origin where the same native language is spoken. As far as the German speaking countries are concerned, the main source areas of foreign labour during the last twenty years were southern European and non-European countries like the former Yugoslavia or Turkey. Most interestingly, although free mobility of labour has been introduced within Europe, the share of non-European foreigners in the stock of foreign labour has increased, while return migration has become important within intra-European net migration flows (annex 1).

Economic theory expects that labour flows are influenced by differences in marginal labour productivity. In competitive markets, real wage rates or employee compensation per hours worked should be a reasonable proxy for marginal productivity. In table 1, real wage per hours in manufacturing (wages) and real employment compensation from the National Accounts per hours worked (both variables in US dollars at 1985 prices and exchange rates) are shown relative to Germany and related to net migration intensities. In contradiction to theory, in Greece, Ireland and Portugal, net migration balances were relatively higher than in Germany in the 1970s though real wages and employment compensations remained clearly below German levels in these countries. For Switzerland and the UK, just the opposite was true. In the 1980s, however, migration seemed to be more in line again with what could be predicted by real labour compensation differentials.

Both the relative endowment approach of classical theory and the technology-differentials approach seem partly compatible with the marginal productivity patterns observed. In countries like Greece, Portugal, Spain, UK, Ireland and Italy wages have remained significantly below German levels. In the 1980s a Greek worker earned less than one third his German colleague's earnings. But production was much more labour intensive in Greece. While Germans worked on average 6,5 hours to produce 100 dollars of GDP value, Greeks needed about three times as many hours (column 4 in

Table 2. Sum of Net Migration in the 1970s and 1980s (persons) and the Stock of Foreigners in % of Total Population in 1980 and 1990, respectively

	Net migration sum 1971-80 (persons)	Stock of foreigners in % of population 1980	Net migration sum 1981-90 (persons)	Stock of foreigners in % of population 1990
Austria	77000	3,7	115000	5,4
Belgium	103000	9,2	48000	9,1
Denmark	24000	2,0	42000	3,1
Finland	-29000	0,3	44000	0,5
France (a)	596000	6,9	547000	6,4
Germany	1572000	7,2	2877000	6,6
Greece* (b)	249000	0,7	263000	2,3
Ireland* (c)	103000	2,3	-229000	2,2
Italy	-2000	0,5	790000	1,4
Luxembourg (b)	26900	25,8	13300	27,7
Netherlands	339000	3,7	262000	4,6
Norway	44000	2,0	56000	3,4
Portugal* (d)	384000	1,1	-322000	1,0
Spain* (b)	19000	0,5	1000	1,0
Sweden	87000	5,1	169000	5,7
Switzerland	-89000	14,0	250000	16,4
U.K. (e)	-251000	3,0	182000	3,3

(a) = 1982/1990; (b) = 1980/1989; (c) = 1983/1990; (d) = 1981/1989; (e) = 1979*/1990
 Source: OECD, Sopemi, ann.; *EUROSTAT, Employment and Unemployment;
 Demographic Statistics, ann., EUROSTAT Luxembourg

table 1). Thus, with the given technology and with the prevailing labour/capital ratio, an employer may not have achieved cheaper production in Greece than in Germany. Presumably the amount of capital and the level of technology have been relatively modest in low wage countries. Operating surpluses as a percentage of GDP (column 5 in table 1) were on average higher in less developed European countries than in Germany, and in these countries production was more labour intensive. Their high share of operating surpluses in GDP indicates a relatively higher marginal productivity of scarce capital than in Central European countries.

Although making progress in the formation of the Internal Market, Europe has not achieved very deep economic integration if we measure the degree of integration by factor price equalisation. Real wage differentials are still large and have converged very slowly only from the 1970s to the 1980s. For Portugal and the UK relative wage differentials even increased. Consequently, there is still much scope for further integration through production factor flows and trade. The low intensity of labour migration in Europe partly contradicts what we would expect from the observed patterns of marginal productivity.

Labour mobility within Europe has remained surprisingly low. Indeed, for the observed small migration flows, the explanatory power of international economics in general and of marginal productivity differentials in particular turns out to be very limited. Overriding costs of migration and policy effects must have dominated actual patterns.

3.2 Capital Mobility

The 1980s have sometimes been labelled the decade of international liberalisation of capital movements. But actually, liberalisation of international capital flow regulations has taken place at different times in European countries. Switzerland for instance has traditionally been famous for its liberal financial legislation. The United Kingdom deregulated its financial markets completely in 1979, but the Nordic countries did not liberalise their restrictive capital flow regulations until ten years later¹⁵.

As far as the EC countries are concerned, EC had implemented common rules for intra-EC capital flows but not concerning the flows with non-EC countries. EFTA has never agreed on any common policy on capital flows. At present, some restrictions are left in many European countries, e.g. on the purchase and foreign ownership of real estate. But in July 1990 all EC countries abandoned their remaining controls on international capital flows. EFTA countries adapted EC regulations as well when they joined the European Economic Area¹⁶.

International capital movements can take different forms and capital flows may be quite heterogeneous in practice. They include public financing and transfers, private portfolio investments, foreign direct investment, investment in real estate, operations in securities and in units of collective investment undertakings, commercial and financial credits and loans and private capital movements. It is likely that only a part of these flows correspond to the type of reasoning we assumed in our discussion on international economics. Therefore, we are going to discuss three different types of aggregates: the net capital account (excluding reserves), net foreign direct investments (FDI) and net portfolio investments.

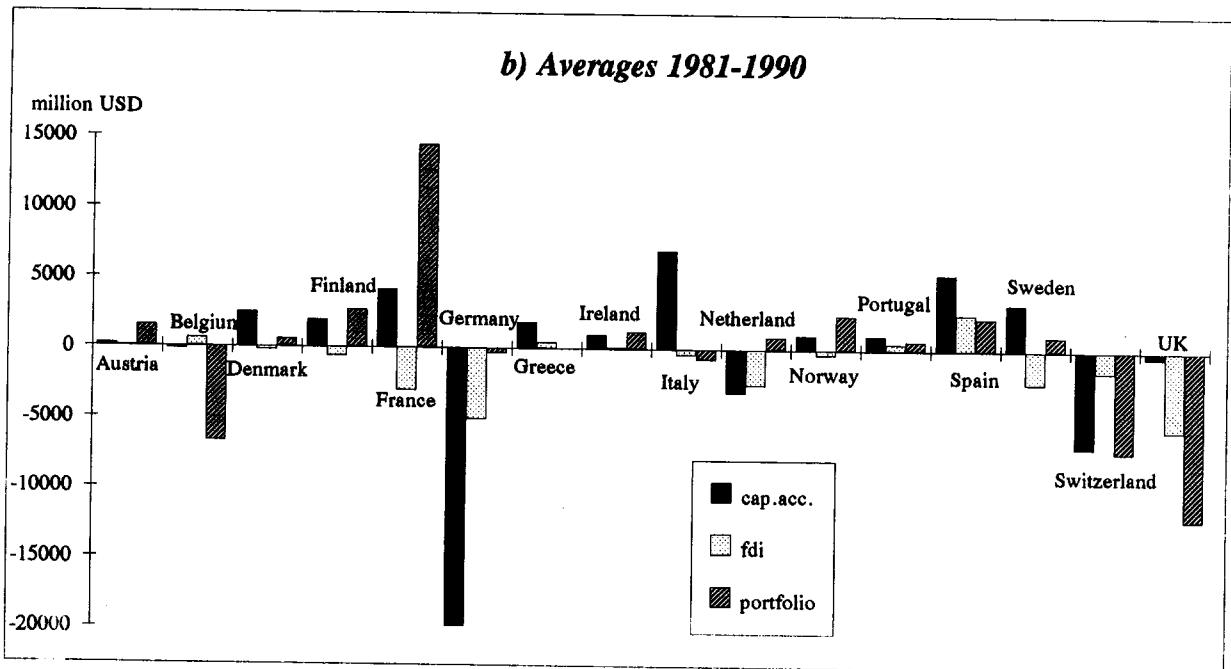
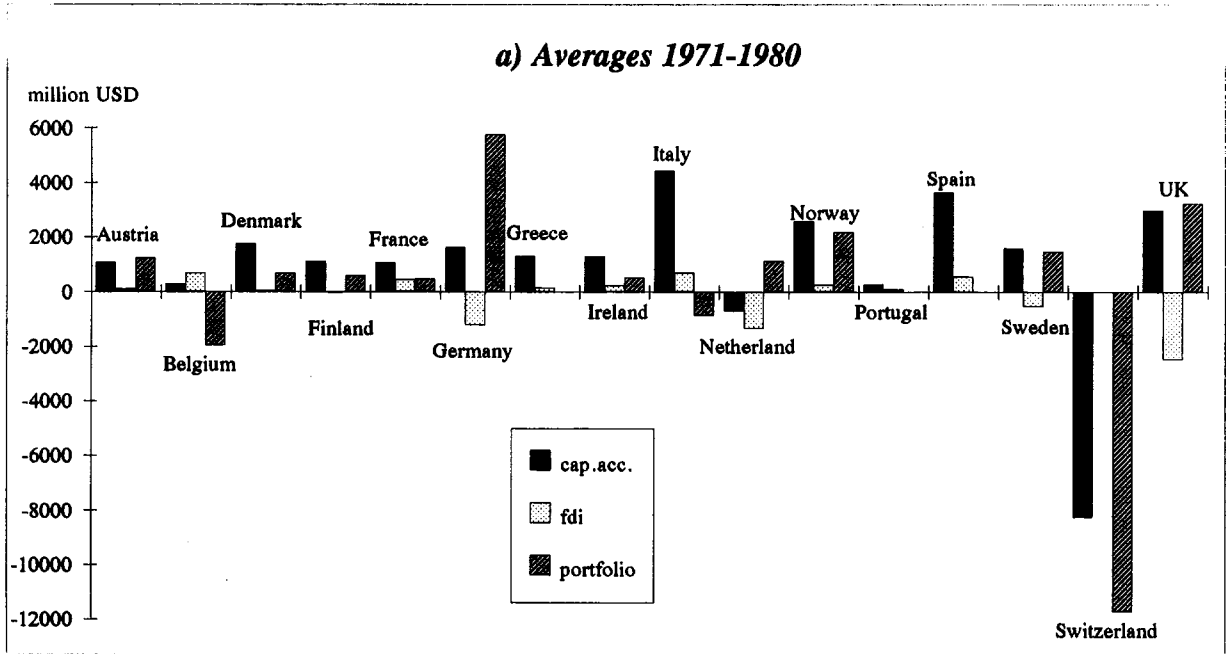
Until the early 1970s the United States unambiguously dominated the international capital markets. Because of the collapse of Bretton Woods system, the two oil shocks and the liberalisation of capital flow restrictions in some European countries, important changes in the structure of capital flows took place in the 1970s. Also the flows of private long-term capital to developing countries increased significantly. Japanese markets opened up. Simultaneously, eurodollar markets developed (see e.g. Panic and Scioppa 1989).

In the 1980s, the international debt crisis cast its shadow on international investments. Because of increasing uncertainty, investors preferred net portfolio investment rather than foreign direct investment. Portfolio investments outweighed the quantitative importance of foreign direct investment in international capital flows by and large. The total volume of foreign direct investment, however, grew considerably as well. Direct investment flows of the OECD countries were about twice as large in the 1980s as in the 1970s.

¹⁵ In Finland an important starting point for the liberalisation process was lifting the restrictions on forward exchange rate operations in the very beginning of the 1980s. Anders Vredin (1990) has discussed the process of capital liberalization, especially in the case of Sweden.

¹⁶ With the exception of Switzerland of course, which stays still outside the European Economic Area.

Graph 2. Net Capital Accounts, Foreign Direct Investment and Portfolio Investment of Western European Countries in Million US Dollars (averages in 1985 prices and exchange rates)



Source: IMF Balance of Payments: own transformations

Graph 2 shows the average balances of the capital accounts, portfolio investment and foreign direct investment in the 1970s and 1980s for all EC and EFTA countries (except Iceland and Liechtenstein). The data presents the averages of annual balance of payments statistics of the International Monetary Fund, deflated into US dollars at 1985 prices and exchange rates. With the exception of Switzerland and the Netherlands, Western European countries have all been net importers of capital in the 1970s. In the 1980s, the situation looked more diverse: apart from Switzerland, Germany became the largest net lender of international capital.¹⁷ Also the Netherlands, the United Kingdom, Belgium and Luxembourg were net exporters of international capital on average.

Still in the first half of the 1980s, the EC countries tended to make most of their foreign direct investment in the United States rather than in other European countries. Intra-European foreign direct investment became even less important than it was in the second half of the 1970s.

In the late 1980s, there was a change both in the basic character of investment flows and in the traditional regional direction of these investments. The US became a major recipient of capital and Japan became the largest net investor abroad. Also portfolio investment became increasingly important again. The EC countries have substantially increased their investments abroad. The UK is the second largest investor among the OECD countries. In the latter part of the 1980s, the attraction of the EC as a host region for FDI has increased markedly mainly because of the Internal Market program. That also increased intra-EC direct investment. (EFTA Trade 1991).

Since the EC announced its Internal Market program in the mid-1980s, the EC area has become the most important host of West European non-EC countries' capital. About half of direct investment from EFTA countries has been placed within the EC, where Great Britain, Germany, France and Netherlands were the most important single host countries. Regional differences between the Nordic and Alpine EFTA countries are great especially with regard to inward investment. The Nordic countries receive most of their foreign investment from other Nordic countries, whereas the Alpine countries receive theirs from the EC. As the intra-Nordic flows are large just like the flows between Austria and Switzerland, there are clearly two blocs in EFTA. Inside these blocs the flows are sizeable but between them the flows are small (EFTA Trade 1990).¹⁸

¹⁷ The figures discussed here are ten-years averages. Of course, as far as Germany is concerned, the situation has been changing dramatically with German unification. At the end of this century Germany is converting into Europe's highest net capital importer. Due to the tremendous capital demand of the restructuring former communist countries capital is getting more scarce on a worldwide level. Our paper directly concerns only the situation that has been typical for Europe during the 1970s and 1980s.

¹⁸ Unfortunately, available and internationally comparable information on capital flows is poor. The main problem is the lack of cross country data. Actually we do not know where all the capital comes from and where it goes. It is, however, evident that the flows between Europe, US and Japan are much larger than the intra-European flows

Conforming to our theoretical hypothesis, the less developed southern economies enjoyed the most important net capital increases due to international capital mobility. Column I of table 3 shows the net balance of average annual financial flows as a percentage of GDP during the 1970s and 1980s. During both decades, Ireland, Greece, Spain and Portugal were on average net importers of international capital (from 1,5 % to 7,5 % of GDP). The largest change shows up for Ireland (7,3 % in the 1970s and 4,2 % in the 1980s) and for Greece (4,9 % and 5,2 %), while for Portugal we record the most important relative increase (from 1,5 % to 3,6 %).

Most of these net capital inflows were probably not due to classical private capital movements. Foreign direct investment made a significant contribution to the positive current accounts in Ireland and Greece during the 1970s, and in Spain, Portugal and Greece during the 1980s. With the exception of Ireland, which besides Norway, was the most distinct net receiver of portfolio capital and Portugal, which showed a clearly positive saldo in the 1980s, portfolio investment stayed close to zero in these countries.

As discussed in the first part of this paper, we would expect net capital flows to be influenced by differences in factor payments which should represent marginal productivity of capital plus the risk premium. In empirical research, the question of measurement becomes a central problem. In fully competitive markets, marginal productivity should eventually show up in interest rates. Furthermore, investment decisions should be determined by the real return on capital, for which reason we have to correct for inflation. Columns IV and V of table 3 show the spread of typical real short- and long-term interest rates relative to German interest rates. For practical reasons, the figures shown are calculated using ex post real interest rates i.e. they were calculated using realised inflation reflecting static expectations and not calculated from actual (forward-looking) inflation expectations. Tax effects are also neglected. Interpretation should therefore be made with caution.

Our calculated interest rates show surprisingly wide average spreads from the German interest rates. Real (ex post) interest rate differentials were even more striking in the 1970s. Mainly due to high inflation they were in most European countries lower than in Germany. Only in the 1980s were real interest rates on average higher than in Germany, but most of them also got closer to the German level than in the 1970s.

The negative spread between Germany and the economically less developed European countries' real (ex post) interest rates in the 1970s contradicts sharply with our productivity expectations, probably because nominal interest rates were regulated. Indeed, in the southern countries, labour intensive production and low marginal productivity of labour indicated by the many hours worked to produce 100 USD of GDP value (column VI in table 3) as well as by the high share of operating surpluses in GDP (column VII) both point towards capital being scarce and relatively productive in these less developed European countries. Presumably, real (ex post) interest rates were seriously distorted by shocks (the oil price shock, breakdown of the Bretton Woods system) and political influences (capital controls, monetary policy).

Table 3. European Capital Mobility and Capital Productivity

a) Averages 1971 - 1980

	Capital account % of GDP	FDI % of GD	Portfolioinvest. % of GDP	Real short-term interest rate differential	Real long-term intererest rate differential	Hours worked per 100 USD of GDP	Operating surplus per GDP, %
	I	II	III	IV	V	VI	VII
Austria	1,96	0,20	2,23	-0,48	n.a.	9,3	18,6
Belgium***	0,34	0,82	-2,34	-0,53	-1,21	7,6	21,3
Denmark	3,04	0,10	1,17	-0,16	0,94	6,5	19,5
Finland	2,30	-0,06	1,23	n.a.	-5,03	8,3	18,0
France	0,20	0,09	0,09	-2,40	-4,48	7,9	19,8
W-Germany	0,25	-0,19	0,90	0,00	0,00	8,2	18,7
Greece	4,85	0,53	0,00	n.a.	n.a.	24,7	38,2
Ireland	7,34	1,40	2,94	-5,69	-4,05	12,4	21,1
Italy	1,07	0,17	-0,21	-5,13	-6,85	9,7	26,5
Netherlands	-0,53	-1,00	0,85	-2,67	-1,78	7,2	20,4
Norway	5,37	0,54	4,54	-2,24	-3,72	5,4	14,0
Portugal	1,49	0,54	-0,04	n.a.	n.a.	37,3	26,9
Spain	2,14	0,33	-0,01	-1,56	n.a.	15,3	27,8
Sweden	1,58	-0,52	1,46	-2,65	-1,15	6,5	14,0
Switzerland	-8,34	0,00	-11,83	-0,62	-0,25	6,7	21,3
U.K.	0,63	-0,53	0,69	-6,45	-1,66	10,9	14,0

b) Averages 1981 - 1990

	Capital account % of GDP	FDI % of GD	Portfolioinvest. % of GDP	Real short-term interest rate differential	Real long-term intererest rate differential	Hours worked per 100 USD of GDP	Operating surplus per GDP, %
	I	II	III	IV	V	VI	VII
Austria	0,31	0,05	2,23	0,37	n.a.	7,1	38,6
Belgium***	-0,16	0,58	-6,56	1,26	0,56	5,6	26,4
Denmark	3,46	-0,28	0,82	1,97	2,27	5,3	21,7
Finland	2,85	-0,94	3,95	2,02	0,05	5,4	19,6
France	0,60	-0,44	2,13	0,54	0,78	5,9	21,1
W-Germany	-2,54	-0,65	-0,04	0,00	0,00	6,5	21,6
Greece	5,20	1,26	0,00	n.a.	n.a.	19,4	38,6
Ireland	4,15	0,51	5,02	0,87	0,65	9,1	25,7
Italy	1,27	-0,07	-0,13	0,72	-0,99	n.a.	35,0
Netherlands	-1,96	-1,63	0,57	0,56	0,95	6,2	28,3
Norway	1,44	-0,53	3,54	2,56	1,19	5,1	22,5
Portugal	3,58	1,67	2,36	-6,48	n.a.	27,1	33,6
Spain	2,60	1,22	1,11	1,33	n.a.	9,8	34,2
Sweden	2,68	-1,89	0,84	0,21	4,37	6,2	17,3
Switzerland	-5,90	-1,27	-6,18	-2,54	0,68	5,6	22,8
U.K.	-0,08	-1,01	-2,14	1,64	4,57	8,6	18,4

(IV): real short-term interest rate (ex post) differentials relative to German interest rates; (V): real long-term interest rate (ex post) differentials relative to German interest rates; (VI): hours worked to produce 100 USD of GDP value (at prices and exchange rates of 1985) indicating labour intensity of production; (VII): operating surplus as a percentage of GDP, *** currency union with Luxembourg, includes Luxembourg's net financial flows. SOURCE: operating surplus, employment and nominal interest rates: OECD; population, GDP and exchange rates: the World Bank; (GDP) deflators, financial flows (balance of payments data), nominal interest rates: IMF; wage rates and hours worked: ILO; own calculations and estimations.

They did not represent actual marginal productivity of capital, unless enormous technological differences would have existed within Europe. Low real interest rates or negative interest rate spreads may explain why private net FDI and portfolio investment to less developed European countries have been quite small despite presumed marginal productivity differences.

The pattern of net capital movements strengthens the view that capital has become more mobile during the 1980s and that factor mobility might have somewhat reinforced convergence of capital productivity. But there seems to be surprisingly much scope left for further integration. At least the present capital movements have not been sufficient to narrow the (predominantly even increasing) existing gaps between real wages and labour productivity within European countries (table 1).

3.3 On the Relation between Labour and Capital Flows

One of the main questions raised in the theoretical discussion was whether factor flows and trade are substitutive or complementary¹⁹. To find out if economic integration in Europe has increased both net capital and net migration flows (complementary relation) or if countries have rather been net importers of one production factor and exporters of the other one (classical assumption), we will now compare the signs of our calculated ten year averages.

Factor flows should furthermore be dependent on trade. If trade and factor mobility were substitutes, we would expect net factor movements to increase in volume if trade intensity decreases. If they were complements, we would expect trade intensity and factor mobility to increase or decrease simultaneously.

Table 4 compares our ten year average calculations for saldos of capital account balances and net migration. The same information is presented graphically in annex 3. Concerning trade, we measured trade intensity by calculating the annual average of total imports plus total exports as a percentage of GDP and investigated changes from the beginning to the end of the analysed decades. While trade intensity increased strongly for all countries in the 1970s, it actually decreased in ten countries in the 1980s. The difference between trade intensity at the end and at the beginning of the 1970s, and respectively for the 1980s, shows if integration by means of trade has increased (*) or decreased (-). The number of symbols indicates the intensity of change (very high, high, moderate, low) with respect to the intensity and nature of net migration and net capital account balances. The underlying absolute figures are given in annex 2.

¹⁹ See e.g. Feldstein and Horioka (1980) as well as Frankel (1992).

Table 4. On the Relation between Migration, Capital Flows and Foreign Trade

	in the 1970s: averages of			in the 1980s: averages of		
	net migration	capital account	trade intensity	net migration	capital account	trade intensity
Austria	**	*	**	**	*	*
Belgium	**	*	****	*	-	**
Denmark	*	**	*	*	***	-
Finland	-	*	**	*	**	--
France	**	*	**	**	*	-
Germany	***	*	**	****	--	-
Greece	***	****	**	***	****	*
Ireland	***	****	****	----	***	*
Italy	0	*	**	**	*	-
Luxembourg	****	*	*	***	-	***
Netherlands	***	-	**	**	--	-
Norway	**	****	*	**	*	-
Portugal	****	*	**	---	***	*
Spain	*	*	*	0	**	-
Sweden	**	*	**	**	**	-
Switzerland	--	----	**	***	----	-
United Kingdom	-	*	*	*	-	*

The meaning of the number of the stars and the minus signs is the following: one = low, two = moderate, three = high, four = very high. Stars refer to net inflows and minus signs to net outflows. Trade intensity here means exports plus imports in relation to GDP. Source: data in annex 2.

The empirical data comparing the two decades shows structural change both in the relation between labour and capital flows, and between capital flows and trade intensity. In the 1970s, the development of labour and capital flows has been complementary, but in the 1980s, the relation looked different. The change from a complementary to substitutive relation has occurred in Belgium, Germany, Ireland, Luxembourg, Portugal and Switzerland. The changes have been exceptionally strong in Ireland and Switzerland. An opposite shift from substitutability to complementarity has taken place in Finland only. In Austria, Denmark, France, Greece, Norway and Sweden, net balances of labour and capital flows showed the same signs in both periods. In Italy and Spain, no clear relation between labour and capital flows could be observed.

The available information is not sufficient to get any general insight into the relation between capital mobility and foreign trade intensity. In the 1970s, trade intensity increased sharply in Belgium and net capital flows remained small. But in Ireland, Greece and Switzerland, relatively strong increases in economic integration through trade were accompanied by highly unbalanced net mobility of production factors. In

the 1980s, trade intensity changed little but net mobility was still very unbalanced in Ireland, Greece, Portugal and Switzerland. Belgium's trade intensity continued to increase and net capital flows were low.

The strong changes and lack of uniformity of relations between migration, capital flows and trade during the 1970s and 1980s might be due to a structural transformation. Intra-industry trade as well as trade in services have increased. Labour mobility was affected in the 1970s by the oil shocks. When the traditional host countries experienced economic recession and their employment situation worsened, the foreign labour had to return home and return migration dominated the migration flows. This presumably explains most of the positive net migration figures for the southern European countries in the 1970s.

4 CONCLUSIONS

The analyses made in this paper do not allow any unambiguous answers to the question on the relation between factor and trade flows in Europe. Classical endowment-based approaches help in explaining some, but not all of the observed patterns. One problem is that the disequilibrium elements and structural changes are basically neglected in the trade theory.

The statistical information available was on too aggregate a level. All in all, empirical evidence for the 1970s and 1980s shows that factor flows inside Europe have stayed on relatively low levels compared to migration from Europe to US at the turn of the century or compared to capital flows between Europe, US and Japan. Within Europe, differences in factor prices (wages and real interest rates) and in factor productivity have stayed large. In almost all countries studied here, labour has been internationally almost immobile and differences in the price of southern and central European labour has hardly decreased. Free trade has still been hampered and has not been enough to guarantee efficient allocation of resources in Europe.

At the end of the first part of this paper, we set up three hypotheses. First, we argued that if countries mainly differed by relative factor endowments, then factor flows and trade should be substitutes. If important differences in technology between countries existed and there were increasing returns to scale, then trade and factor flows should have been complements. Empirical evidence based on macro-data for European countries indicates a change from complementary pattern in the 1970s to a substitutive one in the 1980s. But the complementarity between factor flows in the 1970s could as well be interpreted as a result of exceptional business cycle distortions and structural changes rather than by deviations from traditional Heckscher-Ohlin assumptions.

We also argued that with endowment-based differences between countries, the mobility of one factor should be sufficient for economic integration to arise. Migration and capital flows should constitute substitutes for each other. In our data, we found some evidence of an enforced tendency towards substitution of labour mobility by increasing capital mobility. Our second hypothesis concerned factor price equalisation. We argued that differences in production factor payments determine the direction and intensity of factor flows. If endowment differences matter, then factor payments should be relatively high for scarce factors. If differences in technology matter, then the payments would be highest, where they produce with highest productivity. In Europe, differences in the capital-labour ratio have stayed large. Hours worked per 100 USD of GDP have converged somewhat but differences are still surprisingly large between southern and central European countries.

Although heading for an Internal Market, Europe has not achieved very deep economic integration if we measure the degree of integration by factor price equalisation. Wage differentials are still very large. The direction of migration flows has followed these differentials better in the 1980s. In the 1970s, labour flows were often focused on areas with a lower real wage level because of the large return migration from central European countries to the southern European ones. In general,

wage differentials did not explain the intensity or direction of labour mobility in Europe.

Real interest rates showed inconsistent patterns and were especially low in the southern countries during the 1970s. In the 1980s they came closer to expected patterns but still important ex post differentials were recorded. More information would be needed on the causes for these glaring deviations from theoretical expectations. Are they the reason behind the relatively small volume of private net investment or are the measured real interest rates just a bad proxy for returns on capital? The pattern of operating surpluses at least seem to support the latter argument. If marginal productivity of capital is measured by operating surplus, then capital seems to move to places where capital productivity is higher, i.e. to follow modern trade theory arguments.

Our third hypothesis was that mobility and trade patterns in Europe may change over time from purely substitutive to mainly complementary relationships. It could neither be verified nor clearly rejected from our data.

The mobility of labour in Europe has probably decreased rather than increased. Capital mobility has not induced any tendency towards equalisation of wages or to true convergence of capital-labour ratios. One reason for this may be that despite the mainly substitutional relationship between capital mobility and labour mobility, certain assumptions of modern theoretical approaches were right in predicting that for advanced integration of economies capital market integration has to be complemented by the mobility of at least certain types of labour (high-skilled specialists, people providing services etc.). A reasonable way to overcome the observed rigidities of economic integration might be to actively promote intra-European mobility of distinct types of labour. Labour market measures like the mutual recognition of professional certificates or the promotion of European student exchange as they were introduced within the Internal Market programme may be conceivable examples of such policy steps.

All in all, the traditional endowment-based trade theory predictions have shown up in European integration in the 1970s and 1980s as a weak tendency only. Much scope is left for further integration. To have more integration, further measures should be taken to promote capital and labour mobility. To get a comparative basis for decision making, econometric analyses on the dynamic patterns and causality of factor flows and trade in Europe as well as investigations with micro-data would be needed.

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Table A1. Average Annual Change in the Stock of Foreign Labour by Nationality of Selected European Countries in the 1970s and 1980s (Number of Persons)

Country of residence Nationality	Germany		Switzerland		France		Belgium		Sweden	
	average in 1975-81	average in 1981-87	average in 1975-81	average in 1981-87	average in 1975-81	average in 1981-87	average in 1975-81	average in 1981-87	average in 1975-81	average in 1981-87
EC 12	1817	-25617	-6900	6567	-32417	-12833	2233	3900	-117	-417
-Greece	-13300	-3167	n.a.	-50	-833	n.a.	450	67	-117	-417
-Italy	-317	-16950	-7683	-550	-8733	-7333	917	-167	n.a.	n.a.
-Portugal	-2150	-2933	883	3800	767	-6900	533	267	n.a.	n.a.
-Spain	-7683	-2567	-1433	1500	-20183	-1600	333	917	n.a.	n.a.
Austria	1500	-617	-250	117	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	233	-3883
Yugoslavia	-13050	-5683	1717	3817	n.a.	n.a.	17	33	n.a.	-33
African Mediterian*	n.a.	n.a.	n.a.	n.a.	-7967	-21733	-3750	2317	n.a.	n.a.
Turkey	9183	-2433	1117	883	n.a.	n.a.	2167	2017	n.a.	n.a.
Others	-17633	-1717	-2017	717	-10967	23400	8367	4950	4733	1233
TOTAL	-18183	-36067	-6333	12100	-51350	-11167	9033	13217	4617	-3100
in % of TLF**	-0,5	-0,2	-0,2	0,3	-0,3	-0,1	0,2	0,3	0,1	-0,1

*= Algeria, Morocco, Tunisia; **= Total Labour Force; n.a. = not available

Table A2. *European Factor Flows and their Determinants, Annual Averages in 1971-1980*

	I	II	III	IV	V	VI	VII	VIII	II	III	IV	XII
	Sum of net migration decade (persons)	(% of population)	Capital account, net billion USD in 1985 prices	Foreign direct investment billion USD in 1985 prices	Portfolio investment billion USD in 1985 prices	Change in trade intensity	Short term interest rate differential	Long term interest rate differential	Real hourly wages relative to Germany	Real employees' compensation/hour relative to Germany	Hours worked per 100 USD of GDP	Operating surpluses per GDP, %
Austria	77000	1,02	1074	107	1226	15,0	-0,48	n.a.	78,5	91,5	9,3	18,6
Belgium	103000	1,05	287	689	-1970	32,8	-0,53	-1,21	86,0	106,2	7,6	21,3
Denmark	24000	0,47	1765	59	680	9,4	-0,16	0,94	140,0	121,0	6,5	19,5
Finland	-29000	-0,62	1113	-31	595	16,2	n.a.	-5,03	89,1	92,3	8,3	18,0
France	596000	1,13	1075	463	475	12,5	-2,40	-4,48	71,3	95,0	7,9	19,8
W-Germany	1572000	2,55	1613	-1219	5771	14,1	0,00	0,00	100,0	100,0	8,2	18,7
Greece	249000	2,71	1298	142	n.a.	18,4	n.a.	n.a.	23,3	19,4	24,7	38,2
Ireland	103000	3,22	1291	247	517	33,3	-5,69	-4,05	74,8	61,6	12,4	21,1
Italy	-2000	-0,00	4436	705	-862	13,3	-5,13	-6,85	76,8	69,4	9,7	26,5
Luxembourg	26900	7,52	n.a.	***	***	4,9	0,15	-0,52	105,0	98,6	8,4	16,6
Netherlands	339000	2,48	-701	-1323	1123	14,4	-2,67	-1,78	104,8	116,4	7,2	20,4
Norway	44000	1,10	2589	260	2187	4,8	-2,24	-3,72	130,6	148,0	5,4	14,0
Portugal	384000	4,07	293	107	-7	15,4	n.a.	n.a.	21,2	19,3	37,3	26,9
Spain	19000	0,05	3631	566	-10	6,4	1,56	n.a.	46,1	45,5	15,3	27,8
Sweden	87000	1,06	1605	-527	1486	13,1	-2,65	-1,15	134,2	136,9	6,5	14,0
Switzerland	-89000	-1,40	-8212	n.a.	-11642	13,2	-0,62	-0,25	120,2	129,7	6,7	21,3
U.K.	-251000	-0,45	2990	-2483	3235	9,1	-6,45	-1,66	86,3	76,5	10,9	14,0

Sources: migration, employment and employee's compensation: OECD; population, GDP growth and exchange rates: the World Bank; (GDP) deflators, financial flows (balance of payments data), nominal interest rates: IMF; wage rates and hours worked: ILO; own calculations and estimations

Table A3. *European Factor Flows and their Determinants, Annual Averages in 1981-1990*

	I	II	III	IV	V	VI	VII	VIII	II	III	IV	XII
Sum of net migration within decade (persons)	Sum of net migration within decade (persons)	(% of population)	Capital account, net billion USD in 1985 prices	Foreign direct investment billion USD in 1985 prices	Portfolio investment billion USD in 1985 prices	Change in trade intensity	Short-term interest rate differential	Long-term interest rate differential	Real hourly wages relative to Germany	Real employees' compensation/hour relative to Germany	Hours worked per 100 USD of GDP	Operating surpluses per GDP, %
Austria	115000	1,52	212	36	1537	3,1	0,37	n.a.	84,4	89,2	7,1	38,6
Belgium	48000	0,49	-166	596	-6737	18,7	1,26	0,56	87,3	110,9	5,6	26,4
Denmark	42000	0,82	2472	-201	584	-7,9	1,97	2,27	131,1	116,3	5,3	21,7
Finland	44000	0,90	1935	-641	2685	-18,0	2,02	0,05	89,3	113,1	5,4	19,6
France	547000	1,10	4099	-3017	14429	-0,8	0,54	0,78	74,2	103,8	5,9	21,1
W-Germany	2877000	4,55	-19873	-5079	-344	-3,1	0,00	0,00	100,0	100,0	6,5	21,6
Greece	263000	2,65	1821	442	n.a.	6,3	n.a.	n.a.	29,4	22,7	19,4	38,6
Ireland	-229000	-6,53	996	123	1207	4,9	0,87	0,65	77,7	66,6	9,1	25,7
Italy	790000	1,38	6987	-388	-719	-4,4	0,72	-0,99	84,3	N.A.	n.a.	35,0
Luxembourg	13300	3,60	***	***	***	21,2	1,91	1,21	99,7	101,0	7,1	15,1
Netherlands	262000	1,80	-3066	-2551	890	-4,2	0,56	0,95	105,2	100,0	6,2	28,3
Norway	56000	1,34	1000	-370	2453	-6,7	2,56	1,19	130,5	113,4	5,1	22,5
Portugal	-322000	-3,17	997	465	658	6,0	-6,48	n.a.	20,5	18,4	27,1	33,6
Spain	1000	0,00	5423	2549	2313	-0,8	1,33	n.a.	54,4	53,2	9,8	34,2
Sweden	169000	2,02	3321	-2339	1035	-0,2	0,21	4,37	117,6	107,7	6,2	17,3
Switzerland	250000	3,84	-6896	-1478	-7221	-2,6	-2,54	0,68	121,2	126,7	5,6	22,8
U.K.	182000	0,32	-428	-5696	-12001	1,0	1,64	4,57	79,6	73,1	8,6	18,4

Sources: migration, employment and employee's compensation: OECD; population, GDP growth and exchange rates: the World Bank; (GDP) deflators, financial flows (balance of payments data), nominal interest rates: IMF; wage rates and hours worked: ILO; own calculations and estimations

