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Macroeconomics of Migration in New Member States

Rudolfs Bems and Philip Schellekens

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Prepared by Rudolfs Bems and Philip Schellekens[∗]

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Abstract

This paper examines the macroeconomic impact of migration on income convergence in the EU's New Member States (NMS). The paper focuses on cross-border mobility of labor and examines the implications for policymakers with the help of a general equilibrium model. It finds that cross-border labor mobility provides ample benefits in terms of faster and smoother convergence. Challenges, however, include containing wage pressures and better mobilizing and utilizing resident labor that does not cross borders.

Author's E-Mail Address: rbems@imf.org and pschellekens@worldbank.org

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I. INTRODUCTION

Along with the international flow of capital, international migration and the accompanying movement of labor across the borders of the European Union's New Member States has been a key feature in their process of income convergence.[1] Throughout transition, most NMS have experienced sizeable flows of labor across borders, which have manifested themselves in various guises and directions.

Over the past decade or so, many countries have experienced a wider variety in the way labor services are being provided across borders, whether through physical migration, change of permanent residence, and participation in the foreign labor market, or through various types of seasonal, temporary, or irregular flows of labor services across borders. These different modes have emerged in response to factors such as an increased availability of low-cost transportation options, a less restrictive policy environment, and an increased demand for flexible forms of foreign labor.

Unlike capital flows—which have been primarily inbound—many countries have experienced flows of labor in both inbound and outbound directions. While several countries have witnessed sizable outflows to higher-income countries, many of them have simultaneously benefited from sizable inflows from their lower-income neighbors. In net terms, however, most countries have since the onset of transition experienced for some period of time large net outflows.

The magnitude of these flows has fueled a debate that has unevenly emphasized the perspective of higher-income recipient or destination countries. For these countries, a key issue has been the absorption of foreign labor inflows in domestic labor markets. Whereas initially the concern was that large inflows would hurt labor market outcomes, the evidence thus far suggests that the inflows have been absorbed well. They have supplemented rather than replaced domestic labor, and by doing so, they have alleviated aging-related problems, contributed to economic growth, and helped fend off inflationary pressures.[2]

Adopting the perspective of the NMS, this paper documents migratory flows of labor across borders, interprets these with the help of a general equilibrium model, and examines the implications for policymakers.

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[1] The NMS comprise Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia.
[2] World Bank (2006).

The key findings of the paper are the following:

- Enhanced labor mobility as manifested by migratory flows speeds up the convergence process and helps boost economy-wide capital-labor ratios. As labor migrates, so does part of the demand for nontradable goods. This migration moderates the boom in nontradable prices and the buildup of the current account deficit which arise during the convergence process.

- Restricting labor mobility is no answer to overheating pressures. Labor mobility is unlikely to be a significant primary source of overheating. In addition, labor mobility tends to play a cushioning rather than amplifying role. However, over the medium term, second-round effects of wage inflation possibly associated with outward labor flows need to be avoided so as to prevent an erosion of competitiveness.

- To ensure sustained growth, labor needs to be mobilized and utilized better, including by fostering labor force participation. This outcome would enable countries to better face the challenges of reorienting resources from the nontradable to the tradable sector, as well as to address any mismatches resulting from the differences in the age and skill composition of labor outflows and inflows.

II. CROSS-BORDER LABOR FLOWS

Measuring cross-border labor flows arising from migration is a challenge. It is subject to various data limitations (availability, timeliness, precision, and quality). For example, migration registration systems reliant on changes in permanent residency may underestimate flows when foreign workers maintain their residency status while working abroad. Also, population censuses and labor force surveys may not capture temporary and irregular flows. Moreover, workers' registration and other administrative systems in recipient countries may produce double counting and suffer from cross-country comparability problems.[3]

Labor market openness has made large and rapid strides since the onset of transition. Before transition, the movement of labor was highly restricted by governments (in terms of volume and destination) and primarily took the shape of settlement and irregular migration. The fall of the Iron Curtain gave a significant impetus to migration and, thereby, the mobility of labor across borders. However, labor markets in destination countries were opened up only gradually. Given the large income differentials and the uncertainty surrounding the possible scale of migration, restrictions were initially in force, but these were gradually alleviated in the wake of the successive EU enlargements.

The development of net migration rates is indicative of the extent of cross-border labor flows (Table 1). The data on net migration, derived from population statistics and available for most countries over relatively long periods of time, suggest that several countries have experienced strongly negative net migration rates over extended periods of time (i.e., outflows dominating inflows). This was particularly so in the Baltics during the early years of transition (reflecting the return migration of ethnic groups). Bulgaria, Poland, and Romania also experienced high negative net migration rates. For other countries, such as Czech Republic, Hungary, and Slovenia, the average migration balance was positive.

Considering the period following the first EU enlargement in 2004, the evidence available on gross emigration rates suggests the following patterns:

- From the perspective of the EU-15 old member states, the stock of foreign residents from the NMS-8 increased by about 200,000-250,000 per year since the first EU enlargement.[4] This represents a cumulative 1.5 percent of source countries' total

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[3] Worker registration systems, for example, may not be able to ensure that workers deregister when they leave the destination country. This would cause the measure of inflows to be overstated.

[4] Brücker (2007). These figures are based on labor force and population statistics.

population since 2004, with Latvia, Lithuania, and Poland experiencing higher-than-average gross emigration rates.[5]

- Countries that opened up earlier were among the more popular destination countries (Figure 1). Ireland and the United Kingdom, which were among the first to lift restrictions, recorded large inflows, leading to well-established migration networks.[6] Factors other than migration restrictions also played a role, such as language barriers, as countries with similarly liberal regimes (e.g., Denmark and Sweden) did not experience sharp rises in inflows.

Bulgaria and Romania became important source countries well before their accession in 2007 (Table 2). In response to the large inflows after the first EU enlargement, Ireland and the United Kingdom chose to restrict access to their labor markets from Bulgaria and Romania in 2007.[7] The most attractive destination countries then became Italy and Spain.[8]

Table 1. New Member States: Net Migration Rates, 1992-2007

(percent)

	1992–95	1996–99	2000–03	2004–07
Estonia	-17.1	-4.9	0.1	0.1
Latvia	-11.6	-3.0	-1.3	-0.5
Lithuania	-6.5	-6.1	-2.1	-2.1
Bulgaria	-2.7	0.0	-6.5	0.0
Slovenia	-1.1	0.1	1.7	3.6
Romania	-0.9	-0.5	-6.1	-0.3
Poland	-0.4	-0.3	-3.0	-0.5
Slovak Republic	0.3	0.3	-0.9	0.8
Czech Republic	0.9	1.0	0.0	4.2
Hungary	1.7	1.7	1.1	1.7

Sources: Eurostat; and IMF staff calculations.

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[5] Kaczmarczyk and Okolski (2008).
[6] Ireland attracted large migrant inflows from Lithuania, Poland, and Romania; the United Kingdom from various countries but especially Poland.
[7] Other countries where restrictions were applied regarding access of Bulgarian and Romanian workers during the first stage of the transitory arrangements include: the Czech Republic, Cyprus, Estonia, Latvia, Lithuania, Poland, Slovenia, the Slovak Republic, and Finland.
[8] Iara (2008).

Figure 1. Residents from the NMS-8 in the EU-15, 2000-2006 1/
(thousands)
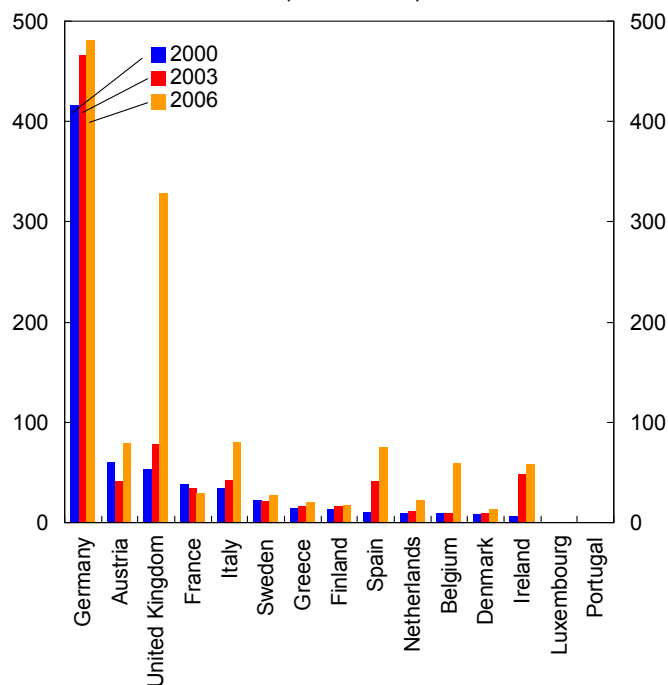
Source: Brückner (2007)

Note: Data compiled from various national population statistics and Eurostat labor force surveys.

1/ NMS-8 comprises the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia, and the Slovak Republic.

Table 2. Largest Source Countries for Immigration in OECD
European Countries, 2000 and 2005
(thousands)

	2000		2005
Morocco	96	Poland	324
Ecuador	96	Romania	202
Poland	94	Morocco	128
Bulgaria	81	Bulgaria	82
Turkey	79	Germany	77
Romania	76	Ukraine	70
United States	64	Turkey	66
Germany	61	United Kingdom	65
France	60	Russia	54
Italy	56	France	49

Source: OECD, *International Migration Outlook (2007).*

III.   A GENERAL EQUILIBRIUM MODEL WITH LABOR MOBILITY

Over the past decade, the NMS economies have grown strongly, with income levels converging at unprecedented speed to European Union (EU) averages (Figure 2). The per capita income levels in the Baltic economies improved dramatically, rising from about 40 percent to 63 percent of the overall EU average over only seven years.[9] Other countries, such as Hungary and Slovenia, converged more slowly, partly due to a better starting position.

How has this convergence process been affected by cross-border labor mobility? To address this question, we build a dynamic general equilibrium model of convergence that incorporates endogenous labor allocation across borders.[10] The setup of the model is discussed first, followed by the definition of equilibrium and the results from the model simulations.

Figure 2. New Member States: Income per Capita
Relative to EU-27, 2000 and 2007
(percent)
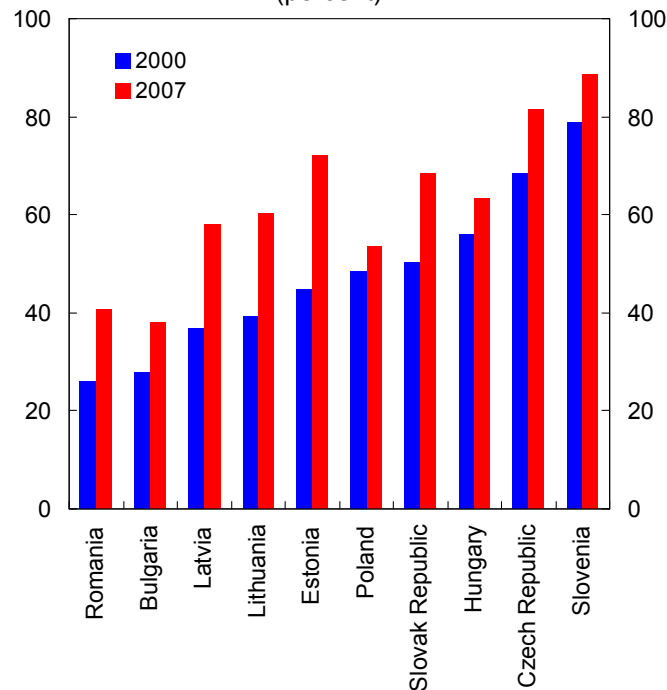
Sources: Eurostat; and IMF staff calculations.
Note: Purchasing power standard-adjusted GDP per
capita relative to EU-27 average, normalized to 100.

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[9] Simple unweighted average of per capita income levels of Estonia, Latvia, and Lithuania to the EU-27.
[10] The model builds on Fernandez de Cordoba and Kehoe, 2000; Bems and Hartelius, 2006; and Bems and Schellekens, 2007.

A. Model Setup

The economy considered is a small open economy, populated by a representative agent. The model features three types of goods: a tradable, a nontradable, and an investment good. The representative agent acts both as a consumer of final goods and a producer of final and intermediate goods, and maximizes utility over an infinite horizon. The convergence process is modeled as the dynamic response of the economy to a shock of productivity convergence towards higher EU levels. The model is deterministic in the sense that after the initial shock all uncertainty is resolved.

The optimal dynamics of the convergence process in the model following the initial shock are well understood (see e.g., Bems and Schellekens, 2007). It is useful to distinguish between two stages:

- In the *expansion stage*, the converging economy exhibits a shift of production factors and economic activity towards the nontradable sector. This is due to the fact that the necessary quantities of tradables can be readily borrowed from the rest of the world while the supply of nontradables becomes a bottleneck in the convergence process. Equilibrium is restored by partly increasing both the capacity and relative price of nontradable goods.

- In the *reorientation stage*, economic activity shifts back towards tradables as the repayment of the foreign debt, denominated in tradables, becomes the dominant concern. The more borrowing of foreign capital is done in the expansion stage, the more the tradable sector in the reorientation stage will exceed the initial steady state level.

The paper examines how the convergence dynamics are altered, when the considerations of optimal cross-border labor allocation are introduced. This is done by letting the representative agent optimally choose the share of labor that in each period is employed abroad and at home.

In what follows, we describe the problem faced by the representative agent in his roles of consumer, producer of final goods in the tradable and nontradable sectors, and producer of intermediate goods in the investment sector. Subsequently, we describe the aggregate resource constraints of this economy.

Consumer Problem

The economy is inhabited by a representative consumer, who maximizes lifetime utility derived from the consumption of tradable and nontradable goods:

$$\max_{\left\{c_{Tt},c_{Nt},k_{t+1},l_t^F,b_{t+1}\right\}} \sum_{t=0}^{+\infty} \beta^t U(c_{Tt},c_{Nt}),$$

subject to

$$c_{Tt} + \left(1-l_t^F\right)p_{Nt}c_{Nt} + l_t^F p_N^* c_{Nt} + q_t(i_{Tt}(k_{Tt+1},k_{Tt}) + i_{Nt}(k_{Nt+1},k_{Nt})) + b_{t+1} + \Gamma(l_t^F,l_{t-1}^F) \leq$$
$$\leq (1+r)b_t + w_t(1-l_t^F) + w^* l_t^F + h_t k_t,$$

where subscripts T and N refer to the tradable and nontradable goods sectors, and subscript t refers to time. Choice variables are: c_{Tt} and c_{Nt}, the consumption of the tradable and nontradable goods in period t; k_{t+1}, the domestic capital stock at the beginning of period $t+1$; b_{t+1}, the net foreign asset position, denominated in tradables; l_t^F, the amount of labor that is allocated to the rest of the world in period t. β is the subjective discount factor with $0 < \beta < 1$.

The per-period budget constraint is expressed in terms of tradable goods. The total labor endowment is normalized to unity. Notation is as follows: p_{Nt} is the relative price of the nontradable good, and p_N^* is its price in the rest of the world, which is a constant since the rest of the world is assumed to be in a steady state and the model economy is small; $i_{Tt}(k_{Tt+1},k_{Tt})$ and $i_{Nt}(k_{Nt+1},k_{Nt})$ represent investment in the capital stock of the tradable and nontradable sectors; q_t is the relative price of investment; $\Gamma(l_t^F,l_{t-1}^F)$ is an adjustment cost term associated with changes in labor employed abroad; r is the risk free return on net foreign assets; w_t is the wage at which an endowment of labor is supplied in the domestic market, while w^* is the wage rate in the rest of the world; $h_t k_t$ is income from renting capital at the relative price h_t to producers in the tradable and nontradable sectors; q_t is the price at which the consumer acquires capital for period $t+1$ (the transaction takes place at the end of period t), whereas h_t is the price at which the consumer rents capital in period t to firms.

In each period the consumer ensures that labor income, rental income, and the proceeds from lending (principal plus interest) exceed the consumption expenditure of tradable and nontradable goods, investment outlays for the tradable and nontradable sector, any lending that is conducted, and the costs associated with the change in labor located in the rest of the world. Note that the investment decision takes into account the existing capital stocks in the tradable and nontradable sectors (k_{Tt}^i and k_{Nt}^i), which the consumer takes as given from the

optimization problem of the producer. It is further assumed that b_1 is given. We rule out Ponzi schemes by assuming that $b_{t+1} + q_{t+1}k_{t+1}$, in any period cannot be smaller than $-A$, for A sufficiently large.

International labor mobility considerations enter the consumer problem in the consumer's choice of the amount of labor that is allocated abroad in each period, l_t^F. Several terms in the per-period budget constraint are directly affected by the labor allocation decision. First, nontradable goods are consumed at home and abroad, proportionally to the period's labor allocation, at different relative prices, p_{Nt} and p_N^*. For tradable goods, foreign consumption does not alter the budget constraint, since the price of tradable goods is the same at home and abroad. Second, any change in foreign labor allocation incurs adjustment costs, which derive from the movement of labor across borders (e.g., transportation costs). This cost term is assumed to satisfy all the standard adjustment costs properties (i.e., convex and absent in steady state). Third, on the income side, labor income reflects different wage rates earned at home and abroad.

Producer Problems

Tradable and Nontradable Sectors

The representative consumer in his role as producer maximizes profits in an environment of perfect competition in product and factor markets. We focus attention on the optimization problem in the tradable sector as the case of the nontradable sector is identical.

Taking prices as given (with p_{Tt} normalized to 1, since the tradable good is the numeraire), the producer chooses how much capital and labor to buy in each period by maximizing:

$$\max_{\{k_{Tt}, l_{Tt}\}} \sum_{t=0}^{\infty} \beta^t \frac{U_{C_T}\left(c_{Tt+1}, c_{Nt+1}\right)}{U_{C_T}\left(c_{T1}, c_{N1}\right)} \left(p_{Tt} F_T\left(k_{Tt}, l_{Tt}, l_{Tt-1}\right) - w_t\, l_{Tt} - h_{Tt} k_{Tt}\right).$$

The maximand contains the value of future profits, which consist of the value of production minus wage and capital rental costs. Note that the production function $F_T(k_{Tt}, l_{Tt}, l_{Tt-1})$ includes past values of labor employed in the sector, as changing labor is subject to adjustment costs. The introduction of lagged labor means that the maximization problem of the producer cannot be solved on a within-period basis. As a result, the entire infinite horizon problem needs to be considered.

Investment Sector

The producer problem in the investment sector is simpler since it can be solved within each period. Taking the prices q_t and p_{Nt} as given, the producer in the investment good sector maximizes:

$$\max_{\{x_{Tt}, x_{Nt}\}} q_t F_I\left(x_{Tt}, x_{Nt}\right) - x_{Tt} - p_{Nt} x_{Nt}$$

where x_{Tt} and x_{Nt} are the inputs of tradable and nontradable goods into the investment sector at date t.

Aggregate Resource Constraints

The aggregate resource constraints for the tradable and nontradable sector are as follows. In addition to being consumed, the tradable and the nontradable goods can be used as inputs into the investment sector. The economy's resource constraint for nontradable goods is:

$$(1 - l_t^F)c_{Nt} + x_{Nt} \leq F_N(k_{Nt}, l_{Nt}, l_{Nt-1}),$$

where the consumption of domestic nontradables both as final and intermediate goods cannot exceed its domestic production.

The resource constraint for tradable goods incorporates the possibility of trading with the rest of the world as well as the possibility of having labor move across borders:

$$c_{Tt} + x_{Tt} + b_{t+1} - b_t(1+r) + \Gamma(l_t^F, l_{t-1}^F) \leq F_T(k_{Tt}, l_{Tt}, l_{Tt-1}) + l_t^F(w^* - p_t^* c_{Nt}).$$

Because of international labor mobility, the trade balance is defined as

$$NX_t \equiv b_{t+1} - b_t(1+r) - l_t^F(w^* - p_N^* c_{Nt} - c_{Tt}) + \Gamma(l_t^F, l_{t-1}^F).$$

Here the term $b_{t+1} - b_t(1+r)$ captures changes in the net foreign asset position and capital income; $-l_t^F(w^* - p_t^* c_{Nt} - c_{Tt})$ represents the part of foreign labor earning that is left over after the consumption of tradable and nontradable goods abroad. Such earnings are then sent back home as labor income and, for a given current account position, allow the model

economy to run a smaller trade balance.[11] $\Gamma(l_t^F, l_{t-1}^F)$ are adjustment costs for foreign labor, assumed to be incurred in terms of tradable goods. Whether this term is part of the trade balance depends on the destination of such payments—the domestic economy or the rest of the world. However, regardless of these considerations, the size of these payments as a share of output is negligible in the parameterized model, and therefore do not affect the trade balance in any significant way.

For production factors the following constraints are satisfied:

$$k_{t+1} = k_{Tt+1} + k_{Nt+1}$$

$$l_{Tt} + l_{Nt} + l_t^F = 1$$

which are, respectively, an aggregation constraint needed to ensure that the capital stock level derived in the consumer problem equals the capital stock levels used in the tradable and nontradable sectors as derived in the producer problems, and a resource constraint applicable in the labor market, ensuring that labor used in the tradable, nontradable sectors and abroad adds up to the total labor endowment.

Capital accumulation occurs as follows. The investment good augments the capital stock in the subsequent period, which gives the following law of motion for capital in the tradable sector (the law of motion is analogous in the nontradable sector):

$$k_{Tt+1} \leq (1-\delta) k_{Tt} + \Phi\left(\frac{i_{Tt}}{k_{Tt}}\right) k_{Tt}$$

where δ is the depreciation rate with $0 < \delta < 1$ and the following resource condition is satisfied:

$$i_{Tt}(k_{Tt+1}, k_{Tt}) + i_{Nt}(k_{Nt+1}, k_{Nt}) = F_I(x_{Tt}, x_{Nt})$$

Finally, the model allows for different specifications of interest rate determination. If the economy is closed to cross-border resource flows in period t, there can be no foreign

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[11] In equilibrium, the sign of this term will depend not only on considerations of domestic versus foreign consumption, but also on the optimal size of aggregate (global) consumption and domestic aggregate investment. E.g., if in a given period it is optimal to increase consumption at the expense of investment, domestic resources can be sent to increase consumption abroad. In such a case, there is a net 'wage income' outflow from the model economy.

borrowing or lending, $b_{t+1} = b_t$, and the return on investment is endogenously determined in the model. If the economy is open, the interest rate is equal to an exogenously given international rate, r, and b_{t+1} is endogenously determined.

B. Definition of Equilibrium

The equilibrium in this model is characterized by sequences of prices $\left\{ \hat{p}_{Nt}, \hat{w}_t, \hat{q}_t, \hat{h}_t, \hat{r}_{t+1} \right\}$, consumption, assets and foreign labor $\left\{ \hat{c}_{Tt}, \hat{c}_{Nt}, \hat{k}_{t+1}, \hat{b}_{t+1}, \hat{l}_t^F \right\}$, sectoral production plans $\left\{ \hat{k}_{Tt}, \hat{l}_{Tt} \right\}$ and $\left\{ \hat{k}_{Nt}, \hat{l}_{Nt} \right\}$, and inputs into the investment sector $\left\{ \hat{x}_{Tt}, \hat{x}_{Nt} \right\}$, for $t = 1, 2, ..., +\infty$, such that:

1.   Given prices $\left\{ \hat{p}_{Nt}, \hat{w}_t, \hat{q}_t, \hat{h}_t, \hat{r}_{t+1} \right\}$ the representative consumer's first order conditions are satisfied in every period;

2.   Given prices $\left\{ \hat{p}_{Nt}, \hat{w}_t, \hat{q}_t, \hat{h}_t, \hat{r}_{t+1} \right\}$ the representative producers in the tradable and nontradable sectors choose factor inputs $\left\{ \hat{k}_{Tt}, \hat{l}_{Tt} \right\}$ and $\left\{ \hat{k}_{Nt}, \hat{l}_{Nt} \right\}$ so that the first order conditions are satisfied in every period;

3.   Given prices $\hat{p}_{Nt}$ and $\hat{q}_t$ the investment sector's first order conditions are satisfied in every period;

4.   The market clearing conditions are satisfied in every period. If the economy is closed in period t, $b_{t+1} = b_t$;

5.   Factor markets clear in every period:

$$ \hat{k}_{Tt} + \hat{k}_{Nt} = \hat{k}_t $$

$$ \hat{l}_{Tt} + \hat{l}_{Nt} + \hat{l}_t^F = \hat{l}_t = 1. $$

C. Characterization of Equilibrium

In what follows, we characterize the equilibrium of the model. We first present the choice of functional forms and parameter values, and then discuss the initial steady state and the transitional dynamics towards the new steady state. For the transitional dynamics, several cases are examined. The first case is that of an open economy with internationally mobile labor. To provide a benchmark, this model solution is compared to the case of no cross-border labor movements. Next, we consider the case with increased factor adjustment costs and discuss the role of adjustment costs in model outcomes. The final case is that of a boom-bust cycle, generated by two sequential shocks and benchmarked against the case of rational expectations.

Functional Forms and Parameterization

To solve the model, we need to make some assumptions about the functional forms and parameter values. We assume that consumer utility is given by:

$$U(c_{Tt}, c_{Nt}) = \frac{(c_{Tt}^{\varepsilon} c_{Nt}^{1-\varepsilon})^{1-\rho} - 1}{1-\rho},$$

where a unitary elasticity of substitution between tradable and nontradable goods is imposed. ε is the weight of tradable goods in consumption expenditures and ρ captures the intertemporal elasticity of substitution in consumption.

Investment goods are produced from tradable and nontradable goods as follows:

$$F_I(x_{Tt}, x_{Nt}) = G x_{Tt}^{\gamma} x_{Nt}^{1-\gamma},$$

where γ is the weight of tradable goods in investment expenditures. Following Bems (2008), we impose a unitary elasticity of substitution between the two goods. Also, we normalize

$$G = \left[(1-\gamma)^{1-\gamma} \gamma^{\gamma} \right]^{-1}.$$

The production function for sector $j = \{T, N\}$ is assumed to take the following form:

$$F_j(k_{jt}, l_{jt}, l_{jt-1}) = A_{jt} k_{jt}^{\alpha} l_{jt}^{1-\alpha} - \lambda \left(\frac{l_{jt} - l_{jt-1}}{l_{jt-1}} \right)^2 l_{jt-1}, \lambda \geq 0.$$

where apart from producing output with the standard Cobb-Douglas production function with capital and labor as production factors, producers in each sector incur costs every time the stock of labor is changed. We assume that such costs are quadratic with level parameter λ capturing the size labor adjustment costs.

Following Lucas and Prescott (1971), we introduce sectoral investment adjustment costs:

$$\Phi\left(\frac{i_{jt}}{k_{jt}}\right) = \frac{\delta^{1-\eta}\left(\dfrac{i_{jt}}{k_{jt}}\right)^{\eta} - (1-\eta)\delta}{\eta}$$

where $\eta \in (0,1]$ is the investment adjustment cost parameter and $\eta = 1$ represents the case of no adjustment costs. The functional form satisfies $\Phi(\delta) = \delta$, $\Phi'(\delta) = 1$ and $\Phi''(\delta) = 0$. Thus, similar to labor, there are no investment adjustment costs in the steady state.

Adjustment costs incurred by cross-sectoral labor movements are specified as:

$$\frac{\zeta}{2}\left(l_t^F - l_{t-1}^F\right)^2.$$

Consumers incur quadratic costs in periods when the allocation of foreign labor is changed. The size of such costs is determined by the cost level parameter, ζ. Recall that the total labor endowment in the model is normalized to unity.

Parameterizing the model's *steady state*, we set one period equal to one year. The initial net foreign asset position is set as $b_0 = 0$, which captures the closed-economy steady nature of the initial steady state. The intertemporal elasticity of substitution in consumption is set at $1/\rho = 0.5$, as in the real business cycle literature. The discount factor is set at $\beta = 0.96$. The expenditure weights for tradables in consumption and investment, ε and γ, are based on input-output table data for new member state countries, and take values of 0.34 and 0.44, respectively. Note that consumption is more intensive in nontradables than investment. The income share for capital, α, is set to 0.33 and the same for both sectors (which is in line with input-output data). Next, given values of β and α, δ is set to match the investment-output ratio, equal to 0.21.

Without loss of generality, for the rest of the world the ratio of steady state productivity levels in the two sectors, A_T^* / A_N^*, is normalized to unity, and level wise set at $A_T^* = A_N^* = 1.10$. As a result, the relative price in the rest of the world is also unity, $p_N^* = 1$. In the relatively poor model economy, productivity levels in the initial steady state are below those observed in the rest of the world. Finally, to facilitate comparison between the model with and without cross-border labor mobility, the fraction of labor abroad in the initial steady state is set at $l_0^F = 0$. The choice of all parameter values is summarized in Table 3.

Table 3: Parameter Values and Initial Conditions

Parameter	Value
$1/\rho$	0.50
β	0.96
ε	0.34
γ	0.44
α	0.33
δ	0.073
$A_T^* = A_N^*$	1.10
l_0^F	0
b_0	0

To further clarify the list of the initial conditions in Table 3, note that the model cannot be used to solve for the optimal steady state level of the foreign labor. Instead, the steady state is defined for a given foreign labor share. This feature of the model's steady state is reminiscent of the treatment of the net foreign asset position in the standard small open economy model, including the one considered in this paper. As a result, initial values for both initial net foreign assets and foreign labor need to be specified.

Case 1: Impact of Cross-Border Labor Mobility on Convergence

We now first discuss the setup of the model simulations that allow for the identification of the effect of international labor mobility on the convergence dynamics. Next, we will present simulation results and discuss the various forces at work.

To compare the model economy with and without cross-border labor mobility, both specifications need to start in the same initial steady state and face identical productivity shocks. When compared to the rest of the world, the model economy starts out in a steady state with lower productivity levels in both sectors and is *closed* to cross-border labor movements. The shock in the model is defined as news about a gradual bridging of the productivity gap with the rest of the world and, in case of cross-border labor mobility, also as the opening of labor markets to cross-border flows.

The level difference in productivity is set so as to allow for productivity convergence in each sector as well as the Balassa-Samuelson effect. The sectoral productivity in the initial steady state (and the subsequent productivity shock) is defined in the two sectors as:

$$A_{j,i} = \frac{A_{j,T}}{1 + g_j \omega^i}, \quad for \; j = \{T, N\} \; and \; i = \{1, 2, \; ... \; , T - 1\},$$

where T is a sufficiently large number, $\omega = 0.5$, $g_T = 0.05$, $g_N = 0.01$ and $A_{j,T} = A_j^*$ for $j = \{T, N\}$. The initial steady state values are denoted by $A_{j,1}$ and, for the parameters used, correspond to levels of 9 and 2 percent, respectively, below tradable and nontradable sector values in the rest of the world. Notice that with the above specified evolution of productivity levels, the relative price of nontradables in the initial steady state is below the relative price in the rest of the world. This feature of the parameterization is a result of the assumed presence of the Balassa-Samuelson effect in the convergence process. The specified rule for sectoral productivity growth ensures that productivity levels eventually converge *exactly* to the ones observed in the rest of the world.

To simulate the model, we also need to specify parameters governing adjustment costs for sectoral investment, η, and changes in the domestic and foreign labor, λ and ζ. These parameters do not affect the initial steady state, but matter for the transitional dynamics and the final steady state.

- Transitional dynamics of the model are of interest only when the economy faces non-zero adjustment costs. Without such costs, the new steady state is reached already after one period of transition (see e.g., Obstfeld and Rogoff, 1996). Furthermore, when cross-border labor flows are allowed, the optimal solution is for all labor to immediately leave the economy, so as to take advantage of the higher returns abroad.

- With non-zero adjustment costs this is no longer the case, as the transition takes more than one period. Labor outflows in this case are more gradual, and they will stop or reverse by the time productivity convergence is completed. Thus, the model simulation comparisons require that for a given productivity shock, factor adjustment costs are sufficiently large. As will be evident from the simulation results below, quantitatively, even economically insignificant adjustment costs lead to well-defined model dynamics for large initial productivity shocks.

In view of these considerations, in the first set of simulations we switch off the factor adjustment costs to investment and cross-border labor flows, i.e., $\eta = 1$ and $\zeta = 0$. Domestic sectoral labor adjustment costs are set at $\lambda = 2$.

Simulation results of this parameterization are presented in Figure 3, where the solid lines represent the standard model where cross-border labor movements are not allowed. The dashed line shows the dynamics from the model with endogenous cross-border labor flows,

as developed in this paper. The figure depicts the sectoral productivity shocks (the same for both model specifications) as well as the optimal response of consumption, output, foreign labor, the external sector, the relative price of nontradables, and the real wage to the productivity shocks. Productivity, output and consumption levels are all expressed relative to their initial steady state values; prices are expressed relative to the final steady state; external sector variables are measured as a percentage of output; and the cross-border labor allocation is expressed as a percentage of the total labor endowment.

In the case of no cross-border labor mobility, the model dynamics exhibit the *two stages of convergence* as discussed in the previous section. After the productivity shock, consumption smoothing considerations dictate the transitional dynamics to a new steady state with higher consumption levels. To speed up the increase in consumption, the model economy initially borrows resources from the rest of the world, and specializes domestically in the production of nontradables (expansion stage). Subsequently, as the level of foreign debt grows, the economy shifts back towards the production of tradables, which are used to service the foreign debt (reorientation stage).[12]

How does cross-border labor mobility affect the transition? The answer can be derived by comparing the solid and dashed lines in Figure 3. Cross-border labor mobility adds the following new first order conditions to the system of non-linear equations that determine transition dynamics in the model:
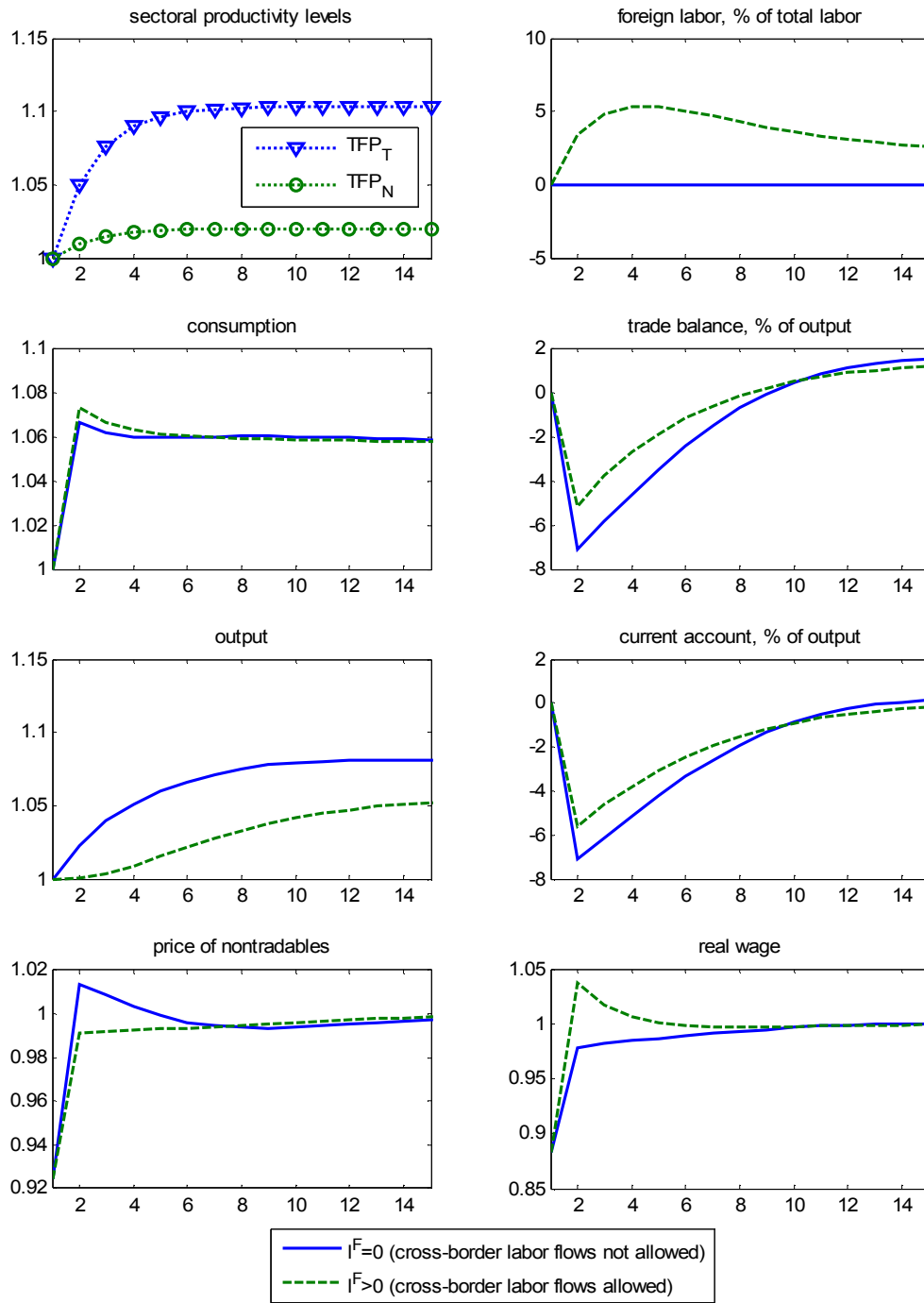
$$w^* - w_t = c_{Nt}(p_N^* - p_{Nt}) + \Gamma_{l_t^F}(l_t^F, l_{t-1}^F) + \beta \frac{U_{c_{Tt+1}}}{U_{c_{Tt}}} \Gamma_{l_{t+1}^F}(l_{t+1}^F, l_t^F),$$

$$w^* - w_t = c_{Nt}(p_N^* - p_{Nt}),$$

where to simplify the expression we have applied $\zeta = 0$ to eliminate the adjustment cost terms.

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[12] For more details on transitional dynamics see Bems and Schellekens (2007).

Figure 3: Simulations with Minimal Factor Adjustment Costs

Source: Authors' calculations

After the productivity shock and removal of cross-border labor flow restrictions, the representative consumer in the model faces a real wage gap, [13] i.e.,

$$\frac{w^* - w}{c_N \left(p_N^* - p_N \right)} > 1 \, .$$

Labor will be reallocated to the rest of the world until this gap is closed. These considerations set in action the following dynamics: *ceteris paribus*, labor outflows increase the marginal product of labor, narrowing the wage gap. At the same time, the reduction in the domestic labor force lowers the marginal product of capital, resulting in less investment or even disinvestment. This in turn lowers the marginal product of labor, and induces further labor outflows. As discussed earlier, without adjustment costs, these dynamics would lead to an instant reallocation of all labor (and capital) to the rest of the world. However, in the presence of adjustment costs to factors of production (in this case sectoral labor adjustment costs) the outflow is more gradual and stops once the wage-price gap is closed.

The dynamics are further affected by changes in the relative price of nontradables, which is initially lower than in the rest of the world, and the consumption of nontradables. Both variables increase during the first period of transition, making their overall contribution to the real wage gap indeterminate. In Figure 3, the relative price during transition remains below the rest of the world level, while consumption overshoots the steady state level. To satisfy the first order condition, the wage also overshoots the level in the rest of the world.

As can be expected, access to a higher foreign wage speeds up the convergence process in the model. Intuitively, by reallocating abroad, a fraction of the labor provided by the representative consumer can immediately command higher compensation due to the higher foreign productivity levels. This increases both income and consumption, but aggregate output growth at home will be lower as the size of the local labor force shrinks.

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[13] Note that in the model's steady state, the wage is determined by sectoral productivities as follows:

$$w = (1-\alpha)A_T \left(\frac{\alpha}{r+\delta} A_T^\gamma A_N^{1-\gamma} \right)^{\frac{\alpha}{1-\alpha}} ,$$

with higher productivity levels leading to a higher wage in the rest of the world. The relative price of nontradables in a steady state is determined by $p_N = A_T / A_N$ and, given our parameterization, is also higher in the rest of the world.

With cross-border labor mobility, the two stages of the convergence process are less pronounced. As labor reallocates abroad, so does part of the domestic demand for tradable and nontradable goods. The lower demand for nontradables alleviates the main bottleneck in the convergence process. Consequently, the relative price of nontradables in equilibrium needs to increase by less. Concomitantly, the lower demand for tradables results in smaller external sector imbalances and a lower level of foreign debt. The only exception to this observation is the wage rate in the domestic economy, which is further increased by the cross-border mobility of labor.

Interestingly, the transitional dynamics in the model can exhibit partial return migration. In Figure 3, around 5 percent of the labor force reallocates to the rest of the world during the initial 5 years of transition. In the subsequent decade some of the labor returns, with foreign labor stabilized ultimately at 2 percent of the total labor endowment. The size of return flows is determined by a complex interplay of expected productivity increases and adjustment costs. Because of adjustment costs to factors of production, in initial periods the "real wage", i.e., wage adjusted for price level differences, can overshoot its level in the rest of the world and subsequently induce return flows.

Case 2: Impact When Adjustment Costs are Large

The transitional dynamics in Figure 3 exhibit uncomfortable "over-shooting" dynamics in several variables. In particular, the wage in the first transition period exceeds that of the final steady state and consumption peaks in the first period of transition. This subsection considers an alternative simulation with larger factor adjustment costs and a more persistent productivity increase. It is argued that the absence of adjustment costs and lack of persistence in productivity growth drive the overshooting dynamics.

For the simulations of this subsection, adjustment costs for sectoral investment are set at $\eta = 0.9$, which is a standard value in the literature. The level parameter for adjustment costs in cross-border labor flows is set at $\zeta = 100$. The resulting adjustment costs during transition are economically insignificant, peaking at 0.05 percent of consumer income in the initial period of transition. Domestic sectoral labor adjustment costs are kept at $\lambda = 2$, unchanged from the previous parameterization. To increase the persistence of productivity growth, we set $\omega = 0.8$, $g_T = 0.06$ and $g_N = 0.03$.

Figure 4 summarizes the simulation results from this parameterization. As before, outcomes from the model with (dashed line) and without (solid line) cross-border labor mobility are compared. In line with the parameterization, the productivity shock is considerably more persistent, leading in the final steady state to a 33-percent increase in the level of productivity in the tradable sector and a 15-percent increase in the nontradable sector.

Despite the added persistence and adjustment costs, the qualitative story behind the effects of cross-border labor mobility on transitional dynamics is the same as in Figure 3: the convergence process is sped up and the two stages of convergence are less pronounced, except in the case of the domestic wage rate.

Quantitatively, adjustment costs and persistence in productivity eliminate the initial overshooting dynamics in consumption and the wage rate. If a larger role for Balassa-Samuelson effect in productivity convergence was assumed, the relative price of nontradable goods in the first period would also remain below the final steady state level. Since in the initial period the trade deficit exceeds the current account deficit[14], this model simulation exhibits sizable (around 1.5 percent of output) wage remittance flows into the model economy.

Finally, notice that the results in Figure 4 feature considerably larger labor outflows and no return migration. Larger outflows result from the wider initial productivity gap, which increases the benefits from reallocating labor to the rest of the world. The optimal transition path exhibits small amounts of return migration from period 30 onwards (not included in the figure), but the observed return flows are economically insignificant. The eventual size of the foreign labor remains at 16 percent of the total labor endowment.

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[14] To see this, recall that $b_0=0$ and, thus, in the first period of transition $rb_0=0$ with any deviation between the trade balance and the current account being a result of wage remittance flows.

Figure 4. Simulations with Larger Adjustment Costs
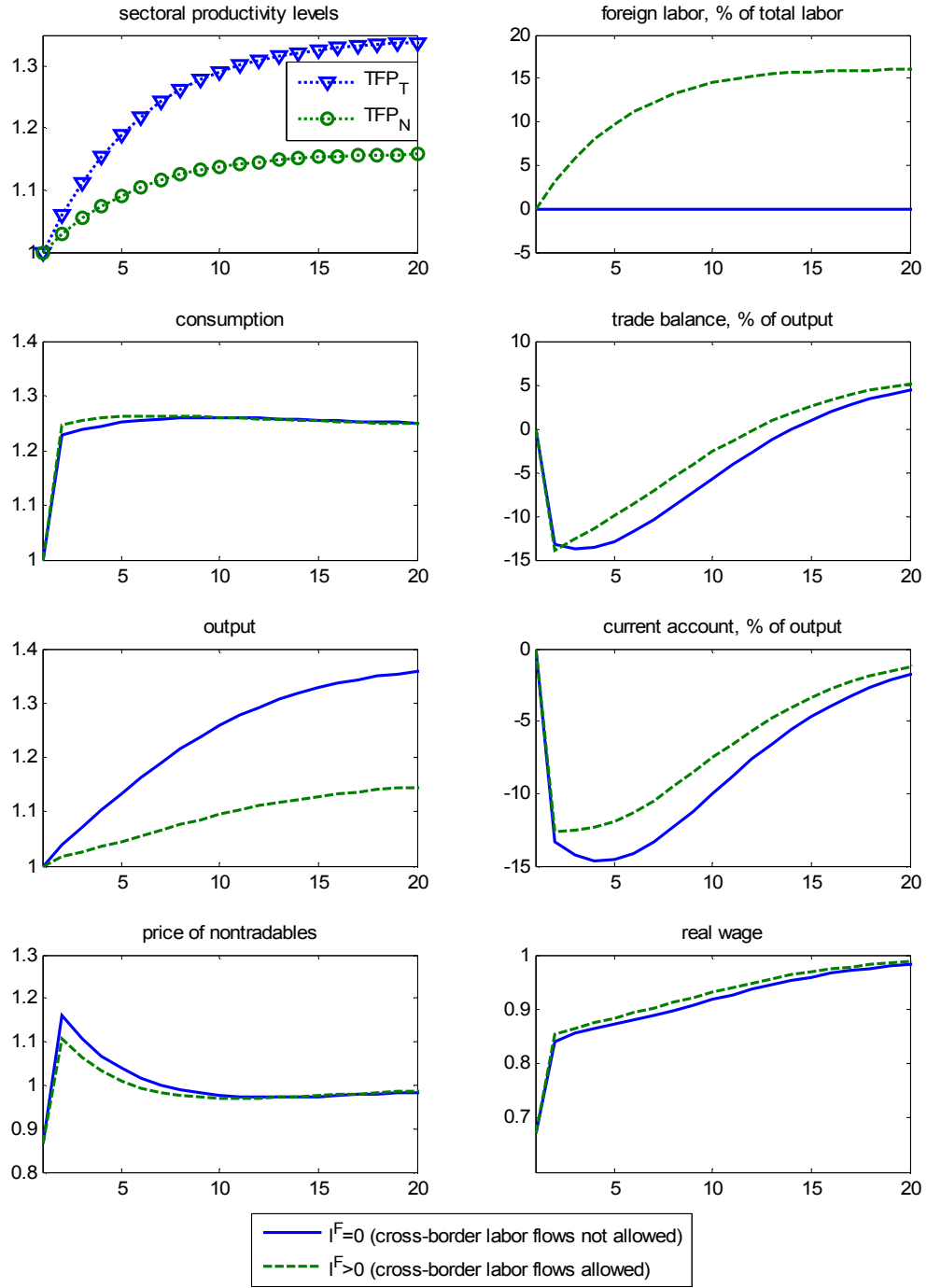
Source: Authors' calculations

Case 3: Pace of Productivity Convergence and the Boom and Bust Cycle

Next we apply the model to examine two further questions concerning optimal cross-border labor flows during the income convergence process. First, for a given productivity gap, how does the speed of productivity convergence affect the size of labor outflows? Second, what is the impact of "overly optimistic" expectations for productivity convergence on labor outflows?

To answer the first question we consider two alternative paths of "fast convergence" and "slow convergence". In both cases, identical productivity gaps between the model economy and the rest of the world are bridged. In the case of fast convergence, productivity converges quickly and smoothly. In the slow convergence case, productivity convergence is interrupted for some years. We assume that the initial 5 years of convergence are followed by 5 years of zero productivity growth, with productivity convergence resuming subsequently. As a result, in the case of slow convergence, catch-up in productivity takes exactly 5 years longer.

Figure 5: Response of Cross-Border Labor Flows to Selected Convergence Scenarios
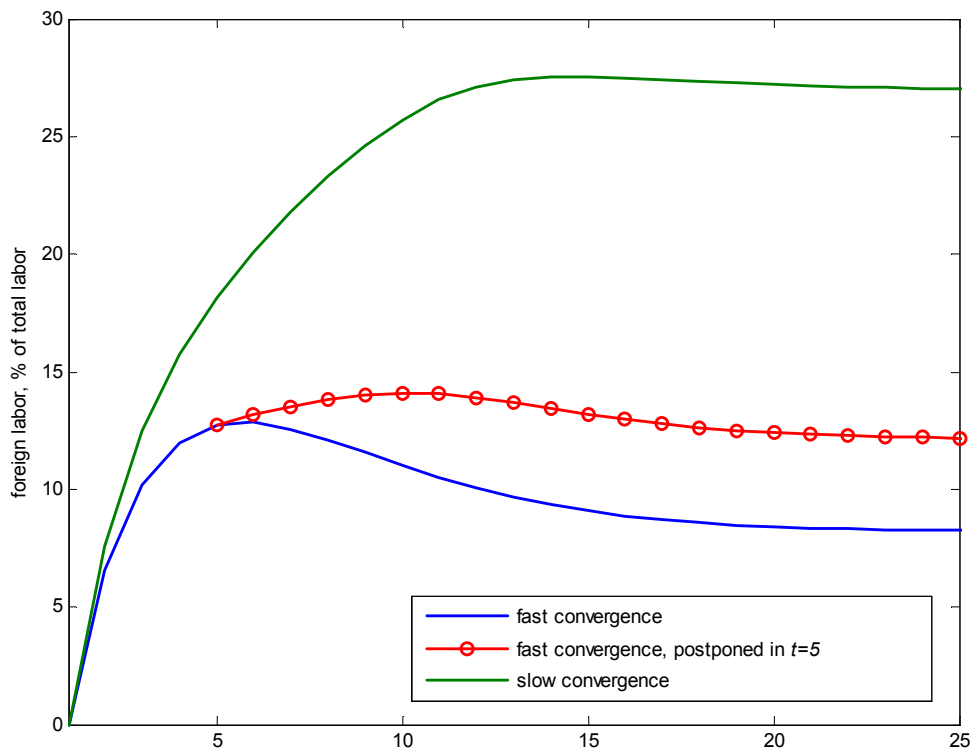
Source: Authors' calculations

The optimal cross-border labor flows for the two scenarios are presented in Figure 5, where the dashed and solid lines represent respectively the cases of slow and fast convergence. The results suggest that labor outflows decrease with the speed of convergence. Intuitively, faster productivity convergence leads to smaller wage gaps. The closing of the wage gaps can then be achieved with a smaller reallocation of labor to the rest of the world. Importantly, not only the difference in productivity levels initially matters (which happens to be zero in this particular example), but also the difference in all subsequent periods of transition.

The second question concerns the effect of "overly optimistic" expectations on the outflow of labor. To answer this question, consider a model simulation with two sequential shocks. Initially, agents believe that the economy is on a track of "fast convergence". They hold this belief with full certainty. However, in period 5, new information about the productivity convergence process is revealed as follows: productivity growth will be zero for the next 5 periods and subsequently the initial convergence process will resume. What effect does the second shock have on optimal cross-border labor flows?

The model solution for this case is shown in Figure 5. After the second productivity shock in period 5, the optimal path for labor outflows diverges from the case of "fact convergence". The new path for productivity implies larger wage gaps than initially expected. To bridge these larger wage gaps, a higher proportion of the total labor endowment is allocated to the rest of the world. These model results are in line with the view that an unexpected slowdown in the convergence process can generate new waves of labor outflows.

Interestingly, the model results suggest that overall labor outflows are substantially smaller in the case of a boom-bust cycle than in the case of a "slow convergence". Consumers' welfare is higher when "slow convergence" is initially correctly anticipated and labor can be allocated to the rest of the world from the outset.

IV. POLICY CHALLENGES

Following the discussion and model-based interpretation of greater cross-border labor mobility, this section discusses a number of challenges for policy. While greater labor mobility has substantial benefits at the level of the individual, it does present a number of challenges at the aggregate level:

- From the perspective of the individual, greater mobility offers a wider set of possibilities. Insofar as the outflow of labor is the outcome of a decision made under free choice, the outcome is welfare improving to the individual.

- From the perspective of society, however, the issue is more complex. Does the individual decision impose any externalities on the rest of society? How are these externalities shared across borders? Do national policymakers sufficiently take into account the cross-border externalities?

In what follows, we will discuss the challenges that arise at the level of society and relate these to the objectives of managing volatility and fostering growth.

A. Managing Volatility

The flow of labor across borders has been repeatedly—and, as will be argued, often erroneously—associated with overheating and subsequent cooling (the boom-and-bust cycle). This is perhaps unsurprising in view of the rates of wage inflation recently observed in some countries, as well as the presumed boost of remittances to domestic demand.

Symptoms of Overheating...

During the early stages of transition, labor outflows occurred in the context of large unemployment and underemployment figures. Later on, domestic labor markets have experienced a tightening, driving up real wages (Figure 6), although this started to taper off somewhat more recently. Job vacancy rates evolved similarly (Figure 7), although in Estonia and Latvia they have started to fall recently. Shortages have emerged in segments of the labor market (e.g. construction and services), where labor demand was buoyant. With labor markets tighter, incremental moves in the supply of labor due to cross-border mobility have as a result become more easily reflected in wages.
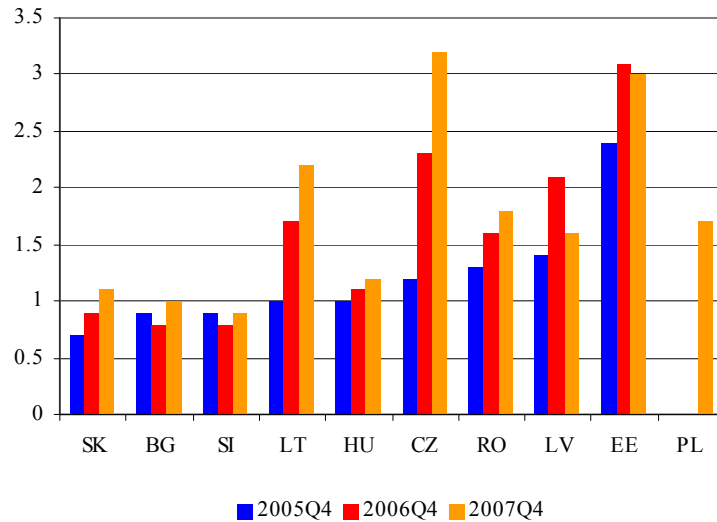
Figure 6. New Member States: Real Wage Developments, 2004-2008:Q1

(percent)

■ 2004 ■ 2007 ■ 2008Q1
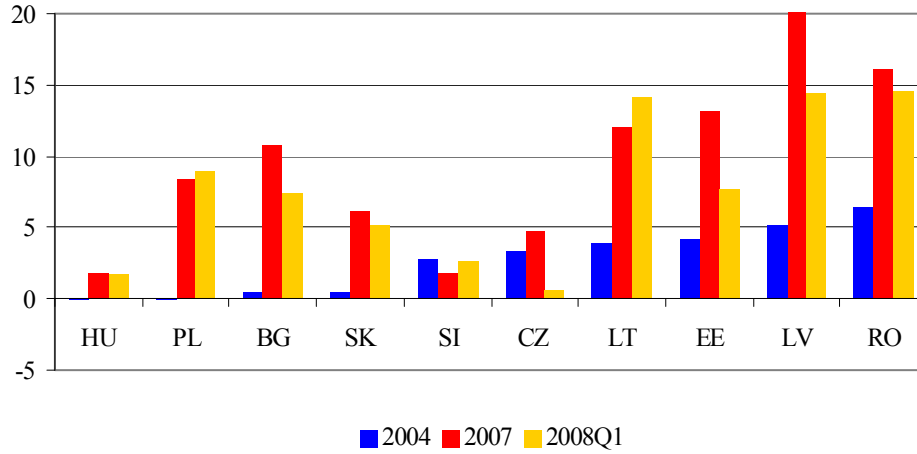
Sources: Eurostat; and IMF staff calculations.
Notes: Average year-on-year quarterly growth rates, deflated by the consumer price index.

Figure 7. New Member States: Job Vacancy Rates, 2005-07

(percent)

■ 2005Q4 ■ 2006Q4 ■ 2007Q4

Sources: Eurostat; and IMF staff calculations.
Notes: The job vacancy rate is defined as the ratio of total posts that are vacant to the number of occupied posts plus the number of job vacancies.

Associated with labor outflows are the inflows of remittances. These support domestic economic activities, and, insofar as these activities push up the demand for domestic products, price and wage inflation could ensue. In addition to supporting household and family consumption, remittances may increasingly take on an investment character. The monies remitted by cross-border workers may be invested in domestic equity and real estate markets, thus amplifying existing appreciation pressures on these asset prices and feeding back into overall demand through wealth effects.

... Or Business As Usual?

Before assessing labor mobility's role in overheating, how important has labor been relative to capital in the convergence process? It seems that, for most countries, the combination of anticipated productivity growth and the desire to smooth consumption have been a more powerful driving force than labor mobility.[15] This is also apparent in the fact that, even if labor has flown out, capital has continued to flow in—which would not have been the case had net labor outflows been the dominant factor.[16] So, if labor plays a more limited role than capital in the convergence process, one can safely conjecture that the role of labor in producing overheating is also more limited.

The role played by labor mobility, and its contribution to wage inflation and demand support (e.g. through remittances), need not be seen as causing overheating per se:

- A degree of wage inflation in domestic labor markets is a natural and optimal feature of convergence when labor is crossing borders.[17]

- Remittances allow households to access a wider set of consumption and investment choices, and are therefore a crucial channel through which cross-border labor mobility translates into welfare benefits.[18]

- Labor mobility may dampen the oscillations observed in the domestic economy. As labor flows out, some of the demand for nontradable goods is exported, thereby alleviating pressure on domestic resource constraints. As a result, the nontradable price boom and current account deterioration are both smaller.

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[15] See Brunner (2008).
[16] If labor flows out, the remaining labor force would have too much capital
[17] In cases with a labor-leisure choice, employment may increase during booms, alleviating wage pressures.
[18] Kaczmarczyk and Okolski (2008) report that most expenses by seasonal migrants who worked in Germany during 1998-2000 fall under the category of current consumption.

Labor Mobility's Cushioning Role

As shown by model simulations (see Figure 5 and accompanying discussion), labor mobility responds to overheating pressures: the outflow of labor moderates as the economy overheats, thereby diminishing labor's effect on wage inflation. Labor mobility would also respond in the case of a significant cooling or "bust" in the boom-and-bust cycle. Whereas most countries have continued to register strong growth, the economic conditions in some countries, particularly those that had experienced overheating pressures previously, have started to turn around or have already done so. With labor markets open internationally, the concern is that the downturn produces additional outward flows of labor, as well as a reduced inflow of labor from abroad (including a reduced incentive for return inflows). The concern is particularly valid when the wage gap with destination countries is insufficiently closed.

The magnitude of the labor outflow following a downturn also depends, of course, on whether the downturn is similarly being felt in recipient economies. Indeed, if conditions deteriorate simultaneously in recipient and sending countries, the threat of additional labor outflows may be diminished. Also, region-specific shocks may induce both inward and outward migration. For example, a sector-specific shock in one region may induce an inflow of high-skilled workers from other regions, while producing an outflow of low-skilled workers.

Demand-Management Policies

Against this background, what are the implications for demand-management policies?

- With respect to episodes of overheating, the key policy implication is to address the source of overheating directly, taking into account that much of the wage pressures caused by labor mobility reflect natural convergence and not overheating. Attempting to limit labor mobility directly or to offset the resulting upward pressure on wages through demand management policies may hurt the overall economy's convergence process and, therefore, individual and social welfare.

- At the same time, from a demand-management perspective, overheating may pose a number of secondary challenges, and the key will be to address these while preserving the benefits of labor mobility. For example, as noted, wage inflation may be a natural consequence of labor mobility. While these inflationary consequences are optimal, the policymaker will need to fine-tune demand management policies to ensure that wage pressures do not set off a self-feeding wage-price spiral.

- Policymakers will also need to keep the second-round impact in check to ensure that wage growth does not erode competitiveness. Even where local labor market characteristics, such as low degrees of unionization and high internal labor market flexibility, would suggest that wage growth can be kept in line with productivity growth, the threat of emigration limits the scope for doing so. In designing their policy response, policymakers will need to carefully monitor wage developments and walk a fine line between preserving competitiveness and allowing wages to rise naturally in line with what is optimal.

B. Fostering Growth

Several challenges to the competitiveness and dynamism of the NMS economies need to be addressed to ensure that countries not only reorient their economies successfully toward the tradable sector but also utilize resources more efficiently.

Mobilizing Labor Supply and Employment

Most NMS have experienced a significant improvement in labor market outcomes. Convergence led to a boost in the rate of job creation (Figure 8). As a result, average employment rates for the NMS rose by almost 5 percentage points, although the improvement varied significantly across countries. Similarly, unemployment indicators improved (Figure 9), falling from about 12 percent during the early 2000s to 7 percent in the past few years. Long-term unemployment rates also improved in many countries.

Notwithstanding these improvements, there is further scope to mobilize and better utilize labor resources in most NMS. While the average employment rate has improved in most countries, it remains in all countries below the Lisbon target of 70 percent. The average employment rate in 2007 stood at 63 percent, with some countries (Poland, Hungary, and Romania) experiencing rates below 60 percent. Also, unemployment rates remain high in several (notably the Slovak Republic and Poland, but also Bulgaria and Hungary).

Raising labor market participation rates will help ease pressures on the labor force arising from natural demographic reasons and net migration, both of which reduce the working-age population. As argued by Kaczmarczyk and Okolski (2008), changes in labor market participation may play a bigger role than purely demographic changes through natural population growth and net migration. It is essential for the NMS to improve participation rates so that they can successfully meet the challenges they will face.
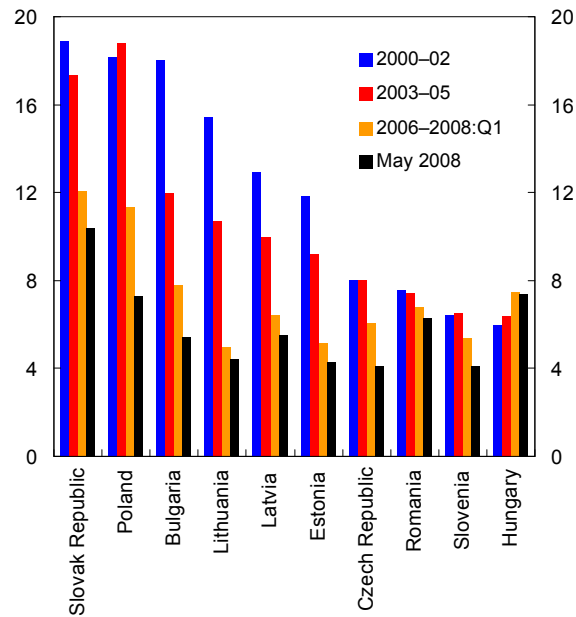
Figure 8. New Member States: Employment Rate, 2000-07(percent)
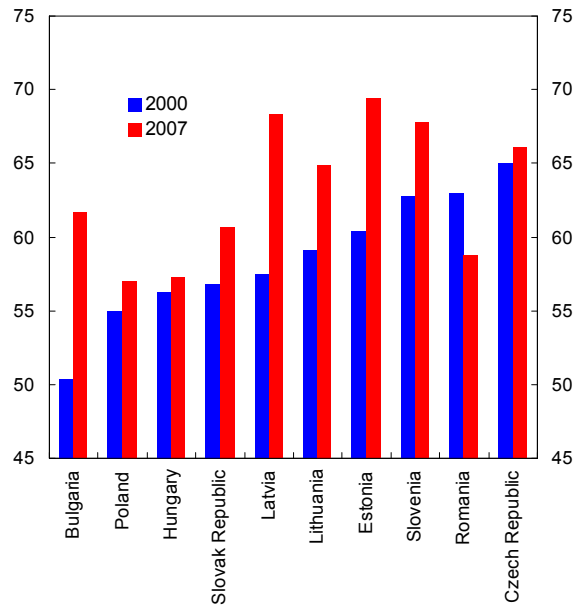
Sources: Eurostat; and IMF staff calculations
Notes: Values for Czech Republic and Romania are
forecasts

Figure 9. New Member States: Unemployment Rate, 2000-08 (percent)

Sources: Eurostat; and IMF staff calculations
Notes: Harmonized monthly unemployment rates averaged
over periods indicated. Romania's latest observation is
March 2008.

A number of factors may complicate the mobilization of labor supply and the increase in employment rates:

- Overheating forces may have eroded the competitiveness of tradable industries, causing them to close down; if reinstalling industries is costly, completing the reorientation stage will become more difficult.

- Reorientation stage challenges are also more difficult to meet if the labor supply is limited and the skill profile of the workforce has deteriorated through the allocation of resources to the nontradable sector.

- The foreign debt will need to be serviced with a smaller labor support (assuming that much of the foreign debt remains local while labor migrates).

The process of income convergence is accelerated if policymakers stimulate labor force participation and employment rates. Greater labor market participation and lower structural unemployment could be achieved through better-targeted active labor market policies, less rigid regulations regarding hiring and dismissals, and an improved design of the tax benefits system.

Reducing Labor Market Mismatches

In a number of countries, labor outflows of the young and relatively low skilled have been particularly pronounced. This phenomenon has lowered the rate of wage dispersion across education levels. In Estonia, for example, net wages for those with tertiary education were 93 percent higher in 1997 than for those with only primary education; by 2006, this premium had fallen to 32 percent.[19]

In countries where mismatches have arisen due to changes in the composition of gross outflows and inflows, these mismatches will need to be addressed. Similar mismatches may arise from the aging of the populations in many countries. These problems complicate the reorientation of the economy to a high-value-added and competitive export sector.

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[19] Statistics Estonia, *Labor Force Surveys*.

To offset mismatches, further consideration should be given to relaxing immigration policies, so as to allow larger inflows from non-EU emerging economies.[20] In addition, countries could invest in return migration to attract back those emigrants who during their employment abroad have gained valuable skills. Some countries have, for example, launched initiatives to induce overseas nationals to "return migrate" to reduce mismatches domestically.[21] Policymakers could also consider investing further in education, including tertiary education.

V. CONCLUSION

This paper has examined the impact of cross-border labor flows on the income convergence process of the European Union's New Member States. Its key findings can be summarized as follows.

First, labor mobility speeds up the convergence process, helps boost economy-wide capital-labor ratios, supports aggregate demand through remittances, and may contribute to skills augmentation through the reintegration of returning migrants in domestic labor markets.

Second, as labor migrates, so does part of the demand for nontradable goods. This migration moderates the boom in nontradable prices and the buildup of the current account deficit that arise during the convergence process. It also lessens the requirements for internal factor market flexibility to direct resources to the tradable sector which would help reduce the current account deficit subsequently.

Third, restricting labor mobility is therefore no answer to overheating pressures. Labor mobility is unlikely to be a significant primary source of overheating. In addition, labor mobility tends to play a cushioning rather than amplifying role. However, over the medium term, second-round effects of wage inflation possibly associated with outward labor flows need to be avoided so as to prevent an erosion of competitiveness.

Fourth, to ensure sustained growth, labor needs to be mobilized and utilized better, including by fostering labor force participation. This outcome would enable countries to better face the challenges of reorienting resources from the nontradable to the tradable sector, as well as to address any mismatches resulting from the differences in the age and skill composition of labor outflows and inflows.

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[20] These non-EU countries may soon however face similar problems of labor shortage.
[21] Romania, e.g., launched initiatives to persuade Romanian construction workers to return home and fill domestic job vacancies.

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