The Impact of EU Enlargement in 2004 and 2007 on FDI and Migration Flows
Gravity Analysis of Factor Mobility

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This paper contributes to the ex post assessment of macroeconomic effects triggered by the 2004 and 2007 wave of EU enlargement, with a specific focus on factor trade, i.e. the cross-border mobility of labor and capital. While most of the potential for trade in goods and for foreign direct investment (FDI) was tapped ahead of actual enlargement, above all migration effects are spread out over a longer period, given transition arrangements for labor market integration.

We use (innovative) gravity models to establish the potential for factor trade and cross-check the results against recent developments. Our key finding is the uneven development of capital and labor mobility since EU enlargement. While migration potentials are materializing as expected, FDI stocks have remained relatively stable at already high levels. Furthermore, we observe a nonlinear relationship between migration and per capita income that may be explained on theoretical grounds and attributed to institutional factors. While the highest-income countries (above all Slovenia and the Czech Republic) are already turning into immigration countries, the low-income countries and those last to join the EU (Bulgaria and Romania) are likely to see further emigration and more FDI inflows.

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Keywords: EU enlargement, factor trade, labor mobility, capital mobility, migration, foreign direct investment, gravity model

1 Introduction

The effects of the large EU enlargement rounds of 2004 (NMS-10) and 2007 on both new (NMS-12) and old (EU-15) Member States of the European Union have been studied in numerous ex ante assessments. However, only a small number of papers focused specifically on the euro area (for an overview see Fidrmuc et al., 2002, and Lammers, 2004). The number of ex post assessments is still limited (European Commission, 2006; Breuss, 2007). Thematically, the free movement of goods and services has been assessed rather thoroughly (Tajoli, 2007; Papazoglou et al., 2006; Ferragina et al., 2005), but with regard to the free movement of persons and capital, scientific evidence is still limited. Finally, the issue of labor mobility has never been more topical, because actual EU accession was more crucial for labor mobility than it was for the free movement of capital or goods and services. After all, cross-border trade and services between the EU and the former candidates for EU membership were liberalized much earlier, through the Association Agreements of the early 1990s.

Pinning down the very moment when the macroeconomic effects of EU enlargement started to emerge is difficult, insofar as the fall of the Iron Curtain and the ensuing ten-year EU accession process as well as the deepening of European integration through the creation of a monetary union triggered similar effects. Taking into account those classification problems, the results of the first ex post studies appear to exceed expectations, above all for the

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new Member States. Gligorov and Richter (2007) find the convergence trend to have accelerated: In the three years following EU accession (2004 to 2006), the NMS-10 had a growth advantage of 3.1 percentage points over the EU-15, compared with 1.7 percentage points in the three years preceding EU entry. In a comparison spanning a somewhat longer period, Breuss (2007) found GDP growth to have accelerated by around 2.5 percentage points year on year in the new Member States, but by a mere 0.1 percentage points in the euro area. In line with earlier assessments, Austria emerges as the euro area country that has benefited disproportionately more from the EU's enlargement to the east (Havlik, 2005; Breuss, 2006).

What integration-related factors have been contributing to growth? The integration effects basically consist of five elements (Breuss, 2007): trade effects, factor mobility effects, fiscal effects, single market effects and monetary union effects. For the reasons outlined above, this paper focuses on the growth effects of factor mobility – a truly comprehensive assessment would, of course, require an analysis of all growth transmission channels.

The *factor mobility effects* central to this study relate to the factors capital and labor. In search of higher yield, capital in the form of FDI typically flows to countries with a lower stock of capital. Similarly, workers in search of higher wages migrate to countries which offer more productive employment opportunities. While FDI-related factor yields have been realized on a cross-border basis since the *fall of the Iron Curtain*, labor migration from east to west remained limited even after the EU accession of the new Member States in virtually all countries of the euro area. Not taking into account intra-EU distribution effects, the transition arrangements limiting the freedom of movement of persons do not appear to make sense from an economic view. After all, economically speaking, it is the recipient that benefits from factor mobility; in other words, capital mobility boosts growth in the new EU Member States, while labor mobility boosts growth in the euro area.[2]

In addition to reviewing the empirical literature and providing a descriptive analysis of the available data, we use (innovative) gravity models to analyze the effects enlargement had on factor mobility. Gravity analyses are a method of choice for integration studies, as they specifically take into account geographic distance and income gaps as key underlying factors. Even so, gravity analyses have rarely been used in the past, and if so, they were mostly applied to trade flows rather than to FDI and migration. Among other things, we look into the question of whether goods and factor trade are supplements or substitutes for each other. We discuss direct effects on growth, (prices), employment and fiscal developments as well as indirect effects (e.g. productivity effects through division of labor) and attempt to answer the following questions:

- How large are potential FDI flows to, and migration flows from, the new EU Member States?
- To what extent have potential FDI and migration flows materialized since EU accession?
- What FDI and migration flows are to be expected following EU accession?

[2] *Significant capital inflows plus significant labor outflows, however, have led to macroeconomic stabilization problems in some Eastern European countries, while in recipient countries large-scale immigration poses policy challenges in terms of integrating migrants and infrastructure planning. At the same time, anecdotal evidence on the outsourcing of production capacity to other countries has drawn a lot of attention.*

We also address the following issues: Has the forecast win-win situation of EU enlargement materialized? When may we expect the potential for positive effects to have been fully exploited? How are the benefits split among countries, regions, factors and sectors? Are there losers, too? Can economic policymakers contribute to optimizing and sustaining those benefits?

The paper is structured as follows: Section 2 below discusses the relevant literature, a number of stylized facts and institutional framework conditions for factor mobility in an enlarged EU. Section 3 presents gravity analyses on FDI and migration. Section 4 provides an interpretation of the results and a number of conclusions for policymaking.

2 Factor Mobility and EU Enlargement

The economic integration of two economic areas may take two forms: Either the two regions trade goods and services; or capital and workers – i.e. the production factors required to produce the goods and services in the first place – move between the two regions. In this respect, it matters whether mobile production factors complement or supplement cross-border trade. Conventional international trade theories provide divergent answers to this question. While goods trade and factor trade substitute each other in a framework building on the Heckscher-Ohlin model (Mundell, 1957), easing some of the highly restrictive assumptions suggests that trade and factor mobility may well supplement each other (Markusen, 1983). Ultimately, this question will have to be assessed empirically, taking due account of the given context.

On balance, the complex interrelation of the variables trade, FDI and migration is influenced by a large number of factors, including educational attainment, geographical distance, trade barriers and income gaps (Schiff, 2006). Unlike the two key drivers of globalization, namely trade and FDI, migration has played a comparatively minor role in terms of magnitude, despite the rise in migration flows in recent years. In 2006, a mere 1.3% of the working population of the EU-15 were NMS-10 nationals (Brückner, 2007), whereas FDI flows from the EU-15 made up some 31% of the GDP of the new Member States (2004 enlargement round), and the Central and Eastern European countries that joined the EU in 2004 (the NMS-8) imported more than 13% of the goods exported by the EU-15 (European Commission, 2006).

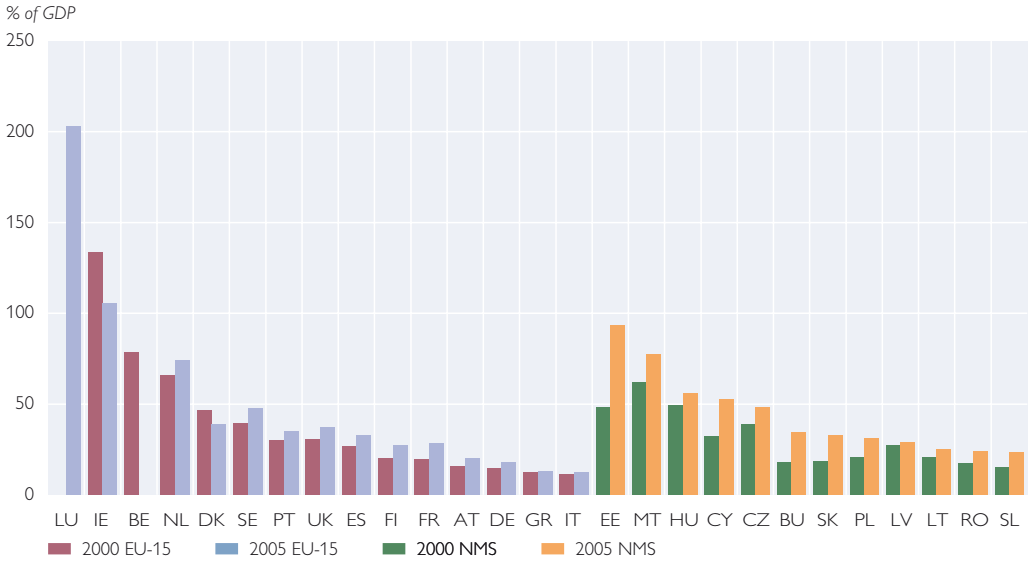
2.1 Direct Investment and EU Enlargement

Ever since the end of the Cold War and the political and economic opening-up of Eastern Europe, the economic geography of Europe has changed fundamentally. The "new economic geography" attempts to combine the choice of location and location factors in order to produce a comprehensive assessment of the challenges created by such restructuring (Venables, 2006). A key finding in this respect is that location, i.e. "nearness or distance," is positively correlated with growth and productivity. Mobile factors tend to reinforce those effects, as they tend to migrate to locations where productivity effects are expected to be high. While a host of determinants are of an exogenous nature (Bevan und Estrin, 2004), geographical location advantages and the ensuing location choices largely depend on endogenous economic determinants as well.

Economic analysis of the change in economic framework conditions triggered by EU enlargement has largely

Chart 1

Inward FDI Stocks



Source: UNCTAD.

concentrated on the traditional determinants so far. For instance, Austria, Germany and Finland have seen their export shares to the NMS-8 grow significantly, which has fundamentally changed foreign trade flows within the EU. Developments have been even more conspicuous in the area of factor mobility. While capital liberalization was a key prerequisite for participation in the Single Market, sweeping transitional restrictions have decisively limited or postponed mobility across labor markets. At the same time, the redesign of ownership structures reflects specific parameters, such as the privatization process observed across Eastern Europe.

FDI inflows have played a crucial role in the economic transformation and integration process in Eastern Europe. Foreign investors have been looking above all for new markets as well as favorable prices for input factors. In the target countries, FDI has above all improved the income and growth potential and has intensified competition; moreover, the target countries benefit from the transfer of technology and know-how.

The last decade was generally a period of strong growth in FDI flows to Central and Eastern Europe, and increasingly also to Southeastern Europe. On average, FDI stocks now account for about 40% of GDP in the NMS-10. This share is markedly above the world average and also exceeds the shares of India or China, some of the most popular target countries of our time. Yet this pattern may possibly also reflect a shift in FDI dynamics from Greece, Spain and Portugal (representing the EU's enlargement to the south) to the new Member States from Central and Eastern Europe, rather than a mere expansion of FDI flows (Breuss et al., 2004).

As the pattern of FDI flows to Eastern and Southeastern Europe shows, integration developments are driven by a mix of determinants (Fischer, 2003), not least by the preferences and goals of consumers and investors, which are in

turn influenced by a broad range of influencing factors. In the debate, investors resident in industrial economies that target emerging markets are seen as being attracted almost exclusively by cheap production costs, above all by low wages and by low taxes, whereas ownership aspects, location factors and internationalization advantages have been found to be most relevant in actual fact (Dunning, 1993). Location-specific advantages are highly divergent for different types of businesses. Horizontally organized companies, which produce identical goods and services in different locations, may use FDI above all to avoid trade costs and to tap large or distant markets (Markusen, 1995). Vertically organized companies will diversify their manufacturing across regions above all to improve their cost structure. The challenge for economic theory is to summarize these incentives in a comprehensive view of FDI-relevant factors. Empirical studies have shown the (expected) market potential for FDI to dominate by far (Lankes and Venables, 1996; Blonigen, 2005).

Key aspects include absolute and comparative advantages, the direct control of foreign interests as well as generally the intensification of ties with major foreign markets. Solving the fundamental problem of geographic (and economic) distance is apparently a staggered process: The first step toward internationalization is cross-border trade in goods and services, which may occur with only very little direct involvement abroad. In a second step, companies may establish branch offices or subsidiaries abroad in order to systematically work local markets. Alternatively, companies may invest in existing firms abroad; in this case internationalization strategies of originally locally oriented firms contribute significantly to minimizing risks and reinforcing competitiveness. Ideally, investor motives will broadly match the requirements of target countries or firms, with the interests of the latter focusing on expanding production capacities, enhancing productivity growth, benefiting from employment opportunities and getting access to technological know-how.

2.2 Migration and EU Enlargement

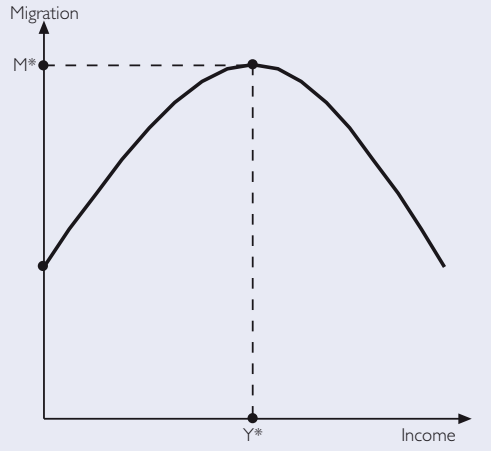
While empirical studies consistently identify income gaps and unemployment as the key drivers of migration, economic theory does not provide a fully satisfactory model for analyzing the causes and effects of migration. This has led to the coexistence of several interdisciplinary approaches, which basically attribute migration to a variety of push and pull factors (Arango et al., 1993).

Macroeconomic theories in the neoclassical tradition explain migration with a (skill) mismatch in labor supply and demand as well as with national wage differences. In contrast, *microeconomic* models explain decisions of individuals with cost-benefit deliberations based on lifecycle income and taking into account investment in human capital. In a model developed by Todaro and Maruszko (1991), for instance, the perspective of international migration prompts rural workers to flock to urban migration centers. Thus, accelerated rural depopulation pushes up urban unemployment despite emigration. *Newer economic* theories assume that the decision to migrate is taken at the family level rather than by individuals. The objective of migration is the collective maximization of income in absolute and relative terms (compared with reference families or neighbors) as well as risk minimization under the conditions of underdeveloped insurance markets (harvest failure). Thus, family members often work in both local and foreign

labor markets. *Dual labor market theory* highlights demand-side pull factors resulting from four characteristics of modern industrial societies: (i) structural wage inflation, (ii) lack of motivation for low-status jobs, (iii) economic dualism between a human capital-intensive core workforce and the peripheral workforce, and (iv) demographic trends in labor supply. The *world system theory* explains international migration with the structure of the global economy. Breaks and shifts occurring in the sending countries uproot and mobilize workers, whose services are in demand in cities throughout the world. According to the *network theory*, the probability of cross-border migration rises with interpersonal relations between (former) migrants and those left behind, as diaspora networks lower the risks involved in migration. *Institutional theory* puts the spotlight on private (humanitarian) organizations, which constitute social capital for migrants. Attempts to combine the theories outlined focus either on the cumulative reasons for social, cultural and economic change or are inspired by the *migration system theory*, according to which political and economic relations have a stronger impact than geographical distance.

Chart 2

Relationship between Migration and Income



Source: Schiff (2007).

One of the key findings of the empirical literature, as evidenced by chart 2, is the nonlinearity of the relationship between the degree of development and migration. In a historical overview spanning over two centuries, Hatton and Williamson (2005) outline a synthesis of the theoretical models mentioned above. Migration probability is a factor of income levels; but only once a given level is reached, migration flows will start to swell, even if income prospects brighten by and by in the country of origin. In turn, remigration will start once the income differential has reached a maximum. More recently, this pattern could have been observed during the EU's enlargement to the south as well as the Asian tiger countries' take-off.

Magnitude

In the first two years following enlargement, the number of foreign residents in EU-15 countries originating from NMS-8 countries rose from 910,000 at the beginning of 2004 to roughly 1.3 million people in 2006. The number of Bulgarians and Romanians that have moved to EU-15 countries is estimated to be in a similar range (900,000), but this figure should be interpreted with caution (Federal Ministry of Technology and Economics, 2007).

With regard to migration intentions, Eurobarometer surveys of 2005 showed the eight new EU members from Central, Eastern and Southeastern Europe (CESEE) split down the middle: Whereas Czech, Hungarian, Slovak and Slovenian labor had a comparatively low propensity to migrate to another EU country, the citizens of the three Baltic states and of Poland were more interested in migrating. In the latter countries, living or working in

Table 1

Residents in EU-15 Countries Originating from NMS-8 Countries

	2000	2002	2003	2004	2005	2006
	in 1,000 persons					
Austria	60.4	44.6	41	53.7	80.5	78.9
Belgium	9.3	12.2	9.5	15.6	25.6	59.9
Denmark	8.7	10	10.2	10.5	11.3	13.3
Finland	12.9	14.8	15.8	16.5	18.3	17.8
France	37.8	44.9	35.1	34	46.8	29.6
Germany	416.5	453.1	466.4	480.7	438.8	481.7
Greece	13.8	14.9	16.4	15.2	20.6	20.1
Ireland	6.4	8.6	49.1	54.1	58.5	58.5
Italy	34.4	41.5	42.2	55.6	67.8	79.8
Luxembourg	1.1	1.2	1.1	1.1	0.7	0.7
Netherlands	9.4	11.2	12.2	13.1	17.9	23.2
Portugal	0.4	0.7	0.6	0.7	0.8	0.3
Spain	10.6	30	41.5	46.7	61.8	74.3
Sweden	23	22.9	21.4	21.1	23.3	26.9
United Kingdom	52.7	62	78.6	81.4	180.8	328.6
EU-15	697.3	772.3	841.1	909.0	1,053.40	1,293.50

Source: National population statistics, Eurostat (cited from Brückner, 2007).

another EU country within five years was conceivable for about 1% to 2% of all citizens, and for 7% to 9% at a later time. Those figures are not substantially higher than the corresponding EU-15 figures, e.g. for the citizens of the three Scandinavian countries plus Ireland and Luxembourg.

Institutional Migration Factors

The decision to migrate to another country, to move on to a third country or to remigrate does not depend on political, cultural and economic conditions alone, but also on the institutional framework.

The institutional framework basically consists of a country's general immigration rules and its EU (and euro area) perspective. In addition, financial frameworks such as the social security system or labor market institutions also play a crucial role. Moreover, the institutional framework also relates to access to public services, such as schools and universities, that the families of migrant workers may use. Finally, even the tax system of a country may be considered part of the institutional framework – even though migrants might not go for a particular country solely because of its tax system, and are unlikely to fully understand the intricacies of a given tax regime ex ante.

Yet many migration models assume that migrants are aware of the relevant institutional peculiarities. In this particular case, however, the assumption of complete information is certainly not appropriate. While the economic drivers of migration decisions, such as wage differentials or differences in unemployment rates, are fairly transparent, this is less so the case for institutional factors. The sheer complexity of the issue (requiring e.g. a cross-country comparison of pension systems), the unknown probability of certain events (do emigrants even expect to be unemployed at some point?) and the process of permanent change to which social security systems are subject make it hard to pin down "institutional differences."

Over time, information deficits become smaller, because the more people

migrate to a given country, the more easily other migration candidates will be able to access information. Information snowballing effects also explain why migrants tend to cluster in particular areas rather than to spread out evenly across potential target countries. Cases in point are the migration waves from Poland to the United Kingdom and[3] to Ireland, but also migration from Romania and Bulgaria to Spain, Italy and Greece.

The target country, in turn, plays a role by either accepting, fostering or limiting emigration. Ireland, the United Kingdom and Sweden opted against limiting the freedom of movement of NMS-8 workers in the first place; other countries have since followed suit in opening their labor markets. One year before the transition period limiting access for NMS-8 workers may be extended one more time, those restrictions have been retained only in a handful of countries, including Germany and Austria.

In contrast, in the second wave of EU enlargement toward the east, in 2007, all old Member States (apart from Finland and Sweden) retained their restrictions for immigration from Bulgaria and Romania. Even the United Kingdom refrained from offering Romanian and Bulgarian workers immediate free entry. This stance was mainly explained with the predominance of migrants going into agricultural jobs, the ensuing regional reallocation of migration and related longer-term challenges for society, especially language and schooling problems.

Germany and Austria, whose long borders with the EU's newest Member States make them particularly attractive for commuters, adopted a number of specific measures on top of their generally defensive policies. Germany, for instance, gives preferential treatment to IT workers among migrants. In its immigration law reforms of 2003 and 2005, Austria introduced an automatic residence and work permit for foreign graduates from Austrian universities and a green card scheme. At the end of the 1990s, Austria concluded an agreement on the employment of cross-border workers with Hungary, and another such agreement with the Czech Republic in mid-2005. There are plans to conclude a similar agreement with Slovakia.

At the same time, the source countries can also control migration through their institutional frameworks. The Iron Curtain was perhaps the most extreme form of such control; other, more subtle measures include the loss of entitlements accrued in the social security system (e.g. no possibility to transfer accrued benefits) and barriers or disadvantages with regard to the sale of property (e.g. high sales taxes for property). In contrast, a deterioration of social conditions, which widens the gap to other countries, may fuel migration. Such economic policy decisions are, however, typically motivated by reasons other than demographic policy considerations. In other words, health care, regional or education policy measures may have an indirect impact on migration decisions.

[3] *According to data from the U.K. Workers Registration Scheme (Home Office, 2008) more than 508,000 Polish citizens applied for the right to work in the U.K. between 2004 and 2007. An opinion poll reveals that the majority of U.K. immigrants intend to stay only less than three months. As was to be expected given population size and the historical ties between Poland and the U.K., Polish migrants account for the highest share of (66%) of all applications, followed by applicants from Lithuania and Slovakia (both 10%). This notwithstanding, the share of U.K. population originating from NMS-8 countries was still rather low at 0.4% in 2005 (the share of EU-15 citizens being 1.7%; Federal Ministry of Economics and Technology, 2007).*

Table 2

Labor Market Restrictions for NMS-8 Citizens in EU-15 Countries

	Access for NMS-8 workers		Access for Bulgarian and Romanian workers[1]
	May 2004 to April 2006	May 2006 to April 2009	2007 and 2008
Austria	limited	limited	limited
Belgium	limited	limited	limited
Denmark	limited	limited	limited
Finland	limited	open	open
France	limited	limited[2]	limited[2]
Germany	limited	limited	limited
Greece	limited	open	limited
Ireland	open	open	limited
Italy	limited	open[3]	limited[4]
Luxembourg	limited	limited	limited
Netherlands	limited	open[5]	limited
Portugal	limited	open	limited
Spain	limited	open	limited
Sweden	open	open	open
United Kingdom	open	open	limited

Source: European Commission and www.EurActiv.com (cited from OECD, 2007b).

[1] *Access for Bulgarian and Romanian workers is limited also on the labor markets of Malta and Hungary.*

[2] *Excluding health care, transport, construction, and hotels and restaurants.*

[3] *Since July 2006.*

[4] *Simplified access procedures in individual industries.*

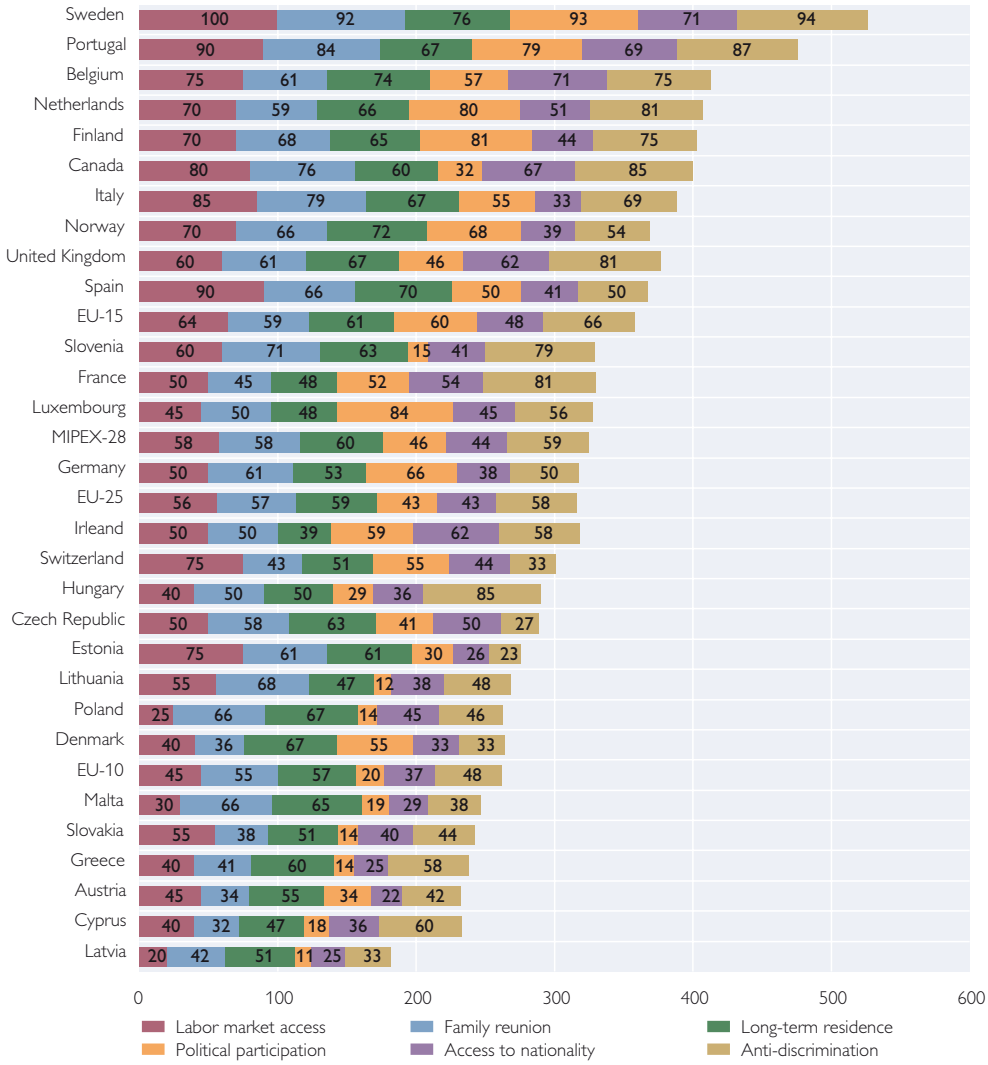
[5] *Unlimited access in most industries since April 2006; generally unlimited access since May 2007.*

A systematic overview of the legal situation of migrants in Europe is provided by the Migrant Policy Integration Index (MIPEX; Niesser et al., 2007; chart 3). MIPEX measures legal and other policies to integrate migrants in the EU-25 and three non-EU countries. On balance as well as in every one of the six policy areas covered by MIPEX, the EU-25 have only come halfway in establishing best practice. So far, Sweden has been the only country to reach the best practice rank with regard to access to the labor market as well as good integration promotion figure in the final ranking across the six policy strands. Among the 25 EU countries covered by MIPEX, 9 countries have measures in place that may be deemed partly favorable. Those countries are the Scandinavian countries, the countries of the Western Mediterranean, Belgium, the Netherlands and Luxembourg, and the United Kingdom. Integration policies in Lithuania, Cyprus, Greece, Slovakia and Austria have been found to be unfavorable at least in some instances. The lowest-scoring countries are the Baltic countries, the countries of the Eastern Mediterranean, the Central European EU member countries as well as Denmark. In the EU average, labor market access policies are only halfway home in complying with best practice standards. Overall and in every single policy area, the countries of the Western Mediterranean (Spain, Italy and Portugal) as well as the Scandinavian countries (e.g. Finland and Sweden) score best. Central and Eastern Europe brings up the rear in key areas, in particular with regard to implementation policies and security issues.

It is a fact that so far Slovenia has lost the smallest number of workers to Western European countries. This would

Chart 3

Migrant Policy Integration Index (MIPEX)



Source: Niessen et al., 2007.

imply that the political situation in the source country is another key institutional factor. Slovenia has provided not only political stability, but its politicians were firmly committed to joining the EU and introducing the euro as soon as possible. A sound EU and euro perspective may evidently reduce or even offset economic emigration incentives. The citizens of Slovenia have seen their expectations met in this respect: Slovenia was the first Central and Eastern European country to introduce the euro (in 2007). However, the "political perspective" proposition does not fully hold. After all Lithuania, which had applied for a rapid launch of the euro together with Slovenia, had a very ambitious euro roadmap until its application was rejected because it failed to meet the inflation criterion – and Lithuania is among the countries with the highest relative outflow of migrants.

Migration Decision Influenced by Pull and Push Factors

Migration determinants may be broken down into *push* and *pull factors*. Principally, any given factor (such as unemployment benefits) may be both a push factor in some instances (high unemployment benefits in the target country) and a pull factor in other instances (low unemployment benefits at home).

Apart from pronounced wage differences, which may be partly offset by higher costs of living in the recipient country, the latter's labor market situation is one of the biggest pull factors. This is particularly evident in the case of the United Kingdom, the preferred target country of many Polish workers. In 2004, the U.K. was the country with the lowest unemployment rate and the highest employment rate among the EU-25. In fact, the U.K. had achieved this favorable position already in the mid-1990s, when Germany was still struggling with a rising unemployment rate. This sustained positive performance of the U.K. labor market turned the country into a most attractive target for migrants. By contrast, in Poland, a typical emigration country, the unemployment rate was twice as high (18%) as in the Czech Republic (7%), which has seen a considerably lower outflow of migrant workers.[4] Finally, the average standard of living evidently influences migration decisions as well. After all Slovenia, which has by far the highest GDP per capita among the CESEE EU members, has seen very few workers leave.

Unlike these macroeconomic indicators, the influence of divergent social security regimes is often overrated. Thus, countries that have restricted access to their labor markets at the same time have restricted access to social transfers. While NMS-8 workers are enrolled in a social security system, i.e. get unemployment, pension and health care coverage and therefore have access to public health care services in countries where these exist, they are cut off from income transfers, such as welfare assistance that kicks in once the regular benefits have been exhausted. This partly also holds true for countries with minor access restrictions, such as Denmark, Ireland and the United Kingdom.[5] Sweden is the only country to already fully apply the equal treatment principle enshrined in community law (Federal Ministry of Economics and Technology, 2007).

Often, the family structure of migrants adapts to this policy of barring access to a number of welfare benefits or the systems favor unattached immigrants (singles). Out of the NMS-8 workers registered in the U.K. between 2004 and 2007, 93% did not have any family in their target country, and only 6% had family members below the age of 17 (Home Office, 2008). The number of applicants for tax-financed means-tested welfare benefits such as child benefits and residential allowances thus remained rather limited.[6] At the same time the restricted access to the social systems favors comparatively short working stays. Many Poles leave

[4] *Budnik (2007) shows that unemployed Poles have the highest propensity to emigrate. In addition, EU accession provided an incentive for numerous people already holding jobs to migrate to countries with liberal migration regimes.*

[5] *This does not necessarily imply that the access restrictions for public welfare benefits are stringent. Ireland for instance pays child benefits for the children of migrants that live abroad, and migrants gain full access to the entire spectrum of services after two years of residence in Ireland (OECD, 2008). In contrast, migrants to Denmark may lose their residence permit when they become unemployed.*

[6] *Between May 2004 and December 2007, a total of 21,759 applications for income or unemployment support and pension benefits were filed; yet only 4,872 of these were accepted for further processing.*

their home country for just a few months, return back home for several months and then look for another job on the Western European labor market. Their behavior resembles that of seasonal workers and is in fact attributable to seasonal peaks in individual industries (such as agriculture and tourism), but also to the social security frameworks of the target countries.

In the source countries – the NMS-10 – social security systems are seldom sophisticated. After all, the previous planned economies were built on the concept of full employment. With the change from planned to market economies having been characterized by deregulation and liberalization, the number of social benefits that might principally be used to control migration flows is limited.

Information on institutional factors that are typical of individual labor markets is not readily accessible, and even harder to compare across countries. By way of approximation, comparisons can be made about public spending on active and passive labor market measures. While in the "old" EU countries, public expenditure on labor market activation programs and income support programs accounts for as much as 4.3% of GDP (Denmark; table 3), public spending accounts for as little as 0.5% of GDP in the Czech Republic or 0.7% of GDP in Hungary. A somewhat higher measure of 1.3% of GDP in Poland reflects above all a huge early retirement wave in response to extremely high unemployment rates and structural labor market problems.

Those statistics also show that even one of the most popular target countries, the United Kingdom, does not spend above-average amounts on labor market measures (0.7% of GDP). As described above, the United Kingdom has a number of rules in place which substantially limit the access of immigrants to social benefits. This would imply that the proposition that migration flows may be controlled through social systems is not fully conclusive.

Migrations Trends in NMS-12 Countries

East-west migration flows have changed fundamentally over time (Kaczmarczyk and Okólski, 2005): Permanent immigration to the West was predominant prior to the fall of the Iron Curtain and peaked temporarily immediately thereafter, but soon sank to a relatively low level at which it broadly stabilized. At present, Bulgaria and Romania are the only two countries from which larger numbers of people still wish to emigrate permanently. In parallel, temporary migration flows have increased, above all over short distances (such as Polish seasonal workers going to Ger-

Table 3

Public Expenditure for Labor Market Programs in OECD Countries

	AT	BE	DK	SF	FR	DE	GR	IE	IT	LX	NL	PT	SP	SE	UK	CZ	HU	PL	SK[1]
	Data for 2005 in % of GDP																		
Total	2.1	3.5	4.3	2.8	2.5	3.3	×	1.5	1.4	1.2	3.4	2.0	2.2	2.5	0.7	0.5	0.7	1.3	×
Labor market activation programs	0.6	1.1	1.7	0.9	0.9	1.0	×	0.6	0.5	0.5	1.3	0.7	0.8	1.3	0.5	0.3	0.3	0.4	×
Income support programs	1.5	2.4	2.5	1.9	1.6	2.4	0.4	0.8	0.8	0.7	2.0	1.3	1.5	1.2	0.2	0.2	0.4	0.9	0.3
Unemployment rate	5.8	8.4	4.8	8.4	9.8	9.1	9.4	4.4	7.8	4.6	5.0	7.7	9.2	5.8	4.8	8.0	7.3	17.7	16.2

Source: OECD (2007b).

[1] *Excluding social assistance.*

many). Apart from economic factors, ethnic reasons evidently also play a big role in this respect (such as historical and linguistic ties with the recipient countries, for instance in the case of Romanians migrating to Hungary and Germany).

An equally interesting phenomenon is the fact the NMS region is increasingly turning into a target for migration itself (especially the Czech Republic, most of all for Ukrainians and Slovaks; but also Hungary for citizens of former Yugoslavia and Romania). Based on migration stock data, Estonia, Latvia, Slovenia and the Czech Republic have already turned into net immigration countries (Ratha and Xu, 2008).[7] The latest results of labor surveys would imply that most of the NMS-10 are witnessing similar developments, at least with regard to permanent migration (Schreiner, 2008). However, those findings do not reflect undocumented migration. The Czech Republic and Hungary have the highest share of migrants from Asia (China and Vietnam). Furthermore, the NMS-10 report rising numbers of asylum seekers as well as substantial transit migration into the West.

3 Gravity Analysis of Enlargement Effects

Gravity models lend themselves well to analyzing the channels of economic integration. They are primarily based on the assumption that any kind of interaction between two countries is dependent on country size and the distance between the countries. Gravity models have a long history not only in migration research (with pioneering contributions from Sjaastad, 1960, and Lowry, 1966); they have also been used to model FDI and trade flows (Bussière et al., 2005; Egger, 2005; Ferragina et al., 2005; Hamilton and Winters, 1992; Papazoglou et al., 2006). In contrast, there is little experience with the estimation of potential FDI flows (Görg and Greenaway, 2003).

We use gravity models to analyze three questions below:

– How large are potential FDI flows to, and migration flows from, the new EU Member States?
– To what extent have potential FDI and migration flows materialized since EU accession?
– What FDI and migration flows are to be expected following EU accession?

3.1 Gravity Analysis of FDI Flows

For the purpose of this paper, the effect of EU membership on FDI flows from Western to Eastern countries will be estimated in the framework of a standard gravity model.[8] The basic gravity model is specified as follows:

$$log(FDI_{ijt}) = \alpha + ß_1 log(GDP_{it}) + ß_2 log(GDP_{jt}) + + ß_3 log(POP_{it}) + ß_4 log(POP_{jt}) + ß_5 log(D_{ij}) + + \varepsilon_{ijt}$$

where FDI_{ijt} occurs from country j to country i at time t, GDP_{ijt} refers to real GDP, POP_{ijt} is population, D_{ij} is the distance between the capital cities of countries i and j and ε_{ijt} is a random shock assumed to be uncorrelated across country pairs and in time. Given the

[7] *Stock data on migration do, however, point in the opposite direction: In the course of the transformation process, the population of the Central and Eastern European EU-8 dropped by 1.1 million citizens, that of the Western Balkans even by 2.7 million people (Mansoor and Quillin, 2006).*

[8] *It should be noted that, although they have become the most frequently used workhorse of applied trade economists, gravity equations are not without criticism (Anderson and van Wincoop, 2003).*

panel structure of our data, the error term can be specified as composed of a fixed country-pair effect (which summarizes all time-invariant factors affecting the investment flow between country *i* and country *j*, among others geographical distance) and a fixed time effect common to all country pairs. The specification is thus given by

$$log(FDI_{ijt}) = \alpha + ß_1 log(GDP_{it}) + ß_2 log(GDP_{jt}) + + ß_3 log(POP_{it}) + ß_4 log(POP_{jt}) + \phi_{ij} + \lambda_t + + \nu_{ijt}$$

Table 4

Countries in the Sample (FDI Analysis)

Investing countries	Host countries
Austria	Bulgaria
Belgium	Czech Republic
Denmark	Estonia
Finland	Hungary
France	Latvia
Germany	Lithuania
Greece	Poland
Ireland	Romania
Italy	
Netherlands	
Portugal	
Spain	
Sweden	
United Kingdom	

Source: OeNB.

where the FDI data refer to FDI inward stocks sourced from The Vienna Institute for International Economic Studies (wiiw). GDP and population data are sourced from the World Bank's World Development Indicators. All data are yearly and cover (in the best cases) the period from 1992 to 2005. Table 4 presents the identity of the investing and recipient countries.

We estimated the specifications presented above; the results are displayed in table 5.

The results do not show any significant effects of membership on FDI for the specification without bilateral fixed effects. The estimates of the specification with fixed effects imply negative effects (significant at the 5% level) of EU membership on Western investment flows into the Central and Eastern European region. Apparently, it is not a particular enlargement date that is decisive, but rather the general perspective of improved circumstances.

The estimation of country-specific effects does not produce homogenous results across countries. Only three countries (the Czech Republic, Hungary and Lithuania) show significant reductions in FDI in the period following their accession. The rest of the countries do not present significant effects.

Table 5

Estimates - FDI Gravity Equations

GDP (investing countries)	−1.71 (−10.78)	−1.71 (−10.75)	−1.92 (−3.11)	−1.88 (−3.09)
GDP (host countries)	0.51 (5.25)	0.59 (4.65)	−2.53 (−2.52)	−2.34 (−2.20)
Population (investing countries)	2.09 (11.60)	2.10 (11.59)	20.50 (11.05)	20.28 (11.13)
Population (host countries)	0.46 (3.99)	0.37 (2.56)	−1.13 (−0.29)	0.05 (0.01)
Distance	−1.44 (−31.82)	−1.44 (−27.98)	–	–
EU	–	−0.41 (−1.17)	–	−0.30 (−2.16)
EU*distance	–	−0.01 (−0.13)	–	–
Country pairs	134	134	134	134
Total observations	1.114	1.114	1.114	1.114
Adjusted R^2	0.37	0.37	0.91	0.91
Bilateral fixed effects?	no	no	yes	yes
Time effects?	yes	yes	yes	yes

Source: OeNB.

** Dependent variable: bilateral FDI inward stock. Robust t-statistics in parentheses. Estimation includes a constant, not reported.*

In the case of the Czech Republic and Hungary, the explanation for these results could lie in the fact that these most advanced countries were targeted by investors relatively soon, especially when it became clear that they would be among the first countries to join the EU.

It should be noted, however, that the specification does not include potentially important explanatory variables. To the extent that these variables are country-specific or country pair-specific and constant (or very persistent) over time, they will be accounted for by the fixed-effect structure which underlies the panel. Furthermore, we also included a variable that accounts for the moment when the accession countries enacted Association Agreements with the EU. The estimate of the parameter associated with this variable was positive but not significant, and it did not change the size, sign or significance of the other parameters in the model.[9]

Our finding of broadly unchanged investment trends following EU enlargement is not really surprising in the light of the analysis in section 2. Whereas migration remained highly regulated, the barriers restricting capital mobility were removed in most new Member States already from the early 1990s onward. Meanwhile, the level of euro area FDI flows into the new Member States has already come to exceed the level of intra-euro area FDI.[10]

3.2 Gravity Analysis of Migration

We also estimate a gravity model to quantify the effect of distance and country size on migration flows from Eastern to Western Europe. Specifically, we estimate a parallel specification to that used in the FDI analysis, that is:

$$log(M_{ijt}) = \alpha + ß_1 log(GDP_{it}) + ß_2 log(GDP_{jt}) + + ß_3 log(POP_{it}) + ß_4 log(POP_{jt}) + ß_5 log(D_{ij}) + + \varepsilon_{ijt}$$

and

$$log(M_{ijt}) = \alpha + ß_1 log(GDP_{it}) + ß_2 log(GDP_{jt}) + + ß_3 log(POP_{it}) + ß_4 log(POP_{jt}) + + \phi_{ij} + \lambda_t + + \nu_{ijt}$$

We estimate alternatively these two specifications enlarged with an EU membership effect in order to quantify the effect of joining the EU on migration flows.

Table 6 shows which countries were used in the regressions, for which yearly data were sourced from Eurostat (for migration data) and the World Bank's World Development Indicators (for the rest of the variables) for the period from 1985 to 2005.

We will include the EU membership effect in two different ways: For the specification including the distance we will include both a dummy variable taking the value 1 for the years 2004 and 2005 if the country joined the EU in 2004, and the interaction of this dummy with the distance variable. This allows us to model the potential decline in migration costs triggered by EU membership. The results of this simple model indicate that, after controlling for all time-invariant effects and the usual gravity variables, joining the EU

[9] *Hajkova et al. (2006) explicitly assess the issue of the effect of taxation on FDI location among OECD economies. Unfortunately, lack of comparable data for the economies in this study for the full period covered did not allow us to include taxation variables in the model. In principle, third-country factors may also play a role in FDI flows. Adequately accounting for such factors would exceed the scope of this paper, so we decided to stick to a simple specification including only bilateral variables.*

[10] *In the finance sector in particular the economic optimum is likely to have been exceeded already (Eller et al., 2006).*

Table 6

Countries in the Sample (Migration Analysis)

Recipient countries	Emigration countries	
Austria	Albania	Lithuania
Belgium	Armenia	FYR Macedonia
Denmark	Azerbaijan	Malta
Finland	Belarus	Moldova
Germany	Bosnia and Herzegovina	Poland
Italy	Bulgaria	Romania
Luxembourg	Cyprus	Russian Federation
Netherlands	Czech Republic	Serbia and Montenegro
Portugal	Estonia	Slovakia
Spain	Georgia	Slovenia
Sweden	Hungary	Tajikistan
United Kingdom	Kazakhstan	Turkey
	Kyrgyzstan	Turkmenistan
	Latvia	Ukraine
		Uzbekistan

Source: OeNB.

increases migration by 17% compared to the control group of countries. The model with distance interaction allows us to differentiate the size of the effect across countries depending on their geographical remoteness. The results suggest that the EU membership effect tends to be concentrated on reducing migration costs and incentivizing for relatively distant countries.

The results for the specification with an EU membership dummy summarize average effects across individual countries. In order to assess and quantify the effects for individual countries, we also estimated the model without bilateral fixed effects, including individual interaction effects for the distance variable and a dummy variable for each new EU member in the years 2004 and 2005.

Chart 4 shows the estimates of the distance interaction for each country, together with twice the standard deviation of the estimate. Positive values indicate that the reduction of migration by distance was smaller after EU accession.

Unlike in the case of investments, the barriers preventing the free movement of people were removed only a decade later – upon actual enlargement – and even then only very cautiously. While the mobility potential of capital was used to the full, the mobility potential of labor just kept growing. As the transitional arrangements restricting the free movement of workers on EU labor markets expire (at the latest by 2011 or 2013) migration is expected to resume.

However, the theoretical arguments discussed above imply a nonlinear rela-

Table 7

Estimates – Migration Gravity Equations

GDP (investing countries)	2.59 (11.01)	2.59 (10.93)	1.32 (1.26)	1.27 (1.17)
GDP (host countries)	0.19 (4.9)	0.19 (4.61)	−0.7 (−5.45)	−0.69 (−5.15)
Population (investing countries)	−1.02 (−4.32)	−1.02 (−4.3)	36.57 (7.47)	36.63 (7.47)
Population (host countries)	0.54 (20.94)	0.54 (18.82)	−2.53 (−8.47)	−2.5 (−8.35)
Distance	−1.24 (−26.89)	−1.28 (−21.3)	–	–
EU	–	−2.54 (−3.78)	–	0.17 (2.56)
EU*distance	–	0.33 (3.85)	–	–
Country pairs	317	317	317	317
Total observations	3.030	3.030	3.030	3.030
Adjusted R^2	0.67	0.67	0.90	0.90
Bilateral fixed effects?	no	no	yes	yes
Time effects?	yes	yes	yes	yes

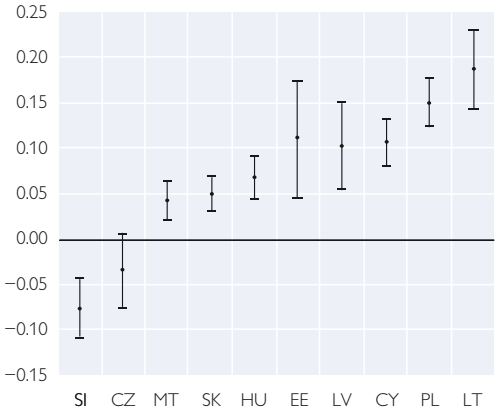
Source: OeNB.

** Dependent variable: bilateral migration flows; robust t-statistics in parentheses..*

Chart 4

Country-Specific Cost Reduction Estimates

± *twice standard deviation estimate*



Source: OeNB.

tionship between migration and development. The higher-income new Member States (Slovenia and the Czech Republic) already show clear signs of a slowdown in emigration; indeed, those countries have already made the transition from an emigration to an immigration country (Schreiner, 2008).

At the same time, a few other countries (Lithuania and Poland) see considerably more people emigrate than may be explained by the variables of the gravity equation prior to EU accession (income, distance, population). Here, the high outflow of workers may reflect high unemployment or institutional factors in the source and target countries. The two comparatively low-income countries, Bulgaria and Romania, are still lagging behind in terms of factor mobility.

The key result of the two gravity analyses is that FDI and migration developed asymmetrically after the EU enlargement rounds of 2004 and 2007. This dichotomy may be explained with the hypothesis that the production factors are mutually substitutive with regard to their mobility. In line with standard trade theory based on the Heckscher-Ohlin model, this hypothesis is based on factor endowment considerations: Capital and labor need each other in production, but they are allocated unevenly across countries. Therefore, capital will need to move where labor is in abundant supply, or labor will need to move to a country with more capital. Yet, this would be putting the complex relationship between the two factors too simply; in actual fact, this relationship has to be assessed specifically for each country (Landesmann, 2001).

4 Conclusion

Our assessment of the characteristics of the European integration process yielded a three-step process:

(i) In a first development stage driven by the fall of the Iron Curtain – many years before the first Eastern European countries actually joined the EU – trade between east and west was gradually intensified, in both directions. At the time, the major barriers were on the Western European side, while the Eastern European markets opened up very rapidly to trade and services from Western Europe. Overall, this substantially enhanced trade integration between the two parts of Europe.

(ii) The second development stage, which somewhat overlapped with the first, was characterized by signs of increasing direct investment flows between the two regions of today's EU. Fueled by the privatization process, a wave of ownership transformation swept across Eastern European countries, causing property to change into the hands of, above all, Western European investors, for a variety of reasons.

(iii) Last but not least, slowed down by political decisions, labor mobility is gradually evolving as an additional driver of the integration process.

From a monetary perspective, allowing EU citizens to fully enjoy the four fundamental freedoms enshrined in Community law is to be welcomed. According to the optimum currency area theory (Mundell, 1961), mobile production factors are an important substitute for the exchange rate instrument as an adjustment channel in the case of country-specific shocks.

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