Migration of Labor in Europe: Theory and Evidence*

James Anderson†

April 2011

Abstract

The paper studies the impact of migration policy liberalization on labor migration in the enlarged EU. Adopting a structural NEG approach, we attempt to assess the direction, size and dynamics of potential labor migration after the end of the 'transitional measures', which are restricting the relocation of workers. According to our simulation results, the liberalization of migration policy would induce additional 2 - 3 percent of the total EU workforce to change their country of location, with most of migrant workers relocating as expected from the East to the West. The average net migration rate is decreasing in the level of integration, and in Portugal and the UK the immigration of workers has even reverted to emigration at higher levels of integration, suggesting that from the economic point of view no regulatory policy responses are necessary to labor migration in the enlarged EU. These results for the CEE-8 suggest that the labor mobility restrictions imposed on workers from the Balkan Member States and the Balkan Candidate Countries are obsolete and should be removed with respect to achieving the objectives of the Europe 2020 Growth Strategy.

Keywords: Labor Migration, Romania.

JEL classification: F12.

1 Introduction

The paper studies the impact of migration policy liberalization on labor migration in Europe. In particular, we attempt to assess the direction, size and dynamics of potential labor migration after the end of the 'transitional measures', which are restricting the relocation of workers from the NMS.[1] The paper tries to answer the following policy-relevant questions: Will the liberalization

*The author acknowledges helpful comments from George Borjas and Thomas Straubhaar, as well as seminar participants at the Institute for labor Economics, University of London and European Data Centre for Work and Welfare. The author acknowledges financial support from the Research Grant 'International Labor Migration in a Globalizing Economy'. The author is solely responsible for the content of the paper.

†Institute for Labor Economics, University of London and European Data Centre for Work and Welfare. Correspondence Address: Institute for Labor Economics, University of London, Malet Street, WC1E 7HU London, UK.

[1]In this paper the CEE-8 accession countries are referred to as the new EU Member States (NMS): Poland, Czech Republic, Latvia, Lithuania, Slovenia, Estonia, Slovakia, Hungary.

of migration policy – the removal of 'transitional measures' – trigger labor migration in Europe?[2] If so, are there endogenous forces in the EU economies which not only induce but also reduce migration endogenously or are there regulatory policy responses necessary? What lessons from the CEE-8 experience can be learned for the Balkan Member States and the Balkan Candidate Countries?[3]

The questions about the direction, size and dynamics of potential labor migration in Europe have again sparked large political interest in context of the current economic and financial crisis. However, the context and assumptions around migration in Europe have changed significantly since the fall of the Wall. From the early nineties, when the centrally planned countries in Eastern Europe started to transform their economies to market oriented economies, to the current time, when most of the EU Member States face an economic shock - a global economic crisis - both migration push and pull forces have changed fundamentally (Kancs and Kielyte 2010).

There is a sizeable body of migration literature that attempts to predict the direction, size and dynamics of potential labor migration in Europe. The predictions of early migration studies, most of which were based on reduced-form migration models and extrapolations of previous migration experiences from the South, were rather high, predicting an emigration of 10.5% to 15% of the CEE's population (Straubhaar 1993). Confronting these predictions with the observed migration flows during the first two decades since the fall of the Wall, we note that only a tiny share of the CEE's population has emigrated to Western Europe (European Commission 2008, Kancs and Kielyte 2010). For example, the European Commission's (2008) report on the functioning of the 'transitional arrangements' set out in the 2004 Accession Treaty reports that very few citizens from the new EU Member States were actually moving to the old EU Member States (even to those OMs, which did not impose any restrictions to workers from the NMS). According to the report, the CEE-8 citizens represented less than 1% of the total working age population in all old EU Member States except Austria (1.4%) and Ireland (3.8%). Thus, the predictions of some quarters of 'floods of immigrants' arriving in the old EU Member States, a significant factor behind the labor market restrictions in the OMS, have turned out to be incorrect.

The huge discrepancy between the predicted and the observed labor migration flows in the EU is not surprizing, given that most of the early migration studies were based on reduced-form migration models, where ex-ante values of the key explanatory variables, such as wages, are determined a priori and fixed exogenously. In order to account for deficiencies of the reduced form approach to international labor migration, more recently, an increasing number of migration studies adopt a structural general equilibrium framework, which is based on the theory of the new economic

[2]In this paper EU-15 are referred to as the old EU Member States (OMS): Austria, Belgium, Finland, Greece, Luxembourg, Denmark, Spain, Netherlands, Germany, France, Portugal, Ireland, Italy, Sweden, United Kingdom.

[3]The Balkan-5 are referred to as the Balkan Member States (Bulgaria and Romania) and the Balkan Candidate Countries (Croatia, Macedonia and Montenegro).

geography (NEG), for studying the relationship between the factor and product market integration and labor migration (Kancs 2005; Kancs 2006, Kielyte and Kancs 2010). According to the NEG framework, migrants not only follow market potential, they also affect market potential. Hence, market access, wages and labor migration are mutually interdependent, implying that changes in one part of the economy will be offset through adjustments in others. Given that the NEG approach incorporates important general equilibrium feedback mechanisms around labor migration which, interacting with wages and market access, determine the equilibrium distribution of labor force across countries, it has been empirically more successful than the reduced form approach.

The present study follows Kancs (2005); Kancs (2006), Kielyte and Kancs (2010) and adopts a structural NEG approach for studying the direction, size and dynamics of potential labor migration in Europe. Our empirical findings predict a selective migration between the EU Member States in the post-transitionary period. According to our simulation results, the liberalization of migration policy would induce additional 1.80 - 2.98 percent of the total EU workforce to change their country of location, with most of migrant workers relocating as expected from the East to the West. These figures are considerably lower than reduced-form models' predictions, but they are in line with other studies based on the NEG framework, and empirical evidence. The observed empirical evidence suggests that, even in the absence of policy restrictions on international labor migration, the mobility of workers is rather low in Europe, despite sizeable and persistent disparities in wealth between countries.

The second important policy finding of our study is that the integration-induced relocation of workers seems to be a self-regulatory system, where migration arizes and comes to a halt endogenously. Starting from market integration, which reduces trade costs and factor reallocation costs, results in better market access, lower costs and higher factor rewards. Increasing relative wages in one country in turn attracts workers from other countries, which triggers new migration. Larger workforce in turn exerts downward pressure on wages, which discourages more workers to emigrate. When the driving forces of migration, such as relative net wages, are equalized across countries, the economically-driven labor migration comes to a halt. According to our simulation results, the average net migration rate is increasing in the level of integration, but the rate of increase is decreasing (from 1.80% to 0.25%). In Portugal and the United Kingdom the immigration of workers has even reverted to emigration at higher levels of integration. Hence, from the economic point of view, no regulatory policy responses are necessary to labor migration in Europe.

These results have important policy implications. After the fall of the Wall two decades ago, highly restrictive policy measures very introduced to 'protect' the old EU Member States' labor markets from workers from the East. With the enlargement in 2004, these restrictions were partially replaced by a complex set of 'transitional measures' with the aim to gradually liberalize policy restrictions on international labor mobility in Europe. The last restrictions on labor mobility from

the CEE-8 were removed in April 2011. However, labor mobility restrictions still apply to workers from the Balkan Member States and the Balkan Candidate Countries.

These results for the CEE-8 suggest that the restrictions imposed on workers from the Balkan-5 countries are obsolete and can be removed without being afraid of mass inflows of migrant workers. Moreover, as noted by the European Commission (2010), efficient allocation of workforce will contribute to achieving the objectives of the Europe 2020 Growth Strategy. Therefore, the reduction of international labor mobility through policy interventions, as currently practiced in Europe, is both obsolete and counterproductive. Obsolete, because the international mobility of workers is rather low in Europe, and it would come to a halt on itself. Counterproductive, because the transitional labor market restrictions distort the equilibrium allocation of workforce across countries and industries which, as shown by Borjas (2001), reduces the welfare and growth in the long run.

2 Migration policy in the EU

Growing market integration in the EU is one of the main forces behind increasing factor mobility, which contributes toward more efficient factor allocation and factor price equalization between countries. Given that the liberalization of migration policy in Europe could have strong implications on international labor migration, the Accession Treaties of 2004 and 2007 allowed for the introduction of 'transitional measures' on the movement of workers from the NMS. The 'transitional measures' scheme gave the old EU Member States the freedom of choice in May 2006, and again in May 2009, whether they would open up their labor markets to workers from the NMS or keep restrictions in place. Different old EU Member States introduced different schemas of 'transitional restrictions' lasting up to '2+3+2-years (from May 2004 until maximum April 2011), which resulted in a highly complex and heterogeneous set of international labor migration policy instruments within the EU.[4]

The migration policies chosen by different OMS can be classified into four categories: liberal, semi-liberal, semi-restrictive and restrictive. Liberal migration policy, by keeping labor markets open, was chosen by Ireland, Sweden and the United Kingdom. Ireland was one of three countries which immediately opened its labor markets to all new member states in 2004 with the CEE-8 enlargement. An influx of an estimated 200,000 workers from Central Europe came to Ireland between 2004 and 2006. However, evidence suggests that a significant proportion of these labor migrants have since already left Ireland due to the country's severe economic downturn in 2008-2009, particularly in its construction industry, where many of the workers were employed (Kancs

[4]For workers from the CEE-8 all 'transitional restrictions' ended on 30 April 2011. However, labor mobility restrictions still apply to workers from the Balkan Member States and the Balkan Candidate Countries.

and Kielyte 2010). Also Sweden applied no restrictions to workers from the new EU member states. The United Kingdom was, together with Sweden and Ireland, the third country not to impose transitional measures on CEE-8 workers in the first place. Its open-borders policy led to an estimated labor immigration of 450,000 to 600,000 within the two-and-a-half years following the May 2004 enlargement (Kancs and Kielyte 2010).

Semi-liberal migration policy, by removing restrictions by 2006, was chosen by Finland, Greece, Italy, Portugal and Spain. Finland lifted all restrictions on workers from the eight 2004 entrants on 1 May 2006. Previously, citizens of the new member states could get a job without a work permit only if the employment office decided there was no-one else available on the Finnish labor market. Greece dropped all restrictions on 2004 entrants as of 1 May 2006. In July 2006, Italy took the decision to end the transitory measures. Portugal and Spain dropped all restrictions from 1 May 2006. Between 2004 and 2006, Portugal imposed a 6,500 annual limit on immigrant workers of all nationalities and allowed immigration from 2006.

Semi-restrictive migration policy, by lifting the restrictions gradually between 2006 and 2009, was chosen by Belgium, Denmark, France, Luxembourg and the Netherlands. Belgium decided to open its labor market to citizens of the eight East European EU countries of the 2004 enlargement from 1 May 2009. A few months beforehand, the country made it easier to get work permits in areas of the economy where jobs are hard to fill. Denmark decided to open its labor market to citizens of the ten East European EU countries from 1 May 2009. Denmark was the 12th country among the EU-15 to abolish such restrictions. In early March 2006, France decided on a "step-by-step controlled lifting of restrictions" on free movement of labor from the CEE-8 countries. The partial opening of the French labor market started with sectors where labor was in short supply (e.g. social and health care, hotels and catering, transport and construction). On 1 July 2008 – a year earlier than planned – France opened its labor market to workers from the CEE-8. In November 2007, Luxembourg lifted restrictions for workers from the 2004 accession countries. As a first step to slowly phase out restrictions, the Netherlands opened, on 17 September 2006, 16 sectors of its labor market to workers from the CEE-8 states. The decision concerned sectors where workers are scarce or where there had been a high percentage of illegal workers. The Dutch government lifted all restrictions on 1 May 2007 for workers from the 2004 accession countries.

Restrictive migration policy, by keeping the restrictions in place until April 2011, was chosen by Austria and Germany. Citing "pessimistic" labor market forecasts, Austria along with Germany is the only country which applied the restrictions until 2011. Workers from the 10 former communist states have to apply for work permits. There were also curbs on employers posting workers to Austria in certain sectors. Germany originally decided to continue the transition period for CEE-8 workers until 2009. However, Germany issued 500,000 of work permits between 2004 and 2006. On 25 April 2008 Germany announced it aimed to maintain barriers for CEE workers until 2011.

3 Basic Model

The present paper develops a New Economic Geography model with labor market rigidities based on efficiency wages (and thus a wage curve). The model is constructed to discuss how disparities of regional labor markets endogenously arise. The New Economic Geography part of this model is depicted from Fujita et al. (1999). Their household model is extended to disutility of work effort which is basic for modeling efficiency wages. Efficiency wages are based on the approach of Shapiro and Stiglitz (1984). The goods market in turn is based on Fujita et al. (1999). However, the assumption of full employment is dropped and unemployment results as a consequence of efficiency wages.

There exist two regions, r and s, as well as two sectors, agriculture A and manufacturing M. Agriculture is characterized by perfect competition on both, goods and labor market. Manufacturing instead is characterized by monopolistic competition on the goods market and efficiency wages on the labor market. Labor is inter-sectoral immobile but labor in manufacturing is interregional mobile. Labor in agriculture is interregional immobile.

3.1 Households

Households receive utility by the consumption of agricultural goods C_A and by the consumption of manufacturing goods. C_M represents a composite index of manufacturing goods. Utility is lowered by work effort e.[5]

$$U = C_M^{\mu} C_A^{1-\mu} - e \tag{1}$$

The composite index of manufacturing goods is a CES utility function:

$$C_M = \left[\int_0^m C_i^{\frac{\theta-1}{\theta}} di \right]^{\frac{\theta}{\theta-1}} \tag{2}$$

The number of firms is given by m and the elasticity of substitution between the varieties of the manufacturing goods is $\theta > 1$. Households maximize their utility in two stages. They decide upon the optimum division of their income on agricultural and manufacturing goods. In addition they decide upon the optimum composition of the varieties of the manufacturing good. The budget constraint of household j is:

$$GC_{Mj} + P_A C_{Aj} = I_j \tag{3}$$

[5]This utility function can be extended to cover congestion costs by multiplying it with a congestion costs factor H.

Household j uses all of his income I_j for consumption of agricultural goods C_A at price $P_A \equiv 1$ and for consumption of the composite index of manufacturing goods C_M at price index G. Due to the standardization $P_A \equiv 1$, the prices of the manufacturing goods (and all wages) are measured relative to agricultural prices. Inserting the budget constraint into the utility function delivers:

$$U_j = C_{Mj}^{\mu} \left(I_j - GC_{Mj}\right)^{1-\mu} - e \tag{4}$$

Utility maximization ($\partial U_j / \partial C_{Mj} = 0$) leads to the consumption expenditure shares of agricultural and manufacturing goods in income. Note that the result of the utility maximization is independent of work effort:

$$C_{Mj} = \mu \frac{I_j}{G} \tag{5}$$

$$C_{Aj} = (1-\mu) I_j \tag{6}$$

The optimum division of expenditures for manufacturing goods on the individual varieties results from utility maximization over the varieties. This is equal to minimizing the expenditures for the varieties (Shepards Lemma):

$$min \int_0^m P_i C_i di \; s.t. \; \left[\int_0^m C_i^{\frac{\theta-1}{\theta}} di\right]^{\frac{\theta}{\theta-1}} = C_M \tag{7}$$

This leads to the CES manufacturing price index G:

$$G = \left[\int_0^m P_i^{1-\theta} di\right]^{\frac{1}{1-\theta}} \tag{8}$$

In the two-region-case with identical firms and iceberg transport costs $\tau \geq 1$ this leads to the manufacturing goods price index G_r in region r:

$$G_r = \left[m_r P_r^{1-\theta} + m_s (\tau P_s)^{1-\theta}\right]^{\frac{1}{1-\theta}} \tag{9}$$

whereas m_r and m_s represent the number of firms (=varieties) in the corresponding region. The demand for variety i by household j follows from minimizing expenditures for the varieties:

$$C_{ij} = \left(\frac{P_i}{G}\right)^{-\theta} C_{Mj} = \left(\frac{P_i}{G}\right)^{-\theta} \mu \frac{I_j}{P} \tag{10}$$

	Description
C_A	consumption of agricultural goods
C_M	composite index of manufacturing goods
C_i	consumption of manufacturing good i
e	disutility of work effort
G	CES manufacturing price index
I	income
$L_{A,M}$	agricultural/manufacturing employees
M	difference in expected life-time utilities
m	number of manufacturing firms (varieties)
$N_{A,M}$	agricultural/manufacturing labor force
P_A	price of agricultural goods
P_i	price of manufacturing good i
$P_t(i,j)$	transition probability from status i to status j at time t
q_i	manufacturing output of firm i
$()_{r,s}$	regions r and s
s	additional labor input due to shirking
U_j	utility of household j
U^{ns}, U^s, U^u	utility of (non-)shirking employees / unemployed
$U_{r,s}$	unemployment rate in region r (s)
$v(w)$	utility resulting from the wage
V^{ns}, V^s, V^u	expected life-time utility of (non-)shirking employees / unemployed
w	wage rate
β	fix labor input
$1-\gamma$	detection probability of shirking
δ	endogenous job creation rate
θ	elasticity of substitution between manufacturing varieties
λ	share of manufacturing employees in region r
μ	expenditure share of manufacturing goods
π	yield/profit
ρ	discount rate of utility
τ	transport costs
ϕ	variable labor input
ψ	exogenous job destruction rate

Table 1: List of Variables and Parameters

3.2 Labor Market

The labor market is modeled within the efficiency wage framework of Shapiro and Stiglitz (1984). Here the derivation of their wage curve is based on Zenou and Smith (1995).[6] Only the derivation of the wage curve for region r is presented. The wage curve for region s follows analogously. Employees (which are equal to households) receive utility $v(w_r)$ through the wage w_r in region r, which is equal to the household income I_j. The income of unemployed households is zero. Households suffer from disutility of work effort e, analogous to the utility function (1):

$$v(w_r) = C_M^{\mu} C_A^{1-\mu} \tag{11}$$

Thus, the term $v(w_r)$ is only a means to abbreviate the derivation of the wage curve. Due to disutility of work effort, employees have an incentive to shirk and hence to avoid work effort. The utility of a non-shirking employee in region r is $U_r^{ns} = v(w) - e$, the utility of a shirking employee is $U_r^s = v(w)$ and unemployed do not receive any utility $U_r^u = 0$. The employment status of the households are subject to a time-homogenous Markov process with status 0 for unemployed and status 1 for employed. The transition probabilities $P_t(i,j)$ at time t depend on the current status, the endogenous job generation rate δ_r, the exogenous job destruction rate ψ and the detection probability of shirking $1-\gamma$.[7] The transition probabilities of non-shirking and shirking employees are then described by (see Zenou and Smith (1995) for a detailed derivation of this result):

$$P_{t,r}^{ns}(0,1) = \frac{\delta_r}{\psi + \delta_r} - \frac{\delta_r}{\psi + \delta_r} e^{-t(\delta_r + \psi)} \tag{12}$$

$$P_{t,r}^{ns}(1,1) = \frac{\delta_r}{\psi + \delta_r} - \frac{\psi}{\psi + \delta_r} e^{-t(\delta_r + \psi)} \tag{13}$$

$$P_{t,r}^{s}(0,1) = \frac{\delta_r}{\psi + \delta_r + 1 - \gamma} - \frac{\delta_r + 1 - \gamma}{\psi + \delta_r + 1 - \gamma} e^{-t(\delta_r + \psi + 1 - \gamma)} \tag{14}$$

$$P_{t,r}^{s}(1,1) = \frac{\delta_r}{\psi + \delta_r + 1 - \gamma} - \frac{\psi + 1 - \gamma}{\psi + \delta_r + 1 - \gamma} e^{-t(\delta_r + \psi + 1 - \gamma)} \tag{15}$$

The parameter ρ is the discount rate of utility. The lifetime utilities of shirking and non-shirking employees are then derived similar to Zenou and Smith (1995):

[6] Zenou and Smith (1995) construct a two-city-model with intra- and inter-city migration. They derive the Shapiro and Stiglitz (1984) efficiency wage model by using Markov processes to model the transitions from and to unemployment. For the purpose of the present model the inter-city migration is adopted to the two-region case.

[7] Those employees who are detected shirking at work are laid off.

$$
\begin{aligned}
V_r^{ns} &= \int_0^\infty \left[P_t^{ns}(1,0)U_r^u + P_t^{ns}(1,1)U_r^{ns}\right] e^{-\rho t} dt \\
&= \frac{(\delta_r + \rho)U_r^{ns} + \psi U_r^u}{\rho(\delta_r + \psi + \rho)} \\
&= \frac{(\delta_r + \rho)(v(w_r) - e)}{\rho(\delta_r + \psi + \rho)} \qquad (16) \\
V_r^s &= \int_0^\infty \left[P_t^s(1,0)U_r^u + P_t^s(1,1)U_r^s\right] e^{-\rho t} dt \\
&= \frac{(\delta_r + \rho)U_r^s + (\psi + 1 - \gamma)U_r^u}{\rho(\delta_r + \psi + \rho + 1 - \gamma)} \\
&= \frac{(\delta_r + \rho)(v(w_r))}{\rho(\delta_r + \psi + \rho + 1 - \gamma)} \qquad (17)
\end{aligned}
$$

The labor market equilibrium is given by two conditions. First, employers pay efficiency wages to prevent shirking at the margin. Therefore the wages are set at the level required to equalize utilities of shirking and non-shirking employees ($V_r^{ns} = V_r^s$):

$$
v(w_r) = e\frac{\rho + \psi + \delta_r + 1 - \gamma}{1 - \gamma} \qquad (18)
$$

Second, in equilibrium the inflow to unemployment ψL_{Mr} is equal to the outflow of unemployment $\delta(N_{Mr} - L_{Mr})$ (where L_{Mr} is the number of manufacturing employees and N_{Mr} is the manufacturing labor force in region r). Therefore the endogenous rate of job creation is given by:

$$
\delta_r = \psi L_{Mr}/(N_{Mr} - L_{Mr}) \qquad (19)
$$

Taking into account the definition for $v(w_r)$ and the definition of the unemployment rate $U_r = L_{Mr}/(N_{Mr} - L_{Mr})$ delivers the wage curve for region r (the wage curve for region s is constructed in the same way).

$$
w_r = \frac{G_r^\mu}{K} e \left[1 + \frac{\rho}{1 - \gamma} + \frac{\psi}{(1 - \gamma)U_r}\right] \text{ where } K = \left(\frac{1 - \mu}{\mu}\right)^{1-\mu} \mu \qquad (20)
$$

Equation (20) directly links the wage to the unemployment rate and represents the wage curve resulting from efficiency wages. It represents the wage firms pay in order to prevent shirking at the margin.

Now, migration takes place. Individuals who migrate are unemployed in the immigration-region at first, due to search unemployment. An individual decides to migrate when her expected

life-time utility as an unemployed is larger abroad than in the current status at home. However, to monitor whether migration takes place it is sufficient to compare expected life-time utilities of unemployed in both regions. The reason is that the expected life-time utility of employees is always larger than that of unemployed: $V_r^{ns} > V_r^u$. Therefore, migration takes place when $V_r^u < V_s^u$. This is true as long as we are interested in whether someone migrates instead of who (employees or unemployed) migrates. For observing migration we therefore compare expected life-time utilities of unemployed in both regions. The expected life-time utility of an unemployed in region r is given by:[8]

$$\begin{aligned} V_r^u &= \int_0^\infty \left[P_t^{ns}(0,0)U_r^u + P_t^{ns}(0,1)U_r^{ns}\right] e^{-\rho t} dt \\ &= \frac{\delta_r U_r^{ns} + (\psi+\rho)U_r^u}{\rho(\delta_r+\psi+\rho)} \\ &= \frac{\delta_r(v(w_r)-e)}{\rho(\delta_r+\psi+\rho)} \end{aligned} \tag{21}$$

Taking account of the definition for $v(w_r)$ delivers:

$$\rho V_r^u = \frac{\delta_r}{\rho+\psi+\delta_r}\left[w_r\frac{K}{G_r^\mu} - e\right] \tag{22}$$

Emigration (immigration) takes place when the expected life-time utility of unemployed in the neighboring region is larger (lower) than the expected life-time utility of unemployed in the home region.

3.3 Goods Market

The goods market is based on the core-periphery model of Fujita et al. (1999) and is separated into agriculture and manufacturing. The agricultural sector produces a homogeneous good under perfect competition, and trade between regions is free and costless, i.e. a single price results. The labor market of the agricultural sector is characterized by perfect competition as well, leading to full employment. Labor input L_A and output in agriculture C_A are linked through the production function $C_A = L_A$. Due to marginal productivity payment in the agricultural labor market, the price of agricultural goods is equal to 1: $P_A = \partial C_A/\partial L_A = w_A = 1$. Prices and wages in agriculture are fixed to 1 and serve as reference for prices and wages in manufacturing.

Firms in manufacturing instead produce under increasing returns to scale and monopolistic

[8] See Zenou and Smith (1995).

competition. There is trade of manufacturing goods at iceberg transport costs τ. The production function in manufacturing is:

$$L_{Mi} = \beta + \phi q_i + s_i \tag{23}$$

For production firm i needs a fixed labor input β, a variable labor input ϕ per unit of output q_i and an additional labor input s_i due to shirking employees. Labor demand L_{Mi} of firm i is the sum of these three components. Due to efficiency wages there is no shirking and hence no additional labor input is needed: $s_i = 0$. Due to love for variety no combination of firms exists producing the same variety. The yield of firm i is given by:

$$\pi_i = P_i q_i - w_r(\beta + \phi q_i) \tag{24}$$

Firms maximize their profit through prices and ignore their influence on the price index G. This leads to the price setting rule for the regional price P_r which is identical for all firms of a region (due to identical wages within a region and due to identical firms):

$$\frac{\partial \pi_i}{\partial P_i} = 0 \Rightarrow P_r = \frac{\theta}{\theta - 1} w_r \phi \tag{25}$$

The number of firms is endogenous. New firms enter the market until the profits decrease to zero (zero-profit condition):

$$\pi_i = \frac{\theta}{\theta - 1} w_r \phi q_i - w_r(\beta \frac{\theta - 1}{\theta} \phi q_i) = 0 \Rightarrow 0 = w_r \left(\frac{\phi q_i}{\theta - 1} - \beta \right) \tag{26}$$

Then production and employment of a firm in equilibrium are given by:

$$q_i = \frac{\beta(\theta - 1)}{\phi} \tag{27}$$

$$L_{Mi} = \beta + \phi \frac{\beta(\theta - 1)}{\phi} = \beta\theta \tag{28}$$

Production and employment per firm in equilibrium are constant and equal for all firms irrespective of their region. This leads to the number of firms in a region:

$$m_r = L_{Mr}/L_{Mi} = L_{Mr}/(\beta\theta) \tag{29}$$

The labor input per unit of output is standardized to $\phi \equiv (\theta - 1)/\theta$, so that price and production reduce to:

$$P_r = w_r \tag{30}$$

$$q_i = \theta\beta = L_{Mi} \tag{31}$$

The fix labor input is standardized to $\beta \equiv \mu/\theta$. Then the number of firms (=varieties) in a region as well as the production of a firm are given by:

$$m_r = L_{Mr}/\mu \tag{32}$$

$$q_i = L_{Mi} = \mu \tag{33}$$

In equilibrium the production of a firm is equal to the sum of regional demand for the variety of the firm and import demand of the neighboring region for the firms variety (taking into account iceberg transport costs τ).[9]

$$q_i = \mu I_r P_r^{-\theta} G_r^{\theta-1} + \mu I_s (\tau P_r)^{-\theta} G_s^{\theta-1} \tau \tag{34}$$

$$\Rightarrow w_r = \left[I_r G_r^{\theta-1} + I_s G_s^{\theta-1} \tau^{1-\theta} \right]^{\frac{1}{\theta}} \tag{35}$$

The latter equation represents the goods market equilibrium in form of a price setting function. It represents the wage at which the condition of zero profits is fulfilled and no firms enter or leave the market. For lower wages, the profit of an additional firm is greater than zero so that new firms enter the market. This results in increasing employment, decreasing unemployment and increasing shirking. To prevent shirking, firms increase wages (wage curve). This process continues until the wage fulfilling the zero-profit condition is equal to the wage preventing shirking.

4 Equilibrium and Migration

The simultaneous equilibrium in both regions is defined by the price indexes, price setting functions, incomes and wage curves of both regions (only equations for region r are presented, equations for region s are constructed analogous):

[9] If one unit of the manufacturing good is transfered to the neighboring region, only $1/\tau$ units arrive. Therefore τ units have to be sent when 1 unit shall arrive.

$$G_r = \left[\frac{1}{\mu}\left(L_{Mr} w_r^{1-\theta} + L_{Ms}(\tau w_s)^{1-\theta}\right)\right]^{\frac{1}{1-\theta}} \tag{36}$$

$$w_r = \left[I_r G_r^{\theta-1} + I_s G_s^{\theta-1} \tau^{1-\theta}\right]^{\frac{1}{\theta}} \tag{37}$$

$$I_r = w_r L_{Mr} + L_{Ar} \tag{38}$$

$$w_r = \frac{G_r^{\mu}}{K} e \left[1 + \frac{\rho}{1-\gamma} + \frac{\psi}{(1-\gamma)U_r}\right] \tag{39}$$

From (36), it follows that the region with the larger number of manufacturing employees has a lower price index. This is because a larger number of manufacturing employees results in a larger number of varieties produced, increasing competition. Then the demand for any individual variety is lower, its price and corresponding revenues decrease, leading to a lower price index. Furthermore transport costs are lower in the agglomeration, which further reduces the price index in the agglomeration.

The price setting equation (37)[10] represents the wage (=price) at which firms reach their break-even point (i.e. where profits are zero). The higher incomes and prices and the lower transport costs are, the higher is this wage. Regions with a higher income have a higher purchasing power and the break-even point of firms lies at a higher wage. An increase of income in a region leads to a lower or higher increase of employment, depending on the wage elasticity of labor supply. When the increase in employment is larger, centripetal forces dominate: A region that once manages to gain a higher income will be able to use this advantage for attracting new firms, income and demand, enforcing an agglomeration process. This process endogenously leads to agglomeration and regional disparities.

The region with the larger number of manufacturing employees thus has higher nominal wages (backward linkage) so that this region is more attractive for firms due to its higher purchasing power. This region is further characterized by a larger number of varieties and thus a lower price index and is therefore more attractive for immigration (forward linkage). These forward and backward linkages establish the centripetal forces leading to endogenous agglomeration. These are opposed to centrifugal forces resulting from the demand by the agricultural employees.

Equation (39) represents the wage curve, which is the extension of this paper to the core-periphery model. The wage curve is the link between employment and wages, leading to unemployment. It represents the wage set by firms to prevent shirking.

For a compact illustration of the model the labor force (as a sum of agricultural and manu-

[10] This equation is labeled "wage equation" by Fujita et al. (1999).

facturing labor force) is standardized to one. This labor force is separated into agriculture (N_A) and manufacturing (N_M) according to the expenditure shares of agricultural and manufacturing goods in income. The agricultural labor force is equal in both region whereas the labor force in manufacturing is divided between the regions according to λ. Due to full employment in agriculture the corresponding labor force is equal to employment in both regions ($N_{Ar} = L_{Ar}$ and $N_{As} = L_{As}$).

$$L_{Ar} = \frac{1-\mu}{2} \tag{40}$$

$$L_{As} = \frac{1-\mu}{2} \tag{41}$$

$$N_{Mr} = \mu\lambda \tag{42}$$

$$N_{Ms} = \mu(1-\lambda) \tag{43}$$

The simultaneous equilibrium in the short term depends on the exogenous parameters: disutiliy of work effort (e), probability to observe shirking ($1-\gamma$), job destruction rate (ψ), share of expenditures for manufacturing (μ), elasticity of substitution between manufacturing goods varieties (θ) and discount rate (ρ). The model cannot be solved analytically but rather numerically, which is standard practice in New Economic Geography.

In the long term unemployed are allowed to migrate between the regions. Unemployed compare their expected utility in both regions and decide to migrate when their utility is higher in the neighboring region. Their utility depends on their real wages[11] and chances to find employment.[12] The agglomeration forces are similar to Fujita et al. (1999). Due to the wage curve, higher real wages in a region are always accompanied by lower unemployment in that region compared to the neighboring region. Migration behavior (expressed as the change in λ) is therefore sufficiently defined by:[13]

[11] The real wage in region r is: $w_r \frac{K}{G_r^{\mu}}$

[12] The chance to find employment depends on the endogenous job creation rate and thus directly depends on the unemployment rate.

[13] This definition of migration behavior is motivated by optimal migration decisions based on static expectations on the differences in real wages, unemployment and congestion costs between both regions (Baldwin et al.; 2003, Appendix 2.B.4). It further extends the underlying logic of the basic efficiency wage model to the migration-case: In the basic model the equilibrium is reached when the expected life-time utilities of shirking and non-shirking employees are equal. Analogously the long-term equilibrium is reached when the expected life-time utilities of unemployed in both regions are equal.

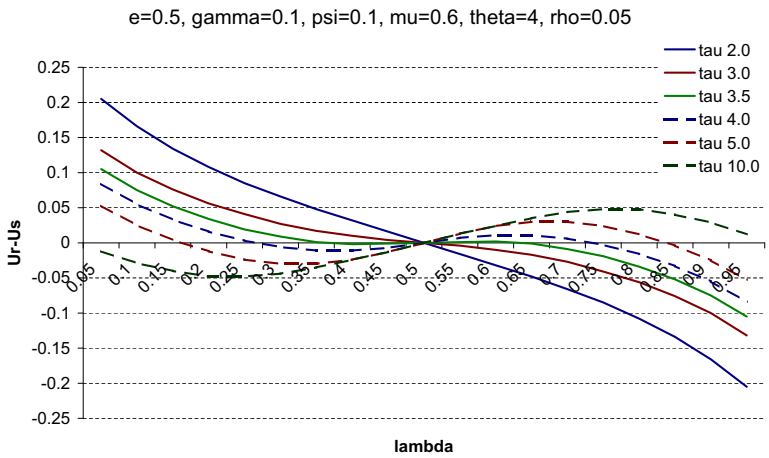

Figure 1: Equilibria and Migration

$$\begin{aligned}
\dot{\lambda} > 0 \text{ for } \delta_r > \delta_s \text{ or } w_r \frac{K}{G_r^\mu} > w_s \frac{K}{G_s^\mu} \\
\dot{\lambda} = 0 \text{ for } \delta_r = \delta_s \text{ or } w_r \frac{K}{G_r^\mu} = w_r \frac{K}{G_s^\mu} \\
\dot{\lambda} < 0 \text{ for } \delta_r < \delta_s \text{ or } w_r \frac{K}{G_r^\mu} < w_r \frac{K}{G_s^\mu}
\end{aligned} \tag{44}$$

In case of symmetry ($\lambda = 0.5$) there is no migration since — due to symmetry — the endogenous variables are equal in both regions. When there is no symmetry ($\lambda \neq 0.5$), the endogenous variables can differ between both regions and migration might occur depending on these differences. For any given λ, a short term equilibrium exists. However, if the utility of unemployed differs between the regions in the short term equilibrium, unemployed migrate leading to a new short term equilibrium. A long term equilibrium results when the utility of unemployed is equal in both regions so that no further migration occurs. For zero congestion costs, migration takes place from the region with the higher to the region with the lower unemployment rate. The difference in unemployment rates in the short term equilibrium, depending on λ, is displayed for different transport costs in Figure 1 (for the parameters $e = 0.5$, $\gamma = 0.1$, $\psi = 0.1$, $\mu = 0.6$, $\theta = 4$, $\rho = 0.05$).

Depending on transport costs τ, different situations result. For low transport costs the unem-

ployment rate is always lower in the larger region (in the agglomeration). A marginal advantage of a region (compared to the other region) then leads to a self enforcing agglomeration process until full agglomeration is reached. The symmetric equilibrium at $\lambda = 0.5$ is instable in this case. For high transport costs the unemployment rate is always higher in the larger region so that the system returns to the symmetrical equilibrium at $\lambda = 0.5$ for initial λ. For medium transport costs, two additional equilibria (i.e. equal unemployment rates in both regions) result - in this case the symmetrical equilibrium is stable as is the equilibrium with full agglomeration. The additional equilibria then serve as thresholds that have to be crossed for the agglomeration process to be stable (i.e. to reach full agglomeration starting from symmetry).

5 Simulating integration-induced migration in the EU

5.1 Baseline equilibrium

Empirical implementation of the economic geography model requires two types of data: a cross-section of both dependent and independent variables, and numerical values of model's parameters. Endowments with the immobile factor (land), sectoral expenditure shares, and base year endowments with the mobile factor (labor) are drawn from the Eurostat. The structural model parameters (α and σ) are estimated in Kancs (2010), which we employ for the purpose of the present study.

Solving the economic geography model empirically, we obtain base year equilibrium values for all endogenous variables, such as prices, manufacturing output, and wages for each country. The replication of the base year data in the model turns out to be a non-trivial challenge, because in the data both channels of labor market adjustment are present: the price (wage) channel and the quantity (migration) channel. In the enlarged EU we observe both sizeable wage differences between countries and international labor migration. In order to replicate this in the model, one needs to attribute part of the adjustment to the price channel, and part to the quantity channel. This is not straightforward, however, because in reality (and in the data) part of cross-country wage differences is due to migration costs, and part of international migration is not economically-motivated, e.g. family reunification, refugees and education. On the other hand, not all international labor migration taking place in the enlarged EU is recorded in the data, e.g. illegal migration.

In order to deal with these issues, we proceed as follows. First, we calculate market access by employing data for international trade costs (which is proxied by trade freeness, see Figures 1 and 2), country share of labor force in the base year, and the manufacturing price index. Using this measure of country market access and Eurostat (2009) for international migration in the base

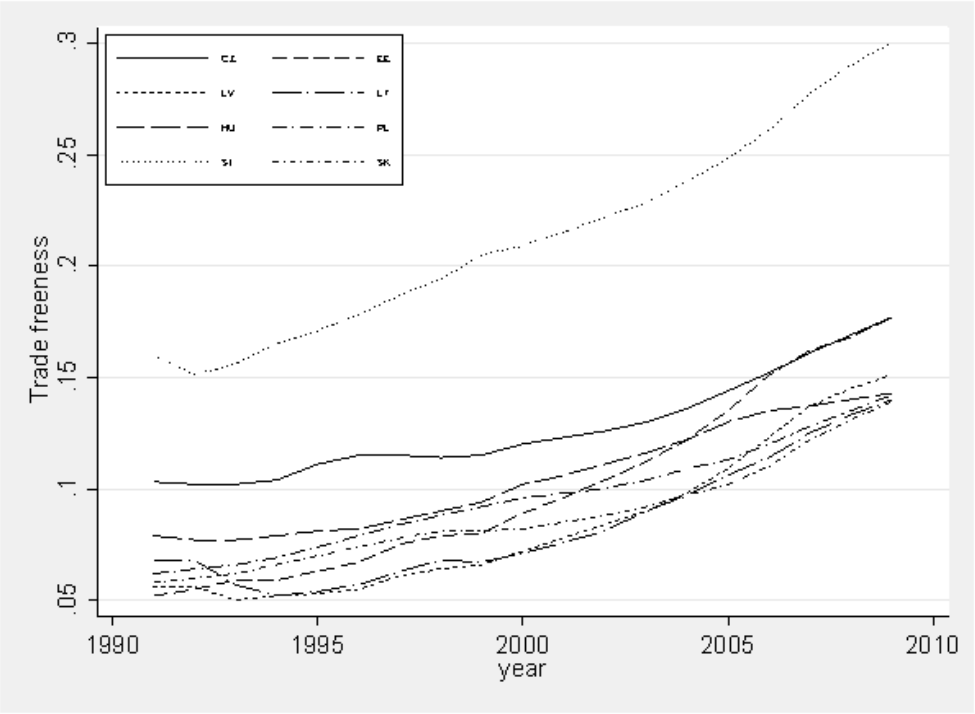

Figure 2: Trade freeness in CEE-8, 1991-2009

year, we solve the model for equilibrium wage differences between countries. The model-predicted international wage differences are systematically lower than the base year data for the enlarged EU suggests. These differences are, among others, because in the model we have not accounted for migrations costs yet. In order to account for international migrations costs, we associate the differences between the model-predicted and base year data wages to international migration costs. This allows us to replicate the base run data in the model, while allowing for both channels of labor market adjustment: the price (wage) channel and the quantity (migration) channel.

Further, we make the following assumptions in the simulation analysis: (i) only economically-driven migration is present; (ii) no illegal migration is possible; and (iii) migration costs between countries do not change from the base year level.

5.2 Integration-induced migration in the EU

The factor and product market integration in the EU is modeled as declining migration costs. Reliable estimates of migration cost changes related to future factor and product market integration in the EU are not available in the literature yet. Therefore, in order to overcome this data limitation, we construct several hypothetical scenarios, which help us to understand what type of

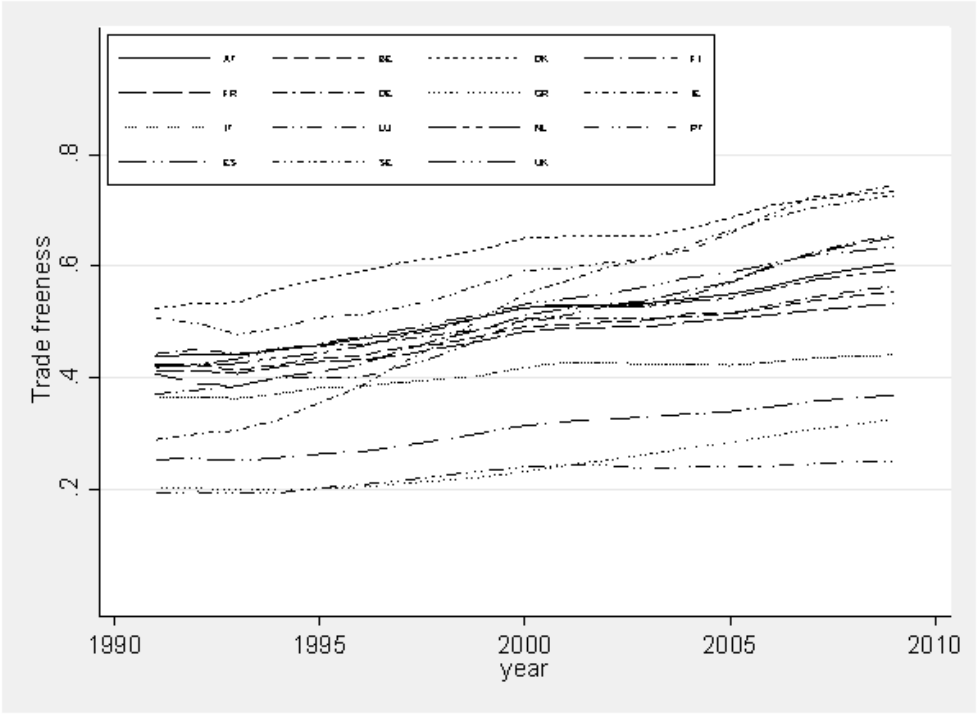

Figure 3: Trade freeness in EU-15, 1991-2009

labor market effects could be expected from further factor and product market integration in the enlarged EU.

In order to simulate market integration in the enlarged EU, and to assess the integration-induced international labor migration flows, we exogenously reduce migration costs in 10% steps up to 30% of their base year values, and solve the model for a new inter-regional equilibrium. The net migration of labor is calculated as a difference in the workforce between the base year and the respective scenario results, where negative values stand for emigration of country r, and positive values stand for migration to country r. Migration rate is obtained by normalizing the results by the total labor force.

Table 1 reports simulation results for three different levels of integration in the enlarged EU. Columns 2-4 report the predicted migration rate as a percentage of country's initial endowment with mobile workers. Considering the estimates reported in Table 1, we note that a symmetric integration shock results in substantial differences in the net migration rate among EU countries. Gross migration flows (immigration minus emigration) do, however, sum up to zero in each period fulfilling in such a way the general equilibrium condition of the total labor supply, which does not change between the scenarios.

Comparing the three integration scenarios (M10, M20 and M30), we note that the share of

Table 2: Integration-induced reallocation of workforce in the EU, share of labor force

	Region	M10	M20	M30
	(1)	(2)	(3)	(4)
AUSTRIA	EU-15	0.74	1.12	1.21
BELGIUM	EU-15	0.62	0.98	1.07
CZECH REPUBLIC	CEE-8	-1.42	-2.30	-2.65
DENMARK	EU-15	0.68	1.04	1.10
ESTONIA	CEE-8	-5.23	-8.24	-9.10
FINLAND	EU-15	0.59	0.94	1.05
FRANCE	EU-15	0.89	1.35	1.44
GERMANY	EU-15	0.70	1.31	1.66
GREECE	EU-15	0.84	1.28	1.37
HUNGARY	CEE-8	-2.18	-3.58	-4.07
IRELAND	EU-15	2.95	4.65	5.18
ITALY	EU-15	0.97	0.92	0.85
LATVIA	CEE-8	-5.84	-9.18	-9.95
LITHUANIA	CEE-8	-4.91	-7.86	-8.84
LUXEMBOURG	EU-15	2.32	3.65	4.01
NETHERLANDS	EU-15	1.05	1.67	1.80
POLAND	CEE-8	-1.58	-2.58	-2.89
PORTUGAL	EU-15	0.94	1.26	1.12
SLOVAKIA	CEE-8	-1.01	-1.72	-2.04
SLOVENIA	CEE-8	0.75	1.20	1.38
SPAIN	EU-15	2.81	2.38	2.20
SWEDEN	EU-15	0.98	1.58	1.73
UNITED KINGDOM	EU-15	1.33	1.98	1.80

Notes: M:"-" emigration, "+" immigration. Source: NEG model simulations based on Eurostat data for 2009.

workforce, which would change its country of residence as a result of EU integration (not reported) increases continuously from 1.80% (M10) to 2.73% (M20) and 2.98% (M30), which implies that EU integration would induce additional 1.80 - 2.98 percent of the total EU workforce to relocate in the post-transitionary period. As explained above, these numbers refer solely to economically-driven migration, which in our model is solely due to cross-country differences in the net real income. Other types and drivers of migration, e.g. family reunification, refugees, education, are not included in these numbers. The simulation results reported in Table 1 also suggest that, on average, the migration rate is increasing, but with a decreasing rate: 1.80% (M10), 0.93% (M20) and 0.25% (M30).

Turning to country-specific results we note that, if factor and product market integration would increase symmetrically between EU countries, then Ireland followed by Luxembourg would be the

largest gainers of workforce and manufacturing activity. Luxembourg is very centrally located (high market access) with very high per capita net income, which attracts workers. Ireland, one of the most open EU economies, is the only EU country, were the immigration rate of workforce is larger than 5% (scenario M30). According to our calculations, in terms of their workforce, the three Baltic States – Latvia, Estonia and Lithuania – lose the highest share of their workforce: -9.95%, -9.10% and -8.84%, respectively. These countries are peripheral (low market access) with relatively low per capita net income, which encourages workers to relocate to countries with better market access and higher wages.

In terms of the East-West migration, our model results are consistent with empirical evidence from the enlarged EU: seven out of eight CEE-8 are emigration countries, and all EU-15 are immigration countries (Kancs and Kielyte 2010). Slovenia is the only new EU Member State, which attracts workers from other countries. This can be explained by the fact that the wage rate in Slovenia is above the EU average and the proximity to other CEE countries.

From the perspective of the economic geography theory, Portugal and the United Kingdom are particularly interesting cases. In these two countries the size of workforce increases (M10), reaches its peak (M20), and finally it starts to decline (M30), suggesting that at higher levels of integration the dispersion forces outweigh the agglomeration forces. Product and factor market integration reduces trade costs and factor reallocation costs, which results in better market access, lower costs and higher factor rewards. Increasing relative wages in one country in turn attracts workers from other countries, which triggers new migration. Larger workforce in turn exerts downward pressure on wages, which discourages more workers to emigrate. Hence, compared to reduced form migration models, which usually predict migration rates under a set of exogenous assumptions about explanatory variables, the underlying economic geography model is able to predict the equilibrium distribution of workforce under different levels of integration. As a result, in our model both labor migration is induced endogenously, and it comes to a halt endogenously, when the forces driving migration, such as wages and market access, has equalized across countries.

5.3 Comparison with previous studies and limitations

In order to study the relationship between market access, wages and labor migration, a growing number of migration studies rely on the structural economic geography framework (Kancs 2005; Kancs 2006, Kielyte and Kancs 2010). They estimate quasi-structural economic geography models relating workers' location choices in Europe to market access. The results of all three studies suggest that the economic geography framework provides a promizing framework for studying labor migration in small open economies. They find that workers choose to migrate to states with higher market access. Kancs (2005) uses a new economic geography model to predict migration

flows in the Baltics. Simulating European integration as a reduction in trade costs, he finds that, depending on the integration scenario, between 3.5% and 6.2% of workers would change their region of residence. Hence, the results presented in this study are in line with the previous NEG literature, which suggests that migrants both follow and affect market potential. The somewhat lower potential migration rates from the CEE-8 can be explained by better data quality and endogenously determined explanatory variables.

Comparing our predictions to the reduced form migration models, we note that our calculations are different, particularly with respect to the dynamics of migration. For more than a decade, the general assumption in migration literature was that the common EU labor market would initiate massive labor migration from the CEE accession countries, with peak levels arizing during the first years after EU enlargement. Accordingly, between 10.5 and 15.0% of the current CEE population was predicted to migrate to Western Europe in the medium and long run (10-30 years) (Straubhaar 1993). In reality, however, a comparable small share of the total CEE population emigrated to Western Europe in first the two decades since the fall of the Wall. One of the main reasons for deviations between the reduced form models' predictions and the observed migration patterns is strong underlying assumptions about country developments and exogenously fixed response to integration, migration and development, which are based on the a priori and fixed estimates of the economic differences between countries.

In addition, deviations among previous studies and our calculations might be caused by mis-specification of the model (missing variables, specific functional forms), differences in the employed data, differences in source and destination countries studied, and differences between the underlying conceptual frameworks. One particular feature that sets the conceptual framework employed in the present study apart from the traditional reduced-form specifications is implied by differences in the treatment of explanatory variables. According to the underlying economic geography model, the relocation of workers not only absorbs market distortions caused by short-run transitory shocks, it also induces changes in explanatory variables, such as wage rate, utility and profits. For example, if the net wage (indirect utility) is a positive function of region's size of labor force, as in the underlying economic geography model, then migration will induce circular causality forces in the economy. These circular causality forces are captured in the underlying economic geography model, but neglected in reduced form models (Massey et al 1993, Gallup 1997, Fertig and Schmidt 2001). As a result, in our model labor migration converges to zero relocation endogenously, whereas in reduced form models it is set exogenous.

6 Conclusions

The paper studies the impact of migration policy liberalization on labor migration in the enlarged EU. In particular, we attempt to assess the direction, size and dynamics of potential labor migration after the end of the 'transitional measures', which are restricting the relocation of workers from the NMS. The paper tries to answer the following policy-relevant questions: How will the liberalization of migration policy – the removal of 'transitional measures' – affect the labor migration in the enlarged EU? If so, are there endogenous forces in the EU economies which not only induce but also reduce migration endogenously or are there regulatory policy responses necessary? What lessons from the CEE-8 experience can be learned for the Balkan Member States and the Balkan Candidate Countries?

Traditionally, international labor migration has been studied in reduced-form migration models, where ex-ante values of the key explanatory variables, such as wages, are determined a priori and fixed exogenously. In the context of international labor migration in small open transition economies, the fixing of explanatory variables is particularly problematic (Faini et al 1999; Borjas 2001; Kielyte 2008). In order to account for deficiencies of the reduced form approach to international labor migration, the present study follows Kancs (2005); Kancs (2006), Kielyte and Kancs (2010) and adopts a structural NEG approach for studying the direction, size and dynamics of potential labor migration in the enlarged EU.

Our empirical findings predict a selective migration between the EU Member States in the post-transitionary period. According to our simulation results, the liberalization of migration policy would induce additional 1.80 - 2.98 percent of the total EU workforce to change their country of location, with most of migrant workers relocating as expected from the East to the West. These figures are considerably lower than reduced-form models' predictions, but they are in line with other studies based on the NEG framework, and the observed empirical evidence. The empirical evidence suggests that even in the absence of policy restrictions on international labor migration, the mobility of workers is rather low in the enlarged EU, despite sizeable and persistent disparities in wealth between countries.

The second important policy finding of our study is that the integration-induced relocation of workers seems to be a self-regulatory system, where migration arizes and comes to a halt endogenously. Market integration reduces trade costs and factor reallocation costs, which results in better market access, lower costs and higher factor rewards. Increasing relative wages in one country in turn attracts workers from other countries, which triggers new migration. Larger workforce in turn exerts downward pressure on wages, which discourages more workers to emigrate. When the driving forces of migration, such as relative net wages, are equalized across countries, the economically-driven labor migration comes to a halt. According to our simulation results,

the average net migration rate is decreasing in the level of integration, but the rate of increase is decreasing (from 1.80% to 0.25%). In Portugal and the United Kingdom the immigration of workers has even reverted to emigration at higher levels of integration. Hence, from the economic point of view no regulatory policy responses are necessary to labor migration in the enlarged EU.

These results have important policy implications. After the fall of the Wall two decades ago, highly restrictive policy measures very introduced to 'protect' the old EU Member States' labor markets from workers from the East. With the enlargement in 2004, these restrictions were partially replaced by a complex set of 'transitional measures' with the aim to gradually liberalize policy restrictions on international labor mobility in the enlarged EU. The last restrictions on labor mobility from the CEE-8 were removed in April 2011. However, labor mobility restrictions still apply to workers from the Balkan Member States and the Balkan Candidate Countries.

These results for the CEE-8 suggest that the labor mobility restrictions imposed on workers from the Balkan-5 countries are obsolete and can be removed without being afraid of mass inflows of migrant workers. Moreover, as noted by the European Commission (2010), efficient allocation of workforce will contribute to achieving the objectives of the Europe 2020 Growth Strategy. Therefore, the reduction of international labor mobility through policy interventions, as currently practiced in the enlarged EU, is both obsolete and counterproductive. Obsolete, because the international mobility of workers is rather low in the enlarged EU, and would come to a halt on itself. Counterproductive, because the transitional labor market restrictions distort the equilibrium distribution of workforce across countries, which as shown by Borjas (2001) reduces welfare on growth in the long run.

A potential downside of the adopted economic geography approach is that a structural general equilibrium model per se does not guarantee a better fit - certain reduced-form specifications might still perform better in terms of explanatory power and forecasting performance. Therefore, we urge for more research, both methodological and empirical, be devoted to estimating and testing of economic geography models in predicting the (re)location of firms and workers. Future expectations may also play a significant part in migration decisions - expecting improvements in the home country's economy may delay migration decision or ultimately erase the idea of migration. This issue has not been considered in the current study and is a promizing avenue for future research.

References

[1] Boeri T. and Brücker H. (2001), "The Impact of Eastern Enlargement on Employment and Labour Markets in the MS,' European Commission, DG Employment and Social Affairs, Brussels.

[2] Borjas G.J. (2001), "Economics of Migration,' International Encyclopedia of the Social and Behavioral Sciences, pp. 9803-9809.

[3] European Commission (2007), Third Annual Report on Migration and Integration, Office for Official Publications of the European Communities, Luxembourg.

[4] European Commission (2008), The impact of free movement of workers in the context of EU enlargement, Communication from the European Commission, Luxembourg.

[5] European Commission (2010), Fifth Report on Economic, Social and Territorial Cohesion, Office for Official Publications of the European Communities, Luxembourg.

[6] Fertig M. and Schmidt M. (2001), Aggregate-Level Studies of Migration as a Tool for Forecasting Future Migration Streams, London.

[7] Forte, A. (2010), "The European Central Bank, the Federal Reserve and the Bank of England: Is the Taylor Rule a useful benchmark for the last decade?", Journal of Economics and Econometrics, 53(2), pp. 1-31.

[8] Fujita M., Krugman P. and Venables A.J. (1999), The Spatial Economy: Cities, Regions, and International Trade, Cambridge, Mass. MIT Press.

[9] Gallup J.L. (1997), "Theories of Migration", Development Discussion Paper No. 569, Harvard University.

[10] Kancs D. (2005), "Can we use NEG models to predict migration flows? An example of CEE accession countries", EERI Research Paper Series 2005/01, Economics and Econometrics Research Institute, Brussels.

[11] Kancs D. (2006), "The economic geography of labour migration: Competition, competitiveness and development", EERI Research Paper Series 2006/01, Economics and Econometrics Research Institute, Brussels.

[12] Kancs D. and Kielyte J. (2010), "European Integration and Labour Migration", EERI Research Paper Series 2010/27, Economics and Econometrics Research Institute, Brussels.

[13] Kancs D. and Kielyte J. (2010), "Education in the East, Emigrating to the West?", EERI Research Paper Series 2010/01, Economics and Econometrics Research Institute, Brussels.

[14] Kielyte J. (2008), "Estimating Panel Data Models in the Presence of Endogeneity and Selection,' Journal of Economics and Econometrics, 51(1), pp. 1-19.

[15] Kielyte J. and Kancs D. (2002), "Migration in the Enlarged European Union: Empirical Evidence for Labour Mobility in the Baltic States", EERI Research Paper Series 2002/04, Economics and Econometrics Research Institute, Brussels.

[16] Krugman P. (1991), "Increasing Returns and Economic Geography", Journal of Political Economy, 99(3), pp. 483-99.

[17] Massey D. S., Arango J., Hugo G., Kouaci A., Pellegrino A. and Taylor E. (1993), "International Migration Theories: A Review and Appraisal," Population and Development Review, 19(3), pp. 431-466.

[18] Russo, G. (2008), "Voting over Selective Immigration Policies with Immigration Aversion", EERI Research Paper Series 2008/14, Economics and Econometrics Research Institute, Brussels.

[19] Schoellman, T. (2009), "The Occupations and Human Capital of U.S. Immigrants", EERI Research Paper Series 2009/19, Economics and Econometrics Research Institute, Brussels.

[20] Straubhaar T. (1993), "Towards an EU Migration Policy", Population Research and Policy Review, 12 (3), pp. 225-241.

[21] Traser, J. and Venables, T. (2005), Report on the free movement of workers in EU-25. Brussels: European Citizen Action Service.