WORLD BANK WORKING PAPER NO. 105

Internal Labor Mobility in Central Europe and the Baltic Region

Pierella Paci
Erwin R. Tiongson
Mateusz Walewski
Jacek Liwinski
Maria M. Stoilkova

THE WORLD BANK

WORLD BANK WORKING PAPER NO. 105

Internal Labor Mobility in Central Europe and the Baltic Region

Pierella Paci
Erwin R. Tiongson
Mateusz Walewski
Jacek Liwiński
Maria M. Stoilkova

THE WORLD BANK
Washington, D.C.


printed on recycled paper

1 2 3 4 5 10 09 08 07

ISBN-10: 0-8213-7090-1 ISBN-13: 978-0-8213-7090-2
eISBN: 978-0-8213-7091-9
ISSN: 1726-5878 DOI: 10.1596/978-0-8213-7090-2

Pierella Paci is Lead Economist in the Poverty Reduction Group of the World Bank. Erwin R. Tiongson is Economist in the Poverty Reduction & Economic Management unit of the Europe & Central Asia Region of the World Bank. Mateusz Walewski is Economist at CASE (Poland). Jacek Liwiński is Economist at CASE (Poland).

Maria M. Stoilkova is a Consultant to the Operations Policy & Country Services department at the World Bank.

Library of Congress Cataloging-in-Publication Data has been requested.

Contents

List of Tables

List of Figures

List of Boxes

Acknowledgments

This report was prepared by a World Bank team composed of Pierella Paci (PRMPR, Task Team Leader), Erwin R. Tiongson (ECSPE, co-Task Team Leader), Mateusz Walewski (CASE Poland), Jacek Liwiński (CASE Poland), and Maria M. Stoilkova (OPCDM and Columbia University). A background paper, based on the analysis of data from the Czech Republic Labor Force Survey (LFS), was prepared by Daniel Munich (CERGE-EI), assisted by Martin Guzi (CERGE-EI) and Franta Michal (CERGE-EI). The team received additional inputs from Jekaterina Rojaka (ECSPE). Balazs Zempleni (ECCU7) assisted the team in obtaining Hungary's LFS data. Helena Makarenko (ECSPE) was responsible for processing the report.

This report was undertaken under the guidance of Ms. Daniela Gressani, Country Director, Ms. Cheryl Gray, Sector Director, and Mr. Asad Alam, Sector Manager. The Peer Reviewers of the report were Arvo Kuddo (ECSHD), William Maloney (LCRCE), Stefano Scarpetta, (HDNSP), and Zafiris Tzannatos (WBIHD). Many useful comments and recommendations were received from the Ministry of Finance, the Ministry of Industry and Trade, and the Ministry of Labour and Social Affairs of the Czech Republic; the Ministry of Finance of Latvia; the Ministry of Economy of Lithuania; the Ministry of Economy and the Ministry of Labour and Social Policy of Poland; and the Ministry of Economy of the Slovak Republic. In addition, the report benefited from valuable advice and comments from Suman Mehra (ECCU7), Thomas Laursen (ECSPE), Anton Marcincin (ECSPE), Leszek Kasek (ECSPE), Paulina Bucon (ECSPE), Egbert Holthuis (European Commission, DG Employment and Social Affairs), Christoph Maier (European Commission, DG Employment and Social Affairs), Peter Huber (Austrian Institute of Economic Research), Antonio Spilimbergo (International Monetary Fund), and Iulia Traistaru-Siedschlag (The Economic and Social Research Institute).

Vice President	:	Shigeo Katsu
Country Director	:	Daniela Gressani
Sector Director	:	Cheryl W. Gray
Sector Manager	:	Asad Alam
Task Team Leaders	:	Pierella Paci
		Erwin Tiongson

Acronyms and Abbreviations

CASE	Center for Social and Economic Research (Centrum Analiz Spoleczno-Ekonomicznych)
CEEC	Central and Eastern European Countries
CERGE-EI	Center for Economic Research and Graduate Education of Charles University-Economic Institute
EBS	Eurobarometer Survey
ECA	Europe and Central Asia
EC	European Commission
EU	European Union
EU8	New Member States of the EU (2004 Enlargement) from Central Europe and the Baltic Region
EUROSTAT	Statistical Office of the European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IMF	International Monetary Fund
ISSP	International Social Survey Programme
LFS	Labor Force Survey
LTU	Long-Term Unemployment
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Cooperation and Development

Executive Summary

Background

The transition from central planning to a market economy had dramatic labor-market repercussions in most of the eight new member states of the EU from Central Europe and the Baltic region (EU8): Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.[1] At the beginning of the transition, the formerly socialist countries had essentially no official unemployment and a very egalitarian distribution of wages. The structural reforms of the transition era brought about a sharp decline in employment with related increase in unemployment and inactivity in most of the transition economies.

By the mid-1990s, most Central European countries and the Baltic region had experienced a remarkable economic renaissance. National income, average real wages and employment began to increase. However, economic recovery contributed at first only to the stabilization of the unemployment rates and only later to their slight decline. Moreover, in some of the EU8 countries, the late 1990s brought further increases in unemployment in the wake of slumps in economic performance and macroeconomic stabilization programs designed to restore macroeconomic equilibrium and support structural reforms. Thus, on the eve of their entry into the EU, most of the EU8 countries showed unemployment rates that were substantially higher than the EU average and, in the Slovak Republic and Poland, considerably higher than those of any other EU country.

Of particular concern have been the high rates of long-term unemployment (LTU). The share of LTU exceeds 40 percent of unemployment in all the EU8 countries and is more than 50 percent in Poland, Slovenia and the Slovak Republic (65 percent), a value that is considerably higher than the EU average although similar to that of Germany, Greece and Italy. This suggests increasing segmentation of the labor force into the employable (who tend to be employed) and a growing pool of unemployed with a minimal chance of re-employment. These individuals often combine several disadvantages, among which low skills and living in a high unemployment area are of primary importance (World Bank 2004).

In addition to the increase in the average unemployment rate at the country level, the process of economic liberalization led to growing regional disparities in unemployment, with the inequality increasing with the level of disaggregation (from county to district level and from district to community level).

Migration appears to have played a minimal role in reducing these regional disparities in unemployment. Empirical evidence to date shows clearly how geographical mismatches in the demand and supply of labor and skills have grown considerably across the EU8 area. The resulting regional disparities in unemployment may account for a large proportion of the troubling increase in long-term structural unemployment experienced in these countries over the last decade. Nevertheless, to date this remains a largely unexplained issue, due predominantly to lack of adequate data. Moreover, the little literature that exists tends to be

1. This report was written prior to the 2007 EU enlargement process. It focuses on the new EU members from the 2004 enlargement, the EU8, and treats the new EU member states from the 2007 enlargement (Bulgaria and Romania) as comparator countries along with Turkey and other countries for which the relevant data are available.

predominantly of a single-country nature and little effort is made to draw cross-country comparisons and derive typologies of countries that face similar issues and may benefit from similar types of intervention.

The Scope of This Report

This report focuses on internal labor mobility and its potential for reducing regional disparities in unemployment. It is a modest attempt to examine a small piece of the broader and complicated puzzle of imbalances in regional development, by focusing on persistent regional labor market disparities, and in particular, persistent regional unemployment. It makes an effort to explain why internal migration has not played a bigger role in mitigating regional unemployment disparities. By design, issues related to international migration and cross-border commuting are not addressed in this report but are the focus of another recent World Bank study.[2] In particular, this report:

- Evaluates the magnitude of disparities in regional labor market indicators in the EU8, with special focus on regional unemployment indicators in 2004.[3]
- Provides a simple framework for reviewing the main adjustment mechanisms which could potentially reduce regional disparities in unemployment, as identified by the theoretical and empirical literature—that is, price (or wage) adjustments, quantity adjustment (capital and labor mobility), and government action (such as regional transfers).
- Identifies patterns and statistical profiles of geographical mobility—broadly defined as (i) internal migration and (ii) commuting—using individual-level data from the 2004 Labor Force Surveys (LFS) and various years (through 2003) of the International Social Survey Programme (ISSP) and summary data on individual-level information from the 2001 Eurobarometer Survey (EBS) across different countries in a comparable manner—that is, utilizing a common empirical framework and employing a common estimation strategy.

A Simple Framework

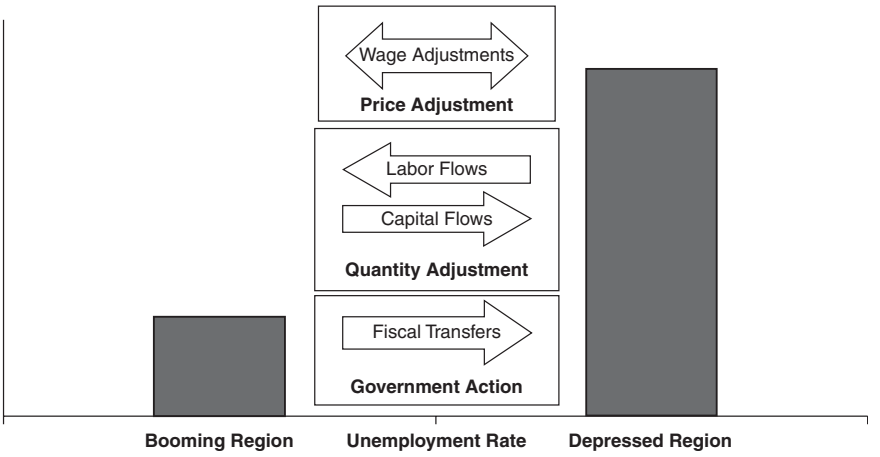
Figure 1 shows how, in principle, an economy could respond to regional unemployment disparities. The arrows represent the main adjustment channels and their direction: price adjustment, quantity adjustment, and government action.

First, prices or wages may serve to correct imbalances. Where unemployment is high, wages could fall and attract firms into the high-unemployment region. Firms already in the region may also hire more workers in response to higher returns and lower unit labor costs. Lower real wages could also encourage workers to migrate out of lagging regions. Second, factors of production (capital and labor) respond to unemployment disparities.

2. See *World Bank EU8 Quarterly Economic Report* (September 2006).

3. It would be interesting to examine 2005 regional unemployment rates, to analyze the impact of EU accession on regional unemployment. However, at the time the core analysis was conducted, data on regional unemployment rates for 2005 were not available.

Figure 1. Adjustment Mechnisms



Capital flows into lagging regions in response to lower unit costs. Labor mobility, on the other hand, could take the form of workers moving out of high unemployment regions into low-unemployment regions. At the same time, the movement of workers out of high-unemployment regions can ease the labor market pressure on those left behind. Finally, government action aimed at addressing regional imbalances could take a number of forms. First, the government transfers resources to depressed regions as a form of insurance or compensation to assist those who are unemployed. Where income differentials are persistent, the central government could provide equalization transfers or structural funds to assist in the development of lagging regions.

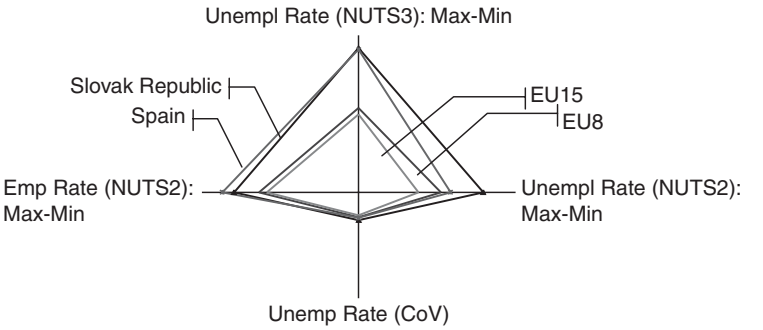
Findings

The analysis of both primary and secondary data and the review of existing literature carried out for this report indicate that the main adjustment mechanisms are not working to reduce regional labor market disparities. There is then potentially a major role for labor mobility in narrowing regional disparities. The following are the main questions this analysis asked and related findings.

Is the Concern About Growing Structural Unemployment and Increasing Regional Imbalances in the EU8 Countries Justified?

There are wide disparities in unemployment rates across regions in the EU8. Such disparities have also tended to be persistent over time. As a group, EU8 experience higher unemployment rates, wider disparities in unemployment rates across regions, and more persistent regional unemployment rates than their EU15 counterparts. Figure 2 provides some summary information on the magnitude of regional disparities in unemployment and employment in 2004.

Figure 2. Measures of Regional Labor Market Disparity



Away from the center, the points in Figure 2 suggest greater regional disparities. The figure indicates that spatial disparities in labor market indicators are larger in the EU8 than in the EU15 as a group. However, it is important to note the following:

- *The EU8 countries are not a homogeneous group*. On one extreme are Poland and the Slovak Republic with relatively high unemployment rates and high regional disparities in unemployment rates, and on the other extreme are the Baltic countries where unemployment rates and regional disparities are much smaller. In Poland, for example, regional unemployment rates at the NUTS3 level range from 10 to over 30 percent. In the Slovak Republic, unemployment rates range from about 8 to over 25 percent. By contrast, regional unemployment rates range from 9 to 12 percent in Latvia's NUTS3 regions.
- *Some EU15 countries, including the Southern European countries, have regional imbalances comparable to the EU8.* While, as a group, EU15 countries have much narrower regional disparities than the EU8, the Southern European economies (Greece, Italy, Portugal, and Spain) and other countries such as Germany are in many respects comparable to the EU8. In Figure 2, for example, Spain has spatial disparities in unemployment and employment much larger than the EU15 average and comparable to the Slovak Republic.
- *Other comparator countries are comparable to the EU8.* Bulgaria, Romania, and Turkey generally have regional unemployment disparities that are similar to those of the EU8. In Bulgaria, for example, regional unemployment rates range from 4 percent to 24 percent.

Are Capital Flows and Wage Adjustments Effective Mechanisms for Offsetting Imbalances in Regional Unemployment in the EU8?

The review of existing evidence suggests that regional capital flows have tended to reinforce geographic disparities. There is no evidence that capital flows and wage adjustments are serving to help correct regional imbalances in the EU8. In particular, capital typically flows to booming

regions, where the human capital stock is high and where economic activity is concentrated. With respect to the wage curve, wage adjustments in the EU8 are comparable or slightly more responsive to local labor market conditions than those of the EU15 and those of other advanced economies. However, there are two main barriers in the effectiveness of wage adjustments in helping correct unemployment imbalances: First, in absolute terms, the measured wage elasticity may be insufficient to offset persistent and high rates of unemployment. In Poland, the estimates of the unemployment elasticity of wages range from zero to −0.12. Second, in a few countries, the relationship between wage levels and unemployment may be nonlinear: that is, where unemployment rates are very high, wages may be even more unresponsive to regional unemployment. In the Czech Republic, for example, wages are responsive to local unemployment rates only in districts where unemployment rates are low.

In sum, these adjustment mechanisms have not been effective in reducing regional unemployment disparities. Wages do not fall in the face of persistent unemployment and capital flows do not follow cheap labor. This implies that labor mobility is a potentially important adjustment mechanism.

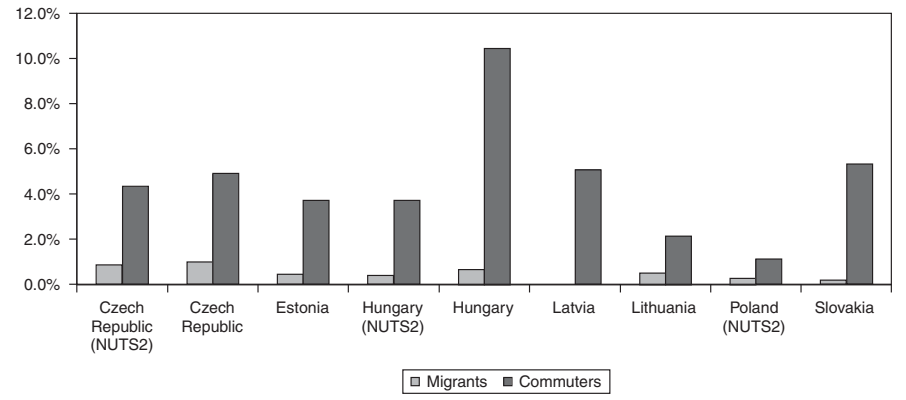
How Large Are Internal Migration Flows in the EU8 and What is Behind Them?

Internal migration in the EU8 is low, has fallen over time, and is generally lower than that of the EU15. In addition, migration is, at best, weakly related to regional unemployment rates in the EU8. However, mobility rates in the EU8 are comparable to some Southern European countries. In addition, commuting rates are higher than migration rates and vary across countries.[4] In 2004, commuters accounted for 1 percent of all employed workers in Poland while accounting for 10 percent of such workers in Hungary (Figure 3). In contrast, internal migrants accounted for less than 1 percent of all employed workers, on average. There is also evidence that commuting rates are growing, based on three countries for which the relevant data are available (Czech Republic, Hungary, and the Slovak Republic). However, it is not clear what has driven the growth in commuting. In part, this may be due to recent improvements in transport infrastructure, co-financed by EU structural funds. It is also possible that the costs of transport and commuting are perceived to be much lower than the transaction costs and non-economic costs of residential relocation.

Results of the analysis of LFS data suggest that the probabilities of both commuting and migration are highest among men, among younger workers, among single or separated/widowed workers and among workers that are relatively more educated. In Lithuania and the Czech Republic, those who are acquiring or engaged in continuing education or training are also more likely to commute. Commuting appears to be much more prevalent among workers employed by large firms. With respect to previous employment status, commuting may facilitate the transition out of joblessness. However, in Czech Republic and in Hungary, there is some evidence that being previously unemployed is associated with *lower* probability of migration. This suggests that, at least in the case of internal labor migration, employed,

4. A worker is classified as a commuter if the worker's place of work and place of residence are located in two different regions. An individual is classified as a migrant if the individual's current region of residence is different from the region of residence the year before.

Figure 3. Migrants and Commuters: LFS 2004 (In percent of the employed population; NUTS3 level unless otherwise indicated)



Source: LFS data and Bank staff calculations.

skilled workers—not the unemployed workers—are best able to take advantage of employment opportunities in other regions. In addition, the fungibility or transferability of skills matters: Some occupations or workers in selected sectors of employment are much more mobile than others. For example, at broad sectoral levels, agricultural workers tend to be less mobile than service or industry sector workers. At more disaggregated levels of employment sector, construction workers are relatively more mobile while education and health workers seem less mobile. The results, with respect to employment in the mining sector, are mixed: in Estonia it is negatively (though weakly) related to commuting; in the Czech Republic, it is positively related to commuting.

For understanding the growth and persistence of regional unemployment rate disparities, two findings are noteworthy:

- *First, migration is generally not responsive in a consistent way to regional economic indicators, employment, and wage differentials.* In contrast, commuting is much more responsive and in the expected direction.
- *Second, commuting but not migration may facilitate transitions out of joblessness.* In general, those previously inactive or unemployed are more likely to commute the following period. In contrast, being unemployed in one period is not associated with a higher probability of migration the following period. In fact, in some countries, there is evidence that being previously unemployed is associated with *lower* probability of migration and that the already employed and skilled workers, not the unemployed workers, are best able to move out of depressed regions.

The analysis of data from the ISSP and EBS confirm the main demographic characteristics of mobile workers. In particular, young, more educated, single men express a greater willingness to migrate (potential mobility) to improve work or living conditions. They also have higher historical (actual) mobility rates. Furthermore, the results of the

analysis of individual preferences suggest that habits matter: Individuals in the EU8 countries express a stronger attachment to their local communities than the EU15. Such attachment, in turn, is reflected in lower propensities to migrate. There is evidence that workers in EU8 countries are more likely to rely on informal sources of jobs information. In regions where unemployment is high, informal job search methods may be much less effective outside the unemployed worker's region of residence. Not surprisingly, educated workers rely more on formal job search methods.

Caveats to the Analysis

While the findings of the analysis are compelling it is important to keep in mind a number of limitations of the data and methodology used which may indirectly affect these findings:

- *Unit of measurement.* The choice of regional unit may lead to different results. On the one hand, regional flows may not be adequately measured in indicators based on large regional units, as migration flows may not necessarily involve great distances. On the other hand, smaller regions may capture flows that are not necessarily labor market-related. The arbitrary nature of the borders of some smaller territorial units may also inflate the estimated commuting flows. This report uses the NUTS classification system to compare regions within and across countries. This system comes closest to using comparable measures of regions across countries, although the regional units may still vary widely with respect to the average population, area (size), density, and other characteristics.
- *Temporary versus permanent migration.* Permanent and temporary movers may have systematically different incentives for moving. It is, however, difficult to distinguish temporary from permanent migrants using existing data. As a result, few empirical studies are able to make this distinction and this report is no exception. In some cases, the distinction made is quite arbitrary, using rules of thumb (e.g., dividing observed migration flows into two) to estimate permanent and temporary flows. Some use information from household surveys to determine whether a migrant is no longer considered a member of its previous household. Because this report primarily uses individual-level LFS data, this report is unable to use this strategy to identify permanent and temporary migration flows.
- *Country coverage.* Due to data limitations, not all EU8 countries are always included in the analysis. For example, the analysis of LFS data excludes Slovenia because the relevant data on regional residence at the NUTS-3 level are not available. However, taking all the data sources on mobility together (LFS, ISSP, and Eurobarometer), each of all the EU8 countries are covered by at least one or more data sources.
- *Policy issues.* This report was originally intended to help shed light, among other things, on the role of policy in select areas—such as in transport infrastructure and homeownership—and how policy may help facilitate labor mobility and adjustment to regional unemployment disparities. Nonetheless, it is difficult to clarify the role of housing policy (for example, do housing shortages and underdeveloped rental markets constrain mobility?) because the main data source—the LFS—does not have individual level information on homeownership. Data on transport infrastructure at the appropriate NUTS level are available for selected countries but they

do not yield any strong, robust results regarding the impact of infrastructure on mobility, either way. In part, this may be due to multicollinearity, as these regional indicators tend to move together.

- *International migration.* By design, as previously discussed, this report focuses on internal labor migration alone. This, however, may have an impact on the results because international migration may serve as a substitute for internal migration. Because recent developments such as EU accession as well as the falling costs of international commuting may be facilitating greater mobility, the importance of international migration may have grown over the last few years.
- *Can labor mobility exacerbate regional differences?* This analysis does not permit a rigorous examination of the impact of labor mobility on regional labor market disparities since the interaction among the various adjustment mechanisms as well the cumulative impact over time cannot be adequately assessed with single year data points. Nonetheless, the existing evidence suggests that the individuals that are most likely to migrate are the younger and more educated and those who held jobs in lagging regions. This would suggest that labor mobility may indeed exacerbate regional disparities. Appropriate policy interventions, as described in the next section, should thus ensure that those left behind in lagging regions are not neglected and that particular efforts are made in reducing skill gaps.

Policy Implications

Despite the limitation outlined above, this report derives a number of findings that are particularly relevant for identifying potential policy levers for addressing regional disparities in unemployment and facilitating inter-regional labor flows. We propose the following policy considerations:

- *Promote measures to facilitate commuting.* The results of the analyses suggest that commuting flows respond to regional economic differentials more than migration flows. Where residential mobility is traditionally low and where there are institutional barriers to changing residences, policy measures to facilitate commuting, rather than migration, may be more viable. The reasons for encouraging commuting are also related to simple geography: most of the EU8 countries are relatively small so that commuting is a more attractive option than migration, with much of commuting flows already directed from neighboring regions to rapidly growing regions. What policy interventions encourage commuting? Very important amongst these measures are those designed to reduce the transport costs of commuting in terms of money and time. These will include improvements in infrastructure—i.e., roads, railways—but also the enhanced efficiency of the market for transport services via a combination of private provision and public regulation. Moreover, because commuting flows do respond to geographic disparities and economic incentives, structural reforms that improve the investment climate and create the macroeconomic conditions for sustained economic growth remain critical.
- *Invest in education and lifelong learning.* The robust relationship between educational attainment and mobility suggest that those unemployed who are left behind in lagging regions are predominantly the low skilled workers with the lowest

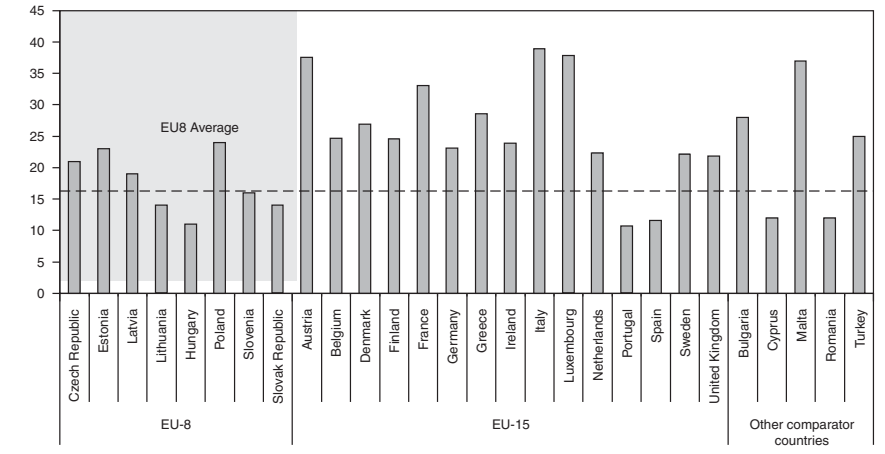
employment prospects. This is confirmed by the weak relationship found between previous year unemployment and the decision to migrate. This suggests that lack of education is an important barrier to mobility. As such, investments in education and training may facilitate the adjustment process, as workers acquire the necessary skills to find jobs in more dynamic regions and move away from lagging parts of the country.

- *Enhance flexibility in labor markets.* The first two policy recommendations focus on facilitating the flow of labor from lagging regions to booming regions by (i) ensuring that workers have the skills that are demanded by the newly created jobs and (ii) lowering the monetary and time costs of commuting. For those left behind in lagging regions, a policy package designed to support job creation, encourage capital to move into the area and enhance productivity is critical. Within the EU8 countries, policy measures designed to promote wage flexibility in local labor markets—such as through minimum wages differentiated by age or region and decentralized wage bargaining systems—are a critical component of this package.
- *Ensure that social protection does not inhibit mobility.* There is compelling empirical evidence across countries in Central and Eastern Europe demonstrating that generous unemployment and welfare benefits may serve to dampen labor mobility, by raising the reservation wages and reducing the incentive to look for work among unemployed workers. It has also been observed that regional disparities in real *disposable* per capita income may not be as large as suggested by differences in regional per capita income (World Bank 2004b). This is due in large part to different price levels and social transfers. The policy challenge is to strike the right balance—providing unemployment and welfare benefits to mitigate income shocks while preserving job search incentives by tightening of eligibility criteria.

Accounting for Heterogeneity. The nature of cross-country regional reports makes it difficult to identify in-depth, country-specific policy recommendations. Nonetheless, this report makes clear that there are significant differences across countries and policy actions will need to consider these variations carefully. In particular, the heterogeneity of regional unemployment differentials among the EU8 countries suggests that regional unemployment disparities (either because labor mobility is low or capital flows are in the "wrong" direction) are a more urgent policy issue in Poland and the Slovak Republic, where spatial disparities are much larger and persistent, than in Estonia or Latvia. The relative strength and responsiveness of adjustment mechanisms in the face of labor market disparities also vary from country to country. Commuting flows, for example, are relatively large in Hungary and the Slovak Republic; policy interventions to encourage commuting may be more urgent in Poland. Within countries, there is also a compelling case for regionally differentiated policy interventions. Where the pool of unemployed workers in lagging regions consist largely of relatively older workers, continuing education is clearly not appropriate. Depressed regions within commuting distance from growing regions may require strategies different from those of peripheral regions.

The Limits of Policy? The literature suggests that individuals may be unwilling to relocate, despite the promise of better employment prospects, due to a legacy of central planning and permanently secure jobs. In addition, labor mobility in Europe, in general, has

Figure 4. Intended Regional Mobility 2001 (Percent who intend to move to another region within the next five years)



Source: Eurobarometer Survey 2001 and Bank staff calculations.

been low and thus low mobility in the EU8 may reflect the preferences and habits of the broader European region. Attachments to local communities, ancestral lands, and social networks, among other reasons encourage individuals to stay. Furthermore, employment is often not the only motivation for geographic mobility; family matters, housing amenities, utility costs, and living standards are often important determinants of mobility. Evidence from other regions, such as in Latin America, also suggests that spatial disparities in broad welfare indicators (such as mortality and health indicators or subjective measures of well-being) may not be as large as in labor market indicators. This report finds evidence that individual preferences, sociocultural factors, attitudes, and habits do restrain individual mobility. Such preferences, in turn, may help explain the lower preferences for mobility and lower rates of intended mobility in the EU8 (Figure 4).

Conclusion

This report finds significant spatial disparities in unemployment in the EU8, with some countries such as Poland and the Slovak Republic at the higher end of this distribution. Some EU15 countries, notably the Southern European countries have geographic disparities comparable to the EU8. Such disparities appear to be persistent over time indicating, in part, a lack of flexibility in the adjustment mechanisms. Labor mobility is generally low but commuting flows have grown over time and are more responsive to regional economic differentials than migration flows. Not surprisingly, better-educated workers are more likely to migrate or commute. Appropriate policy measures are necessary to promote labor market flexibility, particularly as it applies to labor mobility.

Several important policy questions remain unanswered and are left for future research. These include the following: First, the role of international migration needs to be explored.

With the recent opening of selected EU15 labor markets to workers from EU8 countries, international migration—whether in the form of residential migration or international commuting—may or may not be serving to reduce domestic regional disparities in unemployment. Second, it may be worth examining further what has underpinned the growth of commuting flows in recent years. Investment in appropriate data that may demonstrate clear statistical linkages between commuting and transport costs would be important. Third, migration out of lagging regions may be promoted through a better functioning housing market. There are good reasons to think that housing problems create barriers to mobility. In fact, the relatively larger size of commuting flows, compared to migrations flows, has sometimes been interpreted as an indirect confirmation of failures in the housing markets, such as high housing costs or shortages in rental housing. However, this requires further statistical verification, which, in turn, requires obtaining the appropriate data for clarifying the links between housing and individual migration behavior. Finally, it may be necessary to ensure that generous unemployment and welfare benefits are not curbing geographic mobility by creating perverse incentives while also imposing an unnecessary fiscal burden and dampening economic growth. This would require a careful analysis of the linkages between job search behavior, migration, and income-replacement benefits as part of the overall strategy for growth.

CHAPTER 1

Introduction

Background: Some Emerging Concerns

The transition from central planning to a market economy had substantial labor-market repercussions in most of the eight new member states of the EU from Central Europe and the Baltic region (EU8): Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia.[5] At the beginning of the transition, the formerly socialist countries had essentially no official unemployment and a very egalitarian distribution of wages. During the first few reform years, output and employment declined sharply and unemployment rose sharply, except in the Czech Republic.[6]

Why is Unemployment Persistently High in Some Regions?

By the mid-1990s, most Central European countries and the Baltics had experienced a remarkable economic renaissance. National income, average real wages and employment had begun to increase. However, economic recovery contributed at first only to the stabilization of the unemployment rates and only later to their slight decline. Moreover, in some of the EU8 countries, the years that followed brought further increases in unemployment in the wake of slumps in economic performance and macroeconomic stabilization programs designed to restore macroeconomic equilibrium and push through structural

5. This report was written prior to the 2007 enlargement.

6. Unemployment rates reached double-digit levels during the early transition period except in the Czech Republic. See, for example, Svejnar (2002).

reforms.[7] Thus, on the eve of their entry into the EU the EU8 countries showed unemployment rates that were substantially higher than the EU average.

In addition to the increase in the average unemployment rate at the country level, the process of economic liberalization led to growing regional disparities in unemployment, with cross-regional variance in unemployment rates reaching EU8 averages that are considerably higher than in any other EU country except Italy and, to some extent, Spain.[8] Moreover, the share of long-term unemployment over the total is consistently above 40 percent across the EU8 countries and is more that 50 percent in Poland, Slovenia and the Slovak Republic (65 percent). This share is considerably higher than the EU average although similar to that of Germany, Greece and Italy and it suggests the increasing segmentation of the labor force into the employable (who tend to be employed) and a growing pool of unemployed with a minimal chance of re-employment. Moreover, country-specific studies suggest this pool to be highly concentrated amongst individual that combine several disadvantages, among which low skills and living in a high unemployment area are of primary importance (World Bank 2004a).

Long-term unemployment severely affects both individuals and public budgets. Extended periods of joblessness reduce individual's attachment to labor force and deplete their human capital. In addition, evidence from Poland and Slovakia suggests very strong links between long-term unemployment and incidence of poverty.[9] Furthermore, public budgets suffer because of loss of tax revenue and increasing expenditures on unemployment benefits, welfare and health care. Long-term unemployment is also important because it features as the culprit in the "unemployment hysteresis" hypothesis, according to which short-lived decreases in aggregate demand may persistently raise unemployment if they result in pockets of long-term unemployment. The justification for this hypothesis are various ranging from the fact that the long-term unemployed do not search very hard for jobs and therefore do not exert sufficient downward pressure on wages (Layard, Nickell, and Jackman 1991) to the loss of skills associated with long-term unemployment (Pissarides 1992). Whatever the mechanism the final result is a permanent increase in a country's "natural rate of unemployment" and the potential for this increase is highest where geographical differences are considerable and geographical mobility does not act as an effective adjustment mechanism.

This risk is confirmed by evidence that the regional disparities that emerged in the early stages of the transition process have been highly persistent over time. These are clear examples of poverty traps as workers in high unemployment areas have become discouraged and inactivity has risen in the poorest regions.

Why are the Unemployed not Moving to Where the New Jobs are?

In the context of large and persistent inequalities in employment opportunities, economic theory suggests that geographical mobility may play an important role by preventing the

7. This included Poland and the Czech Republic.

8. The extent of the variation has been increasing with the level of disaggregation, i.e., from county to district level and from district to community level (Cazes and Nesporova 2003).

9. See, for example, World Bank (2004a) and World Bank (2002).

creation of a pool of increasingly unemployable individuals. Its potential role is particularly important in countries undergoing fundamental structural changes and presenting large regional inequalities. Thus, geographical mobility could play an important role in curbing the growth in structural unemployment faced by the EU8 countries during transition and reducing the increase in regional inequalities by gradually absorbing the impact of economic restructuring and the liberalization of the labor and goods markets on structural unemployment; and reducing labor market bottlenecks and facilitating regional adjustments.

By contrast, if factor mobility is limited or prices and wages are rigid, the effect of the initial shocks will persist, LTU will continue to grow and regional economies must rely on other adjustment mechanisms. Often, this involves the pressure to use fiscal redistribution to alleviate pervasive interregional disparities, which in turn gives rise to fiscal and political tensions, which more effective migration could alleviate. Thus, geographical mobility is an important instrument of regional policy and employment reducing strategies in countries facing large regional inequalities in the incidence of unemployment.

Europeans are Slow to Move and the New Europeans are Not an Exception

However, Eichengreen (1993 and 1998) and Bentivogli and Pagano (1999) point to a sharp contrast between the effectiveness of migration in the United States and in continental Europe. European countries often display persistent economic differences between regions (for example, the North and South of Italy and East and West Germany), while labor mobility contributes little to smoothing these differentials (Decressin and Fatas 1995). As a result, wage and unemployment differentials are generally greater and more persistent than in the United States and the effects of structural shocks are absorbed mainly by changes in labor-force participation and increase in structural unemployment rather than through migration (Decressin and Fatas, 1995). The EU8 countries appear to follow the European example closely (more later).

Considerable attention has been given in the literature to the impact of the adverse effects of asymmetric shocks on the overall level of structural unemployment and its regional variation in the old members of the EU and to the capacity to mitigate these effects via geographical mobility of the factors of production. However, comparatively little is known on the extent and speed of these adjustments in the EU8 countries and on the extent to which this is (i) a constraint to the reduction in average unemployment in these countries and (ii) a barrier to a more equitable distribution of the benefits of growth across individuals and household.[10]

The Objectives and Scope of this Report

From the preceding section, three troubling aspects emerge from the analysis of the labor market developments in the EU8 countries over the transition period, namely: the slow

10. The limited literature in this area include studies by Büttner (2006), Gacs and Huber (2004), and Bornhorst and Commander (2004).

and low responsiveness of unemployment to economic growth and economic recovery and the long-term nature of a large part of the unemployment experienced; the growth in regional inequalities; and the very limited role that internal migration appears to plan in reducing these inequalities.

This report focuses on the third of these constraints which is of particular importance as available empirical evidence to date shows clearly that geographical mismatches in the demand and supply of labor and skills have grown considerably across the EU8 area. These developments may account for a large proportion of the troubling increase in long-term structural unemployment experienced in these countries over the last decade. Nevertheless, to date this remains a largely unexplained issue, due predominantly to lack of adequate data. Moreover, the little literature that exists tends to be predominantly of a single-country nature and little effort is made to draw cross-country comparisons and derive typologies of countries that face similar issues and may benefit from similar types of intervention.

This report is a modest attempt to examine a small piece of the broader and complicated puzzle of disparities in regional development, by focusing on persistent regional labor market disparities, and in particular, persistent regional unemployment. It makes an effort to explain why internal migration has not played a bigger role in mitigating regional unemployment disparities. By design, issues related to international migration and cross-border commuting are not addressed and are instead left for future research. In particular, the report does the following:

- Evaluates the magnitude of disparities in regional labor market indicators in EU8 countries, with special focus on regional unemployment indicators.
- Provides a simple framework for reviewing the main adjustment mechanisms which could potentially reduce regional disparities, as identified by the theoretical and empirical literature—i.e., price (or wage) adjustments, quantity adjustment (capital and labor mobility), and government action (such as regional transfers).
- Identifies patterns and statistical profiles of geographical mobility—broadly defined as (i) migration and (ii) commuting—using individual-level data from the 2004 Labor Force Surveys (LFS) and various years (through 2003) of the International Social Survey Programme (ISSP) and summary information from the 2001 Eurobarometer Survey (EBS)—that is, utilizing a common empirical framework and employing a common estimation strategy across different countries in a comparable manner.

In addressing these questions evidence from the EU8 is compared with relevant indicators from selected countries in three broad country groups:[11]

- *The group of 15 members states of the European Union in the period prior to enlargement in 2004 (EU15):* Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom;

11. This follows similar typologies of "benchmarks" in recent publications (see for example World Bank 2005a and 2005b).

- *Other comparator countries:* Bulgaria, Croatia, Romania, and Turkey.
- *Other advanced OECD countries:* Australia, Canada, Japan, Norway, Switzerland, the United States, and others.

It is important to point out that the scope of the report is limited to internal geographical mobility and issues related to international migration are not addressed. Neither are the potential links between international migration and interregional migration evaluated, or whether they are substitutes or complements.

The Value Added of This Analysis

This report makes a number of important contributions to the understanding of the potential role internal mobility can play in enhancing the shared growth. First, this report provides valuable information on countries that are often neglected in the existing literature on this subject—namely, Lithuania, Slovakia, and Slovenia. It updates earlier findings which had focused primarily on the period from mid to late 1990s. It analyzes individual-level Labor Force Survey (LFS) data on migration and commuting—and their correlates for all or most of the EU8 countries—rather than at the aggregate, regional level. This is a comparatively new methodology as, to the best of our knowledge, the LFS has been used to analyze internal mobility in the EU8 only twice previously, to examine migration in Estonia and Latvia in the late 1990s. Furthermore, this report analyzes individual level data from the International Social Survey Programme (ISSP) and summary data from the Eurobarometer (EBS) survey, to examine patterns of mobility as they relate to preferences, intentions, and attachments to community, including other dimensions of mobility that are otherwise difficult to measure using typical labor force surveys. It also presents new analysis or new elaboration of existing regional data from Eurostat, the OECD, EBRD, and the World Bank as appropriate. Finally, this report compares EU8 countries with EU15 and other advanced comparator economies in a careful, consistent manner using available data.

The Structure of the Report

The next chapters are organized as follows:

- *Chapter 2 reports measures of the magnitude and evolution of regional disparities.* This section measures dimensions of disparities in regional development, including reporting descriptive statistics and measures of persistence, for the following labor market indicators: unemployment rate, long-term unemployment, employment rate, and the labor force participation rate.
- *Chapter 3 quantifies various adjustment mechanisms to alleviate regional disparities.* This section provides a simple framework for understanding the main adjustment mechanisms to significant imbalances in regional unemployment rates. The chapter draws from the existing literature and summarizes what is known with respect to the role of wage adjustments, capital flows, and government transfers.

- *Chapter 4 examines labor mobility and measure its covariates using individual-level data*. This section looks at the known covariates of labor mobility to understand better the barriers to the more effective use of geographic mobility in alleviating regional disparities. The empirical framework and the discussion of the results will be informed by a review of the recent empirical literature as well as a review of the sociological literature and case studies based on qualitative data. This section draws from two main data sources ISSP and LFS, with supplementary data from EBS.
- *Chapter 5 summarizes the main findings and concludes.* This section identifies the key findings from the analysis and discusses the policy implications as well as directions for future research.

CHAPTER 2

Regional Labor Market Disparities

Background

Why Do Regional Disparities Matter?

A large literature on regional unemployment and labor market adjustment in the EU15 and on the EU8 and EU accession candidates has emerged over the last decade. Why is there heightened interest in regional disparities and the capacity of local labor markets to adjust to such disparities?

Regional Development and the Poverty and Social Implications of Lagging Regions. Regional labor market disparities have implication on poverty, inequality, and social inclusion.[12] Where local regional markets fail to adjust to employment and income differentials, some regions may be locked in unemployment traps with unemployed workers falling into long-term unemployment or subsequently discouraged and falling into inactivity. A strand of the literature has also been concerned with vulnerable groups, noting differences, for example, in how skilled and unskilled workers respond to regional unemployment (see, for example, Mauro and Spilimbergo 1999). In addition, there is interest, in the presence of wide regional disparities in unemployment, in how the social costs of unemployment is increase, that is, how welfare is lower when disparities are wide, for a given level of aggregate unemployment (Mauro, Prasad, and Spilimbergo 1999). Where capital and labor flows are themselves positive functions of levels of income, capital and labor flows exacerbate rather

12. Förster, Jesuit, and Smeeding (2002) provide evidence that the economic transition may have exacerbated regional differences in the Czech Republic, Hungary, Poland, and Russia, with increasing urban/rural gaps and rising inequality between as well as within regions.

than offset regional disparities. In the case of Russia, for example, Andrienko and Guriev (2004) found that migration is constrained by liquidity. Rising income thus increases, rather than decreases, labor outflows.

Political Economy Implications of Lagging Regions. Regional disparities may increase pressure for greater fiscal transfers, possibly fueling political tensions. Cross-regional subsidies may, for example, fuel social tensions (Mauro, Prasad, and Spilimbergo 1999; Obstfeld and Peri 2000). There are also concerns over the cost of fiscal transfers, which may be utilized to correct regional disparities. Such cross-regional subsidies may have to be financed by distortionary taxation (with overall efficiency costs). At a cross-national level, there is also interest in the internal migration implications of EU enlargement; that is, where local regional markets fail to adjust, there may be increasing pressure for international migration (see Obstfeld and Peri 2000).

The Transition Experience with Unemployment. Unemployment rates were expected to follow an inverted U-shaped pattern over the transition period, with the speed of increase in unemployment driven by firm closures, privatization, and restructuring. Instead, high unemployment rates have persisted, with large disparities across regions (Bornhorst and Commander 2004).

Other Reasons. There are some concerns over a higher country-level non-accelerating inflation rate of unemployment (NAIRU), as inflation pressure may rise faster in low-unemployment areas and spread to the rest of the country (Mauro, Prasad, and Spilimbergo 1999; Layard, Nickell, and Jackman 1991). This pattern may hold in cases where wage-negotiations are led by regions with relatively low unemployment.

Magnitude of Spatial Disparities in Unemployment

This section characterizes the patterns of regional unemployment across countries and over time. It draws from and summarizes secondary data mainly from Eurostat but also draws from other sources as appropriate (for example, OECD databases). While achieving complete cross-country comparability is a challenge, the use of regional data at NUTS level guarantees a certain degree of comparability although a few technical issues remain (see Box 2.1). The OECD has also developed comparable regional units consistent with the NUTS system, thus allowing us to compare regional indicators in the EU with other (non-EU) OECD member countries (such as Japan, the United States, Australia, and others).

How Large are Regional Labor Market Differentials in the EU8?

Figures 2.1 and 2.2 below depict minimum and maximum regional unemployment rates at the NUTS3 and NUTS2 level for EU countries for which 2004 data are available.[13]

13. It would be interesting to examine 2005 regional unemployment rates, to analyze the impact of EU accession on regional unemployment. However, at the time the core analysis was conducted, data on regional unemployment rates for 2005 were not available.

Box 2.1: The Choice of Regional Unit

Comparisons of regional indicators are sensitive to the choice of regional unit. How much variability is captured by the analysis depends in large part on how narrowly or how broadly 'region' is defined.[14] For cross-country comparability, the analysis presented in this report utilizes the regional classification system developed by the European Union, the so-called *Nomenclature of Territorial Units for Statistics* (NUTS). Developed in the 1970s, the NUTS system is a hierarchical, three-level system that serves as a common reference for the development of regional statistics, including socio-economic indicators, and feeds into the formulation of EU regional policies.

While the NUTS system has become the standard for producing regional statistics in the EU, a number of issues regarding comparability remain. For example, owing to differences in geographic size within the EU8, some of the smaller countries are themselves considered the NUTS2 region (Estonia, Lithuania, Latvia, and Slovenia) while the other countries are classified as NUTS1 regions (Czech Republic, Hungary, Poland and Slovakia) (Table 1). In addition, within the same NUTS level, there can still be wide disparities in average population, average geographic size, and average population density, across countries (Table 2).

Caution is thus warranted in interpreting the regional summary statistics presented in this and in forthcoming chapters of the report. For countries for which multiple NUTS disaggregations are possible, that is, where regional data are available both at the NUTS2 and NUTS3 level, we present both sets of summary data, to verify the robustness of the documented trends and statistical characteristics. Regional employment rates over time are readily available only at the NUTS2 level. Data on unemployment rates, however, are available at the NUTS3 level.

Table 2.1. Number of Regions by NUTS level

	Number of Regions	
Country	**NUTS2**	**NUTS3**
Czech Republic	8	14
Estonia	1	5
Hungary	7	20
Latvia	1	6
Lithuania	1	10
Poland	16	45
Slovenia	1	12
Slovak Republic	4	8

Source: Eurostat.

(*Continued*)

14. For example, while the data suggest that there is limited variability in the regional unemployment rates across the six NUTS3 regions of Latvia, official (registered) unemployment rates range from 4.5 percent in thriving regions to 28 percent in poorer towns, although ILO-consistent measures of unemployment suggest lower unemployment rates in the countryside. We thank Latvia's Minister of Finance for raising this point.

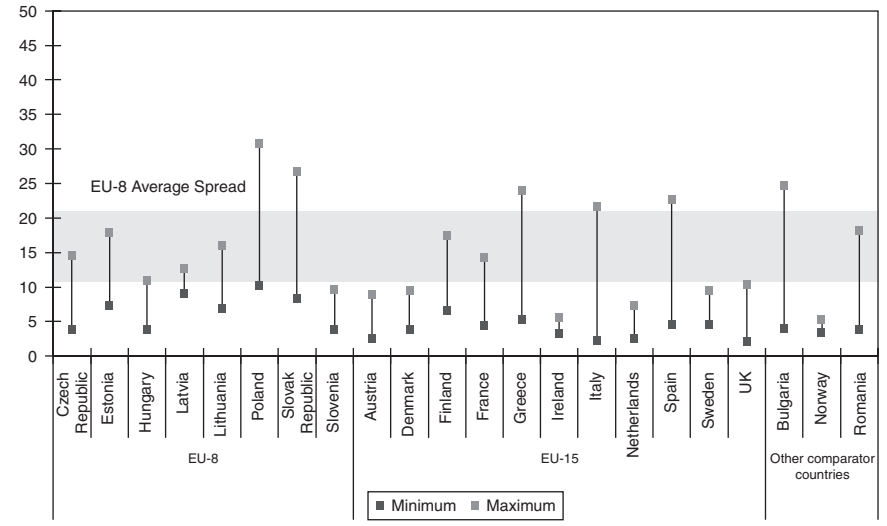
Box 2.1: The Choice of Regional Unit (*Continued*)

Table 2. Main Characteristics of the NUTS-3 Level Regions, 2003

	Average			Standard Deviation			Coefficient of Variation		
	Population	Area (in km^2)	Density	Population	Area (in km^2)	Density	Population	Area (in km^2)	Density
Czech Republic	729.1	5633.4	280.5	300.8	2658.6	574.6	41.3	47.2	204.9
Estonia	270.7	8739.6	45	145.8	4560.6	40.1	53.9	52.2	89
Hungary	506.5	4651.5	250.3	339.5	1789.7	691.3	67	38.5	276.2
Latvia	387.6	10764.8	421.5	161.7	5038.2	885.4	41.7	46.8	210
Lithuania	345.4	6267.8	52.2	229.9	1849.6	23.3	66.6	29.5	44.6
Poland	849	6948.6	427.4	447.9	3690	799.8	52.8	53.1	187.1
Slovenia	166.3	1689.4	99.6	127.3	749	47.2	76.6	44.3	47.4
Slovak Republic	672.5	6129.3	130.6	79.7	2325.9	64.3	11.8	37.9	49.2

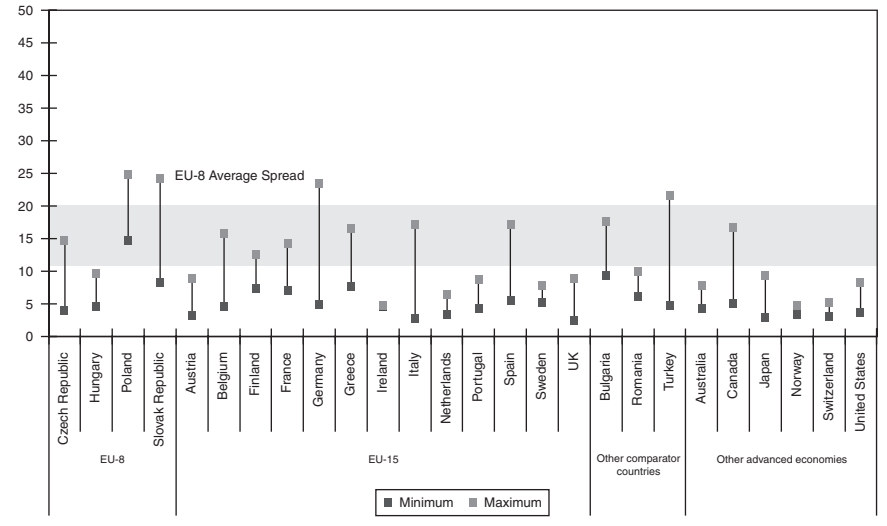
Source: Eurostat and Bank staff calculations.

Figure 2.1. Minimum and Maximum Regional Unemployment Rates (NUTS 3), 2004



Source: Eurostat and Bank staff estimates.

Figure 2.2. Disparities in Regional Unemployment Rates (NUTS2 or Equivalent), 2004



Source: Eurostat, OECD, and Bank staff estimates. Data for other advanced economies, except Norway, refer to 2003.

Regional indicators for selected comparator countries and other advanced economies are summarized as well. The lines represent the percentage point spread between the minimum and maximum rates. The gray area in the background represents the average spread for the EU8 as a group.

Regional Imbalances are Relatively Larger in the EU8 Compared to Other EU and Advanced Countries. Figures 2.1 and 2.2 suggest that, as a group, the EU8 have experienced relatively wide disparities in regional labor market indicators in 2004. In Poland, for example, regional unemployment rates at the NUTS3 level are from 10 to over 30 percent. In the Slovak Republic, the unemployment rates range from about eight to over 25 percent. Compared to EU15 countries (or the older EU member states) and other advanced economies, such disparities have, on average, been much wider among the EU8, as few advanced economies exceed the average EU8 spread, both at the NUTS2 and NUTS3 level. The regional disparities among the EU8 are however comparable with other countries such as Bulgaria and Romania (at the NUTS3 level) and Turkey (at the NUTS2 level).

The EU8, However, is Not a Homogenous Group. Within the EU8, there are substantial differences in the magnitude of disparities in regional unemployment. At the lower end of this distribution are Latvia and Slovenia (and to some extent, Lithuania), where unemployment rates have been relatively lower and the spread much narrower than the regional unemployment rates in Poland and the Slovak Republic, two countries at the other end of the distribution. In fact, regional disparities in Latvia and Slovenia are much more similar to the EU15 as a group and to other advanced economies.

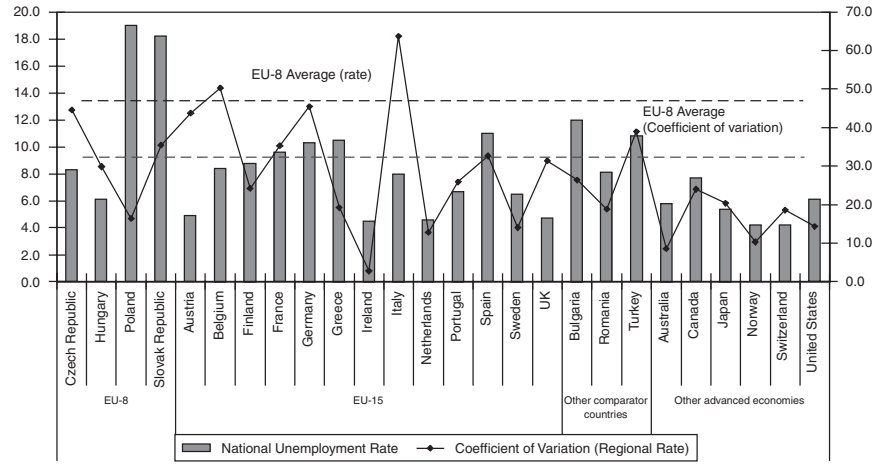
Some Southern European Countries are Comparable with the EU8. Within the EU15, here is significant heterogeneity as well. While the EU15 as a group have relatively compressed regional unemployment rates, a few countries have disparities that far exceed the EU15 average and are comparable, possibly larger, than the EU8 average. These countries include the Southern European countries, such as Greece, Italy, and Spain at the NUTS3 level and Italy and Spain, along with Germany, at the NUTS2 level.[15] At the NUTS3 level, the observed differences between minimum and maximum regional unemployment rates exceed 18 percentage points among the Southern European countries. In Italy, for example, the regional unemployment rates range from a low of 2 percent to a high of over 21 percent.

Are These Tendencies Robust to Various Measures of Regional Disparities? Other measures of disparity, such as the coefficient of variation (which normalizes the standard deviation by dividing through by the national average) are broadly consistent with patterns depicted in Figures 2.1 and 2.2. At the NUTS3 level, for example, the coefficient of variations is generally highest among the EU8 and other comparator countries with comparable rates for Italy, Greece, and Spain (Figure 2.3).

Do Other Regional Labor Market Indicators Reflect the Same Patterns? Figure 2.4 reports disparities in regional employment rates at the NUTS2 level for selected countries.

15. It has been suggested that relatively large regional disparities in Germany may be due to the inclusion of East Germany, which may be considered a "transition economy."

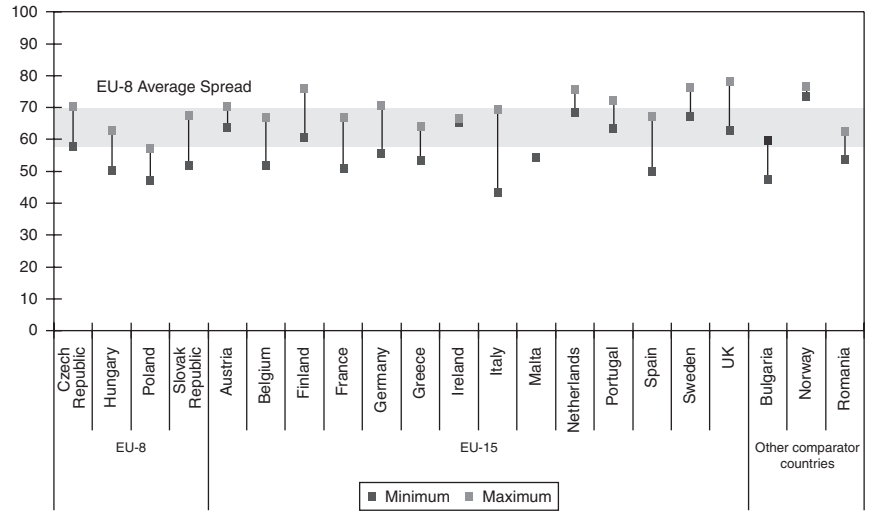
Figure 2.3. Unemployment Rate: National Level and Regional Dispersion 2004 (NUTS2 or Equivalent)



Source: Eurostat; OECD; and Bank staff estimates.

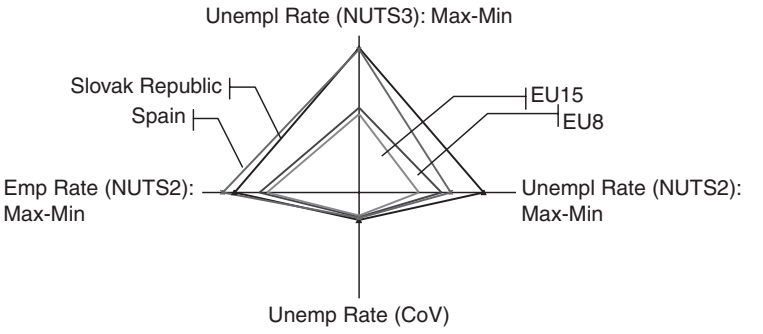
The differences between the EU8 as a group and the EU15 are not as manifest, although on average the EU8 still has somewhat larger disparities than the EU15. Within the EU15, the Slovak Republic is still at the higher end of the distribution. Among advanced economies, Italy and Spain have the highest percentage-point spreads.

Figure 2.4. Regional Employment Rates (NUTS2), 2004



Source: Eurostat and Bank staff estimates.

Figure 2.5. Measures of Regional Labor Market Disparity



Source: Eurostat and Bank staff estimates.

Figure 2.5 is an alternative representation of summary information on regional labor market differentials. The diamond chart represents regional disparities along four selected dimensions (unemployment rate at the NUTS2 and NUTS3 level, employment rate at the NUTS2 level, and the coefficient of variation of the unemployment rates). Away from the center, the points in Figure 2.4 represent wider regional variations. Thus, the EU8 as a group has larger disparities than the EU15, along the four dimensions. The Slovak Republic has much wider disparities than the EU8 and EU15 averages, but Spain (representing the Southern European countries) has comparable rates.

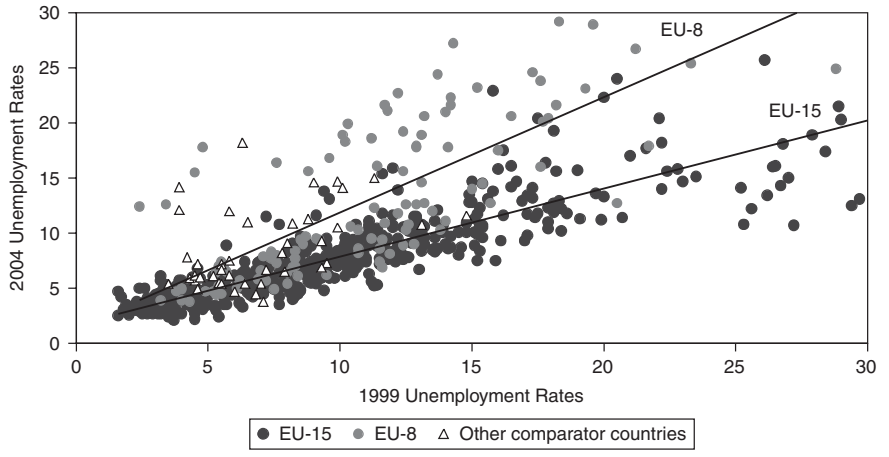
How Persistent are Regional Labor Market Differentials in the EU8?

Unemployment Rates in the EU8 Tend to be More Persistent Than in the EU15. Figure 2.5 reports the regional unemployment rates at the NUTS3 level for 1999 in selected countries in the EU and for 2004. The lines indicate the average tendency over time for the EU8 and the EU15 as a group. The steeper line for the EU8 suggests that where regional unemployment rates are initially high (in 1999), they have remained high in 2004. In contrast, among the EU15, such rates have tended to fall over time. The higher EU8 line also suggests that regional unemployment rates are generally higher in these countries compared to the EU15.

The Same Patterns—Large, Persistent Disparities—are Reflected in Unemployment Rates as Well as Employment Rates at the NUTS2 Level. In the case of employment rates, they are generally lower in the EU8 but still more persistent. That is, where they are initially low, they remain low in the next period.

This Simple Measure of Persistence is Consistent with More Rigorous Tests of Persistence That Have Been Applied in the Literature. We find high correlation coefficients between regional unemployment rates in the initial and final periods, both at the NUTS2 and NUTS3 level (not shown), with generally higher estimated persistence at the NUTS2 level

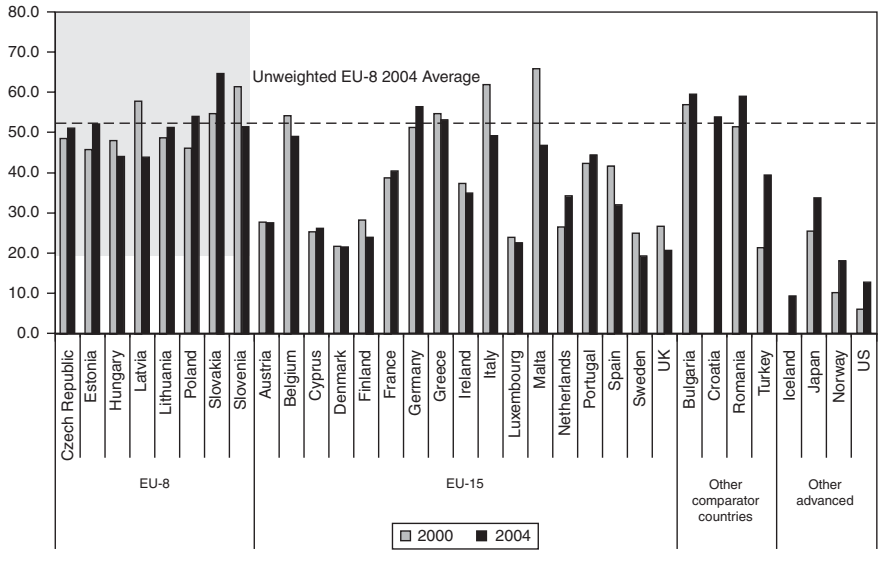
Figure 2.6. The Persistence of Regional Unemployment Rates, 1999–2004 (NUTS3)



Source: Eurostat and Bank staff calculations.

(the larger regional unit of analysis). In addition, Commander and Bornhorst (2004), utilize more rigorous time series tests and find supporting evidence that transition economies (including Czech Republic, Hungary and Poland) have generally experienced persistent regional unemployment rates.

Figure 2.7. Long-Term Unemployment Rate 2000 and 2004 (Unemployed 12 months or more in percent of all unemployed)



Source: Eurostat and Bank staff calculations.

There is a Large Share of Long-Term Unemployed Workers in the EU8. Closely related to the notion of persistent unemployment rates is the growth of the pool of long-term unemployed workers. Not surprisingly, the EU8 on average has a much higher share of long-term unemployed (i.e., workers unemployed for at least a year as a share of all unemployed) than most countries (Figure 2.6). On average, over half of the unemployed have been jobless for at least a year. In 2004, this was higher than long-tern unemployment rate in most countries, except for other comparator countries in Eastern Europe, selected Southern European countries (Italy and Greece) and other countries (Germany). Among the EU8, Poland and the Slovak Republic have the highest incidence of LTU.

CHAPTER 3

Regional Unemployment Disparities and Adjustment Mechanisms

Introduction

Our understanding of adjustment mechanisms in response to regional unemployment disparities is based, in part, on the income convergence literature.[16] The neoclassical growth model predicts absolute convergence: under certain conditions, poorer economies grow more rapidly in per capita terms than richer ones. This is a much stronger prediction than conditional convergence, which predicts that an economy grows faster the further it is from its own steady state. With absolute convergence, economies converge or catch up to the same steady state assuming similar preferences, technologies, and institutions.[17]

While the hypothesis of absolute convergence has been typically tested using cross-country analyses, regional (within-country) data sets have also been utilized. The within-country analysis has the advantage of likely smaller differences in taste, technology, and institutions across regions within the same country than across countries. With both capital and labor likely to be more mobile, at least in principle, within countries, the speed of convergence is also likely to be faster. Thus, factor income (wages and returns to capital)

16. Another strand of the literature, focusing on optimum currency areas and dating back to the work of Mundell (1961), examines the local adjustment mechanisms necessary to respond to asymmetric shocks and sustain a common currency. For a common currency area to function well, either the regions or countries within the area need to be subject to the same economic shock, so that a common monetary policy can manage the adjustment or, where regional shocks are asymmetric, adjustment mechanisms are necessary for restoring equilibrium. A seminal empirical paper by Blanchard and Katz (1992) analyzes the main adjustment mechanisms to offset regional employment shocks in the United States. A number of studies in this literature examine adjustment mechanisms in European countries as a group (Obstfeld and Peri 2000; Decressin and Fatás 1995) or in specific countries.

17. For a description of this literature and examples of empirical studies using regional datasets, see Barro and Sala-i-Martin (2004). See also McDonald and Dearden (2005).

across regions within an integrated area should equalize, if capital and labor are sufficiently mobile. Indeed, empirical evidence for U.S. states, Japanese prefectures, and European regions over many decades provide support for the absolute convergence hypothesis.

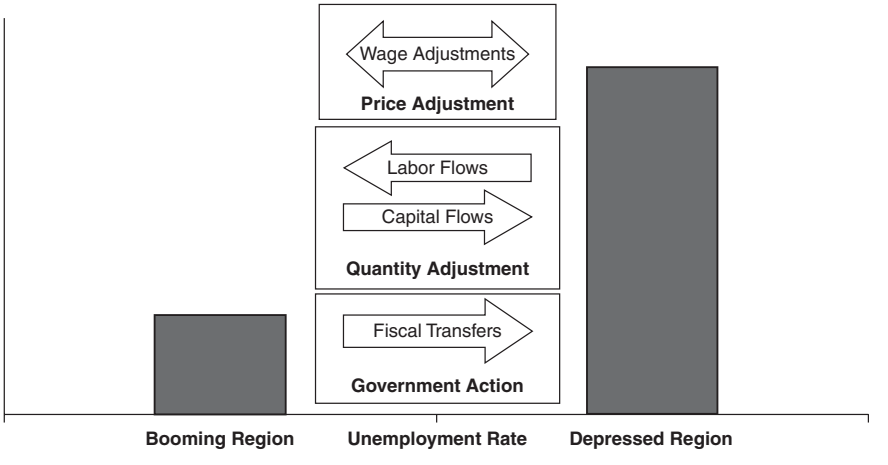
In contrast, a strand of this literature has emphasized lasting differences in technologies and institutions, the high cost of transportation and the high price of adopting new technologies, as well as the importance of agglomeration effects and clusters (see for example Fujita, Krugman and Venables 1999; Puga 2002). In this environment, mobile factors are expected to flow from poor regions to rich regions and in significant quantities; regional disparities grow wider as a result. This literature on divergence thus predicts that within an integrated economy, there can be persistent, possibly increasing, gaps in standards of living across regions. As such, where factor flows do not serve to equalize standards of living, public policy may be necessary to address regional economic disparities.

Adjustment Mechanisms: Three Main Channels

Based on the preceding discussion, the three main adjustment mechanisms in response to regional labor market disparities are the following (see Figure 3.1):

- *Price (or wage) adjustment.* Wages can correct imbalances. Where unemployment is high, wages could fall and attract firms into the high-unemployment region. Lower real wages could also provide an incentive for workers to migrate out of high-unemployment region.
- *Quantity adjustment.* Related to wage adjustments are capital flows into regions with high unemployment, in response to higher returns and lower unit costs. New firms may be set up, existing firms may expand into high-unemployment regions,

Figure 3.1. Regional Unemployment and Adjustment Mechanisms



or they may migrate out of low-unemployment regions. Such flows of new investments, in turn, are expected to create new jobs. Labor mobility, on the other hand, could take the form of workers moving out of high unemployment regions into low-unemployment regions. For those who stay behind in lagging regions, the outflow of workers may serve to relieve the pressure on the local labor market.

- *Government action.* Government action aimed at addressing regional imbalances could take a number of forms: First, government transfers resources to depressed regions as a form of insurance, to compensate, for example, for a natural disaster or an employment shocks. Where income differentials are persistent, the central government could provide equalization transfers or structural funds to assist in the development of lagging regions. Where price and quantity adjustment worsen rather than mitigate regional disparities (see literature on divergence, above) such as in the case of selective out-migration (for example, high skilled workers leave the economically depressed region, making it more difficult for that region to attract new investment), fiscal transfers in the form of structural funds could again be provided to lagging regions.

Alternatively, government action could aim at creating the environment for facilitating price and quantity adjustments, such as by decentralizing wage-setting systems (to encourage decentralized wage-bargaining and set region-specific minimum wages), building the infrastructure to encourage new investment (capital) flows, or tightening eligibility requirements for unemployment benefits to encourage job search and mobility. Where the institutional and economic barriers to labor mobility are known, such as lack of rental housing or high commuting costs, the government could choose to ease some of these constraints.

While the simple framework depicted above treats the different adjustment mechanisms separately, they are clearly interdependent. Wage flexibility alone, for example, will not be sufficient to address regional imbalances. Adjustment requires that the factors of production be sufficiently responsive to wage changes. Meanwhile, factor flows require that wages are sufficiently flexible.

In addition, some have argued that the third adjustment mechanism (government action) does not solve the adjustment problem; instead, it merely "hides" it (Blanchard 1998). Obstfeld and Peri (2000) find that in an environment where labor mobility is weak, fiscal transfers from booming to depressed regions play a redistributive and stabilizing role. At the same time, they caution against relying exclusively on fiscal redistribution to address income and employment differentials. They cite as potential challenges the likely political resistance to the enlargement of transfers programs, the moral hazards induced by such programs, and the inflationary pressures they create. The moral hazard associated with fiscal transfers may also serve to dampen migration flows, as job search intensity may be negatively related to the generosity of fiscal transfers. That is, as the cost of unemployment falls, the reservation wage may rise.

Adjustment Mechanisms: Empirical Evidence

Using a framework similar to that depicted in Figure 3.1, a number of empirical studies have compared adjustment mechanisms in the Unites States, in Europe (EU15), and in

other advanced economies.[18] For example, Blanchard and Katz (1992) apply panel vector-autoregression (panel VAR) to examine the inter-relationships among regional employment, employment rates, and participation rates and find that inter-state migration is the main adjustment mechanism for regional employment shocks. In contrast, using the same framework, Obstfeld and Peri (2000) find that inter-regional migration is much lower in Europe than in the United States or Canada.[19]

In the case of the new EU member states and EU accession candidates, researchers have utilized similar frameworks to examine adjustment mechanisms and convergence processes in depth. For example, Perugini and Signorelli (2004) examine employment converge in the EU, including Romania and Bulgaria. They document divergence, rather than convergence, within the EU8, reinforced by regional labor market diversification. While they do not consider regional levels of development (that is, levels and changes in per capita regional GDP), they find that across the EU-25, including Bulgaria and Romania, a significant correlation exists between employment outcomes and levels of per-capita GDP, with the strongest correlation documented in regions of the EU8. Similarly, Herz and Vogel (2003) examine convergence across and within countries in Europe, including Central and Eastern Europe, without finding evidence of absolute converge within countries.

Price (or Wage) Adjustment

The impact of unemployment on wage rates is theoretically ambiguous. Typically, higher unemployment rates are assumed to lead to lower wages, such as in the neoclassical case where unemployment is resolved through instantaneous wage reduction. On the other hand, a number of studies consider higher wages as a "compensating differential" for the higher probability of unemployment, thus postulating a *positive* relationship between wages and unemployment (see for example Harris and Todaro 1970).

Influential and pioneering work on the "wage curve" by Blanchflower and Oswald (1994) and many others that have applied similar estimation strategies—across various countries in Europe (for example, Belgium, Denmark, France, and Spain), in Latin America (for example, Argentina and Brazil), in Africa (for example, Ghana, South Africa, Burkina Faso), and in Asia (for example, Taiwan). They have marshaled compelling evidence that regional wage rates are negatively related to regional unemployment. In general, the empirical evidence also suggests that the unemployment elasticity of wages is about -0.1; a doubling of unemployment is then associated with a drop in pay of about 10 percent. This literature was first reviewed by Card (1995) and more recently by (Nijkamp and Poot 2005) as well as Blanchflower (2001).

18. Similarly, in the literature on economic growth, a number of regional studies have examined the impact of specific channels on the speed of convergence. Barro and Sala-i-Martin (2004) find only a weak correlation between migration and convergence coefficients.

19. Decressin and Fatás (1995) find that in the short term, the main adjustment mechanism in Europe is the change in participation rates. Similarly, Eichengreen (1993 and 1998) and Bentivogli and Pagano (1999) find that that the responsiveness of migration to unemployment and wage differentials is lower in the EU than in the United States. Similarly, Pissarides and McMaster (1990) find that relative unemployment and wages, both expressed as ratios to national mean values, significantly affect interregional migration in Great Britain, but the resulting regional adjustment to shocks is very slow. Jackman and Savouri (1992) study British migration and obtain a similar finding for unemployment and vacancy rates but obtain the opposite result for wages, which suggests that migrants move from high wage to low wage regions.

The empirical framework for estimating the wage curve generally follows a version of this model (as explained in Blanchflower and Oswald 1994):

$$\ln w_{r,t} = \alpha + \beta \ln U_{r,t} + \gamma X_{r,t} + \mu_r + \lambda_t + \varepsilon_{r,t} \quad (1)$$

where $w_{r,t}$, and $U_{r,t}$ are the wage and unemployment rates, respectively, for region r at time t; X is a vector of explanatory variables; μ_r is a time-invariant region specific effect λ_t is a region-invariant time-specific effect and $\varepsilon_{r,t}$ is the error term. Because the model is a double-log specification, β is an estimate of the elasticity of the regional wage with respect to the regional unemployment rate. The test for the presence of a wage curve is thus a test for $\beta > 0$ and its statistical significance.

What are the wage curves in the EU8? Table 3.1 presents estimates of unemployment elasticity of wages across the new EU member states, drawing from existing studies of the wage curve. When found to be negative and significant, the wage elasticities in the EU8 are broadly comparable with estimates produced by Blanchflower and Oswald (1994). However, where several empirical studies may be available for a single country, the summary results in Table 3.1 also suggests that there is a wide variance in these estimated wage curves. In Hungary, depending on the estimation strategy, the author, and period covered, the wage elasticity may be positive, insignificant, or negative. In Poland, the wage elasticity estimates range from zero to -0.12.

Are wage curves in the EU8 different from those of other countries? Many estimates of the wage elasticity with respect to local unemployment have been produced since the seminal work of Blanchflower and Oswald (1994). One could compare the studies summarized in Table 3.1 with existing studies of the wage curve in EU15 and in other advanced economies. However, these estimates may not be fully comparable across countries as they have sometimes utilized different estimation strategies and used different types of data sets covering different periods. A small number of studies, however, combine comparable data for both Eastern and Western European countries. They suggest the following.

There is Some Evidence that Wages are More Responsive to Regional Unemployment in the EU8 Than in the EU15. Huber (2004) finds that wages are more responsive to local unemployment rates in the EU8 than in the EU15 but are less responsive to national unemployment rates. Huber's analysis is based on data for the period 1992 to 1998, and covering selected EU8 countries (Czech Republic, Estonia, Hungary, Poland, Slovenia), candidate countries (Bulgaria and Romania) and some EU15 countries (Netherlands, Germany excluding East Germany, Spain, Portugal, and Italy).

The Sector of Employment may Matter for the Responsiveness of Wages. Delteil, Pailhe, and Redor (2004) compare Hungary and France and find a negative relationship between wages and local unemployment in both cases. However, they find that such a relationship is stronger among private firms in France while the opposite is true for Hungary. In Hungary, the relationship between wages and local unemployment is weaker for private firms (although the negative elasticity is more pronounced for foreign firms, in part because foreign firms pay high wages and are located in the dynamic regions, where unemployment is low). Delteil, Pailhe, and Redor (2004) claim that the weaker response of private firms to local unemployment in France is not surprising: state sector wages are fixed centrally. It is less clear why the opposite is true for Hungary.

Table 3.1. Evidence on the Wage Curve in the EU8: Selected Studies (Elasticity of regional wages with respect to regional unemployment)

Country and Authors	Period	Elasticity
Czech Republic		
Basu and others (2004)	1990–1993	Insignificant
Blanchflower (2001)	1992, 1994–1997	0.00 to −0.02
Galuscák and Münich (2002)	1996–2001	−0.03 to −0.8
Huitfeldt (2001)	1992–1998	−0.01 to −0.07
von Hagen and Traistaru (2004)	1993–2003	Insignificant
Estonia		
Blanchflower (2001)	1995	−0.29
von Hagen and Traistaru (2004)	1993–2003	−0.15
Latvia		
Adamaite (undated)	1995–1999	−0.06 to −0.10
von Hagen and Traistaru (2004)	1993–2003	−0.15
Lithuania		
von Hagen and Traistaru (2004)	1993–2003	−0.15
Hungary		
Basu and others (2004)	1990–1991	+0.02
	1991–1992	+0.01
Blanchflower (2001)	1993	−0.36
	1990–1997	0.00 to −0.05
Delteil and others (2004)	1989–1998	−0.03 to −0.10
Iara and Traistaru (2004)	1992–1999	Insignificant
Kollo (1998)	1989	−0.05
	1992	−0.15
Kertesi and Kollo (1997)	1992–1993	−0.09
	1994–1995	−0.11
von Hagen and Traistaru (2004)	1993–2003	+0.15
Poland		
Basu and others (2004)	1989–1990	−0.01
	1990–1991	Insignificant
Blanchflower (2001)	1993	−0.18
	1991–1997	−0.12 to −0.15
Duffy and Walsh (2001)	1994 to 1996	−0.10
Iara and Traistaru (2004)	1992–1999	0.00 to −0.07
von Hagen and Traistaru (2004)	1993–2003	Insignificant
Slovenia		
Slovak Republic		
Basu and others (2004)	1990–1991	Insignificant
	1991–1992	−0.39 to −0.56
Blanchflower (2001)	1993, 1995	−0.04 to −0.18
Huitfeldt (2001)	1992–1998	−0.08 to −0.12
von Hagen and Traistaru 2004	1993–2003	−0.06

Source: As indicated.

The Relationship Between Local Wages and Unemployment may be Nonlinear. Some economists have raised the possibility of a nonlinear relationship between local wages and local unemployment. In particular, in regions where unemployment is very high, wages may be unresponsive to unemployment. Yamaguchi (2005) employs several estimation techniques allowing for such nonlinearity and concludes that in Poland, wages are less elastic in a high unemployment/low wage environment. Similarly, Galušcák and Münich (2002) find in the Czech Republic that the wage elasticity is negative and significant only for the short-term unemployed or in districts with low unemployment rates or low shares of public sector employment. In districts where unemployment is high, wages do not respond to changes in unemployment. Galuščák and Münich (2005) also provide evidence that regional wage flexibility may have weakened as long-term unemployment has risen at the end of the 1990s, a result that they show to be consistent with the efficiency wage model.

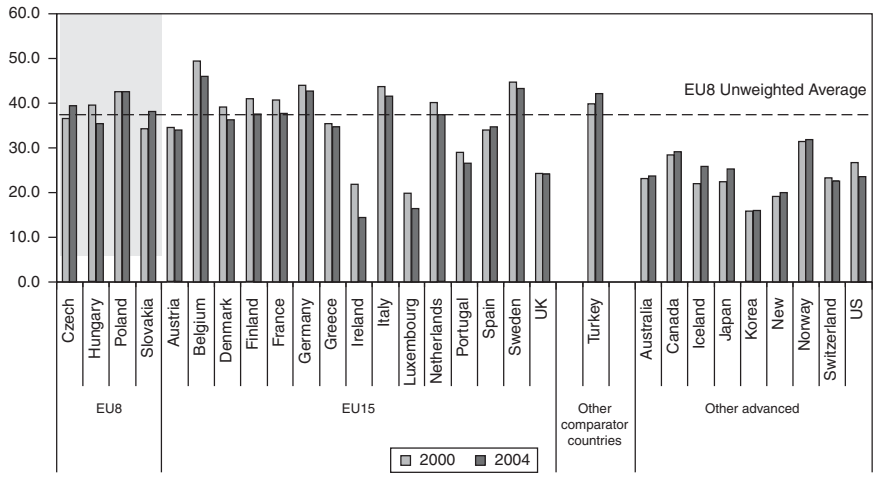
There are Lags in the Responsiveness of Wages to Unemployment. While local wages may be relatively elastic, there may still be some delay in their response to unemployment (Iara and Traistaru 2004). Because of such lags, regional disparities in unemployment may persist over time. In addition, an -0.1 elasticity is clearly not enough to generate the economic response necessary to offset persistent and very high rates of unemployment.

Wage Flexibility is Not Sufficient to Adjust to Regional Unemployment Disparities. Clearly, wage adjustments as equilibrating mechanisms still depend on factor mobility, in particular on firms moving to regions where unit labor costs are relatively lower. In addition, the impact of wages has been small, or sometimes opposite their expected effect. In particular, high wages have encouraged outward migration while high unemployment has tended to discourage it. This is not surprising as migration, because of nontrivial costs of relocation, is a function of liquidity.[20]

Labor Market Institutions Matter. Existing mechanisms for minimum wage setting in the EU8 have tended to dampen wage flexibility in the EU8, particularly among workers at the bottom end of the wage distribution and in poorer regions. Feldmann (2004) reviews country experiences with statutory minimum wages and their impact on unemployment and labor mobility in the Czech Republic, Hungary, and Poland. Among other things, he finds that, in Poland, the statutory minimum wage has been relatively high. Neither is it allowed to vary by age or by region. As a result, it has restrained wage flexibility and increased unemployment in recent years, particularly in the relatively poorer regions and within these regions, among the younger, less productive workers. Feldmann (2004) also estimates that in the Czech Republic, between 1998 and 2001, the statutory minimum wage rose from 23 percent to 34 percent of average wages, compressing the wage distribution in the process and restricting wage flexibility as a result. In Hungary meanwhile, between 1991 and 2000, the minimum wage decreased steadily from about 37 to 28 percent of the average wage, as inflation gradually

20. Faini and Venturini (1996) have argued that the effect of wages on mobility in the region of origin may not be linear because geographical mobility from poor regions is, in part, a function of liquidity constraints. With rising wages at home, emigration may thus increase, rather than decrease, as the liquidity constraints are eased. For relatively affluent regions, rising wages reduce the incentive to emigrate. Andrienko and Guriev (2004) report similar evidence for Russia that migration is held back by liquidity considerations.

Figure 3.2. Total Tax Wedge: 2000 and 2004 (Single workers without children earning 67 percent of average production worker's earnings)



Source: OECD and Bank staff estimates.

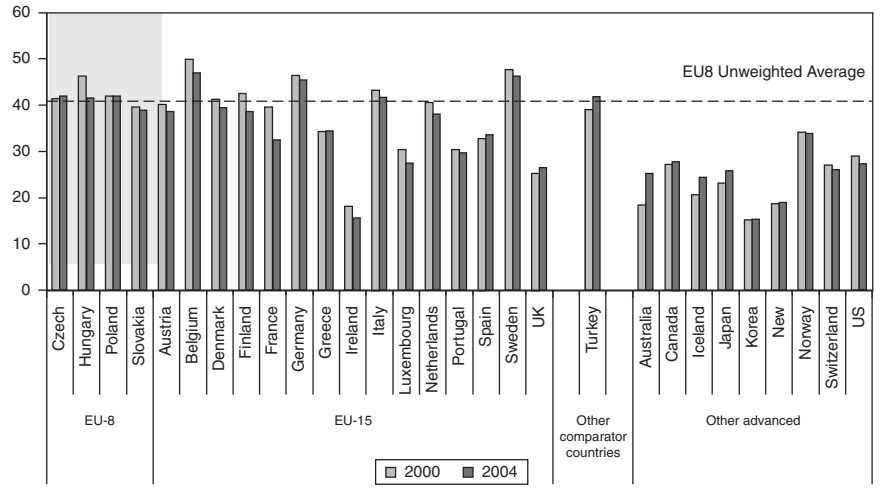
eroded its real value. However, it rebounded sharply thereafter to 38 percent of average wages following the statutory minimum wage increase in 2001. In addition, the tax wedge on labor in the EU8 is among the highest in the world (Figures 3.2 and 3.3). This serves to dampen labor demand because it raises unit labor costs; at the same, labor supply may decrease as real wage consumption falls (Rutkowski and Przybyla 2002; Scarpetta and Wörgötter 2005).[21]

Capital Mobility

In principle, we expect capital to flow into depressed regions, create new jobs, and facilitate the adjustment to regional imbalances. In practice, it seems that capital had tended to flow into booming regions, where the human capital stock is high and where economic activity is concentrated. This appears to be consistent with the literature on 'new economic geography,' which emphasizes the benefits of agglomeration. Moreover, while high unemployment rates may indicate the potential availability of labor at relatively low wages, they are apparently associated with "less-competitive industrial conditions and lower quality of life" that may serve to discourage potential investors (Basile 2002). In addition, high unemployment rates may be perceived to reflect rigidities in the local labor market, as they could be associated with high minimum wages and/or high unemployment benefits (Boudier-Bensebaa 2005). This should not be surprising: in Poland, for example, in regions where

21. Thus the direction of causality may in fact run from wages to unemployment, rather than from unemployment to wages, as assumed by the wage curve literature. That is, labor market institutions create wage rigidities, and such institutions in turn foster high unemployment.

Figure 3.3. Total Tax Wedge: 2000 and 2004 (Married couples with 2 children; principal earner earns 100 percent of average production worker's earnings; spouse earns 67 percent)



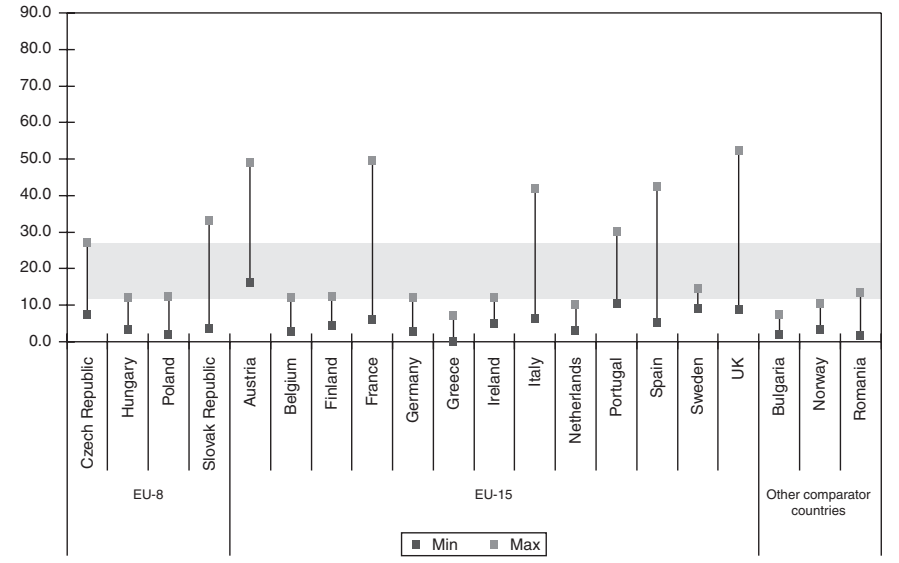
Source: OECD and Bank staff estimates.

the unemployment rates are among the highest, the minimum wage was on average over 90 percent of the wages of workers at the lower end of the wage distribution (Rutkowski and Przybyla 2002; Feldmann 2004).

Studies drawn from the empirical literature on the new EU member states, covering the last ten years or so, provide evidence that capital flows or new investments have generally tended to reinforce, rather than correct, regional imbalances. In Hungary, for example, a recent study of the locational choice of foreign and domestic firms over the 1993 to 2000 period concludes that firms have *not* moved to high unemployment regions. This, despite lower wages in these regions, despite the relative scarcity of skilled workers in high employment regions, and despite active regional policy aimed at attracting new investments (Fazekas 2003). The study also estimates that while wages are generally higher in high employment regions compared to low employment regions, the productivity differential between these two regions more than compensates for the unit labor cost faced by firms. In Poland, using regional data covering the 1993 to 1998 period, Cieslik (2005) finds robust evidence that regional unemployment rate is *negatively* related to the location decision of foreign with foreign capital participation, and positively related to the agglomeration of industry and service firms and to the transport infrastructure.

Given that the flows of foreign and domestic capital have bolstered industrial or service agglomeration, cross-country studies of industrial location in Central and Eastern Europe have found, not surprisingly, a pattern of increasing, rather than decreasing, concentration of industrial activity (for example, Hildebrandt and Wörz 2004). In the Slovak Republic, a recent assessment of the distribution of foreign capital estimates that some 60 percent of all foreign investment is clustered in the Bratislava region (Farkašová,

Figure 3.4. Regional Investment Per Capita (NUTS2), 2000–2003 Average (In hundred of Euros per capita)



Source: Eurostat and Bank staff estimates.

2002). In Poland, over 50 percent of the initial capital of enterprises with foreign participation appears to be concentrated in the Mazowieckie region, where Warsaw is located (Wisniewski 2004).

Regional data from Eurostat for the 2000 to 2003 period are summarized below at the NUTS2 level (Figure 3.4). They suggest that there are wide disparities in regional investment per capita in selected countries of the EU8 and that, as a group, their average disparity in regional investment is wider than those of many other countries in the EU15 and in selected comparator countries. On the other hand, there are wide disparities in selected EU15 countries as well. These include, not surprisingly, the Southern European countries (Italy, Spain, and Portugal) as well as Austria, France, and the UK.

On the other hand, the evidence regarding the regional allocation and direction of capital flow—that they have reinforced, rather than eased, regional imbalances in the new EU member countries—is far from definitive. Some country studies offer contrasting results. For instance, there are some cases of how new investments have been pouring into regions where the unemployment rate is quite high and where there have been recent declines in the population following emigration. This is in part due to investment flowing into old industrialized regions, to renew the stock of physical capital that has depreciated over time, as Barjak (2001) found in the case of Poland. However, in these cases, new investments have been found to raise productivity, but not necessarily employment.

Boudier-Bensebaa (2005) also finds evidence that the availability of labor (as measured by regional unemployment rates) seem positively related to the inflow of foreign direct investment. However, industrial demand, the high concentration of manufacturing activity,

inter-industrial agglomeration economies and the availability of infrastructure have also been found to be strong determinants of regional FDI flows. These are regional characteristics that are not typically associated with depressed regions or regions where unemployment rates are high.

There may be dynamic interactions between labor mobility and capital mobility as well, not easily captured by the empirical literature. For example, the *prospects* of substantially higher capital flows may serve to discourage labor flows. In many parts of the new EU member states and in the EU accession candidates, substantial new investments are expected to flow into capital-scarce regions following the EU enlargement process, as in the case in many parts of Central and Eastern Europe. Within these countries, expectations or perceptions of improved economic prospects for a region may discourage both internal and external emigration. Burda (1995) compares migration decisions to investment decisions under uncertainty and demonstrates that potential migrants may postpone leaving home because of the "option value of waiting." The prospects of subsequent improvements at home, along with the option to migrate later in case economic conditions worsen, may encourage prospective emigrants to stay.

Government Action or Transfers

Following EU enlargement, the participation of new member states in EU regional policy and their eligibility for large regional transfers create new opportunities for providing assistance to lagging regions or regions with depressed labor markets. As previously discussed, such transfers may serve to promote regional economic convergence and boost employment in lagging regions in the process. However, it is clear that it is too early to evaluate the EU8's experience structural funds.

In addition, the experience of the older EU member states with EU Structural Funds suggests that public transfers may *not* be sufficient to address persistent regional labor market disparities. A recent assessment of the prospects for lagging regions in Poland and the likely benefits from qualifying for large transfers from EU Structural Funds draws from existing EU evidence on regional policy for guidance (Lobatch 2004). The study observes that the EU evidence has been "controversial" and finds that there is little evidence demonstrating how the allocation of structural funds has led to more rapid economic growth in depressed regions. It notes that such funds may have instead performed a redistributive function, rather than promoting regional economic convergence. It then concludes, rather remarkably, that in the case of Poland and the optimal use of structural funds, "the best policy is the policy of not relying on the structural funds at all" (Lobatch 2004).

A few other analyses confirm that the experience with EU Structural Funds has not been encouraging. Basile and Girardi (2001) analyze the evidence from the late 1980s to the late 1990s for twelve countries in the EU. They are unable to find strong evidence of regional convergence of real per capita income, labor productivity, and employment rates, despite massive allocation of structural funds and the disbursement of these funds in a manner that is consistent with equity and cohesion principles. In fact, over the period examined, employment gaps between regions have expanded rather than narrowed. Basile and Girardi (2001) suggest that EU Structural Funds, which were primarily allocated toward infrastructure investments in lagging regions, have had a positive impact on

regional productivity, but no measurable direct effect on employment.[22] In addition, they also suggest—drawing from the work of Faini (1983)—that the creation of transport infrastructure linking economic centers to the periphery may lead to unintended consequences and serve to exacerbate, rather than dampen, regional inequality. In particular, building transportation infrastructure lowers the probability of firms relocating to depressed regions because these local markets can be conveniently reached regardless of a firm's location.[23]

The evidence based on the EU's experience with structural funds over the 1990s remains controversial. Stierle (2004) provides a brief survey of the econometric evidence on the impact of regional transfers on regional economic growth and convergence. He finds that a few studies find a positive impact from structural funds (Fayolle and Lecuyer 2000; García Solanes and María-Dolores 2002; de la Fuente 2003) while some others do not (for example, Boldrin and Canova 2001; Basile and Kostoris Padoa Schioppa 2002). Beugelsdijk and. Eijffinger (2003) also do not find any evidence of positive impact on convergence from such funds. Stierle (2004) criticizes the econometric frameworks employed by these studies. Meanwhie, Pérez and Rowland (2004) analyze a broader sample of countries and their experience with regional policy, including Brazil, and found inconclusive evidence. There is no measurable and incontrovertible regional convergence associated with regional policy; at the same time, the counterfactual is not clear: there could have been increasing divergence in the absence of regional policy.

In addition, as previously discussed, each of these adjustment mechanisms, while treated separately, is not completely independent of the other adjustment mechanisms. There are, for example, potential interactions and feedback effects. Several authors have analyzed the diverging patterns of mobility in Europe and the United States, arguing that the lower levels of geographic mobility characteristic of Europe are considered the result of the general prevalence of enduring social insurance institutions in Europe, in contrast to the United States (Hassler et al. 2005). The presence of such institutions may serve to curb mobility, where migration in search of more lucrative employment in other regions may be considered relatively more costly than the alternative, that is, staying and enjoying the benefits of insurance institutions.

Concluding Remarks

In sum, adjustment mechanisms have not been effective in reducing regional labor market imbalances. There is no evidence that capital flows and wage adjustments are serving to help correct regional imbalances in the EU8. In particular, capital typically flows to booming regions, where the human capital stock is high and where economic activity is concentrated. With respect to the wage curve, wage adjustments in the EU8 are comparable or slightly stronger than those of the EU15 and those of other advanced economies. However, there are two main barriers in the effectiveness of wage adjustments in helping

22. See also the example drawn from Barjak (2001) in the previous section.

23. See Puga (2002) on how transportation infrastructure accelerated the deindustrialization of southern Italian regions.

correct unemployment imbalances: First, in absolute terms, the measured wage elasticity may be insufficient to offset persistent and high rates of unemployment. Second, in a few countries, the relationship between wage levels and unemployment may be nonlinear: that is, where unemployment rates are very high, wages may be even more unresponsive to regional unemployment. Meanwhile, the experience with government transfers and structural funds remains controversial. All these things imply that labor mobility, as a mechanism to offset regional disparities, is critical.

The next chapter first reviews the existing literature on labor mobility. It then summarizes the relevant secondary data on labor mobility in the EU8 and then proceeds to report the main findings from the original analysis of individual-level data.

CHAPTER 4

Labor Mobility: Levels and Covariates

Review of Stylized Facts

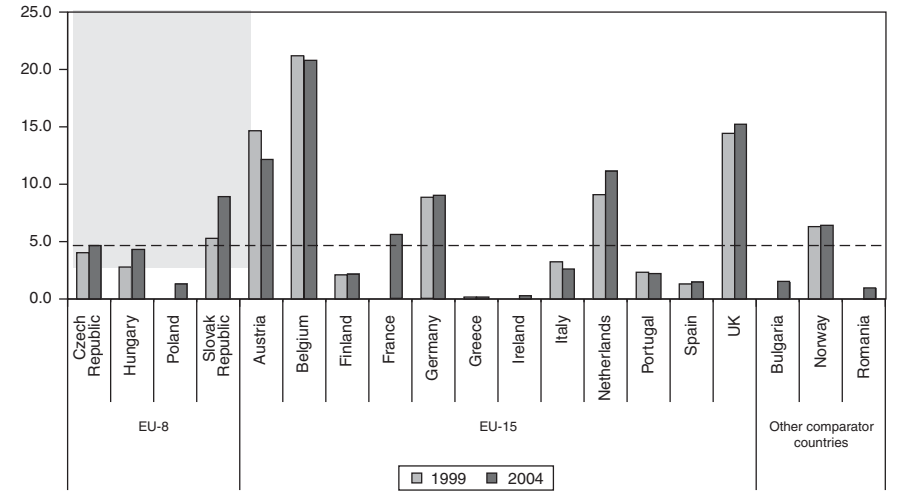
Cross-country comparisons of inter-regional labor mobility are fraught with several technical difficulties.[24] First, as in the analysis of regional unemployment rates, the most basic challenge is again the choice of regional unit. The data source often determines such choice. But even within the same data source, the units that are otherwise defined in a similar fashion across countries may vary widely in terms of the average population, area (size), density, and other characteristics (see Box 2.1). Second, closely related to the challenge of choosing the appropriate regional unit is the challenge of measuring mobility flows appropriately. Measures based on large regional units may not capture intra-regional flows adequately. Migration flows may not necessarily involve great distances and regions, when defined in smaller units, may capture a larger fraction of actual migration.[25] On the other hand, smaller regions may capture flows that are not necessarily labor market-related (residential flows that do not involve changes in workplace).[26] This last point underscores the more general constraint to the measurement of labor migration, that existing data typically capture population/residential migration rather than labor migration. If commuting flows are large (which can account for as much as 30 percent of the regional labor force, in one

24. See also OECD (2005), Fidmurc (2004), Fidmurc and Huber (2004), Burda and Profit (1996), and Sjoberg and Tammaru (1999).

25. See for example Institute of Informatics and Statistics, 2002, *Population Development in the* Slo*vak Republic* (Table 6.10).

26. It has been suggested, for example, that growth in commuting may reflect "suburbanization," rather than labor-induced mobility. We thank the Lithuania Ministry of Economy for raising this point.

Figure 4.1. Average Regional Commuting Rates (NUTS2) (In percent of employed workers)



Source: Eurostat and Bank staff calculations. Czech Republic data refer to 2000 and 2004.

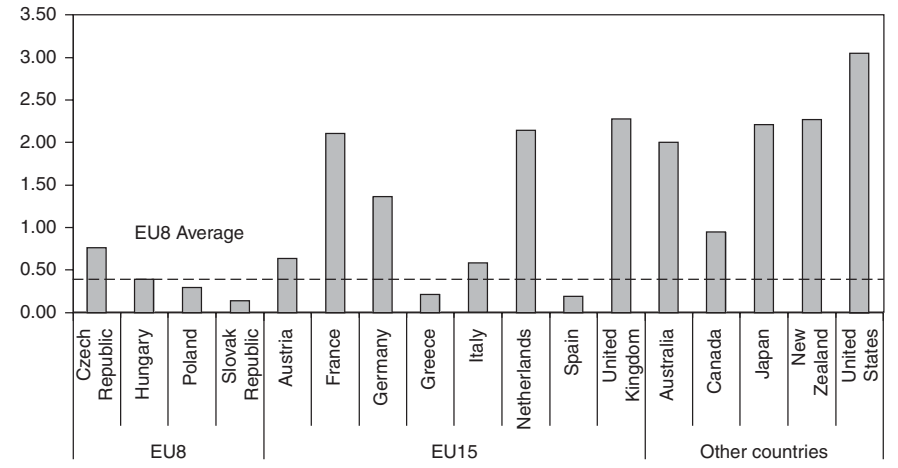
documented case) or the migration of students, retirees, and others not in the workforce account for a large share of migration, then population migration flows misrepresent the true magnitude of labor flows. Third, a large share of residential migration may go unrecorded. A study of internal migration in Estonia suggests that official statistics or population registers under-report actual mobility and the disparity has grown over time.

This chapter uses two measures of labor mobility: commuting and migration. The regional unit of measurement is again based on the NUTS classification system as well as NUTS-equivalent measures developed by the OECD for selected advanced (non-EU) economies.[27] Figures 4.1 and 4.2 summarize data on internal migration rates (gross regional outflows in percent of the working age population) and commuting (in percent of all employed workers) for selected EU15 countries and the relevant comparator countries using secondary data from Eurostat and OECD. The data suggest the following.

Mobility in the EU8 has been Low. Internal migration rates have been low, compared to the EU15 and other advanced economies. Commuting rates have also been low on average, but somewhat higher than a number of countries in the EU15 and selected comparator countries. There is also some evidence that they have been increasing between 1999 and 2004 in the Czech Republic, Hungary, and Slovak Republic, while decreasing in a number of EU15 countries.

27. OECD (2005).

Figure 4.2. Internal Migration Rates 2004 (or most recent year) (Gross regional outflows in percent of working age population; NUTS2)



Source: Eurostat and Bank staff calculations.

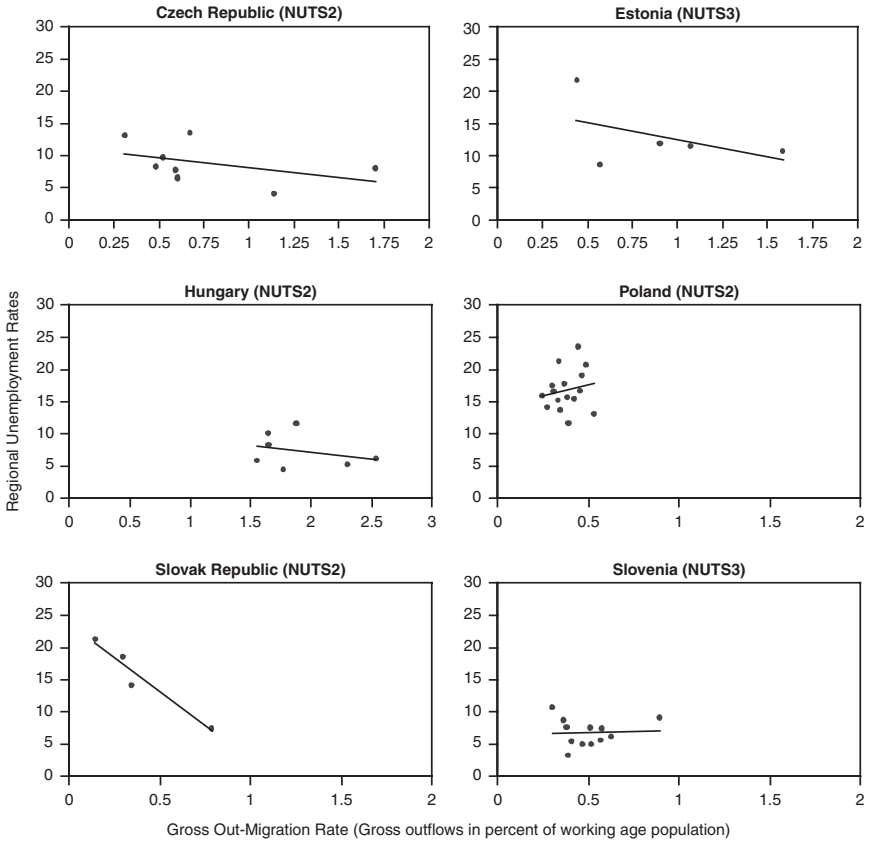
Mobility Rates Exhibit Considerable Variation Across Countries. Within the EU8, Poland and the Slovak Republic are again at one end of the distribution with comparatively higher internal migration flows in the Czech Republic and Hungary. Among the EU15, the Southern European Countries again have indicators that are comparable with the EU8. Greece and Spain, in particular, have internal migration rates that are lower than the EU8 average.

How do internal migration flows respond to regional unemployment differentials? Using data on regional unemployment rates and gross out-migration rates (in percent of working age population) for selected countries in the EU8, the data suggest that the migration is generally unrelated or *negatively* related to unemployment (gross migration rates are lowest, where unemployment is highest; Figure 4.3). One exception appears to be Poland. This is consistent with the findings of Rutkowski and Przybyla (2002) that showed that among *voivodships*, migration is strongly related to the unemployment rate and the hiring rate. Nonetheless, in absolute terms, the internal migration flows are quite low.

Review of the Literature

This section reports the main results of our survey of the empirical literature on (internal) labor mobility in the EU8 countries (see Appendix Table A.1). Our review suggests that *at least* 20 studies focusing on one or more EU8 countries have been conducted in recent years. Most studies focus on the Czech Republic, Poland, Estonia, and Hungary. In contrast, Lithuania, Slovakia and Slovenia have been studied the least. The majority of studies cover the 1990s. Some studies cover 2000 or 2001 but typically look at *intended* mobility

Figure 4.3. Regional Unemployment Rates and Gross Out-migration Rates



Source: Eurostat and Bank staff calculations. Data are for 2000.

for this period rather than *actual* mobility (for example, in a survey conducted in the 1990s, respondents were asked whether *they would like to migrate* in 2001).

Empirical studies of internal migration in the EU8 have been carried out using both descriptive statistics and relatively more sophisticated analysis (logit regressions, panel data regressions, etc.) utilizing both regional-level information on labor mobility (typically drawn from the census or population registers) and, in relatively rare cases, individual level information (own-surveys, LFS, etc.). Studies covered by our survey define "labor mobility" broadly to include studies of residential or labor migration as well as of commuting flows, although commuting studies are significantly fewer. Studies have looked at the typical covariates of mobility: at the regional level, regional characteristics such as local unemployment rates, wage disparities, hire rates, per capita income, availability of rental housing, and others. At the individual level, socioeconomic and demographic covariates such as gender, education, household composition, marital status, age, income, and ethnicity have been analyzed.

The Main Findings from the Review

Internal Migration Rates have been Low, They have been Falling Over Time, and They are on Average Comparatively Lower Than Those of the EU and Other Advanced Economies.[28] This is not surprising given the summary data presented in the previous section.[29] In the Czech Republic for example, migration rates fell between 1990 and 1998 (Vecernik 2001 Fidrmuc and Huber 2004). Migration rates are also reported to have fallen over the 1990s in Hungary, Poland, and the Slovak Republic (Fidrmuc 2004), or have been low and persistent as in the case of Slovenia (Huber 2004). Similarly, Commander and Bornhorst (2004) find that between 1990 and 2000, gross migration rates have been falling or have remained very low in the Czech Republic, Hungary, Poland and other economies in transition.

Fidrmuc and Huber (2003) also report using district level data from 1992–1998, that migration rates are lower than Western European levels and have fallen over this period, as spatial disparities in earnings have risen (see also Huber 2005). Similarly, in Estonia, county level migration rates are found to be low, and lower than those of selected comparator countries such as Norway, the Netherlands and the UK (Rees and Kupiszewski 1999). However, there appears to be heterogeneity within the EU8. Hazans (2003a) claims that migration rates in Estonia, Latvia, and Lithuania are comparable or even higher than Denmark and the Netherlands.

Mobility Increases with Education and Decreases with Age. While individual-level assessments of internal mobility in the EU8 are relatively less common, the few studies that exist provide robust results with respect to a few selected individual covariates. For example, age is negatively related to migration. In contrast, skill level or educational attainment is positively related to migration. Commuting, likewise, increases with education and decreases with age (Hazans 2004).

Why are younger workers more mobile? Younger workers migrate because they are relatively freer from various family commitments. In addition, among older individuals, pensions have become, in many former socialist countries, the most secure source of income available to families, which keeps them tied to their places of origin. This has been specifically the case in Russia and in the one-enterprise-towns inherited during socialism.

28. Comparative studies of commuting flows are scarce. One recent study published by the EU compares commuting flows across the EU25 (Buscher, Lang, and Hart 2005). The definition of commuting, however, is conceptually different from those utilized in Appendix Table A.1 and in this report. The EU study is drawn from an "ad hoc labor market survey" conducted in 2004. The survey asks respondents whether they commute, regardless of the commuting time (the responses range from a few minutes to over 2 hours) and commuting distance (from 1 kilometer to over 60 kilometers) or whether the commute is inter-regional or intra-regional. Not surprisingly, the commuting flows are large over 70 percent of respondents are commuters in some countries. However, because the point of departure of this report is the disparities in regional unemployment, it is also not clear how to map the commuting statistics produced by Buscher and others (2005) to our analysis. Nonetheless, the demographic covariates they report appear to be consistent with this report.

29. Official government documents and national employment programs share the view that labor mobility has been low as well. See, for example, the series of *Joint Inclusion Memorandum* prepared in 2003 by the governments of Hungary, Poland, and Slovakia, jointly with the European Commission, DG Employment and Social Affairs. See also, for example, the Slovak Republic's *National Action Plan on Social Inclusion* (2004–2006) and the *National Action Plan for Employment* (2004–2006). The decreasing rate of internal mobility has also been noted by national reports. See for example Ministry of Labour, Social Affairs, and Family of the Slovak Republic, 2004, *Sectoral Operational Programme—Human Resources.*

Despite major job losses following the restructuring or privatization of local enterprises, some local workers are able secure occasional work through contacts with the local government and enterprise officials. These contacts are essential source of potential assistance whether in the form of pensions (disability, old age or veteran), unemployment benefits, or low income family supplements (Burawoy 1999). For younger workers, labor migration is also an investment decision, with returns earned for the rest of a worker's life.

Gender and Ethnicity. There is some evidence, too, that women are less likely to commute or migrate. However, the results with respect to ethnic minorities, whether they are much more or less likely to move, are ambiguous.

Internal Mobility is Not Strongly Responsive to Unemployment and Wage Differentials. The majority of the studies we surveyed were conducted at regional or district level, that is, by assessing the statistical links between regional migration and commuting flows, on the one hand, and regional characteristics, on the other hand, including regional labor market features. In general, regional economic differentials have played a minimum role in explaining migration patterns. At the aggregate level, there is some evidence that migrations flows fell during the transition, despite rising geographic disparities (Fidrmuc 2004). Compared to other EU countries, migration flows in the EU8 are also estimated to be *less* responsive to wage, employment, and unemployment disparities. In fact, in a number of cases, both wage and unemployment (or employment) differentials have not significantly affected mobility in a measurable manner. At best, the results with respect to unemployment differentials have been mixed. In the Czech Republic, for example, high regional unemployment rates have discouraged migration inflows, but have not encouraged migration outflows (Fidrmuc 2004).

Box 4.1: Gender Dimensions of Mobility: Notes from the Sociological Literature

Male and female labor market opportunities are also reflected in spatial arrangements. There is a clear consensus in the literature that women tend to commute less than men (see Hanson and Johnston 1985; Hanson and Pratt 1995, pp. 95–103; Madden 1981; Madden and White 1980; White 1986). There has been a debate, however, about the sources of this pattern. One argument emphasizes that married women are more spatially constrained in their residential mobility than married men because wives' job locations are viewed as less important than husbands' when selecting residences (Singell and Lillydahl 1986). Another line of argument suggests that women's greater spatial constraints are a result of their generally greater domestic responsibilities, which leads them only to pursue jobs that are easily accessible (White 1986; Hanson and Pratt 1992, 1995). These constraints on women's spatial mobility are taken by some as a cause of the gender differential in earnings (e.g., Fuchs 1971; but see Madden and Chiu 1990). Madden (1981), however, reverses the causal inference with respect to the gender differences in wages. Low-wage jobs do not pay enough to justify long commutes; consequently, women's lower wages would lead them to live closer to work.

A major strand of research in this area builds on the insight that extant gender inequality in the labor market results in gender differences in the journey to work. In particular, a number of studies suggest that it is the gendered nature of the labor market—particularly its pattern of occupational segregation by gender—that leads women to work closer to home (Hanson and Johnston 1985, Hanson and Pratt 1995, Johnston-Anumonwo 1988). The findings in the United States have shown that women in female-segregated jobs work even closer to home than other women.

Box 4.2: Ethnic Dimensions of Labor Mobility: Notes from the Sociological Literature

The literature on spatial mismatches provides interesting insights into the social dynamics that are useful to consider when approaching patterns of geographic mobility in EU8. This literature is particularly well developed in the United States where the main question has been to understand the reason why distance to jobs may be harmful to certain social or demographic groups and minorities in particular. More generally, this literature sheds light on the key mechanisms by which spatial factors might work in the context of the labor market.

Since first being articulated by John F. Kain (see Kain 1965, and the better-known Kain 1968), debates surrounding the spatial mismatch hypothesis have dominated discussions relating space and labor markets. The spatial mismatch hypothesis posits that spatial arrangements—the diminishing access to jobs due to spatial constrains—diminish minorities' access to job opportunities, resulting in greater joblessness for minorities compared with non-minorities. Kain's key insight was the following: in the presence of frictions in the housing market, one need not posit racial/gender discrimination in the labor market to observe large racial differences in employment.

Geographic space may to work as a barrier to job access for minorities in two ways. First, minorities are less likely than other workers to appear in the candidate pools because minority candidates' job searches are less likely to lead them to come across spatially distant job opportunities. Second, even if minorities were to learn about job openings in the suburbs, for instance, the high commuting costs are likely to discourage many minorities from applying to those jobs. This makes for new special segregation in the housing market.

In some cases, there may be important non-linear effects of regional unemployment, depending on the labor market status of individuals. For example, among employed workers, high regional unemployment rates *encourage* migration outflows. Among *unemployed* workers, high regional unemployment rates *discourage* migration flows.

Liquidity Constraints are Important. In some cases, the impact of unemployment and wages has been small, or sometimes opposite to their expected effect. In particular, high wages have encouraged outward migration while high unemployment has tended to discourage it. Andrienko and Guriev (2004) have found complementary evidence for Russia that migration is constrained by liquidity. Rising income may therefore increase, rather than decrease, labor outflow (see also Rees and Kupiszewski 1999 Sjoberg and Tammaru 1999).

Housing and Transport Barriers may be Important. Studies providing evidence linking mobility with housing indicators are few (Baláž and Williams 2001, Cseres-Gergely 2005, Ghatak, Mulhern, and Watson 2004, Fidrmuc and Huber 2003) although it is widely believed that housing barriers are important. Some studies report insignificant links between housing and mobility (Erbenova 1995) or report mixed evidence (Erbenova 1997). Many have argued, without providing strong empirical evidence, that barriers in housing markets or transport infrastructure may impede labor mobility (OECD 2004a, 2004b, 2004c). The consequences of policy interventions aimed at reducing housing prices can be complicated. For example, some have argued that regulation may help contain costs but may also discourage new investment (Vecernik 2001). In a few places, the magnitude of publicly provided housing has tended to dampen migration flows (Rees and Kupiszewski 1999). In Hungary, between 1994 and 1996, residential mobility was rising, despite a fall in housing construction activity (Sailer 2001). Meanwhile, studies linking

mobility with transport infrastructure are even rarer. At best, there is some indirect evidence linking commuting flows to the cost of commuting (Boeri, Burda and Köllö 1998).

Policy Measures Entail Some Risks. Policy responses to low mobility, such as through action aimed at lowering commuting costs, may have unintended consequences. Feldmann (2004) reports that in 2000, the Hungarian government begun legally obliging enterprises to reimburse their commuting employees 85–90 percent of their travel expenses. From the firm's perspective, this of courses raises the cost of employing commuting workers. From the perspective of prospective commuters, this effectively lowers their probability of finding a job. At the same time, for commuting workers, the subsidized cost of transport lowers the incentives to move permanently to regions that are more prosperous.

Gaps in the Literature. Our review of the literature also suggests that a new empirical study, the results of which are summarized in the next section, could potentially provide several contributions to the literature. First, it could contribute to the relatively more limited literature on Lithuania, Slovakia, and Slovenia. Second, existing studies cover the period from mid to late 1990s; this study covers the period up to 2004. Third, existing studies have, at best, examined up to only three (3) EU8 countries at a time; most are single country studies. We provide comparable results for as many of the EU8 countries as allowed by data. Fourth, this report should be the first to use LFS data for all or most of the EU8 countries. Finally, the studies we surveyed utilized different types of dataset at various aggregation levels and covering various periods. The literature stands to benefit from a study using the same data set for the same period and employing a common estimation strategy.

Determinants of Individual Mobility: Evidence from Micro Data

This section presents new empirical evidence on the determinants of and barriers to commuting and migration using the Labor Force Surveys (LFS) of the EU8 in combination with the International Social Survey Programme (ISSP). Both provide individual level data on measures of mobility as well as demographic and socio-economic information. LFS data are drawn from much larger sample sizes but ISSP data also cover a number of EU15 countries and other advanced economies along with the EU8 countries (except Estonia and Lithuania) and thus facilitate consistent cross-country comparison. More important, the ISSP survey provides information, drawn from its multi-topic module, on migration preferences, measures of attachment to local community, and job search strategies. These allow us a more comprehensive understanding of the individual covariates of mobility. The latter part of this section also provides supplementary evidence on mobility, based on the 2001 Eurobarometer Survey (EBS), using summary information similar to the ISSP.

Evidence from LFS Data

Data and Sample Restrictions. The regression analysis of commuting and migration in this section is based on the 2004 Labor Force Survey (LFS) for the following countries: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, and Slovak Republic. Slovenia does not have the necessary information on NUTS3 region of residence and is excluded

from all the analyses. Latvia does not have information on previous region of residence and is thus excluded from the regression analysis of migration. For some countries for which data are available, two sets of results are presented: one corresponding to the NUTS2 level and the other at the NUTS3 level. Only employed workers are included in the regression analysis of commuting. The regression analysis of migration, on the other hand, is based on two samples: The first is based on a sample of all working-age individuals (age 15–64, including employed, inactive, and unemployed individuals) to verify the broad demographic and regional covariates of internal migration. The other sample includes employed workers only. This restricted sample allows us, to retain, in a consistent manner, a number of important job related information such as occupation, firm characteristics, and sectors of employment.

Definition of Mobility. Commuting is defined based on place of work and place of residence being located in two different regions. Migration information is based on information on current region of residence and region of residence the year before. The specific definition of migration applied in this analysis may make a recent migration—such as a worker who migrated 13 months ago—appear immobile. Some caution is therefore warranted in interpreting the results. Nonetheless, the broad consistency of the estimated annual migration flows with those estimated from official registers or census data give us more confidence in the LFS-based estimates.

Temporary Versus Permanent Migration. Permanent and temporary movers may have systematically different incentives for moving. The former are more likely to respond to economic incentives while the latter may also value regional amenities such as schooling and housing quality. It is, however, difficult to distinguish temporary from permanent migrants using existing data. As a result, few empirical studies are able to make this distinction and this report is no exception. In some cases, the distinction made is quite arbitrary, using rules of thumb (e.g., dividing observed migration flows into two or permanent if they had not returned to their region of origin at the time of the survey) to estimate permanent and temporary flows.[30] Some researchers use information from household surveys to determine whether a migrant is no longer considered a member of its previous household. Because this report primarily uses individual-level LFS data, this report is unable to use this strategy to identify permanent and temporary migration flows.

Specification. The Logit regressions utilize a common specification for cross-country comparability, building on existing specifications in the literature (see for example Hazans (2004) in the case of the EU8 as well as numerous other studies of countries in the EU15, including Greece, Italy, and Spain). The independent variables include age, age-squared, educational attainment, continuing education (whether engaged in continuing education or training), marital status, place of residence (whether capital city, others), firm size, economic sector, occupation, economic status the previous year, and selected regional labor market indicators. For some countries, additional information on homeownership and transport infrastructure at the regional level are included. Separate regression analyses, such as by gender or by labor market status the previous period, although potentially

30. See for example Cseres-Gergely (2004) and Carletto and others (2004).

interesting and may yield useful insights, are made difficult by relatively low mobility flows. Such empirical exercises yield small cell size or few observations and preclude further analyses.

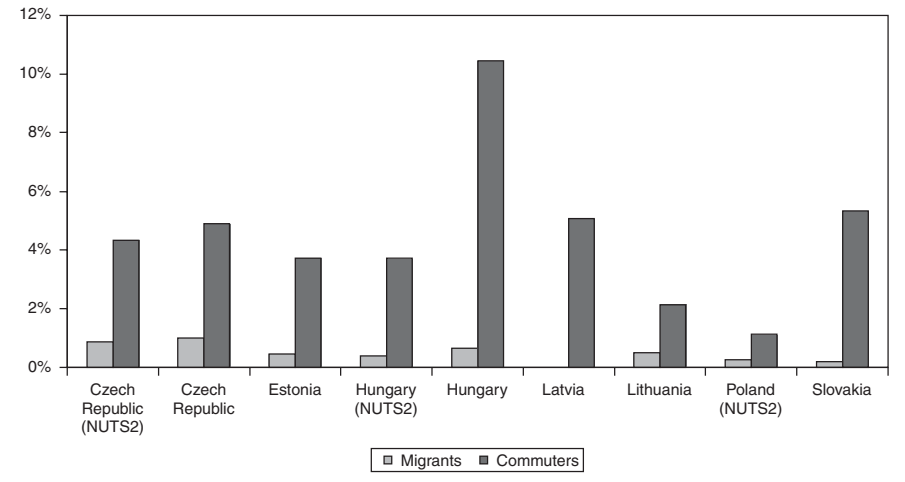
The Results of the Migration Regressions are Generally Less Robust Than Those of the Commuting Regressions. The signs and significance of several independent variables in the migration regressions have tended to switch from one regression specification to another; the signs and significance of variables in the commuting regressions, in contrast, have been relatively more stable. A number of reasons could be driving this. First, commuting flows are much larger than migration flows in the LFS sample. On average commuters account for about 1 to 10 percent of the employed population in the LFS sample while residential migrants only account for 0.2 to 1 percent of the employed population in 2004 (Figure 4.4).

Second, the analysis of migration is more likely to suffer from possible attrition. That is, some of the individuals in the process of moving from one region to another may not be captured by the survey. Where there is a panel component to the survey, the individuals that are more difficult to follow over time are precisely those who have moved to a new address.

Third, the direction of migration may sometimes blur the links between labor mobility and regional economic characteristics. In some countries, for example, the direction of migration has been from the capital city to neighboring regions, while these same migrants commute back to the capital city while residing elsewhere. In this case, commuting is in the "right" direction and responds to regional differentials, while migration is not.

Finally, data on migration contain a lot more "noise," as they capture not just the employment related reasons for moving to a new residence but may capture other non-economic

Figure 4.4. Migrants and Commuters: LFS 2004 (In percent of the employed population; NUTS3 level unless otherwise indicated)



Source: LFS data and Bank staff calculations.

related changes in residence as well, such as regional amenities and housing facilities. In contrast, the commuting variable is, by construction, employment-related.

On the Determinants of Commuting

The main results from the baseline regressions suggest the following (Table 4.1).

Female Workers are Significantly Less Likely to Commute Than Male Workers. Gender is a significant predictor of commuting behavior. The sign is consistent across countries, except in Latvia where there is evidence that women are more likely to commute to work than men.

Age is a Significant Predictor of Commuting Behavior in Some Countries; it is Insignificant in Latvia, Lithuania, and the Slovak Republic. Where it is significant, the direction of the relationship between commuting behavior and age varies. In both Hungary and the Czech Republic, commuting declines with age. In the Czech Republic, there is evidence that commuting first decreases then increases with age, but the marginal effect of the age-squared is very small in absolute terms. In Poland and Estonia, commuting first increases then decreases with age. In particular, in Poland, commuting increases with age up to about age 30 (using the benchmark specification) and falls thereafter.

In Selected Countries, the Probability of Commuting Rises With Educational Attainment. In the Slovak Republic, those who have post-secondary education are more likely to commute to work than the least educated workers. In the Czech Republic, more educated workers, except those with vocational education, are more likely to commute than the least educated workers. In Poland, only those with higher education are more likely to commute than workers with basic education. In Lithuania and the Czech Republic, those who are acquiring engaged in continuing education or training are also more likely to commute.

Marital Status is an Important Determinant of Mobility. Single, widowed or separated workers are generally much more mobile than married workers, except in Poland.

Commuters Typically Commute Into the Capital City. Those who live in the capital city are much less likely to commute. In the Czech Republic, the trend has been residential movements out of the capital, but commuting back into the city for work.

Several Employment-and Skill-Related Characteristics Matter. For example, commuting is much more prevalent among workers employed in relatively large firms. In part, this may be due to the ability of larger firms to recruit from a larger territory. The financial arrangements may also matter. A recent study of commuters in Hungary by Bartus (2004) finds that only 15 percent of commuters pay for the costs of travel. The majority of workers are instead subsidized by their firms. It is possible that larger firms are able to afford to subsidize commuting more than their smaller counterparts.

The sector of employment is also significantly associated with commuting, which may be a measure of spatial mismatches in skills. Using three broad groupings of sector of employment (agriculture, industry, and services), the results suggest that for a few countries,

Table 4.1. Selected Logit Regression Results on Commuting: Labor Force Survey 2004 (Includes employed workers only)

Variable	Country / NUTS Level	Czech Republic NUTS-3		Estonia NUTS-3		Hungary NUTS-2		Hungary NUTS-3		Latvia NUTS-3		Lithuania NUTS-3		Poland NUTS-2		Slovak Republic NUTS-3	
		dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z
Female		–0.0128 ***	0.00	–2.0208 ***	0.00	–0.0094 ***	0.00	–0.0148 ***	0.00	0.0130 ***	0.00	–0.0080 ***	0.00	–0.0027 ***	0.00	–0.0127 ***	0.00
Age		–0.0003 ***	0.00	0.0028 **	0.01	0.0002	0.48	–0.0011 **	0.01	–0.0020	0.14	0.0000	0.40	0.0004 **	0.02	0.0006	0.34
*Age squared (*100)*		0.0000 ***	0.00	–0.0035 ***	0.01	–0.0006	0.13	0.0008	0.14	0.0010	0.27	0.0000	0.18	–0.0005 ***	0.00	–0.0011	0.16
Education	Secondary general	0.0042 ***	0.00	0.0089	0.69	0.0019	0.28	–0.0002	0.92	0.0080	0.19	–0.0050	0.29	0.0005	0.55	0.0035	0.42
	Secondary vocational	–0.0005 ***	0.00	0.0140	0.43	–0.0016	0.15	–0.0040 **	0.01	0.0070	0.27	–0.0020	0.73	0.0018	0.12	0.0094	0.16
	Postsecondary vocational	0.0103 ***	0.00	0.0227	0.48	0.0135	0.16	0.0016	0.89	0.0070	0.40	0.0000	0.97	0.0009	0.27	0.0083 *	0.07
	Higher	0.0153 ***	0.00	0.0196	0.41	0.0069 ***	0.00	0.0009	0.72	0.0150 **	0.04	0.0010	0.82	0.0048 ***	0.00	0.0112 *	0.05
Continuing education		0.0008 ***	0.00	0.0123	0.16	0.0021	0.25	0.0042	0.12	0.0060	0.30	0.0060 **	0.03	–0.0003	0.68	–0.0089	0.14
Marital status	Single	0.0073 ***	0.00	0.0102	0.10	0.0086 ***	0.00	0.0063 ***	0.00	0.0040	0.32	0.0050 ***	0.00	–0.0009 *	0.05	0.0042 *	0.07
	Widowed or separated	0.0031 ***	0.00	–0.0011	0.81	0.0034 **	0.03	–0.0005	0.79	0.0060	0.28	0.0020	0.38	–0.0018 **	0.05	0.0047	0.19
Place of residence	Capital City	0.0300 ***	0.00	–0.0099 *	0.08	–0.0122 ***	0.00	–0.0865 ***	0.00	–1.0000 ***	0.01	–0.0090 ***	0.00	–0.0039 ***	0.00	–0.0273 ***	0.00
Firm size	Up to 10 workers	–0.0011 ***	0.00	–0.0060 *	0.09	–0.0087 ***	0.00	–0.0167 ***	0.00	–0.0070 **	0.05	–0.0030 *	0.06	–0.0021 **	0.00	–0.0128 ***	0.00
Economic sector (1)	Agriculture	–0.0189 ***	0.00	0.0029	0.69	–0.0043 *	0.06	–0.0109 ***	0.00	–0.0090	0.21	–0.0030	0.27	0.0012	0.29	–0.0062 *	0.09
	Industry	0.0006 ***	0.00	–0.0024	0.55	0.0058 ***	0.00	0.0121 ***	0.00	0.0110 ***	0.01	0.0010	0.55	0.0002	0.71	–0.0022	0.43
Occupation	Armed forces	***		0.0035	0.84	0.0217 ***	0.00	0.0452 ***	0.00	***		0.0100	0.24	0.0024	0.17	0.1787 ***	0.00
	Legislators, senior officials and managers	–0.0004 **	0.04	0.0012	0.87	0.0053 *	0.06	0.0145 ***	0.00	0.0150 *	0.07	0.0050	0.18	–0.0012	0.17	0.0051	0.26
	Professionals	0.0006 ***	0.00	0.0003	0.97	0.0019	0.45	0.0111 ***	0.01	0.0270 ***	0.00	0.0060 *	0.06	–0.0025 ***	0.00	–0.0010	0.80
	Technicians and associate professionals	0.0002	0.19	0.0149	0.12	0.0010	0.64	0.0087 ***	0.01	0.0250 ***	0.01	0.0110 ***	0.01	–0.0003	0.66	0.0016	0.63
	Clerks	0.0000	0.82	0.0035	0.75	0.0029	0.22	0.0142 ***	0.00	0.0120	0.20	0.0000	0.93	–0.0023 ***	0.00	–0.0124 ***	0.00
	Service workers and shop and market sales workers	–0.0044 ***	0.00	0.0014	0.86	–0.0002	0.92	–0.0007	0.80	0.0150 *	0.06	0.0020	0.46	–0.0009	0.26	–0.0075 **	0.02
	Skilled agricultural and fishery workers	–0.0262 ***	0.00	–0.0001	0.99	–0.0053	0.11	–0.0007	0.90	–0.0030	0.84	–0.0010	0.88	–0.0057 ***	0.00	0.0069	0.44
	Craft and related trades workers	–0.0054 ***	0.00	–0.0043	0.49	–0.0022	0.19	–0.0023	0.37	0.0070	0.28	0.0050 *	0.05	–0.0006	0.37	0.0001	0.97
	Plant and machine operators and assemblers	–0.0015 ***	0.00	0.0051	0.47	0.0068 ***	0.00	0.0182 ***	0.00	–0.0040	0.53	0.0090 ***	0.01	0.0001	0.93	–0.0037	0.23
Worker's economic status last year	Inactive	–0.0028 ***	0.00	0.0090	0.41	0.0051 **	0.02	0.0016	0.59	0.0080	0.37	0.0030	0.28	0.0026 ***	0.00	0.0165 ***	0.00
	Unemployed	0.0021 ***	0.00	0.0343 **	0.02	0.0018	0.37	0.0003	0.93	0.0050	0.48	0.0020	0.43	0.0015	0.16	0.0172 ***	0.00
Regional labour market variables	Unemployment rate, residence	0.0080 ***	0.00	–0.0051	0.11	0.0434 ***	0.00	0.0516 ***	0.00	–0.0730 ***	0.00	–0.0030 ***	0.00	0.0013 ***	0.00	0.0007	0.23
	Unemployment rate, work	–0.0091 ***	0.00	0.0092 ***	0.01	–0.0433 ***	0.00	–0.0573 ***	0.00	0.0910 ***	0.00	0.0030 ***	0.00	–0.0012 ***	0.00	–0.0012 **	0.01
	Share of the long-term unemployed, residence	–0.0007 ***	0.00	0.0004	0.31	–0.0051 ***	0.00	–0.0038 ***	0.00	0.0250 ***	0.00	–0.0010 ***	0.00	0.0007 ***	0.00	–0.0003	0.39
	Share of the long-term unemployed, work	0.0000	0.25	0.0004	0.35	0.0046 ***	0.00	0.0050 ***		–0.0330 ***	0.00	0.0010 ***	0.00	–0.0008 ***	0.00	0.0004	0.12
	Population density, residence	0.0000 ***	0.00	0.0355 *	0.07	–0.0040	0.28	0.0332 ***	0.00	0.0010 ***	0.01	0.0000 ***	0.00	–0.0001 ***	0.00	0.0006 ***	0.00
	Population density, work	0.0000 ***	0.00	–0.0779 ***	0.00	0.0038	0.30	–0.0022	0.50	0.0000 ***	0.00	0.0000 ***	0.00	0.0001 ***	0.00	–0.0005 ***	0.00
	GDP per capita, residence	0.0000 ***	0.00	–0.2322 ***	0.00	0.0402 ***	0.00	–0.1546 ***	0.00	–0.2640 ***	0.00	–0.0690 ***	0.00	–0.0436***	0.00	–0.2867 ***	0.00
	GDP per capita, work	0.0000 ***	0.00	0.3239 ***	0.00	–0.0307 ***	0.00	0.1841 ***	0.00	0.2590 ***	0.00	0.0710 ***	0.00	0.0464 ***	0.00	0.2914 ***	0.00

Note: Base category: male, primary or basic education, not continuing education, married, not residing in a big city, employed in a firm with at least 11 workers, employed in service sector (Economic sector (1)), employed in agriculture (Economic sector (2)), employed in an elementary occupation.

not surprisingly, agricultural workers are much less likely to commute to work. In general, however, this broad classification of sector of work is weakly related to the probability of commuting.

Using a finer classification of economic sector (not shown), we find that construction workers are generally much more mobile than other workers, while workers in the education and health sectors are less mobile. The latter group of workers tends to be employed in fixed—and sometimes predetermined—geographic locations. The results with respect to mining are mixed: in Estonia, it is negatively (though weakly) related to commuting. In the Czech Republic, it is positively related to commuting. With respect to occupations, white-collar workers are generally much more likely to commute than those with elementary occupation, except in Poland. In Poland, skilled agricultural and fishery workers are also less likely to commute than workers in elementary occupations.

Employment Status the Previous Year is Significantly Related to Commuting. Where previous employment status is a significant predictor of commuting behavior the following period, the results suggests those who were previously inactive or unemployed in the previous period were more likely to commute in the current period. This provides some evidence that for at least some workers, commuting or mobility facilitates their transition out of joblessness.

Regional Labor Market Indicators are Generally Consistent With the Direction of Commuting Flows. The average unemployment rates in both place of residence and place of work are generally significant and in the expected direction (except in Latvia and Lithuania): where unemployment is high, residents are more likely to commute to another region for work; where unemployment is low, workers are generally more likely to commute into this region. The marginal effects of GDP per capita are also in similar directions. Higher GDP per capita discourages commuting outflow while encouraging higher commuter inflow. The impact of long-term unemployment is less consistent: in a few regions, they have dampened rather than increased commuting outflow.

For some countries, additional information on homeownership and transport infrastructure at the regional level are included. However, they do not yield any strong conclusions regarding the impact of these variables on the probability of commuting.

On the Determinants of Migration

Notwithstanding the generally weaker results, a few of the covariates of migration are broadly consistent with the commuting regressions. Tables 4.2 to 4.4 report the main results. Table 4.2 refers to regression analysis using all of the working-age population. Table 4.3 and 4.4 include employed workers only. Table 4.4 uses a finer disaggregation of sectors of employment, compared to Table 4.3.

A Few Demographic Characteristics Associated With Mobility are Typically Significant and are in the Expected Direction. The probability of migration is generally higher among men, younger workers, single/widowed/separated workers, and among relatively more educated workers. This is not surprising given the commuting migration results as well as previous findings in the literature.

Table 4.2. Selected Logit Regression Results on Migration: Labor Force Survey 2004 (Includes working-age individuals)

Variable	Country / NUTS Level	Czech Republic NUTS-3		Czech Republic NUTS-2		Estonia NUTS-3		Hungary NUTS-2		Hungary NUTS-3		Lithuania NUTS-3		Poland NUTS-2		Slovak Republic NUTS-3	
		dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z	dy/dx	P > z
Female		−0.0010 ***	0.00	−0.0010 ***	0.00	−0.0009	0.43	0.0004 *	0.08	0.0005 *	0.10	−0.0008 ***	0.01	−0.0005 ***	0.00	−0.0002 *	0.05
Age		0.0002 ***	0.00	0.0002 ***	0.00	−0.0002	0.49	0.0000	0.78	0.0000	0.65	−0.0002	0.11	−0.0002 ***	0.00	0.0000	0.80
*Age squared (*100)*		0.0000 ***	0.00	0.0000 ***	0.00	0.0001	0.73	−0.0001	0.28	−0.0001	0.45	0.0000	0.45	0.0001 ***	0.00	0.0000	0.54
Education	Secondary general	0.0032 ***	0.00	0.0026 ***	0.00	0.0023	0.49	0.0031 ***	0.00	0.0047 ***	0.00	0.0038 **	0.04	0.0036 ***	0.00	0.0002	0.45
	Secondary vocational	0.0025 ***	0.00	0.0020 ***	0.00	0.0027	0.35	0.0010 **	0.01	0.0001	0.85	0.0058 ***	0.00	0.0114 ***	0.00	0.0001	0.89
	Postsecondary vocational	0.0007 ***	0.00	0.0009 ***	0.00	0.0016	0.75					0.0102 ***	0.00	0.0059 ***	0.00	0.0006*	0.06
	Higher	0.0055 ***	0.00	0.0046 ***	0.00	0.0029	0.49	0.0025 ***	0.00	0.0037 ***	0.00	0.0157 ***	0.00	0.0260 ***	0.00	0.0025 ***	0.00
Continuing education		0.0006 ***	0.00	0.0005 ***	0.00	−0.0015	0.39	−0.0005	0.19	−0.0014 ***	0.00	−0.0007 **	0.03	−0.0006 ***	0.00	−0.0003	0.15
Marital status	Single	0.0024 ***	0.00	0.0019 ***	0.00	0.0010	0.66	0.0009 **	0.04	0.0005	0.35	0.0002	0.63	0.0002	0.16	−0.0001	0.62
	Widowed or separated	0.0035 ***	0.00	0.0029 ***	0.00	−0.0002	0.91	0.0026 ***	0.00	0.0033 ***	0.00	0.0026***	0.00	0.0002	0.49	0.0006 **	0.02
Place of residence	Capital City	0.0011 ***	0.00	−0.0028 ***	0.00	0.0028	0.40	−0.0007 *	0.09	−0.0038 ***	0.00	−0.0009 *	0.06	−0.0004	0.15	−0.0043 ***	0.00
Worker's economic status last year	Inactive	0.0006 ***	0.00	0.0007 ***	0.00	0.0025	0.14	0.0012 ***	0.00	0.0012 ***	0.00	0.0020 ***	0.00	0.0011 ***	0.00	0.0003 *	0.06
	Unemployed	−0.0018 ***	0.00	−0.0013 ***	0.00	0.0017	0.58	0.0009	0.14	0.0003	0.71	−0.0004	0.51	0.0001	0.67	−0.0002	0.34
Regional labour market variables	Unemployment rate, new residence	0.0003 ***	0.00	0.0000 ***	0.00	−0.0040 ***	0.00	−0.0014 **	0.03	0.0021 ***	0.00	0.0000	0.64	−0.0001 ***	0.00	0.0002 ***	0.00
	Unemployment rate, old residence	−0.0004 ***	0.00	−0.0001 ***	0.00	0.0044 ***	0.00	0.0008	0.21	−0.0035 ***	0.00	0.0001	0.42	0.0001 ***	0.00	0.0001 ***	0.01
	Share of the long-term unemployed, new residence	0.0004 ***	0.00	0.0004 ***	0.00	0.0210	0.46	−0.0010 ***	0.00	−0.0014 ***	0.00	0.0001	0.24	0.0000	0.36	−0.0085 ***	0.00
	Share of the long-term unemployed, old residence	−0.0004 ***	0.00	−0.0004 ***	0.00	−0.0210	0.46	0.0012 ***	0.00	0.0017 ***	0.00	−0.0001	0.23	0.0000	0.70	0.0083 ***	0.00
	Population density, new residence	0.0000 ***	0.00	0.0000 ***	0.00	−0.3194 ***	0.00	0.0028	0.10	−0.0132 ***	0.00	−0.0001 ***	0.00	0.0000	0.67	−0.0051 ***	0.00
	Population density, old residence	0.0000 ***	0.00	0.0000 ***	0.00	0.3160 ***	0.00	−0.0031 *	0.07	0.0172 ***	0.00	0.0001 ***	0.00	0.0000	0.35	0.0052 ***	0.00
	GDP per capita, new residence	0.0000 ***	0.00	0.0000 ***	0.00	0.6372 ***	0.00	−0.0193 ***	0.00	0.0324 ***	0.00	−0.0084 ***	0.00	−0.0101 ***	0.00	0.7381	
	GDP per capita, old residence	0.0000 ***	0.00	0.0000 ***	0.00	−0.6296 ***	0.00	0.0183 ***	0.00	−0.0391 ***	0.00	0.0084 ***	0.00	0.0100 ***	0.00	−0.7418 ***	0.00

Note: Base category: male, primary or basic education, not continuing education, married, not residing in a big city, employed in a firm with a least 11 workers, employed in service sector (Economic sector (1)), employed in agriculture (Economic sector (2)), employed in an elementary occupation.

Table 4.3. Selected Logit Regression Results on Migration: Labor Force Survey 2004 (Includes employed individuals)

Variable	Country / NUTS Level	Czech Republic NUTS-3 dy/dx	P > z	Czech Republic NUTS-2 dy/dx	P > z	Estonia NUTS-3 dy/dx	P > z	Hungary NUTS-2 dy/dx	P > z	Hungary NUTS-3 dy/dx	P > z	Lithuania NUTS-3 dy/dx	P > z	Poland NUTS-2 dy/dx	P > z	Slovak Republic NUTS-3 dy/dx	P > z
Female		−0.0014 ***	0.00	−0.0014 ***	0.00	−0.0014	0.33	−0.0002	0.56	−0.0010 ***	0.03	−0.0005 *	0.07	−0.0050 ***	0.00	−0.0007	0.11
Age		0.0001 ***	0.00	0.0000	0.35	0.0005	0.36	−0.0002	0.18	−0.0003 *	0.06	−0.0002 **	0.01	0.0003 *	0.06	0.0001	0.66
*Age squared (*100)*		0.0000 ***	0.00	0.0000 ***	0.00	−0.0008	0.28	0.0001	0.63	0.0001	0.62	0.0000 **	0.04	−0.0006 ***	0.01	−0.0001	0.49
Education	Secondary general	−0.0021 ***	0.00	−0.0019 ***	0.00	−0.0018	0.42	0.0009	0.23	0.0007	0.38	0.9982 ***	0.00	0.0007	0.47	−0.0002	0.83
	Secondary vocational	−0.0014 ***	0.00	−0.0013 ***	0.00	−0.0011	0.77	0.0005	0.33	−0.0010 *	0.07	0.9446 ***	0.00	0.0034 **	0.02	−0.0003	0.79
	Postsecondary vocational	−0.0048 ***	0.00	−0.0028 ***	0.00	−0.0030 **	0.02					0.9866 ***	0.00	0.0012	0.23	0.0000	0.98
	Higher	0.0002 ***	0.00	0.0005 ***	0.00	−0.0018	0.54	−0.0004	0.47	−0.0008	0.26	0.9888 ***	0.00	0.0054 ***	0.00	0.0011	0.41
Continuing education		−0.0028 ***	0.00	−0.0014 ***	0.00	0.0023	0.47	0.0005	0.43	−0.0004	0.56	−0.0005	0.16	−0.0007	0.39	−0.0003	0.82
Marital status	Single	0.0021 ***	0.00	0.0015 ***	0.00	0.0005	0.77	0.0002	0.65	−0.0004	0.51	0.0000	0.97	−0.0011 **	0.05	0.0001	0.86
	Widowed or separated	0.0022 ***	0.00	0.0018 ***	0.00	−0.0031	0.10	0.0020 ***	0.01	0.0030 ***	0.00	0.0017 ***	0.01	−0.0029 **	0.01	0.0012	0.17
Place of residence	Capital City	−0.0038 ***	0.00	−0.0090 ***	0.00	−0.0002	0.94	0.0004	0.55	−0.0030 *	0.06	−0.0002	0.59	−0.0058 ***	0.00	−0.0052 ***	0.00
Firm size	Up to 10 workers	−0.0001 ***	0.00	−0.0002 ***	0.00	−0.0008	0.61	−0.0003	0.37	−0.0010 **	0.02	0.0009 ***	0.00	−0.0048 ***	0.00	−0.0001	0.72
Economic sector (1)	Agriculture	−0.0009 ***	0.00	0.0002 **	0.04	0.0097	0.30	−0.0002	0.77	0.0004	0.74	−0..0007	0.32	−0.0008	0.60	−0.0003	0.71
	Industry	0.0006 ***	0.00	0.0003 ***	0.00	0.0033	0.12	0.0006	0.13	−0.0001	0.91	0.0004	0.19	0.0005	0.35	−0.0004	0.62
Occupation	Armed forces							0.0022	0.19	0.0008	0.67	0.0061 *	0.06	0.0062 ***	0.01	0.0275 ***	0.00
	Legislators, senior officials and managers	0.0004 ***	0.00	−0.0009 ***	0.00	0.0035	0.53	0.0005	0.57	0.0017	0.19	−0.0003	0.61	0.0001	0.91	−0.0006	0.55
	Professionals	0.0017 ***	0.00	0.0001 **	0.03	0.0027	0.61	−0.0002	0.83	0.0005	0.68	0.0007	0.30	−0.0015	0.16	0.0002	0.84
	Technicians and associate professionals	0.0009 ***	0.00	0.0000	0.98	0.0026	0.57	−0.0014 ***	0.00	−0.0021 ***	0.00	0.0007	0.37	0.0010	0.35	0.0005	0.57
	Clerks	0.0009 ***	0.00	−0.0001	0.33			−0.0018 ***	0.00	−0.0007	0.43	0.0017	0.13	−0.0018 *	0.09	−0.0002	0.86
	Service workers and shop and market sales workers	0.0001	0.18	−0.0005 ***	0.00	−0.0017	0.51	−0.0014 ***	0.00	−0.0017 ***	0.01	−0.0003	0.57	0.0009	0.41	−0.0001	0.87
	Skilled agricultural and fishery workers	−0.0002	0.12	−0.0016 ***	0.00			0.0004	0.77	−0.0020 *	0.07	0.0016	0.36	−0.0077 ***	0.00		
	Craft and related trades workers	−0.0011 ***	0.00	−0.0015 ***	0.00	0.0005	0.87	−0.0017 ***	0.00	−0.0031 ***	0.00	−0.0003	0.39	0.0002	0.82	0.0002	0.82
	Plant and machine operators and assemblers	−0.0021 ***	0.00	−0.0021 ***	0.00	0.0029	0.41	−0.0017 ***	0.00	−0.0018 ***	0.00	−0.0002	0.79	0.0017 *	0.10	−0.0004	0.60
Worker's economic status last year	Inactive	0.0017 ***	0.00	0.0011 ***	0.00	0.0068	0.27	0.0022 **	0.02	0.0012	0.24	0.0015 **	0.01	0.0045 ***	0.00	0.0014 *	0.09
	Unemployed	−0.0015 ***	0.00	−0.0013 ***	0.00	0.0116	0.15	0.0009	0.24	−0.0017 **	0.03	−0.0003	0.61	0.0023 *	0.06	0.0001	0.93
Regional labour market variables	Unemployment rate, new residence	−0.0001 ***	0.00	−0.0004 ***	0.00	0.0048 **	0.01	−0.0028 ***	0.00	0.0016 ***	0.01	−0.0001	0.31	−0.0004 *	0.07	0.0000	0.72
	Unemployment rate, old residence	0.0002 ***	0.00	0.0007 ***	0.00	−0.0035 **	0.03	0.0021 ***	0.01	−0.0031 ***	0.00	0.0001	0.25	0.0003	0.14	0.0005 ***	0.00
	Share of the long-term unemployed, new residence	0.0004 ***	0.00	0.0005 ***	0.00	0.0013 ***	0.00	−0.0012 ***	0.00	−0.0018 ***	0.00	0.0000	0.56	−0.0006 ***	0.00	−0.0082 ***	0.00
	Share of the long-term unemployed, old residence	−0.0005 ***	0.00	−0.0006 ***	0.00	−0.0012 ***	0.00	0.0013 ***	0.00	0.0020 ***	0.00	0.0000	0.50	0.0006 ***	0.00	0.0082 ***	0.00
	Population density, new residence	0.0000 ***	0.00	0.0000 ***	0.00	−0.0519 ***	0.00	0.0101 ***	0.00	−0.0096 ***	0.00	0.0000	0.79	0.0000	0.60	−0.0059 ***	0.00
	Population density, old residence	0.0000 ***	0.00	0.0000 ***	0.00	0.0418 ***	0.00	−0.0095 ***	0.00	0.0132 ***	0.00	0.0000	0.39	0.0000	0.40	0.0061 ***	0.00
	GDP per capita, new residence	0.0000 **	0.03	0.0000 ***	0.00	0.1148 ***	0.00	−0.0259 ***	0.00	0.0261 ***	0.00	−0.0085 ***	0.00	−0.0367 ***	0.00	1.1083 ***	0.00
	GDP per capita, old residence	0.0000 ***	0.00	0.0000 ***	0.00	−0.0901 ***	0.00	0.0224 ***	0.00	−0.0327 ***	0.00	0.0092 ***	0.00	0.0293 ***	0.00	−1.1126 ***	0.00

Table 4.4. Selected Logit Regression Results on Migration: Labor Force Survey 2004 (Includes employed individuals)

Variable	Country / NUTS Level	Czech Republic NUTS-3 dy/dx	P > z	Czech Republic NUTS-2 dy/dx	P > z	Estonia NUTS-3 dy/dx	P > z	Hungary NUTS-2 dy/dx	P > z	Hungary NUTS-3 dy/dx	P > z	Lithuania NUTS-3 dy/dx	P > z	Poland NUTS-2 dy/dx	P > z	Slovak Republic NUTS-3 dy/dx	P > z
Female		−0.0012 ***	0.00	−0.0011 ****	0.00	−0.0013	0.41	0.0001	0.88	−0.0008 *	0.09	−0.0005 *	0.05	−0.0031 ***	0.00	−0.0004	0.22
Age		0.0001 ***	0.00	0.0000 ***	0.02	0.0006	0.32	−0.0002	0.16	−0.0003 *	0.06	−0.0002 **	0.01	0.0003 *	0.05	0.0001	0.64
*Age squared (*100)*		0.0000 ***	0.00	0.0000 ***	0.00	−0.0009	0.25	0.0001	0.57	0.0001	0.58	0.0000 **	0.05	−0.0006 ***	0.01	−0.0001	0.47
Education	Secondary general	−0.0020 ***	0.00	−0.0017 ***	0.00	−0.0017	0.47	0.0010	0.20	0.0008	0.35	0.9982 ***	0.00	0.0007	0.44	−0.0001	0.95
	Secondary vocational	−0.0012 ***	0.00	−0.0012 ***	0.00	−0.0009	0.81	0.0005	0.26	−0.0009 *	0.08	0.9424 ***	0.00	0.0029 **	0.02	−0.0003	0.80
	Postsecondary vocational	−0.0045 ***	0.00	−0.0025 ***	0.00	−0.0031 **	0.02					0.9861 ***	0.00	0.0013	0.17	−0.0001	0.93
	Higher	0.0005 ***	0.00	0.0008 ***	0.00	−0.0017	0.58	−0.0003	0.56	−0.0008	0.30	0.9882 ***	0.00	0.0050 ***	0.00	0.0004	0.66
Continuing education		−0.0028 ***	0.00	−0.0013 ***	0.00	0.0023	0.47	0.0005	0.42	−0.0004	0.59	−0.0005	0.15	−0.0006	0.47	−0.0005	0.59
Marital status	Single	0.0020 ***	0.00	0.0014 ***	0.00	0.0006	0.76	0.0002	0.69	−0.0004	0.47	0.0000	0.91	−0.0009 *	0.08	0.0000	0.90
	Widowed or separated	0.0023 ***	0.00	0.0019 ***	0.00	−0.0031	0.11	0.0020 ***	0.01	0.0029 ***	0.00	0.0016 ***	0.01	−0.0026 **	0.01	0.0010	0.13
Place of residence	Capital City	−0.0066 ***	0.00	−0.0113 ***	0.00	−0.0001	0.95	0.0004	0.56	−0.0030 *	0.07	−0.0001	0.78	−0.0054 ***	0.00	−0.0019 ***	0.00
Firm size	Up to 10 workers	−0.0002 ***	0.00	−0.0002 ***	0.00	−0.0008	0.62	−0.0005	0.11	−0.0012 ***	0.01	0.0010 ***	0.00	−0.0052 ***	0.00	0.0000	0.88
Economic sector (2)	Mining and quarrying	0.0029 ***	0.00	0.0003 **	0.03	0.0054	0.57	−0.0011	0.58	−0.0034 *	0.06	0.0189 *	0.05	0.0088 ***	0.00		
	Construction	0.0016 ***	0.00	0.0012 ***	0.00	−0.0014	0.45	0.0036 *	0.07	0.0016	0.36	0.0014	0.43	0.0070 ***	0.00	0.0015	0.27
	Other Industry	0.0015 ***	0.00	0.0000	0.56	−0.0019	0.34	0.0002	0.87	−0.0012	0.28	0.0027	0.16	−0.0005	0.73	0.0001	0.88
	Financial Intermediation	0.0005 ***	0.00	−0.0006 ***	0.00			−0.0006	0.59	−0.0022 *	0.06	0.0012	0.59	0.0003	0.89	0.0035	0.11
	Education and health	0.0000	0.90	−0.0011 ***	0.00	−0.0031 **	0.04	0.0002	0.83	−0.0002	0.85	0.0018	0.31	−0.0042 ***	0.00	0.0002	0.82
	Other services	0.0014 ***	0.00	0.0003 ***	0.00	−0.0046 **	0.02	0.0002	0.79	−0.0004	0.72	0.0010	0.38	0.0018	0.21	0.0004	0.68
Occupation	Armed forces							0.0025	0.16	0.0011	0.58	0.0064 *	0.06	0.0042 **	0.04	0.1521 ***	0.00
	Legislators, senior officials and managers	0.0004 ***	0.00	−0.0010 ***	0.00	0.0041	0.50	0.0006	0.46	0.0020	0.12	−0.0002	0.69	−0.0001	0.89	−0.0004	0.63
	Professionals	0.0019 ***	0.00	0.0003 ***	0.00	0.0030	0.60	−0.0001	0.94	0.0006	0.58	0.0006	0.36	0.0001	0.95	0.0002	0.85
	Technicians and associate professionals	0.0011 ***	0.00	0.0001 ***	0.01	0.0029	0.56	−0.0013 ***	0.01	−0.0018 ***	0.01	0.0007	0.36	0.0007	0.45	0.0008	0.30
	Clerks	0.0008 ***	0.00	−0.0002 ***	0.01			−0.0018 ***	0.00	−0.0004	0.61	0.0017	0.13	−0.0023 **	0.01	−0.0005	0.54
	Service workers and shop and market sales workers	−0.0002 ***	0.00	−0.0008 ***	0.00	−0.0017	0.51	−0.0013 ***	0.00	−0.0015 **	0.03	−0.0003	0.63	0.0000	0.96	0.0000	0.94
	Skilled agricultural and fishery workers	−0.0002	0.28	−0.0016 ***	0.00			0.0007	0.59	−0.0018	0.13	0.0013	0.41	−0.0069 ***	0.00		
	Craft and related trades workers	−0.0010 ***	0.00	−0.0015 ***	0.00	0.0006	0.83	−0.0017 ***	0.00	−0.0030 ***	0.00	−0.0003	0.53	−0.0003	0.74	0.0003	0.62
	Plant and machine operators and assemblers	−0.0022 ***	0.00	−0.0020 ***	0.00	0.0031	0.39	−0.0014 ***	0.00	−0.0014 **	0.05	−0.0002	0.72	0.0017 *	0.07	−0.0003	0.69
Worker's economic status last year	Inactive	0.0017 ***	0.00	0.0012 ***	0.00	0.0077	0.26	0.0022 **	0.02	0.0012	0.23	0.0014 **	0.01	0.0039 ***	0.00	0.0012 *	0.09
	Unemployed	−0.0016 ***	0.00	−0.0014 ***	0.00	0.0121	0.15	0.0009	0.27	−0.0017 **	0.04	−0.0002	0.70	0.0024 **	0.04	0.0008	0.28
Regional labour market variables	Unemployment rate, new residence	0.0004 ***	0.00	−0.0003 ***	0.00	0.0047 **	0.01	−0.0028 ***	0.00	0.0015 ***	0.01	−0.0001	0.39	−0.0005 **	0.02	−0.0001 **	0.02
	Unemployment rate, old residence	−0.0004 ***	0.00	0.0005 ***	0.00	−0.0035 **	0.04	0.0021 ***	0.00	−0.0031 ***	0.00	0.0001	0.18	0.0003 **	0.05	0.0002 ***	0.00
	Share of the long-term unemployed, new residence	0.0002 ***	0.00	0.004 ***	0.00	0.0014 ***	0.00	−0.0012 ***	0.00	−0.0018 ***	0.00	0.0000	0.59	−0.0006 ***	0.00	−0.0004 ***	0.00
	Share of the long-term unemployed, old residence	−0.0002 ***	0.00	−0.0005 ***	0.00	−0.0012 ***	0.00	0.0013 ***	0.00	0.0020 ***	0.00	0.0000	0.77	0.0006 ***	0.00	0.0004 ***	0.00
	Population density, new residence					−0.0523 ***	0.00	0.0100 ***	−0.00	−0.0100 ***	0.00						
	Population density, old residence					0.0421 ***	0.00	−0.0095 ***	0.00	0.0136 ***	0.00						
	GDP per capita, new residence	0.0000 ***	0.00	0.0000 ***	0.00	0.1158 ***	0.00	−0.0258 ***	0.00	0.0273 ***	0.00	−0.0083 ***	0.00	−0.0338 ***	0.00	0.0440 ***	0.00
	GDP per capita, old residence	0.0000 ***	0.00	0.0000 ***	0.00	−0.0903 ***	0.00	0.0224 ***	0.00	−0.0338 ***	0.00	0.0082 ***	0.00	0.0247 ***	0.00	−0.0390 ***	0.00

Note: Base category: male, primary or basic education, not continuing education, married, not residing in a big city, employed in a firm with at least 11 workers, employed in service sector (Economic sector (1)), employed in agriculture (Economic sector (2)), employed in an elementary occupation.

Fungible or Transferable Skills Matter But Their Impact On Migration is Not Always Consistent Across Countries. Some workers in selected occupations or in selected sectors of employment are more mobile than others. For example, construction workers are more mobile than others while education and health workers are less mobile. The results with respect to mining workers are mixed. In the Czech Republic, Lithuania, and Poland, workers in the mining sector are much more likely to migrate while the opposite holds for Hungary at the NUTS3 level.

Regional Characteristics. The probability of migration is statistically associated with various regional economic indicators, employment and per capita income differentials. However, the direction of the statistical relationship is not always consistent. This contrasts with commuting which are relatively more responsive and in the right direction. This may be due in part to the phenomenon of "reverse commute" or suburbanization previously discussed. That is, migrants move to suburban regions (possibly with lower GDP and higher unemployment) and commute back to the capital cities.

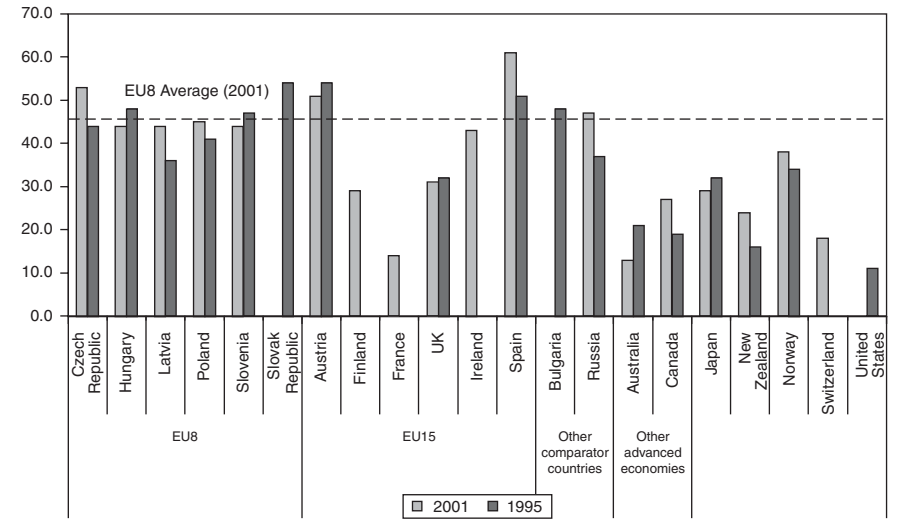
Transitions Out of Joblessness. The results of the migration regressions do not provide evidence that being unemployed the previous period is associated with a higher probability of migration the following period. In fact, in Czech Republic and Hungary, some evidence that being previously unemployed associated with lower probability of migration. While this is not surprising, given the results from the existing literature, this also suggests that employed, skilled workers—not the unemployed workers—are best able to move out of depressed regions. On the other hand, there is evidence that those who were previously out of the labor market are more likely to migrate the following period.

Extensions. We explored a number of possible additional extensions to the benchmark regressions. In general, however, this has failed to yield robust results. For example, where additional pieces of information on transport infrastructure or housing were available, we added them to the vector of regional indicators. This, however, did not yield any significant results. We also examined possible non-linearities in both commuting and migration behavior. In particular, we asked whether mobility rates among the unemployed in high-unemployment regions are systematically different from those in low-unemployment regions. Again, this generally failed to yield any significant results.

Complementary Evidence from ISSP: Preferences and Community Attachment

ISSP data allow us to capture dimensions of mobility that are much more difficult to measure using standard labor force surveys. These include intentions, preferences, or measures of attachment. While ISSP data generally have small sample sizes, they nonetheless provide comparable data for a number of countries, to facilitate cross-country comparisons. The ISSP is annual survey covering various topics in the social sciences; a fixed component of the survey covers individual demographic and socio-economic background information. The surveys were first fielded in 1985 and initially covered industrial countries alone. They now include some 32 countries, including a number of transition economies. ISSP data are drawn from nationally representative samples and provide individual-level information for at least 1,000 respondents per country.

Figure 4.5. Percent Living in Local Community Since Birth (In percent of total population)



Source: ISSP 1995 and 2001 and Bank staff calculations.

ISSP Measure of Historical Mobility. The 2001 and 1995 waves of the ISSP provide information on how long the survey respondents have been living in their local community. The respondents then respond in one of two ways: (i) provide their answer in years, in the case of those who have switched residences, or (ii) indicate that they have been living in their local community since birth, in cases where they have never moved.

Figure 4.5 summarizes what are, to our knowledge, the first estimates of actual geographic mobility (or immobility) drawn from the ISSP. The estimates suggest that there is wide dispersion in mobility rates across the countries in the EU15 and in other advanced economies. The percent of the population that has never moved ranges from less than 10 percent in the United States to over 60 percent in Spain (and close to 80 percent in Cyprus). In contrast, the share of the population living in the same local community since birth is remarkably similar across the EU8 countries. They are also largely unchanged between 1995 and 2001. In addition, on average, the share of the population living in the same local community is higher in the EU8 as a group than in other countries, except Spain, Cyprus, and Austria.

In terms of the statistical covariates of mobility, regression analysis of this measure of geographic mobility also provide supporting evidence that young, single, and relatively more educated men are more likely to migrate. These are consistent with the findings from the LFS, and elsewhere.

Attachment to Local Community. Some have argued that low labor mobility is a function of culture (e.g., Blanchard 1998). Feldmann (2004) reviews the evidence and suggests that low mobility may be related to the "attitudes and habits" of people. He suggests, for

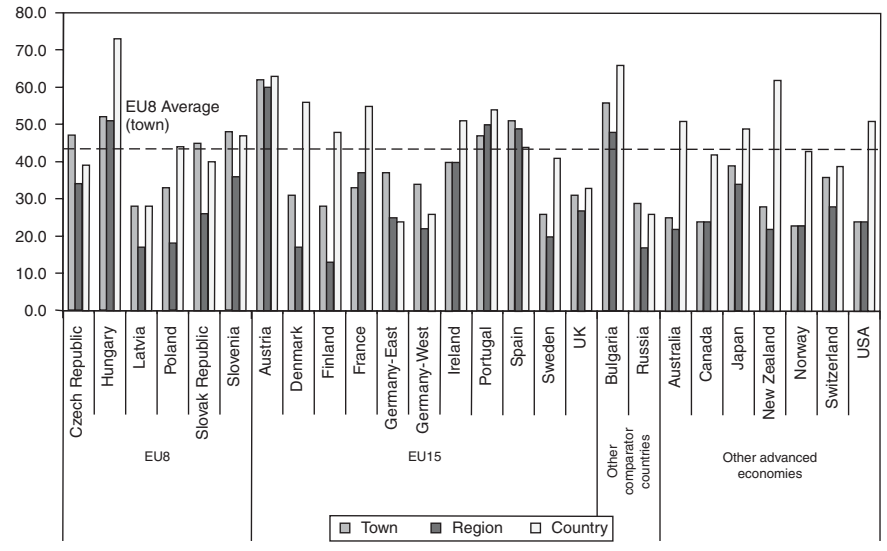
example, that in the Czech Republic, Hungary, and Poland, people are traditionally unwilling to relocate, in part because the legacy of central planning (and permanently secure jobs) bolstered traditional ties to local communities. He cites as evidence surveys in the Czech Republic conducted in 1999 where majority of the unemployed indicated their unwillingness to move for the sake of better employment prospects. Feldmann (2004) suggests that this is largely because of close family ties. Similarly, he cites surveys in Poland that suggest migration to be driven by personal, family reasons rather than employment prospects.

It is of course difficult to capture dimensions of culture and habits in any empirical study and this report is no exception. However, one such dimension is arguably the extent of people's attachment to their local community and the 2003 wave of the ISSP provides an opportunity to examine such attachment in a comparable, cross-country context. The results are summarized in Figure 4.6 below.

The results suggest significant variations across countries. Individuals in the United States, Canada, and Australia feel the least attachment to their local community (town). On the other hand, a large share of respondents in Austria, Hungary, the Czech Republic and Bulgaria feel very close to their local community. Across countries, however, there is some convergence in measures of attachment as the unit of comparison grows larger. Thus, individuals' levels of attachment to their country are broadly comparable.

Comparing broad country groups, the EU8 as a group feels a stronger attachment to local communities (towns) than their EU15 counterparts. They also feel a stronger attachment to their towns and regions compared to most of their advanced economy counterparts except in selected Southern European Countries (Spain, Portugal) as well as in Austria.

Figure 4.6. Percent Feeling "Very Close" to Town/Region/Country (In percent of total population)



Source: ISSP 2003 and Bank staff estimates.

Within the EU8, there are significant variations as well with a larger share of the population in Hungary feeling a strong attachment to their local community and, at the lower end, only about a fifth of the population in Latvia feeling a strong attachment to their community.

Are these measures of attachment related to measures of propensity to migrate? The 1995 ISSP provides information on attachment to local community as well as two measures of mobility: *potential* mobility (willingness to move to another locality) and *actual* mobility (whether the respondent has been living in the same community since birth). Not surprisingly, both measures are negatively and significantly related to attachment to local community. We examine these two measures of mobility more in-depth in the following sections.

Willingness to Move. It may be argued that examining the covariates of actual migration rates, rather than potential migration, does not fully clarify whether mobility is related to underlying preferences or the institutional barriers to it. On the eve of EU enlargement in 2004, some analysts also emphasized the usefulness of estimating potential (international) migration, as well as the likely skill composition of these future flows (skilled workers are hypothesized to have higher opportunity costs of staying compared to the unskilled), to inform policy debates on EU migration policy.

Drinkwater (2003a) is the first to estimate the willingness to move to a new country in Central and Eastern European (CEE) countries using data from the 1995 ISSP. He finds that there are significant cross-country differences in average levels of willingness to migrate (to "improve work or living conditions") and that individuals in CEE countries are less willing to move compared to their counterparts in other countries.

This section extends Drinkwater's (2003a) analysis to explore the willingness to move to another neighborhood, town, or region, to improve work or living conditions. Figure 4.7 below suggests that in general there is substantially greater willingness to move domestically/internally than to move to another country (Russia is one exception). Single, younger, and more educated men are more willing to move, across all geographic destinations. Willingness to move is also significantly related to previous history of mobility (measured using responses to question on whether the individual has been living in the same community since birth). These findings are broadly consistent with those of previous studies of willingness to migrate within countries (Drinkwater 2003b; Drinkwater and Blackaby 2004; Ahn, de la Rica, and Ugidos 1999; Mauro and Spilimbergo 1999) and across countries (Drinkwater 2003a; Liebig and Sousa-Poza 2004; van Dalen, Groenewold, and Schoor 2005).

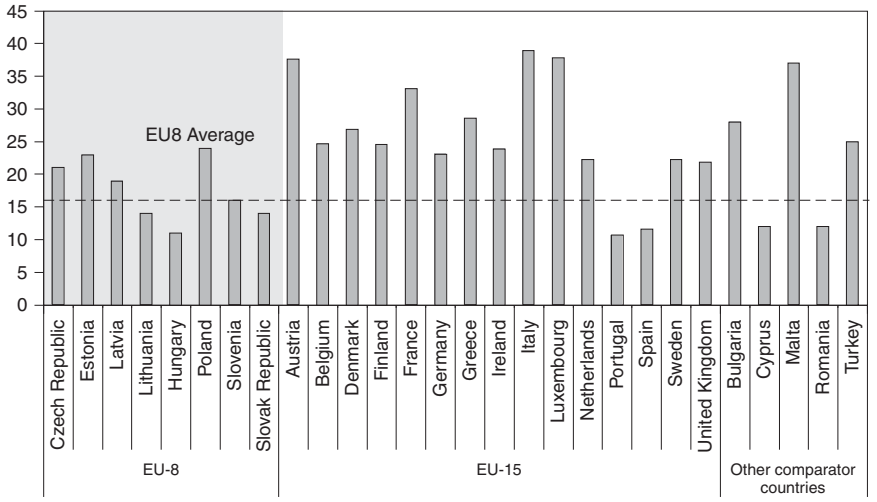
Across broad country groups, there are notable differences in propensities to migrate to another neighborhood, town or region. Individuals in the EU8, in particular, seem less willing to move to another town to improve their labor market prospects or standards of living. Surprisingly, however, within the EU8, both Poland and the Slovak Republic are at the higher end of the distribution, suggesting latent migration potential, although for the mid-1990s.

Job Search Methods. Informal job search methods are not necessarily less efficient in finding jobs than formal job search methods, as many studies have demonstrated (Ioannides and Loury 2004). Informal methods can be productive, generating as many or more job offers than formal methods. It is less clear whether such methods lead to better wages, more productive outcomes, or better quality of matches between workers and firms. One recent paper, for example, focuses on how social networks determine occupation choice, leading to inefficiencies in job matching, lower wages, and lower productivity (Bentolila, Michelacci, and Suarez 2004).

Box 4.3: Past and Intended Mobility: Complementary Evidence from EBS

The 2001 Eurobarometer (EBS) Survey was conducted across all of the countries in the EU, including EU8 countries that were accession candidates at that time. The survey asked respondents about past and intended geographic mobility along with other questions. Results of the survey are presented below. A similar survey was conducted in 2005 and represents a potentially rich source of new information, but summary data are yet to become publicly available. However, preliminary results of the 2005 survey (Karrpinen, Fernandez, and Krieger 2006) suggest that the main patterns summarized below based on the 2001 are still largely reflected in the 2005 data.[31]

Figure 1. Past Regional Mobility 2001 (Percent who moved to another region within the last 10 years)



Source: Eurobarometer Survey 2001 and Bank staff.

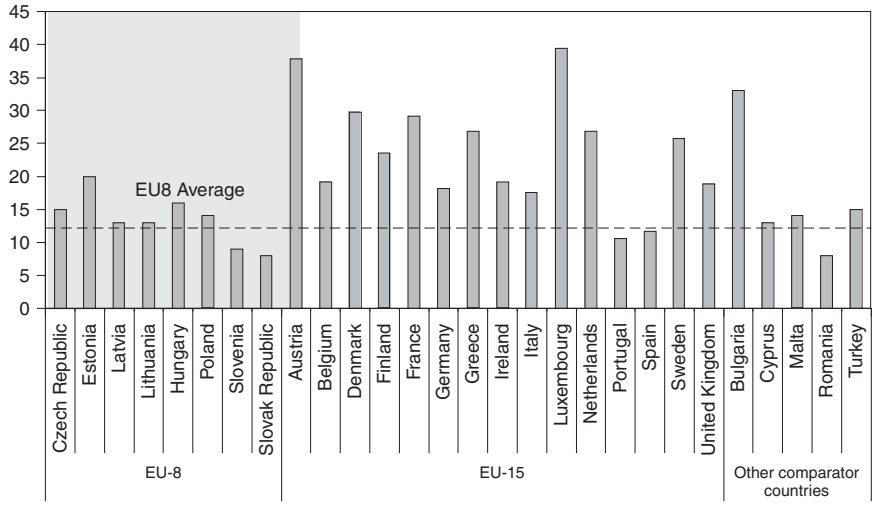
Figure 1 reports summary information by countries on the share of the respondent population who actually moved to another region within the 10-year period preceding the survey. Figure 2 depicts the share of survey respondents in 2001 who intended to move within the following five-year period. The EU8 countries again have low average past and intended mobility comparable with selected comparator countries but lower than those of their EU15 counterparts. Among the EU15 countries, the Southern European countries (Italy, Portugal, and Spain) again have comparably low rates of mobility, although Italy has a surprisingly high rate of intended mobility.

(*Continued*)

31. Another report based on the 2005 Eurobarometer data recently became available, shortly before this report went into publication (Vandenbrande and others 2006). The main findings again suggest that many of the EU8 countries (Slovak Republic, Poland, Slovenia, Czech Republic and Hungary) have generally low geographic mobility rates, comparable to Malta, Greece, Italy, and Portugal. There is significant heterogeneity among the EU8, however, with Estonia, Lithuania and Latvia experiencing high mobility rates.

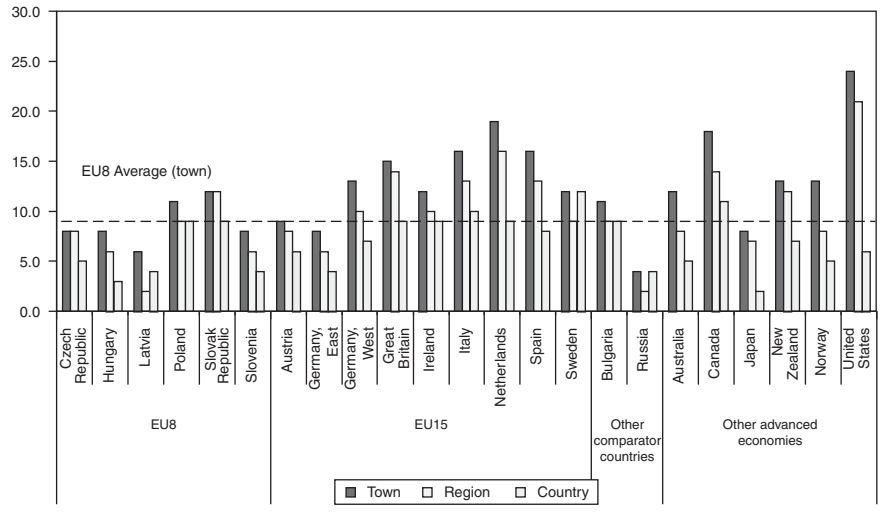
Box 4.3: Past and Intended Mobility: Complementary Evidence from EBS (*Continued*)

Figure 2. Intended Regional Mobility 2001 (Percent who intend to move another region within the next five years)



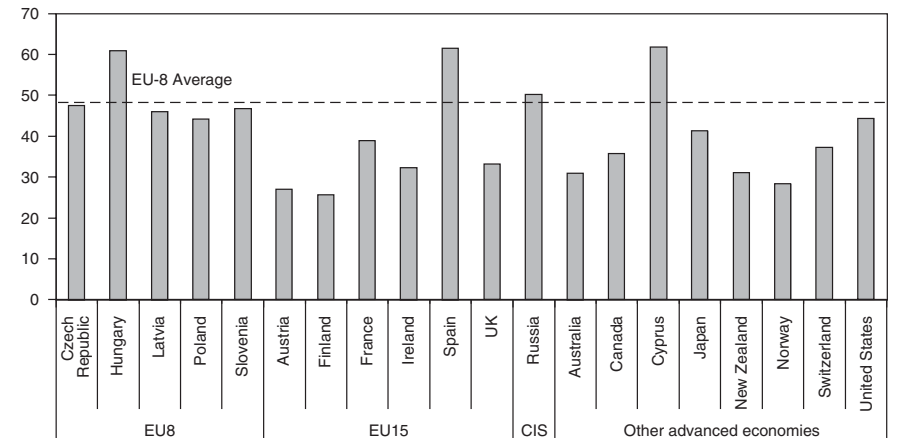
Source: Eurobarometer Survey 2001 and Bank staff calcualtion.

Figure 4.7. Percent "Very Willing" to Move to Another Town/Region/Country



Source: ISSP 1995 and Bank staff calculations.

Figure 4.8. Informal Source of Jobs Information (Percent obtaining information from informal sources such as family, friends, and so forth)



Source: ISSP 2001 and Bank staff calculations.

Recent papers emphasize the complex interaction between individual workers, the quality of social networks, and the hiring strategies of firms. An important recent paper by Calvó-Armengol and Jackson (2004) explores the links between unemployment duration and the quality of social networks: Where the local labor market is depressed and where social contacts are themselves likely to have poor employment experience, individuals are also less likely to find employment using their informal job search. Primary reliance on social networks may thus lead to sustained unemployment (see also Ioannides and Loury 2004). In the case of EU8 countries where unemployment has been high and persistent, it would be instructive to document the main job search strategy of workers.

We use 2001 ISSP data to examine the job search methods across countries (see Figure 4.8). The relatively high rank of France and Spain among EU15 countries is consistent with other surveys and gives us greater confidence in the reliability of ISSP data.[32] Our analysis of job search methods also confirms stylized facts in the literature on informal job search (see Ioannides and Loury 2004): First, there is widespread use of social networks to find jobs. Across countries, those who rely on informal networks range from some 25 percent to 84 percent of all workers. Second, men are more likely than women to rely on social networks. Third, workers that are more educated are less likely to rely on friends and family. On the other hand, while the literature indicates conflicting patterns of job search with respect to age, our analysis suggests a nonlinear pattern of job search: informal job search first decreases, then increases with age.[33]

32. See Labini (2004). In a survey of recent university graduates, Italy is shown to rank first in terms of percentage using social contacts for getting the first job, followed by Spain and then France, among the EU15. Czech Republic, the lone EU8 country in the sample, ranks third, after Spain.

33. Results are available from the authors on request.

Comparing broad country groups, the EU8 countries are more likely to rely on informal sources of information such as family and friends (as opposed to employment agencies and advertisements) compared to their EU15 counterparts and other advanced economies. Some have suggested that a more "collective culture" encourages reliance on social networks, although institutional factors such as the lower quality of job counseling services may in part promote informal networking as an alternative.[34] Why is the observed primary reliance on informal networking important? First, as previously discussed, the link between the persistence of unemployment and informal job search raises concern over the primary reliance on social networks for job search. Second, job search strategy may in part be linked to the probability of geographic mobility. In Italian regions, where regional unemployment disparities are wide and the incidence of long-term unemployment is high, studies indicate that informal job search methods are much less effective outside the unemployed worker's region of residence. They also find that those who rely primarily on family and friends for their job search are less likely to migrate across regions (Faini et al 1997; Puga 2002). Using again the 2001 ISSP data, we find that those who rely primarily on social networks are indeed less likely to have ever migrated, controlling for the standard determinants of the individual probability of migration.[35]

34. We thank Poland's Ministry of Labour and Social Policy for raising this point.

35. According to studies in sociology, migrant networks appear to be more beneficial for international, rather than domestic, migration in the case of EU8 countries. While traditionally strong, the family connections between urban and rural populations in Eastern Europe have begun to dissociate in the wake of the collapse of socialism. The widening phenomenon of social alienation experienced in the post-1990 era and the radical process or re-stratification that these societies incurred, broke down previously established networks and loyalties even within the structure of the extended family networks.

CHAPTER 5

Summary and Conclusion

This report provides an extensive review of existing evidence and a number of additional findings for the EU8 countries on:

- the extent of regional disparities in labor market indicators;
- the persistence of these disparities over time and the related failure of the basic adjustment mechanisms to reduce them; and
- the potential role that internal migration could play in this context and its effectiveness in performing this role.

Main Findings

On the Magnitude and Persistence of Disparities

There are Wide Disparities in Unemployment Rates Across Regions in the EU8. Other regional indicators such as employment rates reflect the same degree of disparity. The EU8 as a group experience higher unemployment rates and wider disparities than their EU15 counterparts and other advanced economies. These high unemployment rates and their disparities also tend to be more persistent. There is no evidence that the persistence of high unemployment rates is driven by the growth of the working-age population in the poorest regions. Together, these trends suggest the absence of viable adjustment mechanisms.

The EU8 Countries are Not a Homogenous Group and Neither is the EU15. While the EU8 as a group has experienced wider labor market disparities than other country groups,

there is also a marked heterogeneity among the countries in this group. At one extreme are Poland and the Slovak Republic, which have experienced much wider disparities, and on the other extreme are the Baltic countries that as a group have experienced narrower and less persistent unemployment differentials. And while the EU15 and other advanced economies compare more favorably to the EU8 as a group, a few selected advanced economies—mainly the Southern European economies—experience comparable disparities (and as illustrated below, they have comparable non-adjustment and have comparable barriers to mobility): Italy, Spain, and Greece.

On the Effectiveness of Adjustment Mechanisms

There are three main adjustment mechanisms to offset persistent regional disparities: price (wage) adjustment, quantity adjustment (capital and labor mobility), and government action (transfers).

The Main Adjustment Mechanisms are Weak. Wage adjustments in the EU8, at best, are comparable or slightly stronger than those of advanced economies. In many cases, however, wage adjustments—as measured by wage curve regression estimates of wage elasticity—are insignificant. Wage adjustments also have a lag, are nonlinearly related to levels of unemployment (they are insignificant in the most depressed regions—where effective adjustment mechanisms are by definition more critical), and are by themselves insufficient to narrow unemployment differentials. Capital flows have tended to reinforce geographic disparities. Both foreign and local investments flow into booming regions, where both economic activity and educated workers are concentrated. This is consistent with the so-called 'new economic geography' literature where agglomeration effects lead to persistent regional differentials. With respect to government transfers, the experience with EU structural funds has been inconclusive, if not disappointing, with respect to their impact on regional economic convergence. The EU8's experience with structural funds will not necessarily be completely similar to the EU15 experience, but it is still too early to evaluate how efficiently the EU8 countries are able to use these regional transfers. Because these mechanisms either have not been effective or are not likely to be effective, labor mobility is thus a critical channel for addressing regional imbalances.

On Determinants and Barriers to Labor Mobility

A brief survey of the literature and an assessment of secondary data suggest that internal or inter-regional mobility (commuting and migration) in the EU8 has been generally low. Geographic mobility is weakly related to regional unemployment rates (among other things, migration requires liquidity; some workers may be "too poor to move") and other regional labor market indicators. Inter-regional mobility rates in the EU8 are comparable to those of the same group of advanced economies with large regional unemployment disparities, namely the Southern European countries, including Greece, Italy, and Spain.

There is Some Heterogeneity Within the EU8. In the Czech Republic, both migration and commuting rates are relatively high; in the Slovak Republic, commuting rates are relatively high but migration rates are relatively low. Both migration and commuting rates

appear to be low in Hungary and Poland. Using 2003 and 2004 data at the individual level (LFS), we find evidence that both residential mobility and commuting rates have been low in EU8 countries. This is confirmed by ISSP data. Again, selected EU15 countries have comparable rates, such as Spain.

Across All Countries, a Number of Socio-Economic and Demographic Covariates are Relatively Robust. Young, single, more educated men have higher propensities to migrate or commute. Our findings with respect to the probability of mobility using the LFS are confirmed by other data sources: young, more educated, single men express a greater willingness to migrate (potential mobility) to improve work or living conditions. They also have higher actual mobility and are less attached to their local community.

The negative statistical correlation between age and mobility may very well be related to social protection, in that the older population may have access to publicly provided welfare benefits while the younger workers do not.[36] Such access effectively raises the reservation wage and decreases the incentive to move in search of better employment prospects. The statistical link between age and mobility may also be due to a number of other non-economic factors, including reasons unrelated to social protection, factors. Major life events, for example, take place during younger years (marriage, family formation) which may involve relocation unrelated to economic motives.

The positive selection of educated individuals is not surprising: on average, the opportunity cost of staying in a depressed region is higher for workers that are more educated. Where transactions costs of mobility are high, educated workers on average are more likely to afford such costs. However, this also raises issues of brain drain. When educated workers are self-selected out of depressed regions, prospects for such regions grow even dimmer. The dynamic links between capital flows and the geographic concentration of skill further worsen the prospects of such regions.

We Also Find That Mobility is Statistically Related to Skills and Employability. Skills mismatches may matter: selected occupations or workers in selected sectors of employment are more mobile than others. Construction workers, for example, are relatively more mobile while mining workers are much less mobile in most of the EU8 countries. In addition, those who were previously unemployed appear to have lower probabilities of migration and that, instead, those who are already employed (and skilled), not the unemployed workers, are those that are best able to move out of depressed regions.

Comparing Commuting and Migration. First, migration is generally not responsive in a consistent way to regional economic indicators, employment, and wage differentials. In contrast, commuting is much more responsive and in the expected direction. Second, commuting but not migration may facilitate transitions out of joblessness. In general, those previously inactive or unemployed are more likely to commute the following period. In contrast, being unemployed in one period is not associated with a higher probability of migration the following period. This finding is not surprising, as several previous studies have concluded with similar observations. A study of Czech Republic by Erbenova (1995)

36. We thank Leszek Kasek for raising this point.

Box 5.1: Commuting and Migration Patterns: Are EU8 Countries Unique?

Commuting and migration patterns described in this report are not unique to countries in the Central and Eastern European region. The magnitude of migration flows, the determinants of mobility, and the relative size and direction of commuting flows compared to migration flows as experienced by EU8 countries are remarkably consistent with the experiences of other, middle-income countries, particularly those in Latin America.

First, in a number of countries, the geographic mobility of labor has been low. For example, using cross-country data for selected countries in Latin America, Soto and Torche (2004) show that annual, inter-regional migration rates in Argentina, Chile, Costa Rica, and Uruguay are much lower than those of Australia, the UK, and the United States, although comparable with Spain. Between 1965 and 2002, annual migration rates averaged around 0.6 percent in Chile. Between 1991 and 1996, migration rates averaged around 1.3 percent in Uruguay. In the United States, over this same period, migration rates were about 6.6 percent.

Second, migration flows appear to have been inadequate to offset regional economic imbalances. For example, Aroca and Hewings (2002) find that such flows have not served to mitigate regional unemployment and wage differentials in Chile. Soto and Torche (2004) also find that, over time, in the case of Chile, migration flows have become *less* responsive to regional economic differentials. In Mexico, net migration flows from impoverished regions have been low and less than expected, given significant regional wage differentials (World Bank 2006). It has been hypothesized that low mobility in Mexico may be due in part to liquidity constraints, or the inability to borrow to finance mobility and secure the gains from relocation. Based on the results of a study of residents in Bolivia, it has also been suggested that local geographic and cultural attractions may offset regional economic differentials (Perry et al 2006).

Third, there are common underlying socio-economic and demographic determinants of mobility. For example, a recent study of inter-regional labor mobility in Egypt between 1981 and 1998 finds that younger and more educated, workers are relatively more mobile than their counterparts (McCormick and Wahba 2004). Construction workers are the most mobile while agricultural workers are the least likely to move. The study also concludes that men are much more mobile than women. Assaad and Arntz (2005) attribute the rise in gender wage disparities to the limited geographic mobility of women.

Finally, commuting is emerging in Latin America as a phenomenon that is more responsive to regional labor market differentials than migration (Perry et al 2006). A study of Chile from 1993 to 2003 by Aroca (2005) suggests that commuting flows over this period are twice the migration flows, on an annual basis. He also finds that inter-regional commuting flows are positively related to the flows of foreign direct investment and negatively related to housing costs. This is taken to mean that with respect to real income net of local cost, commuting may be preferred to migration. In Chile's case, current efforts to upgrade transport infrastructure and promote car ownership are also helping to improve commuting potential (OECD 2006).

using district-level data from the early 1990s, for example, finds that commuting flows, in contrast to migration flows, are more responsive to average unemployment and vacancy rates of districts and operate in the "correct" direction. There are also studies of other middle-income countries confirming similar patterns (see Box 5.1).

Habits, Preferences, and Culture may Matter. We find evidence based on ISSP (and EBS) data, that individuals in EU8 countries express a stronger attachment to their local communities compared to individuals in other countries. Such attachment, in turn, is reflected in lower propensities to migrate. This is consistent with previous studies of a few EU8 countries (Czech Republic and Poland).

The Method of Job Search may Matter. On average, individuals in countries with higher unemployment and longer unemployment duration seem to rely more on informal job search methods. Such strategies may be less effective in regions outside the unemployed worker's region of residence. In depressed regions, social networks may also have poorer employment experience thus facilitating sustained unemployment. The literature on networks and labor markets find dynamic links between the quality of social networks and unemployment duration.

Is Housing a Barrier to Mobility? There are many good reasons to think that housing problems dampen geographic mobility. High housing costs in booming regions offset the incentives to mobility. Rent controls restrict the supply of rental housing. Shortages of rental housing, in turn, restrict mobility. These arguments are reflected in recent studies of housing and labor mobility in the EU8. For example, a study of the Slovak Republic suggests that labor mobility is low because of housing problems: a large share of the population lives in owner-occupied dwellings, there are significant differentials in real estate prices between rich and poor regions, and rental markets suffer from shortages in available housing (OECD 2004a). These conclusions are broadly shared by a number of national or official documents and reports as well.[37] Similarly, an OECD study of the Czech Republic (2004b: 42 ff.) claims that a heavily regulated rental housing market has inhibited labor mobility by creating substantial price differentials between regions. Within the same geographic region, significant differentials may also exist: on one hand are the regulated rental houses with rents below market rates and, on the other hand, are the exceedingly expensive newly constructed dwellings or old private rental housing released from regulation). The benefits of not moving are therefore made quite large by rent control. Addressing these housing issues is complicated and requires carefully crafted interventions: In the Czech Republic, government support for homeownership to ease housing market frictions may itself be dampening mobility, in part due to the high transactions costs involved in selling property that is financed by mortgage (OECD 2004c: 147).

However, it remains difficult to establish clear statistical links between housing indicators and mobility. First, data typically used in statistical analyses relating housing to mobility, such as housing prices or housing stock or whether individual respondents are renters or homeowners, are typically not available in the EU8 (see, for example, Fidrmuc and Huber 2003) and individual-level information related to housing are not available in LFS data. Second, while some relevant data may be available, it is still a challenge to establish significant links between housing and mobility. This report uses regional data on housing for some countries but is unable to find strong statistical links. This is not surprising as many of the indicators of regional economic fundamentals or amenities tend to move together, thus creating technical issues related to multicollinearity (see for example Erbenova 1995).

Nonetheless, some existing studies in the literature provide (indirect) evidence that housing availability or housing prices matter for mobility (e.g., Fidrmuc and Huber 2003; Cseres-Gergely 2005; Ghatak et al 2004). However, many of those who conclude that housing

37. See, for example, Ministry of Construction and Regional Development of the Slovak Republic, 2003, *National Development Plan* (Bratislava: Ministry of Construction and Regional Development) and the *Joint Assessment of Employment Priorities in the Slovak Republic* (Bratislava: Ministry of Labour, Social Affairs and Family and European Commission for Employment and Social Affairs).

is important have typically provided arguments supported by broad descriptive statistics, such as for Hungary (Hegedus 2004), the Slovak Republic (OECD 2004a; Ministry of Construction and Regional Development of the Slovak Republic 2003; Ministry of Labour, Social Affairs and Family of the Slovak Republic and European Commission—DG Employment and Social Affairs 2001), and the Czech Republic (OECD 2004b and 2004c). Some rely on indirect evidence: For example, Fidrmuc and Huber (2004) find that homeownership constrains mobility or that homeowners are the least mobile. This result has been interpreted to mean, in part, that the reluctance of homeowners to move means there is likely no housing market for the rapid disposal of houses.

Can Labor Mobility Exacerbate Regional Differences? This analysis does not permit a rigorous examination of the impact of labor mobility on regional labor market disparities since the interaction among the various adjustment mechanisms as well the cumulative impact over time cannot be adequately assessed with single year data points. Nonetheless, the existing evidence suggests that the individuals that are most likely to migrate are the younger and more educated and those who held jobs in lagging regions. This would suggest that labor mobility may indeed exacerbate regional disparities. Appropriate policy interventions, as described in the next section, should thus ensure that those left behind in lagging regions are not neglected and that particular efforts are made in reducing skill gaps.

Options for Policy Action

The conclusions summarized above lead to a number of conclusions on the need for policy action designed to increase geographical mobility of labor in the EU8 countries and on the format this action should take.[38]

Policy Actions Aimed at Encouraging Commuting (Rather Than Migration) may be More Effective in Addressing Regional Disparities, Given Current Labor Mobility Patterns. Empirical evidence suggests that commuting flows are more strongly related to regional economic differentials than migration flows. Thus, where regionally disparities are large and residential mobility is traditionally low, policy measures aimed at facilitating commuting may be an effective way of reducing regional disparities in labor market outcomes and in living standards. Very important amongst these measures are those designed to reduce the transport costs of commuting in terms of money and time.[39] These will include improvements in infrastructure—roads, railways—but also the enhanced efficiency of the market for transport services via a combination of private provision and public regulation. Data limitations preclude an analysis of the role of commuting costs in this report. However,

38. The diagnoses as well as the policy interventions identified in this section are broadly reflected in a number of existing government programs and planning documents. See, for example, the *National Reform Programme of the Czech Republic* (2005–2008).

39. It has been suggested that high transport costs may raise housing costs as well. There are thus important interactions and policy complementarities in this area. We thank the Ministry of the Economy of the Slovak Republic for raising this point.

there is existing evidence that commuting costs are an important determinant of commuting behavior, such as in Hungary.[40]

Nonetheless, Policies Aimed at Enabling Greater Migration Flows Should Not be Neglected. Current internal mobility patterns—i.e., commuting flows that are more responsive to regional economic differentials than migration—do not imply that policies aimed at encouraging migration (such as policies meant to address failures in housing markets) are not important. In fact, the relatively greater magnitude of commuting flows relative to migration flows has sometimes been interpreted as an indirect confirmation of housing problems (including expensive housing, shortages in rental housing, etc.) as a barrier to migration. Whether this is an appropriate confirmation is uncertain, but there are certainly good reasons, as discussed above, to think that housing problems remain relevant to geographic mobility, subjective to further statistical verification.

Promote Education and Lifelong Learning. The robust relationship between educational attainment and mobility suggest that those who are left behind in lagging regions are predominantly the low skilled workers with lowest employment prospects. This is confirmed by the weak relationship found between previous year unemployment and the decision to migrate. This suggests that lack of education is an important barrier to mobility. As such, investments in education and training may facilitate the adjustment process, as workers acquire the necessary skills to find jobs in more dynamic regions and move away from lagging parts of the country.

Enhance Flexibility in Labor Markets. The first two policy recommendations focus on facilitating the flow of labor from lagging regions to booming regions by (i) ensuring that workers have the skills which are demanded by the newly created jobs and (ii) lowering the monetary and time costs of commuting. For those left behind in lagging regions, a policy package designed to support job creation, encourage capital to move into the area and enhances productivity is critical. Within the EU8 countries, policy measures designed to promote wage flexibility in local labor markets—such as through minimum wages differentiated by age or region, decentralized wage bargaining systems, and others—are a critical component of this package.

Ensure That Social Protection Does Not Inhibit Mobility. The existing literature on unemployment benefits and unemployment duration suggests that generous unemployment and welfare benefits may serve to dampen labor mobility, by reducing unemployed workers' incentives to look for employment and raising their reservation wages. For example, an analysis of unemployed workers in Poland suggests that unemployment benefits may increase the "reservation wages" of the unemployed (or the lowest wage level at which

40. According to a recent analysis by Bartus (2004), only 15 percent of commuters in Hungary finance their own travel. Most commuters appear to be subsidized by their employers. The commuting distance of self-financed commuting is limited to 20 kilometers among women, on average, and 50 kilometers, among men. This suggests that commuting costs may be more binding among women. Boeri, Burda and Köllö (1998) find that traveling more than 20 kilometers and more than 50 kilometers could cost as much as the minimum wage and more than the average wage in Hungary, respectively.

they are willing to accept job offers) and effectively offset the effects of local labor market conditions on reservation wages (World Bank 2004). A recent comprehensive survey of the literature suggests that across countries in Central and Eastern Europe, the evidence is "clear-cut": studies demonstrate that unemployment benefits reduce the probability of leaving unemployment and that the probability of exiting unemployment significantly increases close to the point when unemployment benefits are exhausted (Vodopivec, Wörgötter, and Raju 2005). The evidence appears to be detectable, even in countries where benefits are much less generous such as in Estonia. The policy challenge then is to strike the right balance—providing unemployment and welfare benefits to mitigate income shocks while preserving job search incentives.

Accounting for Cross-Country Heterogeneity. The nature of cross-country regional reports makes it difficult to identify in-depth, country-specific policy recommendations. Nonetheless, this report makes clear that there are significant differences across countries and policy actions will need to consider these variations carefully. In particular, the heterogeneity of regional unemployment differentials among the EU8 countries suggests that the failure to adjust to regional disparities (either because labor mobility is low or capital flows are lacking or are in the "wrong" direction) are less of an issue in countries like Estonia or Latvia. In contrast, these issues seem more urgent in Poland and the Slovak Republic, where spatial disparities are much larger and persistent. The relative strength and responsive of adjustment mechanisms in response to labor market disparities also vary from country to country. Commuting flows, for example, are relatively large Hungary and the Slovak Republic; policy interventions to encourage commuting may be more urgent in Poland. Geographic size is also important. For relatively smaller countries, low migration flows may not be an issue, assuming commuting flows are large enough. For larger countries, both commuting and migration flows may both have to be large enough to compensate for labor market disparities.

Accounting for Regional Heterogeneity. Internal labor markets can have specific characteristics, reflecting varying speeds of reform across regions, unequal investment activities, and local demand conditions. Within countries, there is therefore also a compelling case for region-specific policy interventions. Scarpetta and Wörgötter (1995), for example, advocate the provision of "regionally-tailored" active labor market programs. Where the pool of unemployed workers in lagging regions consist largely of relatively older workers, promoting education to facilitate mobility is clearly not appropriate. Depressed regions within commuting distance from growing regions may require strategies different from those of peripheral regions.[41] Where regional territories are mountainous, commuting may not be feasible either.

The Limits of Policy? The literature suggests that individuals may be unwilling to relocate, despite the promise of better employment prospects, due to a legacy of central planning and permanently secure jobs. In addition, employment is often not the only motivation for geographic mobility; family matters, housing amenities, and living standards are often

41. We thank Peter Huber for raising this point.

important determinants of mobility. Evidence from other regions, such as in Latin America, also suggests that broad welfare differentials (such as mortality and health indicators or subjective measures of well-being) may not be as large as labor market indicators would suggest. This report finds evidence that preferences, attitudes and habits do restrain individual mobility. Such preferences, in turn, may help explain the lower preferences for mobility and lower rates of intended mobility in the EU8.

Issues for Further Work

A primary objective of this report was to maintain the analysis focused on the specific issue of internal mobility as an effective adjustment mechanism in EU8 countries. In order to do so several important policy questions remain unanswered and are left for future research. Filling these gaps may also require significant investments in new data, as noted below. The key knowledge gaps include the following:

- The role of international migration needs to be explored. With the recent opening of selected EU15 labor markets to workers from EU8 countries, international migration—whether in the form of residential migration or international commuting—may be serving to correct domestic regional disparities in unemployment.[42]
- The factors behind the growth of commuting flows experienced in recent years. The appropriate data may demonstrate clear statistical linkages between commuting and transport costs. A specially designed survey may also capture valuable information on commuting duration, costs, and distances.
- The role of informal sector employment and "undeclared work" in geographic mobility require further analysis. Anecdotal evidence suggests that many of the most mobile professions (such as in construction) may not be fully captured by official statistics. As such, the magnitude of labor mobility may be underestimated.[43]
- The potential role of a better functioning housing market in facilitating internal mobility and replace commuting flows out of lagging regions. This requires obtaining the appropriate data for analyzing the links between housing and individual migration behavior.
- Finally, the role of social protection as a potential barrier to geographic mobility via the creation of perverse incentives is another important area where a good deal of work has already been done in other countries. In EU8 countries, this requires carefully analyzing the linkages between job search behavior, migration, and income-replacement benefits.

42. Huber (2005) analyzed data from the 1990s on regional flows in the Czech Republic, Estonia, Hungary, Poland, Slovenia, Slovakia and Romania and found that international flows serve as a complement to internal flows. That is, regions experiencing high internal outflows also typically have high international outflows.

43. LFS data are usually considered comprehensive, but it has been suggested that LFS data may still not capture certain categories of workers such as those holding multiple jobs. See Renoy and others (2004).

Appendix

Table A.1. Summary of Empirical Studies of Interregional Mobility in Central Europe and the Baltic Region

					Main Conclusions	
Countries	**Period**	**Author**	**Method**	**Data**	**Mobility Trends**	**Covariates of Mobility**
Czech Republic	1990–1994	Burda and Profit (1996)	Matching functions	Monthly registered unemployment, vacancies, and unemployment exits for 76 district Labor offices	Migration is a significant labor market adjustment mechanism.	N.A.
Czech Republic	1990–1998	Vecernik (2001)	Descriptive statistics	Migration by various territorial levels (region, district, locality)	Migration rates fell between 1990 and 1998	Regulated rental markets help contain housing costs but also inhibit new construction and investment.
Czech Republic	1991–1994	Erbenova (1997)	Descriptive statistics, two-stage least squares	District level	Migration rates are comparable to advanced economies but decreasing overall.	Migration is responsive to regional disparities but the process is slow. Migration is also responsive to new housing construction,but not to housing stock.
Czech Republic	Undated	Erbenova (1997)	—	—	—	Commuting higher among younger, more educated, and workers with higher occupational status.
Czech Republic	1992–1998	Fidrmuc (2005)	Descriptive statistics, OLS and logit regressions	District (okres) level gross/net migration, Eurobarometer individual level data	Migration rates are low.	Economic factors have little impact on current migration patterns but may have larger impact on future migration intentions.

Czech Republic	1992–1998	Fidrmuc and Huber (2003)	Descriptive statistics, gravity model of interregional migration, Oaxaca decomposition	District (okres) level gross/net migration	Migration rates are low by European standards. Migration rates have fallen as regional disparities in earnings have increased. Over the 1992–98 period, long distance migration fell, while short distance migration remained stable.	Migration more responsive to vacancy rates and availability of housing than to wage differentials. Wage disparities have become more important for migration but offset by spatial distance and decreases in autonomous (or unexplained) migration. The unemploy ment rate has become less important.
Czech Republic	1992–1998	Huber (2004)	MLE under the assumption of a negative binomial distribution	District (okres) level gross/net migration	Migration rates are low and highly persistent.	Compared to EU comparator countries, migration not as responsive to regional wage, unemployment, and employment disparities.
Czech Republic	1992–1998	Fidrmuc (2004)	Pooled, fixed effects, and random effects	District (okres) level gross/net migration	Migration rates have fallen	Average wages not signifi-cantly related to migration. Unemployment negatively related to immigration but inisgnificantly related to emigration. Wages are positively correlated to both immigration and emigration.
Czech Republic	1984, 1994	Rees and Kupiszewski (1999)	Descriptive statistics	District (okres) level gross/net migration	Migration rates are low and lower than Norway, the Netherlands, and the UK.	Low migration flows associated with low per capita income and the magnitude of publicly provided housing. Unemployment has little influence on migration.

(*Continued*)

Table A.1. Summary of Empirical Studies of Interregional Mobility in Central Europe and the Baltic Region (*Continued*)

					Main Conclusions	
Countries	**Period**	**Author**	**Method**	**Data**	**Mobility Trends**	**Covariates of Mobility**
Estonia	1987, 1995	Rees and Kupiszewski (1999)	Descriptive statistics	County level gross/net migration	Migration rates are low and lower than Norway, the Netherlands, and the UK.	Low migration rates associated with low per capita income and the magnitude of publicly provided housing. Net migration negatively related to unemployment in 1995; positively related in 1987.
Estonia	1989–1994	Kulu and Billar (2004)	Multilevel logistic regression	Labor Force Survey	Migration rates fell and reached lowest level in 1991 then increased in 1994.	There are important interactions: For working population, regional unemployment positively related to migration; for the unemployed, regional unemployment negatively related to migration. Migration by ethnicity also varies by regional share of ethnic population.
Estonia	2000	Hazans (2004)	Descriptive statistics and logit regressions	Labor Force Survey	Commuting flows are significant. Capital city receives net inflow of commuters while rural markets experience a net outflow of a quarter of full-time employees.	Commuting patterns vary by place of residence. Commuting increases with education and decreases with age. Women are less likely to commute. Minority employees are more likely to commute than Latvians, in a restricted sample.

Estonia	1989–1997	Sjoberg and Tammaru (1999)	Descriptive statistics	Own survey of individual migration histories	Migration rates are low, though official statistics under-reports actual mobility. Own-survey reveals positive net urban immigration.	Age negatively related to migration; education and income positively related to migration.
Latvia	1993–2001	Hazans (2003a)	Descriptive statistics, OLS and Prais-Winsten panel regressions	Latvian registration data by main cities	Migration rates at comparable, or higher, levels with rest of Eastern Europe, Denmark, and Netherlands.	Migration strongly decreases with age and increases with education. Ethnic minorities and females less inclined to migrate. Inactive and unemployed persons, as well as commuters, are more likely to become migrants. Non-economic determinants are also important.
Latvia	1993–2001; 1989–1999; 1999–2002	Hazans (2003b)	Descriptive statistics, OLS, logit, and Prais-Winsten panel regressions	Registration data; Census 2000; NORBALT II Living Conditions Survey 1999; own on-line survey	Falling migration rates but comparable, or higher, levels with rest of Eastern Europe, Denmark, and Netherlands. A very high proportion of respondents to the on-line survey (39 to 88 percent under different assumptions) intend to migrate to EU countries.	Migration significantly related to economic incentives. Migration decreases with age and increases with education.
Lithuania	1989–2001	Hazans (2003a)	Descriptive statistics	Regional migration rates	Net migration rates are comparable to the other Baltics, Czech R., Denmark and Netherlands but lower than in Hungary.	N.A.

(*Continued*)

Table A.1. Summary of Empirical Studies of Interregional Mobility in Central Europe and the Baltic Region (*Continued*)

					Main Conclusions	
Countries	**Period**	**Author**	**Method**	**Data**	**Mobility Trends**	**Covariates of Mobility**
Lithuania	2000	Hazans (2004)	Descriptive statistics	Regional data	Commuting flows are significant. Capital city is subject to net inflow of commuters while rural markets see a net outflow of a third of full-time employees.	Commuting behavior varies by place of residence. Both local wages and unemployment have a negative impact on commuting. Commuting increases with education and decreases with age (except for rural sub-sample). Women are less likely to commute than males
Poland	1984,1994	Rees and Kupiszewski (1999)	Descriptive statistics	Regional (voivodship) data	Migration rates are low and lower than Norway, the Netherlands, and the UK.	Low migration associated with low per capita income and the magnitude of publicly-provided housing. Negative relationship between net migration and unemployment, but outflows are signifcant only when unemployment rates are very high.
Poland	1970–1985	Korcelli (1990)	Descriptive statistics	Census, population register	Migration increasing through the 1970s and falling through 1985.	N.A.
Poland	1985	Mayo and Stein (1998)	OLS	Regional (voivodship) data	N.A.	Migration responsive to wage differentials but constrained by housing shortages.

Poland	1995–2000	Mainardi (2004)	OLS, FE ML, SURE, switching model	Regional (voivodship) data	N.A.	Local unemployment positively related to emigration. Long-term unemployment negatively related to both emigratio and immigration. Regional hire rates positively related to immigration. Mobility constraints higher among poorer regions.
Poland	1992–1997	Fidrmuc (2004)	Pooled, fixed effects, and random effects	Regional (voivodship) data	Migration rates have fallen	Average wages not significantly related to net migration. Unemployment negatively relate to both immigration and emigration. Wages are positively related to immigration and emigration.
Poland	1995–2001	Ghatak and others (2004)	SURE	Regional (voivodship) data	Migratio rates are low	Migration rates are responsive to economic differentials, infrastructure. Migration negatively related to lack of housing.
Slovakia	1992–1996	Fidrmuc (2004)	Pooled, fixed effects, and random effects	Regional (district) data	Migration rates have fallen	Average wages not significantly related to net migration. Unemployment negatively related to immigration insignificantly related to emigration. Wages insignificantly related to gross migration.
Slovenia	1996–1998	Huber (2004)	MLE under the assumption of a negative binomial distribution	Registry of residents taken from statistical yearbooks.	Migration rates are low and highly persistent.	Compared to EU comparator countries, migration not as responsive to regional wage, unemployment, and employment disparities.

Source: As indicated.

References

Abazov, Rafis. 1999. "Economic Migration in Post-Soviet Central Asia: The Case of Kyrgyzstan." *Post-Communist Economies* 11(2):237–52.

Adamaite, Linda. Undated. "Does Latvia Have a Wage Curve?" University of Latvia. Processed.

Ahn, Namkee, Sara de la Rica, and Arantza Ugidos. 1999. "Willingness to Move for Work and Unemployment Duration in Spain" *Economica* 66(263/August):335–57.

Andrienko, Yuri, and Sergei Guriev. 2004. "Determinants of Interregional Mobility in Russia: Evidence from Panel Data." *Economics of Transition* 12(1):1–27.

Aroca, Patricio. 2005. "Regional Labor Markets, Migration and Commuting." Unpublished paper, Universidad Catolica del Norte, Chile.

Aroca, Patricio, and Geoffrey J.D. Hewings. 2002. "Migration and Regional Labor Market Adjustment: Chile 1977–1982 and 1987–1992." *Annals of Regional Science* 36(2):197–218.

Arro, Reelika, Raul Eamets, Janno Järve, Epp Kallaste, and Kaia Philips. 2001. "Labour Market Flexibility and Employment Security: Estonia." ILO Employment Paper No. 2001/25. Geneva: ILO.

Assaad, Ragui, and Melanie Arntz. 2005. "Constrained Geographical Mobility and Gendered Labor Market Outcomes under Structural Adjustment: Evidence from Egypt." *World Development* 33(3):431–54.

Baláž, Vladimír, and Allan M. Williams, 2001, "Patterns of internal migration, regional polarisation and market reforms in Central Europe." *Ekonomický Casopis* 49(4):663–700.

Barjak, Franz, 2001, "Regional Disparities in Transition Economies: A Typology for East Germany and Poland." *Post-Communist Economies* 13(3):289–311.

Barro, Robert J., and Xavier Sala-i-Martin, 2004. *Economic Growth*. Second Edition. Cambridge: MIT Press.

Bartus, Tamas. 2004. "Commuting." In Károly Fazekas and Jenő Koltay, eds., *The Hungarian Labor Market 2004.* Budapest: Institute of Economics.

Basile, Roberto. 2002. "Acquisition versus Greenfield Investment: The Location of Foreign Manufacturers in Italy." ISAE Istituto di Studi e Analisi Economica, Rome. Processed.

Basile, Roberto, and Alessandro Girardi. 2001. "Regional Inequalities and Cohesion Policies in the European Union." ISAE Istituto di Studi e Analisi Economica, Rome. Processed.

Basu, Swati, Saul Estrin, and Jan Svejnar. 2005. "Employment Determination in Enterprises under Communism and in Transition: Evidence from Central Europe." *Industrial and Labor Relations Review* 58(3):353–69.

Bentivogli, Chiara, and Pagano, Patrizio. 1999. "Regional Disparities and Labor Mobility: The Euro–II versus the USA." *Labor* 13(3):737–60.

Bentolila, Samuel, Claudio Michelacci, and Javier Suarez. 2004. "Social Contacts and Occupational Choice." Working Paper, CEMFI.

Blanchard, Olivier Jean, and Lawrence F. Katz. 1992. "Regional Evolutions." *Brookings Papers on Economic Activity.* Washington: The Brookings Institution.

Blanchard, Olivier Jean. 1998. "Discussion: Regional Nonadjustment and Fiscal Policy: Lessons for EMU." *Economic Policy: A European Forum* 26(April):248–50.

Blanchflower, David G. 2001. "Unemployment, Well-Being, and Wage Curves in Eastern and Central Europe." *Journal of the Japanese and International Economies* 15(4):364–402.

Blanchflower, David, and Andrew J, Oswald. 1994. *The Wage Curve.* Cambridge: MIT Press.

Boeri, Tito, Michael Burda, and Janos Köllö. 1998. "Mediating the Transition: Labour Markets in Central and Eastern Europe." EPI Report No. 4: CEPR, London.

Bornhorst, F., and S. Commander. 2004. "Regional Unemployment and its Persistence in Transition Countries," IZA Discussion Paper No. 1074.

Boudier-Bensebaa, Fabienne. 2005. "FDI-assisted Development in the Light of the Investment Development Path Paradigm: Evidence from Central and Eastern European Countries." University of Paris XII. Processed.

Burda, Michael C. 1995. "Migration and the Option Value of Waiting." Working Papers No. 597. Stockholm: International Economic Studies.

Burda, Michael C., and Stefan Profit. 1996. "Matching across Space: Evidence on Mobility in the Czech Republic." *Labour Economics* 3(3):255–78.

Buscher, Herbet, Cornelia Lang, and Gabriele Hardt. 2005. "The Performance of European Labour Markets on the Basis of Data Obtained from the June 2004 ad hoc Labour Market Survey." Brussels: ECFIN. Downloaded from: http://ec.europa.eu/economy_finance/indicators/business_consumer_surveys/studies_en.htm

Büttner, Thiess. 2003. "Unemployment Disparities and Regional Wage Flexibility: Comparing EU Member states and Accession Candidate Countries." AccessLab Report on Adjustment Capability of Regional Labour Markets, http://accesslab.wifo.ac.at/.

Calvó-Armengol, A., and M. Jackson. 2004. "The Effects of Social Networks on Employment and Inequality." *American Economic Review* 94:426–54.

Carletto, Calogero, Benjamin Davis, Marco Stampini, Stefano Trento, and Alberto Zezza. 2004. "Internal Mobility and International Migration in Albania."Agricultural and Development Economics Division, The Food and Agriculture Organization of the United Nations.

Cazes, Sandrine, and Alena Nesporova. 2003. *Labour Markets in Transition: Balancing Flexibility and Security in Central and Eastern Europe.* Geneva: International Labor Organization.

Cieślik, Andrzej. 2005. "Regional Characteristics and the Location of Foreign Firms within Poland." *Applied Economics* 37:863–74.

Decressin, Jörg, and Antonio Fatás. 1995. "Regional Labor Market Dynamics in Europe." *European Economic Review* 39(December):1627–55.

Delteil, Violaine, Ariane Pailhe, and Dominique Redor, 2004. "Comparing Individual Wage Determinants in Western and Central Europe: On the Way to Convergence? The Cases of France and Hungary." *Journal of Comparative Economics* 32(3):482–99.

Drinkwater, Stephen. 2003a. "Go West? Assessing the Willingness to Move from Central and Eastern European Countries." Department of Economics, University of Surrey, UK. Processed.

———. 2003b. "Estimating the Willingness to Move within Great Britain: Importance and Implications." Department of Economics, University of Surrey, UK. Processed.

Duffy, Fiona, and Patrick Paul Walsh. 2001. "Individual Pay and Outside Options: Evidence from the Polish Labour Force Survey." IZA Discussion Papers 295, Institute for the Study of Labor (IZA).

Eichengreen, Barry. 1993. "Labor Markets and European Monetary Unification." In Paul R. Masson and Mark P. Taylor, eds., *Policy Issues in the Operation of Currency Unions*. Cambridge, UK: Cambridge Univ. Press.

———. 1998. "European Monetary Unification: A Tour d'Horizon." *Oxford Review of Economic Policy* 14(3)24–40.

Elhorst, J. Paul. 2003. "The Mystery of Regional Unemployment Differentials: Theoretical and Empirical Explanations." *Journal of Economic Surveys* 17(5):709–48.

Erbenova, Michaela. 1995. "Regional Unemployment Differentials and Labour Mobility: A Case Study of the Czech Republic." In OECD, *The Regional Dmension of Unemployment in Transition Countries.* Paris.

———. 1997. "Regional Labor Mobility, Wages, and Unemployment in the Czech Republic." *Prague Economic Papers* 6(1):53–74.

Faini, Riccardo, Giampaolo Galli, Pietro Gennari, and Fulvio Rossi. 1997. "An Empirical Puzzle: Falling Migration and Growing Unemployment Differentials among Italian Regions." *European Economic Review* 41:571–79.

Faini, Riccardo, and Venturini, Alessandra. 1996. "Migration and Growth: the Experience of Southern Europe." CEPR Discussion Paper No 964, Center for Economic Policy Research, London.

Farka_ová, Edita. 2002. "Regional Aspects of the Effect of Foreign Direct Investment." BIATEC Volume X, No. 6, National Bank of Slovakia.

Fazekas, Karoly. 2003. "Effects of Foreign Direct Investment on the Performance of Local Labour Markets—The Case of Hungary." Paper presented at the International Conference "Reinventing Regions in the Global Economy" organized by the Regiona1 Studies Association, April 12–15.

Feldman, Daniel C., and Mark C. Bolino. 1998. "Moving on Out: When are Employees Willing to Follow Their Organization During Corporate Relocation?" *Journal of Organizational Behavior* 19:275–88.

Feldmann, Horst. 2004. "How Flexible are Labour Markets in the EU Accession Countries Poland, Hungary and the Czech Republic?" *Comparative Economic Studies* 46(2):272–310.

———. 2005. "Labour Market Institutions and Labour Market Performance in Transition Countries." *Post-Communist Economies* 17(1):47–82.

Fidrmuc, Jan. 2004. "Migration and regional adjustment to asymmetric shocks in transition economies," *Journal of Comparative Economics*, Vol. 32 (2004): pp. 230–247.

———. 2005. "Labour Mobility During Transition: Evidence from the Czech Republic." CEPR Discussion Paper No. 5069, Centre for Economic Policy Research, London.

Fidrmuc, Jan, and P. Huber. 2003. "The Puzzle of Rising Regional Disparities and Falling Migration Rates during Transition." Austrian Institute for Economic Research. Processed.

———. 2004. "Regional and Individual Determinants of the Willingness to Migrate in the Czech Republic." Austrian Institute for Economic Research. Processed.

Förster, Michael, David Jesuit and Timothy Smeeding. 2003. "Regional Poverty and Income Inequality in Central and Eastern Europe: Evidence from the Luxembourg Income Study." UNU-WIDER Discussion Paper No. 2003/65, United Nations University, Helskinki.

Gacs, Vera, and Peter Huber. 2005. "Quantity Adjustments in the Regional Labour Markets of EU Candidate Countries." *Papers in Regional Science* 4:84.

Galuščák, Kamil, and Daniel Münich. 2002. "Microfoundations of the Wage Inflation in the Czech Republic." Processed.

Ghatak, Subrata, Alan Mulhern, and John Watson. 2004. "Inter-Regional Migration in Poland: A New Look."School of Economics, Kingston University, UK. Processed.

Hacker, R. Scott. 1999. "The Effect of Residential Crowding on Labor Productivity with Evidence form the Twilight of Polish Socialism." *Real Estate Economics* 27(1):135–67.

Hanson, S., and I. Johnston. 1985. "Gender Differences in Work-trip Length: Explanations and Implications." *Urban Geography* 6:193–219.

Hanson, S., and G. Pratt. 1995. *Gender, Work, and Space*. New York: Routledge.

Hazans, Mihails. 2003a. "Determinants of Inter-Regional Migration in the Baltic Countries." Paper prepared for the 43rd Congress of European Regional Science Association, Jyväskylä, Finland, August 27–30.

———. 2003b. "Potential Emigration of Latvian Labour Force after Joining the EU and its Impact on Latvian Labour Market.," University of Latvia. Processed.

———. 2004. "Does Commuting Reduce Wage Disparities?" *Growth and Change* 35(3):360–90.

Hegedus, Jozsef. 2004. "The Housing Market and Residential Regional Mobility in the 1990s: The Case of Hungary." In Károly Fazekas and Jenő Koltay, eds., *The Hungarian Labor Market 2004*. Budapest: Institute of Economics.

Herz, Bernhard, and Lukas Vogel. 2003. "Regional Convergence in Central and Eastern Europe: Evidence from a Decade of Transition." Diskussionspapier 13-03, Universität Bayreuth, Bayreuth.

Hildebrandt, A., and J. Wörz. 2004. "Determinants of Industrial Location Patterns in CEECs." WIIW Working Paper No. 32.

Huber, Peter. 2004. "Intra-national Labor Market Adjustment in the Candidate Countries." *Journal of Comparative Economics* 32:248–64.

———. 2005. "Inter-regional Mobility in the Accession Countries: A Comparison to EU-15 Member States." WIFO Working Paper No. 249.

Huitfeldt, Henrik. 2001. "Unemployment, Labour Market Programmes and Wage Determination: Evidence from the Czech and Slovak Republics." Department of Economics, Uppsala University, Sweden. Processed.

Iara, Anna, and Iulia Traistaru. 2004. "How Flexible Are Wages in EU Accession Countries?" *Labour Economics* 11(4):431–50.

Ioannides, Y., and L. Loury. 2004. "Job Information Networks, Neighborhood Effects, and Inequality." *Journal of Economic Literature* 42:1056–93.

Jackman, Richard, and Savvas Savouri. 1992. "Regional Migration in Britain: An Analysis of Gross Flows Using NHS Central Register Data." *Economic Journal* 102(415):1433–50.

Johnston-Anumonwo, I. 1992. "The Influence of Household Type on Gender Differences in Work Trip Distance." *The Professional Geographer* 44:161–92.

———. 1988. "The Journey to Work and Occupational Segregation." *Urban Geography* 9:138–54.

Kain, J.F. 1965. "The Effect of the Ghetto on the Distribution and Level of Nonwhite Employment in Urban Areas." *Proc. Soc. Stat. Sect.Am. Stat. Assoc.* 260–71.

Kertesi, G., and J. Kollo. 1997. "The Birth of the 'Wage Curve' in Hungary, 1989–1995." WDI Working Paper 104.

Korcelli, Piotr. 1990. "Poland." In Charles B. Nam, William J. Serow, and David F. Sly. *International Handbook on Internal Migration*. New Greenwood Press.

Kulu, Hill, and Francesco C. Billar. 2004. "Multilevel Analysis of Internal Migration in a Transition Country: The Case of Estonia." *Regional Studies* 38(6):679–96.

Layard, Richard, Stephen Nickell, and Richard Jackman, 1991. *Unemployment: Macroeconomic Peformance and the Labor Market.* London: Oxford University Press.

Liebig, Thomas, and Alfonso Sousa-Poza. 2004. "Migration, Self-Selection and Income Inequality: An International Analysis." *Kyklos* 57(1):125–46.

Lobatch, Andrei. 2004. "EU Membership and Growing Regional Disparities: Poland's Strategy Options to Optimise Structural Transfers from the Union." Paper presented at the Twelfth NISPAcee Annual Conference "Central and Eastern European Countries Inside and Outside the European Union: Avoiding a New Divide."

Madden, J., and L. Chiu. 1990. "The Wage Effects of Residential Location and Commuting Constraints on Employed Married Women." *Urban Studies* 27(33):353–69.

Mainardi, Stefano. 2004. "Regional Disparities and Migration: Linear and Switching Model Estimations for Poland." *Regional Studies* 38(7):767–81.

Mandic, Srna. 2001. "Residential Mobility versus 'In-Place' Adjustments in Slovenia: Viewpoint from a Society 'in Transition.'" *Housing Studies* 16(1):53–73.

Mauro, Paolo, Eswar Prasad, and Antonio Spilimbergo. 1999. *Perspectives on Regional Unemployment in Europe*. IMF Occasional Paper No. 177. Washington: The International Monetary Fund.

Mauro, Paolo, and Antonio Spilimbergo. 1999. "How Do the Skilled and Unskilled Respond to Regional Shocks? The Case of Spain." *IMF Staff Papers* 46(1):1–17.

Mayo, Stephen K., and James Stein. 1988. "Housing and labor market distortions in Poland: Linkages and Policy Implications." Policy Research Paper No. 361. Washington, D.C.: The World Bank.

Ministry of Construction and Regional Development of the Slovak Republic. 2003. *National Development Plan.* Bratislava: Ministry of Construction and Regional Development.

Ministry of Labour, Social Affairs and Family of the Slovak Republic, and European Commission—DG Employment and Social Affairs. 2001. *Joint Assessment of Employment Priorities in the Slovak Republic.* Bratislava.

McCormick, Barry, and Jacklin Wahba. 2004. "Migration and Mobility in the Egyptian Labour Market." Economic Research Forum Research Report 0401, Cairo.

McDonald, Frank, and Stephen Dearden. 2005. *European Economic Integration*. Fourth edition. Harlow, England: Prentice Hall Financial Times.

Mundell, Robert. 1961. "A Theory of Optimum Currency Areas." *American Economic Review* 51(4):657–65.

Nijkamp, Peter, and Jacques Poot. 2005. "The Last Word on the Wage Curve?" *Journal of Economic Surveys* 19(3):421–50.

Obstfeld, Maurice, and Giovanni Peri. 2000. "Regional Nonadjustment and Fiscal Policy: Lessons for EMU." In Gregory D. Hess and Eric Van Wincopp, eds., *Intranational Macroeconomics.* Cambridge: Cambridge University Press.

OECD. 1995. *The Regional Dimension of Unemployment in Transition Countries.* Paris.

———. 2004a. *OECD Economic Surveys: Slovak Republic.* Paris.

———. 2004b. *OECD Territorial Reviews: Czech Republic.* Paris.

———. 2004c. *OECD Economic Surveys: Czech Republic.* Paris.
———. 2005. "How Persistent Are Regional Disparities in Employment? The Role of Geographic Mobility." *OECD Employment Outlook.* Paris.
———. 2006. *OECD Economic Surveys: Chile.* Paris.
Pérez, G.J., and P. Rowland. 2004. "Regional Economic Policy in Case-studies from Four Countries." Colombia, Banco de Republica. Processed.
Perry, Guillermo E., Omar S. Arias, J. Humberto López, William F. Maloney, Luis Servén. 2006. *Poverty Reduction and Growth: Virtuous and Vicious Circles.* Washington, D.C.: The World Bank.
Perugini, Cristiano, and Marcello Signorelli. 2004 "Employment Performance and Convergence in the European Countries and Regions." *The European Journal of Comparative Economics* 1(2):243–78.
Pissarides, Christopher. 1992. "Loss of Skill During Unemployment and the Persistence of Employment Shocks." *Quarterly Journal of Economics* 107(4):1371–91.
Pissarides, Christopher A., and Ian McMaster. 1990. "Regional Migration, Wages and Unemployment: Empirical Evidence and Implications for Policy." *Oxford Economic Papers* 42(4):812–31.
Puga, Diego. 2002. "European Regional Policies in Light of Recent Location Theories." *Journal of Economic Geography* 2(4):373–406.
Renoy, Piet, Staffan Ivarsson, Olga van der Wusten-Gritsai, and Emco Meijer. 2004. *Undeclared Work in an Enlarged Union: An Analysis of Undeclared Work: An In-Depth Study of Specific Items.* Brussels: European Commission Directorate-General for Employment and Social Affairs.
Rees, Philip, and Marek Kupiszewski. 1999. *Internal Migration and Regional Population Dynamics in Europe: A Synthesis.* Strasbourg: Council of Europe Publishing.
Rutkowski, Jan, and Marcin Przybyla. 2002. "Poland: Regional Dimensions of Unemployment." In Bernard Funck and Lodovico Pizzati, eds., *Labor, Employment, and Social Policies in the EU Enlargement Process.* Washington, D.C.: The World Bank.
Sailer, Ulrike. 2001. "Residential Mobility During Transformation: Hungarian Cities in the 1990s." In Peter Meusburger and Heike Jons, editors, *Transformations in Hungary.* Heidelberg: Physica-Verlag.
Scarpetta, Stefano, and Andreas Wörgötter. 1995. "Introduction." In OECD, *The Regional Dmension of Unemployment in Transition Countries.* Paris.
Singell, L., and J. Lillydahl. 1986. "An Empirical Analysis of the Commute to Work Patterns of Males and Females in Two-Earner Households." *Urban Studies* 23(2):119–29.
Sjoberg, Orjan, and Tiit Tammaru. 1999. "Transitional Statistics: Internal Migration and Urban Growth in Post-Soviet Estonia." *Europe-Asia Studies* 51(5):821–42.
Soto, Raimundo, and Aristides Torche. 2004. "Spatial Inequality, Migration, and Economic Growth in Chile." *Cuadernos de Economia* 41(124):401–24.
Stierle, Michael H. 2004. "Conditions for a Contribution by the Structural Funds to Real Convergence of the Recently Acceded Member States." Processed.
Svejnar, Jan, 2002. "Assistance to the Transition Economies: Were There Alternatives?" OED Working Paper, World Bank Operations Evaluation Department, Washington, D.C.
van Dalen, Hendrik P., George Groenewold, and Jeannette J. Schoor. 2005. "Out of Africa: What Drives the Pressure to Emigrate?" *Journal of Population Economics* 18(4):741–78.

Vodopivec, Milan, Andreas Wörgötter and Dhushyanth Raju. 2005. "Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s." *Comparative Economic Studies* 47(4):615–51.

von Hagen, J., and I. Traistaru. 2004. "Macroeconomic Adjustment in the New EU Member States." Third ECB Central Banking Conference.

Vecernik, Jiri. 2001. "Labour Market Flexibility and Employment Security: Czech Republic." ILO Employment Paper No. 2001/27. Geneva: ILO.

Vandenbrande, Tom, Laura Coppin, Peter van der Hallen, Peter Ester, Didier Fourage, Anette Fasang, Sara Geerdes, and Klaus Schömann. 2006. *Mobility in Europe: Analysis of the 2005 Eurobarometer Survey on Geographical and Labour Market Mobility.* Dublin: European Foundation for the Improvement of Living and Working Conditions.

Wisniewski, Anna. 2004. "The Impact of Foreign Direct Investment on Regional Development in Poland." The Impact of European Integration and Enlargement on Regional Structural Change and Cohesion (EURECO) Work Package No. 4.

World Bank. 2002. *Slovak Republic: Living Standards, Employment, and Labor Market Study.* Washington, D.C.

———. 2004a. *Growth, Employment, and Living Standards in Poland.* Washington, D.C.

———. 2004b. *Poland: Regional Study.* Washington, D.C.

———. 2005a. *Growth, Poverty, and Inequality*: *Eastern Europe and the Former Soviet Union*. Washington, D.C.

———. 2005b. *Enhancing Job Opportunities: Eastern Europe and the Former Soviet Union*. Washington, D.C.

———. 2006. *EU8 Quarterly Economic Report.* Washington, D.C.

Eco-Audit

Environmental Benefits Statement

The World Bank is committed to preserving Endangered Forests and natural resources. We print World Bank Working Papers and Country Studies on 100 percent postconsumer recycled paper, processed chlorine free. The World Bank has formally agreed to follow the recommended standards for paper usage set by Green Press Initiative—a nonprofit program supporting publishers in using fiber that is not sourced from Endangered Forests. For more information, visit www.greenpressinitiative.org.

In 2006, the printing of these books on recycled paper saved the following:

Trees*	Solid Waste	Water	Net Greenhouse Gases	Total Energy
203	9,544	73,944	17,498	141 mil.
'40' in height and 6–8" in diameter	Pounds	Gallons	Pounds Co_2 Equivalent	BTUs

Internal Labor Mobility in Central Europe and the Baltic Region is part of the World Bank Working Paper series. These papers are published to communicate the results of the Bank's ongoing research and to stimulate public discussion.

Large regional disparities in labor market indicators exist in Central Europe and the Baltic region. Such disparities appear to be persistent over time indicating, in part, a lack of flexibility in the prevailing adjustment mechanisms. Internal labor mobility is often seen as an important instrument to reduce adjustment costs when other mechanisms fail.

Drawing from a variety of data sources and utilizing a common empirical framework and estimation strategy, this study identifies patterns and statistical profiles of geographical mobility. It finds internal migration to be generally low and highly concentrated among better-educated, young, and single workers. This suggests that migration is more likely to reinforce existing inequalities than to act as an equalizing phenomenon. By way of contrast, commuting flows have grown over time and are more responsive to regional economic differentials. The findings suggest the need for appropriate and country-tailored policy measures designed to increase the responsiveness of labor flows to market conditions.

World Bank Working Papers are available individually or on standing order. These are also available online through the World Bank e-Library (www.worldbank.org/elibrary).

THE WORLD BANK
1818 H Street, NW
Washington, DC 20433 USA
Telephone: 202 473-1000
Internet: www.worldbank.org
E-mail: feedback@worldbank.org

ISBN 0-8213-7090-1