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# Integrating migration and remittances into a development strategy. The case of Moldova

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## Executive Summary

Less than a decade into independence, Moldova was swept by a wave of outward migration, which has carried abroad at least one-fourth of the active population and provided in exchange an ever-growing flow of remittances, currently accounting for 25-30% of GDP. Government of Moldova (GoM) has neither treated migration and remittances in a comprehensive manner to date, nor has it explicitly included them in its economic policy.

This study provides the Government of Moldova a framework for devising an economic strategy that takes into account migration and remittances. The framework includes a mapping of the determinants and consequences of remittances, as well as a decision tree map for deciding between possible policy interventions. These can be broadly grouped into policies aiming to strengthen the positive effects of remittances (multiplier effect, investment of remittances) and the mitigation of negative consequences (Dutch disease, stress on the pension system).

This is followed by a preliminary analysis of the impact of remittances and migration on economic growth in Moldova. In particular, we find evidence supporting the existence of a remittance-caused Dutch disease and inefficiencies in the financial sector, which prevent the economy from taking full advantage of remittances as a source for productive investments.

# 1 Introduction and policy motivation

Less than a decade into independence, Moldova was swept by a wave of outward migration, which has carried abroad at least one-fourth of the active population and provided in exchange an ever-growing flow of remittances, currently accounting for 25-30% of GDP. It is impossible to think of any other phenomenon that has had a commensurable impact on Moldova's economy. Moreover, the experience of other small states that have witnessed similar processes over a decade earlier than Moldova (e.g. Jamaica, Lebanon) attest to how **migration and remittances are likely to shape the country's economy for years to come.**

Surprisingly, the **Government of Moldova (GoM) has neither treated migration and remittances in a comprehensive manner** to date, nor has it explicitly included them in its economic policy. The Economic Growth and Poverty Reduction Strategy Paper (EGPRSP), a medium-term plan (2004-2006) devised in collaboration with the World Bank, does not mention once the words "migration" and "remittances" in the introduction and the section on expected outcomes. The document identifies *twenty-five* areas for growth-oriented policy interventions, none of which deals directly with migrants and their transfers home. Remittances are mentioned exclusively as one of the drivers of inflation. The 2005-2009 Government Action Plan "Modernization of the country – increased welfare of the people" also did not mention remittances at any point of the 15,000 word report. While an *eighty-word* section of the report was devoted to the topic of migration, this section focused solely on the prevention and reduction of illegal immigration and human trafficking.

Nevertheless, there are **important positive changes**: in 2005, the government acknowledged that remittances are the primary driver behind the consumption-led growth of the previous three years.<sup>1</sup> This recognition is an important first step in beginning to devise an economic policy that would explicitly take into account these phenomena.

A review of the migration and remittances literature reveals that there are no publications available to help organize a policymaker's thinking around this subject. There is a large body of research on the normative economics of migration and remittances (their determinants

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<sup>1</sup> First Vice-Prime Minister Zinaida Greceanii talked about the "poor quality of growth", and in particular by growth's dependency on remittances in her report to the Cabinet of Ministers on October 26, 2005, as quoted by the "Ekonomicheskoye Obozrenie" (Economic Review) on October 28, 2006.  
<http://logos.press.md/Weekly/Main.asp?IssueNum=631&IssueDate=28.10.2005&YearNum=39&Theme=2&Topic=17127>

and impact). There are also individual studies on particular policies and programs that, most often, attempt to reroute remittances from consumption into productive investment. None of these, however, serve as useful guides to policymakers.

The present report attempts to provide the Government of Moldova a **framework for devising an economic strategy that takes into account migration and remittances**. This framework is for managing the economic consequences of migration and remittances. This report does not attempt to offer a detailed action plan for addressing *every* consequence of migration and remittances—that would make the document either monstrously large or extremely shallow. Instead, I focus on the impact on economic growth. This allows (i) showcasing the application of the framework and (ii) providing concrete recommendations that can be rolled out in a timely manner.

**Why focus on economic growth** and not on other policy objectives? The government itself has identified economic growth as the main driver for achieving other important objectives, including poverty reduction. This can be seen, for example, in the introduction to the Government’s 2005-2009 Action Plan. The title of “Economic Growth and Poverty Reduction Strategy Paper” also provides an important hint—the standard World Bank PRSP framework has been extended to address economic growth even more explicitly. The author himself is also guilty of subscribing to the view that economic growth is as close of an approximation as one can find to the “silver bullet” for many, if not most, development issues.<sup>2</sup>

I start chapter two by mapping all the consequences of migration and remittances discussed in the literature, including growth, macroeconomic stability, inequality, and the impact on the public sector. I then continue to analyze in depth the impact on economic growth. Chapter three offers a framework for devising economic policy that is aware of migration and remittances and includes a discussion of policy options. Chapter four presents evidence from Moldova which helps discriminate between options, and finally chapter five offers several growth-related policy recommendations.

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<sup>2</sup> A great discussion on the subject is provided in part one of William Easterly’s (2001) “The Elusive quest for Growth: Economists’ Adventures and Misadventures in the Tropics”.

## 2 Effects of migration and remittances

### 2.1 Determinants of Migration and Remittances

Although this paper is primarily concerned with the *consequences* and not the *causes* of migration and remittances, it is worth briefly summarizing the forces behind these phenomena. This will help in (i) better understanding some characteristics of migration and remittances and (ii) formulating policy interventions that are consistent with the incentives of migrants and recipients of remittances.

**The primary driving force of international migration is international wage differentials** (Rapaport and Docquier, 2005), **whereas altruism is the main reason for remitting** (Stark 1995, Chapter 1). The spatial separation of the migrant and family give birth to a number of additional reasons for migration and remittances:<sup>3</sup>

- **Remittances as payment for services.** Remittances may “buy” a wide range of services, such as taking care of the migrant’s assets and relatives at home. Such motivations are generally signs of temporary migration, signaling the migrants’ intention to return (Cox, 1987).
- **Remittances as repayment for supporting migration costs.** The high international wage differentials mean that people are ready to incur high costs in order to migrate. Such migration costs, however, are beyond the incomes of many prospective migrants and, given capital markets imperfections, must be financed through informal family loans repaid later (with interest) in the form of remittances (Rapaport and Docquier, 2005).
- **Migration as insurance.** Even when wage differentials are not significant enough to compensate for migration costs, it may still be optimal for some families to have migrant members. This is the case, in particular, for rural households whose agricultural income is highly volatile due to changing climatic conditions and other idiosyncratic risks (Rosenzweig, 1988). Consequently, remittances should be inversely correlated with the incomes of families at home. At the national level, this implies counter-cyclicalities of remittance flows.
- **Temporary migration as a source of financing.** In the presence of liquidity constraints and imperfect financial markets, people migrate in order to (quickly) accumulate the

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<sup>3</sup> The discussion follows the classification used by Rapaport and Docquier (2005).

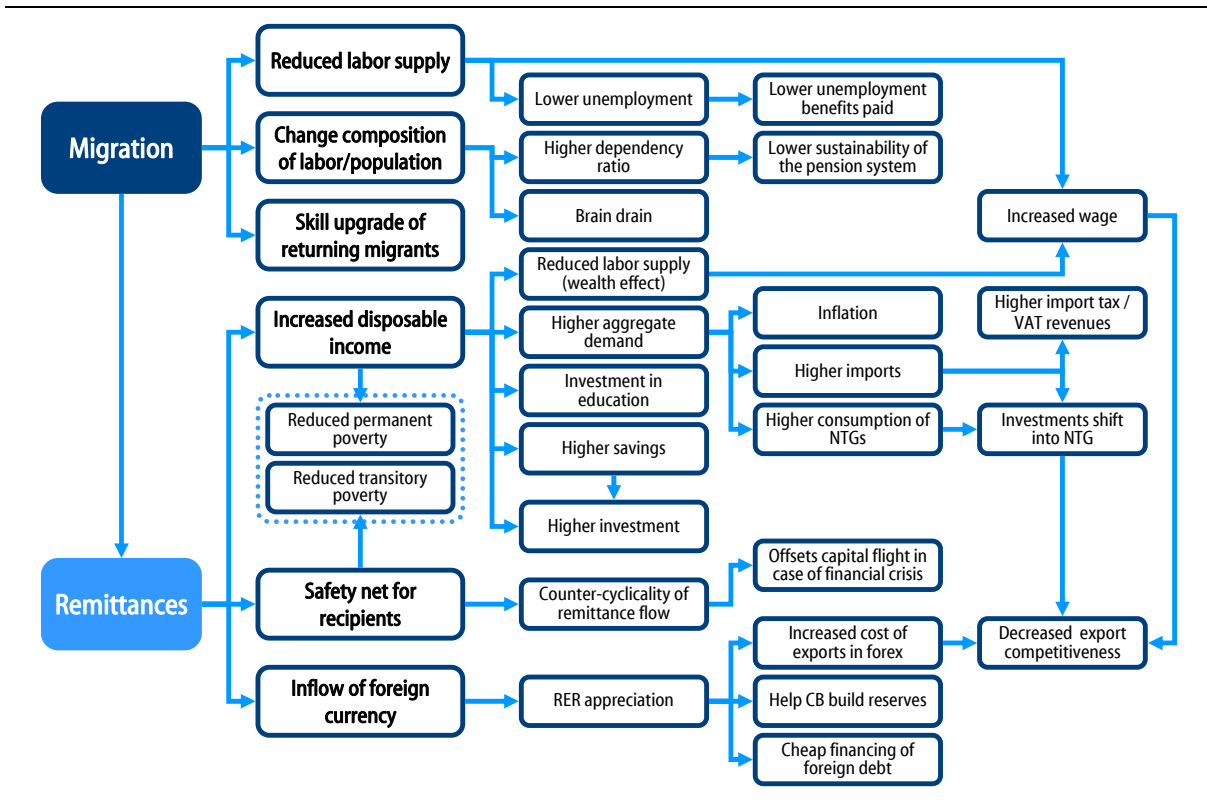
savings required to take advantage of productive opportunities at home and/or invest into human capital (Rapaport and Docquier, 2005).

## 2.2 Mapping Consequences of Migration and Remittances

It is hard to find an economic phenomenon that produces a more complex set of economic outcomes than that of migration on the sending country. Since remittances are the most visible outcome of migration, we treat the two phenomena independently. A note on terminology – I define remittances as including funds brought back by the migrants themselves.

In the following figure, I attempt to map the full array of the economic consequences of migration and remittances.

**Figure 1** The economic effects of migration and remittances on the sending country



By drawing on the rich body of migration and remittance economic literature, the rest of this section will briefly analyze individual effects presented in the map. This section will cover those consequences that are not directly related to economic growth. In section 2.3, I offer a deeper analysis of the impact of migration and remittances on growth.

### 2.2.1 Poverty reduction and impact on income distribution

Migration is often a response to widespread unemployment. In this context, it helps re-equilibrate the labor market and reduce the level of structural unemployment – one of the main determinants of permanent poverty.

The insurance motive to remit also means that remittances can be used for consumption smoothing, which Lucas and Stark (1985) have shown to be the case in their study of rural Botswana.

Cross-country evidence supports the beneficial effect of remittances on poverty reduction. Adams and Page (2003) find that a 10 percent increase in the share of international migrants in a country's population will lead to a 1.9 percent decline in the share of people living on less than \$1.00 per person per day.

The interplay between migration, remittances and inequality is more complicated. Migration is associated with high costs, which in the presence of liquidity constraints, may only be affordable to the richest households. As a result, this tends to further increase inequality. On the other hand, poor households are the ones that have the greatest incentive to send migrants abroad, which works in the direction of reducing inequality.

Sociological studies have provided ample evidence of the fact that these two forces interact. Massey et al. (1994) viewed migration as a diffusion process with decreasing information costs. This suggests that the dynamics of migration and remittances may be characterized by a “trickle down” effect: in the presence of liquidity constraints and initially high migration costs, only high-income groups can access higher income opportunities abroad, hence remittances tend to increase inter-household inequality early on. As the number of migrants increases, migration costs tend to decrease, thus making migration affordable to low-income households. This ultimately decreases economic inequality. Stark, Taylor and Yitzhaki (1986) document these trickle down effects in the case of Mexican villages.

### 2.2.2 Macroeconomic Stability and the Balance of Payments

The insurance motive for migration and remittances predicts that remittance flows should be countercyclical, or at least less pro-cyclical than other financial flows. Ratha (2003) finds that remittances into developing countries are indeed less volatile than private capital and even more stable than FDI – the more stable component of private capital flows. Moreover, remittances remain relatively stable even during large shocks, as in the Philippines, around the time of the Asian crisis of 1997, and in Turkey, around the period of the 2001 financial crisis.

The increase in aggregate demand due to the inflow of remittances is partially spent on non-tradable goods and services, therefore creating inflationary pressure. The supply of foreign currency tends to cause a nominal exchange rate appreciation. In sum, remittances lead to an appreciation of the real exchange rate, accompanied by the deterioration of the current account. I will return to the discussion of the growth consequences of these processes in section 2.3.

### 2.2.3 Impact on the Public Sector

For the government, the short-run consequences of migration and remittances are a blessing:

- The increase in imports (financed by remittances) increases the state's revenues from import tax and VAT on imports.
- The real exchange rate appreciation facilitates the servicing of public debt. The exchange rate appreciation helps reduce the value of foreign currency-denominated debt the same way in which inflation helps devalue the stock of national currency-denominated debt. Since liabilities of most developing governments are primarily dollar-denominated, the appreciation reduces the overall value of public debt.<sup>4</sup>
- The inflow of foreign currency facilitates the accumulation of foreign reserves by the Central Bank.
- By reducing unemployment, migration effectively reduces the state's payments of unemployment benefits.

However, the analysis of a longer-term horizon hints that migration and remittances may prove to be a mixed blessing for governments of sending countries. Outward migration of the active population deteriorates the dependency ratio – there are fewer workers per non-worker. The increased dependency ratio leads to a decreased sustainability of “pay as you go” pension systems, which are traditionally large in the case of transition economies. There are simply not enough working people to pay the pensions of the old.

An indirect negative effect of remittances and migration on the long-run performance of public institutions stems from certain short term benefits. Remittances effortlessly bring higher tax revenues, improved balance sheets, higher foreign currency reserves and as we'll see in the next section, short-term economic growth. In such a situation, governments are no longer subject to former stringent constraints, which postpone structural reforms. This

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<sup>4</sup> The concept and consequences of “original sin” – the inability of government of developing countries to borrow long term in domestic currency is introduced by Hausmann (1999).



from 1.24 (Bangladesh study by Stahl and Habib, 1989) to 3.2 (Mexico study by Adelman and Taylor, 1992).

The analysis of the long-run effects of migration and remittances produces less unambiguously positive results.

### 2.3.2 Savings and Investment

There is a large body of evidence that supports the hypothesis that people engage in temporary migration to overcome borrowing constraints at home. The latter prevent people from taking advantage of productive opportunities at home.

For example, Woodruff and Zenteno (2001) estimate that one-fifth of the capital invested into newly-created enterprises in urban Mexico comes from remittances from the United States. Dustmann and Kirchkamp (2002) found that one-half of a sample of Turkish emigrants returning from Germany started their own business within four years after resettling — thanks to savings accumulated abroad. McCormick and Wahba (2002) find, in the case of Egypt, that a large proportion of returning migrants in the late 1980s set up their own enterprises using funds brought back from abroad. Remittances can also be channeled into productive investments through the banking system. Using household surveys, Adams (1998 and 2002) in the case of Pakistan, and Banaian and Roberts (2004) in the case of Armenia, find that the marginal propensity to save from remittances was higher than from other forms of income.

There is some cross-country evidence pointing in the same direction. Glytsos (2002) models the direct and indirect effects of remittances on investment in seven Mediterranean countries and finds that investment rises with remittances in six out of the seven countries.

One cannot stop noticing the fact that the impact of remittances on growth through the investment channel hinges on a well-functioning financial system. The substitution and complementarity of remittances and financial markets has recently been studied by Giuliano and Ruiz-Arranz (2005). On one hand, well-functioning financial markets, characterized by low transaction costs, may help channel remittances to projects that yield the highest returns and therefore enhance growth rates. On the other hand, “remittances can compensate for a bad financial system: by loosening liquidity constraints, potential entrepreneurs could use remittances whenever the financial system does not help them start productive activities due to lack of collateral or because of high lending costs.” The authors find that in countries with poor financial intermediation, remittances are indeed associated with increased economic growth.

Remittances can also substitute poor insurance markets by providing a source of stable income in the event that the recipient family assumes the risks associated with launching new productive activities. (Taylor 1999).

Despite these upbeat conclusions about the potential of remittances, there are several factors that can hinder the channeling of remittances into productive investments.

### 2.3.3 Fragility of the Savings and Investment Channel

There is a myriad of reasons that would result in a suboptimal share of remittances devoted to productive uses, thus reducing the motive to remit for investment purposes. Below we list just a few factors that may negatively influence savings and investment decisions.

Recipients of remittances and migrants themselves often lack entrepreneurial skills and expertise, which may lead to the fact that **projects initiated by recipients may inherently have low rates of returns.**

Low returns may also be due to a **lack of complementing factors** in areas where recipients are concentrated, e.g. public infrastructure in rural communities.

**Government failures** may further depress returns, e.g. a poor investment climate induces additional costs on firms.

In either case, it is not clear if direct investment (in SMEs, presumably) is the most productive use of remittances. It may well be that savings in the banking system, which are channeled into financing large companies, may provide the biggest bang for the buck. However, **poor financial intermediation** (due to market failures or poor regulation) may result in high interest rate spreads, which lowers the attractiveness of formal savings.

**Moral hazard** issues have attracted less attention as a potential explanation for low savings and investments. Chami, Fullenkamp and Jahjah (2003) argue that moral hazard reduces the labor supply of recipients of remittances. There are, however, other instances in which moral hazard and information asymmetries between migrants and recipients result in suboptimal decisions on the part of the latter.

### 2.3.4 Human capital accumulation and technology transfer

Migration and remittances affect human capital formation through brain drain and by providing resources for financing education for liquidity-constrained households.

The positive or negative effect on human capital accumulation critically depends on the skill distribution of migrants and on the probability of the migrant returning to his home country. Faini (2002) finds that the existing bias towards skilled migration exacerbates the brain drain

in developing countries and restricts the ability of these countries to rely on unskilled migration as an engine for growth and convergence.

Beine, Docquier and Rapoport (2001) take a cautiously optimistic position on brain drain. They distinguish two growth effects: the prospect of higher returns abroad fosters investments in education (the ex-ante “brain effect”), and the exodus of the educated labor force lowers the stock of human capital (the ex post “drain effect”). The case for a beneficial brain drain emerges when the first effect dominates. Using cross-section data for 37 developing countries, they find that beneficial brain drain is more than just a theoretical curiosity.<sup>6</sup>

In the presence of liquidity constraints, remittances can also be used to finance education (Rapoport and Docquier 2005). The existence of this effect is supported empirically by studies in El Salvador and Mexico. Using the 2000 Mexican Census, Hanson and Woodruff (2002) conclude that 10-15 year old children in households with a migrant member complete significantly more years of schooling, with an estimated increase that ranges from 0.7 to 1.6 years of schooling. Cox Edwards and Ureta (2003) reach similar conclusions in the case of El Salvador. Their estimates of “survival functions” show that remittances significantly contribute to lowering the hazard of leaving school.

Finally, returning migrants who upgrade their skills while working abroad, effectively act as agents of international technological transfer.

### 2.3.5 Dynamic comparative advantage and exports

The reduction of labor supply is probably the most direct effect of migration. This leads to increased equilibrium wages in the economy. Chami, Fullenkamp and Jahjah (2003) argue that the reduction of labor supply is also brought about by the income substitution effect — remittance recipients reduce their own labor supply in response to the additional remittance income. The reduced supply of labor increases nominal costs of all firms. In addition, increased domestic demand raises the price of non-tradable goods and results in the appreciation of the currency, which negatively affects the competitiveness of exporters, resulting in the so-called Dutch disease. For many small economies, Moldova included, foreign markets are the only ones which provide ample room for increasing output, and hence growth.

In the framework of a model of dynamic comparative advantage, Krugman (1987) shows that the Dutch disease, combined with learning by doing externalities in the export sectors, will permanently decrease the sophistication of a country’s exports and its long-term growth.

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<sup>6</sup> Similar conclusions can be also found in Stark (2004).

Annex 1 presents an extension of Krugman's model, which is modified to account for the fact that the Dutch disease is caused by outward migration (reduction in labor supply). This extension results in even stronger results with respect to losses of export markets and prospects for growth.

The model predicts that the labor-exporting/remittance-receiving country will reduce the number of goods produced and exported (although not necessarily quantities). Hence, to test if increased labor costs and the Dutch disease negatively affect exports, I look at the concentration of exports by groups of products.

### 2.3.6 What is the net effect on long-term growth?

The long-term effects constitute a mixed bag of negative (loss of competitiveness due to real exchange rate appreciation/increased wages, reduction of human capital due to brain drain, postponed structural reforms, increased dependency ratio) and positive (increased savings and investment into physical and human capital) effects. Not surprisingly, cross-country evidence provides similarly ambiguous results.

Using a panel of 126 countries, Chami et. al (2003) find a negative effect, which they explain by moral hazard issues. Catrinescu (2005) improved on the original specification of regressions by adding controls for institutional development (corruption in particular). This switched the sign on remittances from negative to positive. Using an updated version of the same dataset and by controlling for the level of financial development, Giuliano and Ruiz-Arranz (2005) find a positive growth effect of remittances in countries with poor financial systems. These authors also made the first attempt in controlling for the endogeneity of remittances and financial development. This was achieved by using a Generalized Method of Moments (GMM) approach.

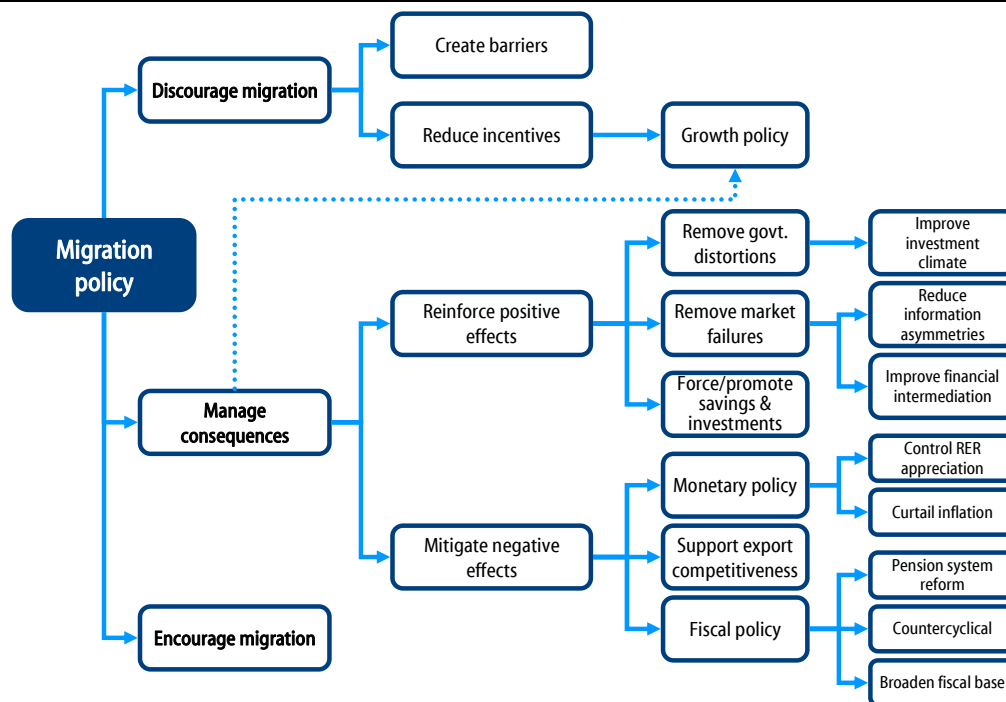
Since the balance of positive and negative long-term effects can differ wildly across countries, these mixed results are to be expected. Hence, this implies that one cannot make any blanket recommendations regarding remittances. The balance of positive and negative long-term effects for each country must be analyzed on a country-by-country basis.

### 3 Policy intervention options

Given the number and intricacies of outcomes brought about by migration and, more specifically, remittances, it comes as no surprise that the relevant policy options are just as numerous. They range from border controls and taxes on remittances to active support of migrants abroad and the creation of incentives for direct investment of remittances. While many of the available policy options attempt to achieve diametrically opposite results, other options appear to reinforce each other. This complexity means that one cannot go about devising a policy package dealing with migration and remittances without a clear framework in mind.

One candidate for such a framework is the decision tree, a possible version of which is presented in the figure below.

**Figure 3** A possible policy decision tree for addressing migration and remittances



The discussion below presents a step-by-step analysis of this decision tree, and it aims to identify a set of policy measures that:

- are compatible with the motives that create remittance flows in the first place;

- addresses the deep issues related to migration and remittances; and
- can be implemented with limited resources and within a reasonable time frame.

### 3.1 Discourage migration, encourage it or manage its consequences?

The first decision to be made by the state is to determine its overall stance and attitude towards migration. It is obvious that at least two options—encouragement and discouragement of migration—are incompatible with each other, while the third option can potentially be combined with one of the other two.

A clear case in favor of encouraging or discouraging migration can be made only if one has a clear answer to the following question:

*Do migration and remittances have a strictly positive or negative impact on the welfare of the sending nation, i.e. on those who remain residents of the country?*

To answer this question, we need to decompose the welfare impact of remittances. For simplicity, we will proxy welfare by GNP per capita. This measure has one important drawback – it disregards the impact of remittances on inequality (which was shown to be ambiguous) and on security arising from the introduction of a stable source of income (which is strictly positive). Also, I focus exclusively on residents remaining in the country. One could expand the population of interest to include residents and temporary migrants, or residents, temporary migrants and permanent migrants who continue holding Moldovan citizenship. This, in the end, is a political decision on the part of the government. Since the entire analysis is focused on issues of economic growth, which usually refers to the area encompassed by a country's borders, I restrict my analysis to the narrowest possible definition of the population of interest.

We can decompose the welfare impact of migration and remittances ( $\Delta W$ ) into two components: short-term level effects ( $\Delta W_0$ ) and the discounted cumulated effect on future welfare ( $\Delta W_t$ ). In short, we are interested in signing the following expression:

$$\Delta W = \Delta W_0 + \sum_{t=1}^T \delta^t \Delta W_t$$

At time zero we only observe the short-run effects. The magnitude of the growth effect critically depends on the applied discount factor  $\delta < 1$  and the duration of these growth effects  $T$  or the relevant policy horizon.

As discussed earlier, migration and remittances have in general a positive welfare impact on the current generation (reduced poverty and unemployment, increased disposable incomes, multiplier effects of increased aggregate demand on short-term growth, etc.), i.e.  $\Delta W_0 > 0$ . However, existing cross-country studies on the role of remittances on economic growth do not allow us to unambiguously sign  $\Delta W_t$ , which opens space for debate regarding the overall welfare impact.

In addition, even if we were to find that the growth impact of migration and remittances is negative, signing the overall impact on welfare critically depends on two factors. If migration/remittances are expected to taper off soon (low  $T$ ) or if long-term negative effects are sufficiently discounted (low  $\delta$ ), the short-term positive level effects may overcome the negative consequences on growth. It is important to mention here that a high discount factor is not necessarily the result of myopic or self-interested politicians; it may constitute the optimal response given the uncertain political and economic environment that the country faces.

Given that we cannot determine the sign of the overall impact of migration and remittances, in the general case, the promotion or the discouragement of migration cannot be argued on welfare-improvement grounds. In addition, there are also feasibility considerations that speak against active attempts to manipulate migration flows. I will only touch briefly upon these considerations.

**Even if migration proves to be welfare improving** for those staying at home, active encouragement of migration is, for obvious reasons, neither a sustainable, nor a politically feasible “development” strategy. There are also important economies of scale associated with public goods, which provide additional rationale against outright promotion of migration.

**Active discouragement of migration** through the imposition of barriers will not remove the incentives that motivate it. Hence, migration intermediation will likely become increasingly criminalized, while repatriation of remittances will shift completely into the underground economy.

**Reducing incentives to migrate** could potentially be achieved by taxing remittances. However, as these can easily shift into informal channels, the effectiveness of such a policy will be close to zero, while the positive effects of remittances are likely to decrease. The only effective way for decreasing incentives to migrate is by lowering incentives to migrate:

- Remove imperfections in **financial markets**. This would lower the incentive to migrate in order to accumulate the capital required to finance investments into physical and human capital.

- Increase effectiveness of **insurance markets** and of the **social security system**, which would lower the use of migration as a method for risk diversification.
- **Increase economic growth and reduce poverty**, which would reduce the main incentive to migrate – wage differentials.

Overall, we conclude that policies aiming to maximize the short-term welfare effects and tip the balance of welfare consequences towards the positive end represent the only plausible strategic option for the government. This can be achieved either by reinforcing the positive effects, mitigating the negative ones or by combining the two.

## 3.2 Reinforce positive effects of migration

In section 2.3 we have seen that the positive impact on investment and savings is the main channel through which remittances affect growth. From the perspective of development agencies, the largest appeal of remittances is provided by the widely recognized fact that only a relatively small fraction of remittances is saved or invested directly. The three main channels through which this positive effect can be reinforced are:

- Mobilization of remittances
- Removal of government distortions
- Removal of market failures

### 3.2.1 Mobilizing remittances – lessons from around the world

There is a natural desire in the development community to channel a larger share of remittances into productive activities (Johnson and Sedaca, 2004). This includes attempts to “bank the unbanked”, and to pool remittances into community development projects.

Eastern Europe does not have a long history of migration – it has reached important proportions less than a decade ago. In comparison, Mexico and Central America have a large history of migration into the U.S., which has been facilitated by the relative openness of the latter towards migrants (compared to Western Europe and Japan). There are a large number of remittance-related projects that have been documented.

Johnson and Sedaca (2004) offer a comprehensive analysis of the various types of remittance- and diaspora-focused programs through various detailed case studies. However, most of these programs are initiated by private banks, non-banking financial institutions (microfinance projects and credit unions) and international organizations. I will thus focus on government programs.

For government authorities, collective remittances can be a vital supplement to their own limited budgets and a means to support public services. Similarly, governments are interested in productive activities that can raise income and lower unemployment within their constituencies. In a desire to increase the use and impact of collective remittances some government authorities have implemented the following measures:

- Provide incentives to attract greater flows of collective remittances;
- Collaborate with Hometown Associations (HTAs) in the planning and implementation of projects;<sup>7</sup>
- Match collective remittance inflows with government funds; and
- Actively solicit and encourage investment by emigrants in their hometowns.

Mexican state governments were the first to introduce programs that attract and use collective remittances. The success and potential of some of its initiatives has caught the attention of other labor exporting countries. I will briefly describe **Mexico's most recognized program, a three for one matching fund project** for small scale infrastructure and other community projects and programs encouraging emigrant investments in community enterprises.<sup>8</sup>

In 1992, the Mexican state government of Zacatecas initiated a program that matched the dollars donated by emigrants with funds from federal and state governments. The program was expanded to include municipal funds, and for every dollar donated an additional three dollars was provided from government sources. The funds raised go into a fund for development projects in HTAs' hometown communities. In 2002 emigrant groups and government authorities channeled \$16 million through this program. The amounts committed to the program by HTAs have increased so rapidly in recent years that, at times, the government did not have the budgets to match the funds. Due to the success of the program, other states throughout the country are implementing their own three for one program. In 2002, the projects totaled \$43.5 million—a quarter of which came from the contributions of Mexican HTAs.

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<sup>7</sup> Hometown Associations (HTAs) are groups of emigrants seeking to support their home communities, maintain relationships with local communities, and retain a sense of community as they adjust to life in their new home. These emigrants develop relatively cohesive associations with a close-knit membership that follow basic rules of group discussion and decision-making. This type of association has become very popular in U.S. emigrant communities from labor exporting countries in Latin America, particularly Mexico and El Salvador. A further discussion can be found in Orozco (2000).

<sup>8</sup> The discussion follows closely PPIAF (2002)

Typical projects under this program include construction of roads, street paving, and improvements of other community facilities, including the provision of water, sewage, and electricity. Recently, some projects have included the provision of computers for schools, small dams and water treatment pools. Although the final choice of the projects is left to the HTAs, many of the projects in Zacatecas reflect the preferences of government officials who perceive infrastructural work as the best kind of partnership with Mexican clubs. Infrastructure activities may also reflect that many HTA members equate construction with development and progress. The average amount budgeted for 3x1 projects in Zacatecas is a relatively modest \$42,000. The construction process of large work is often divided into stages, each one counting as an individual project, and in this way it accommodates groups and communities with different financial capabilities.

The involvement of governments in rerouting remittances into productive investments (e.g. rural infrastructure) is subject to several drawbacks.

First of all, HTAs historically were not created to undertake the projects that the governments want them to fund. Often, HTAs are created simply to provide an information network between the community and migrants. Moreover, financing productive investments may be in conflict with the collective nature of HTA activities, since the short-term benefits of such projects are reaped by individuals. The government's attempts to overrule the priorities of HTAs may result in the complete withdrawal of HTAs.

Second, HTAs may often lack complementary resources required to bring projects to life: i.e. time, business knowledge, and sophisticated management structures. Johnson and Sedaca (2004) quote Jeremy Smith (USAID) noting that many of the projects implemented by HTAs are similar to programs funded by international development agencies. In the end, they are still rural and community development projects. If projects are poorly conceived, designed or implemented, or use ineffective development tools, their impact on recipient communities will be limited, whether the project are migrant-grown or part of a conventional community development program. To an extent, HTA projects differ only in the fact that they are funded primarily by collective remittances rather than official development assistance.

### 3.2.2 Government failures

In the specific case of Moldova, Cuc, Lundbäck, and Ruggiero (2005) focus on government failures as the binding constraint in the path of the productive investment of remittances. They insist that improvements in the investment climate is the only way to effectively

promote higher investments. Similar conclusions can be found in other studies originating in the World Bank and the IMF.<sup>9</sup>

However, even if the constraint lies in the realm of investment climate, declaring that the poor investment climate is the binding constraint is equivalent to saying that everything (and hence nothing) binds, since the investment climate includes a variety of different topics: taxation, labor regulation, infrastructure, corruption, property rights, contract enforcement, etc. These are completely different issues, requiring different policy recommendations. In addition, it is hard to argue that these policy recommendations address problems that are specific to remittances.

### 3.2.3 Market failures

There are several potential market failures that policy can address, including imperfections in the financial market (Giuliano and Ruiz-Arranz, 2005) and information asymmetries between the migrant and recipients (Chami et al., 2003). I will concentrate only on the latter. In section 2, we have identified that inefficiencies in the banking sector can reduce the positive impact of remittances. Poor competition in the financial sector can result in:

- High costs for transferring remittances reduces the disposable income from remittances: both the short run multiplier effects of remittances and also the funds available for productive activities.
- Large spreads which preclude the channeling of remittances deposited with banks into the real sector.

Development of the financial system thus becomes an important component of an economic strategy that aims at integrating remittances into the development mix.

## 3.3 Reduce negative effects of migration

As shown in the simple Ricardian model in Annex 1, labor outflows and a remittances-caused Dutch disease reduce export competitiveness. This threat should be of particular concern to the government of small open economies, like that of Moldova.

There are several ways in which a country can mitigate the negative effects on competitiveness:

**Sterilize the inflow of foreign currency** to prevent appreciation of the currency. This will eliminate the remittance-caused Dutch disease, but will not be able to compensate for wage

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<sup>9</sup> See, for example, Ratha (2003), Chami et al. (2003), Kireev (2006).

increases due to the outflow of labor (the labor movement channel in the model). On the negative side, monetary policy is an economy-wide lever, which does not only affect the export sector. Generally, we want a policy to be located as close as possible to the cause.

**Implement an industrial policy**, which would aim to compensate exporters for competitiveness losses due to increased wages and real exchange appreciation. Industrial policy has proven to be an effective tool in the case of South-East Asian economies (Rodrik, 1994). However, it has proven quite disastrous in many other parts of the world.

In the case of commodity-based Dutch diseases, many countries implement **stabilization funds**. Oil exporters are a prime example in this respect. Norway was one of the first countries to introduce these funds, and more recently stabilization funds have been created in Russia and Kazakhstan. These funds are earmarked to be spent in the event that the export price of a commodity drops or the natural resource is exhausted. It is not immediately clear how such a scheme could be applied to remittances—as it was argued earlier, taxing remittances is not feasible. We will return to the question of feasibility (if not desirability) of setting up remittance-based stabilization funds.

However, before the government decides to act on the possibility of a migration/ remittance-caused loss of competitiveness, it is worth measuring whether the increased wages and costs actually affect the export sector. As becomes clear from the Ricardian model presented in the annex (see the left graph in figure A5), relatively small changes on the demand side will affect wages, but should have minimal effect on competitiveness. If that turns out to be the situation, the case against a strong national currency no longer holds. After all, there are important benefits to having a strong currency, including increased purchasing power of residents, easier servicing of foreign debt, etc.

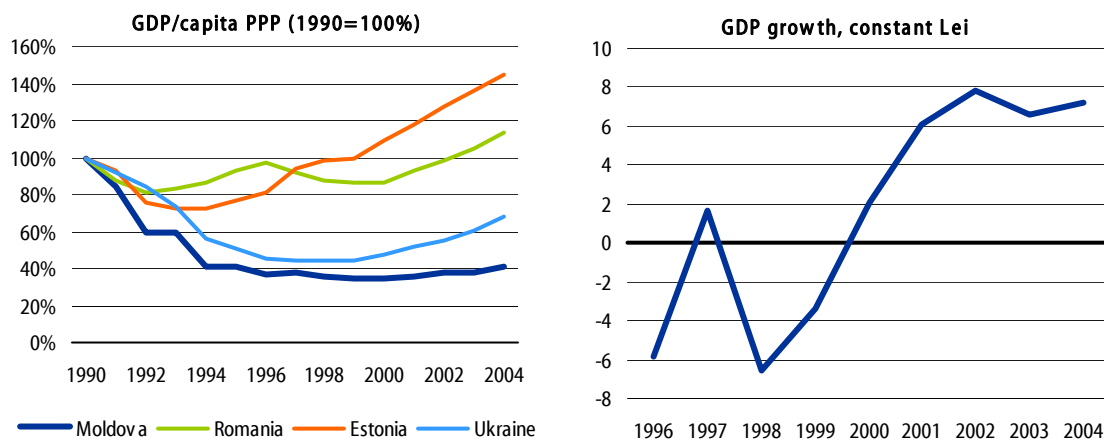
## 4 Migration and Remittances in Moldova

In this section we document the consequences of migration and remittances in Moldova. Particular emphasis is placed on determining the adequacy of financial intermediation and evaluating the presence of a migration/remittance-caused deterioration of competitiveness.

### 4.1 Migration and remittance flows

Moldova was hit particularly hard by the collapse of the Soviet Union. GDP shrank threefold from 1991 to 2000, placing Moldova at the bottom of the GDP per capita ranking in Europe. The economic collapse created widespread unemployment and poverty and was particularly hard hit by the 1998 Russian crisis.

**Figure 4** Dynamics of GDP per capita: Moldova vs. other countries



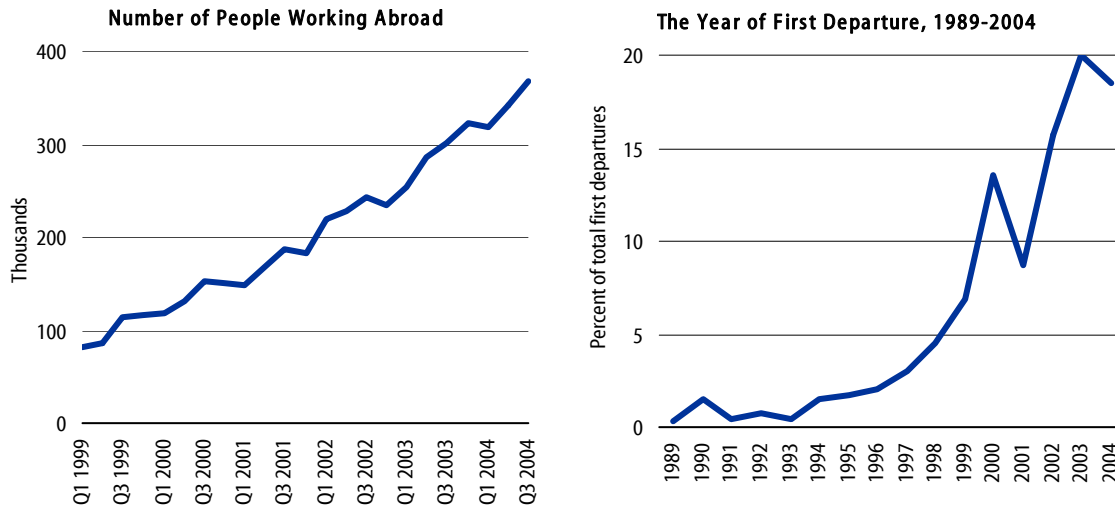
Source: EIU Data Services, own calculations

For many, the solution was finding a better life abroad. Today, anywhere from one-fifth to one-fourth of Moldova's working-age population is abroad. The CBS-AXA (2005) study provides an interesting account of the dynamics of migration (right graph in figure 5 on the next page).<sup>10</sup> We see that migration has intensified in 1998, following the Russian crisis, but has not slowed down ever since, despite partial economic recovery.

<sup>10</sup> The CBS-AXA survey of 2005 is the latest micro-level survey of migration and remittances conducted in Moldova. The study was co-sponsored by the EU, the International Organization for Migration and the IMF. CBS-AXA conducted the survey itself during the period September-November 2004. It includes sample of 3,714

As important characteristics of Moldovan migration is its temporary nature. According to the CBS-AXA survey, close to 85% of migrants are temporary, i.e. they have immediate family members at home and they visit Moldova at least once a year.

**Figure 5** Dynamics of migration

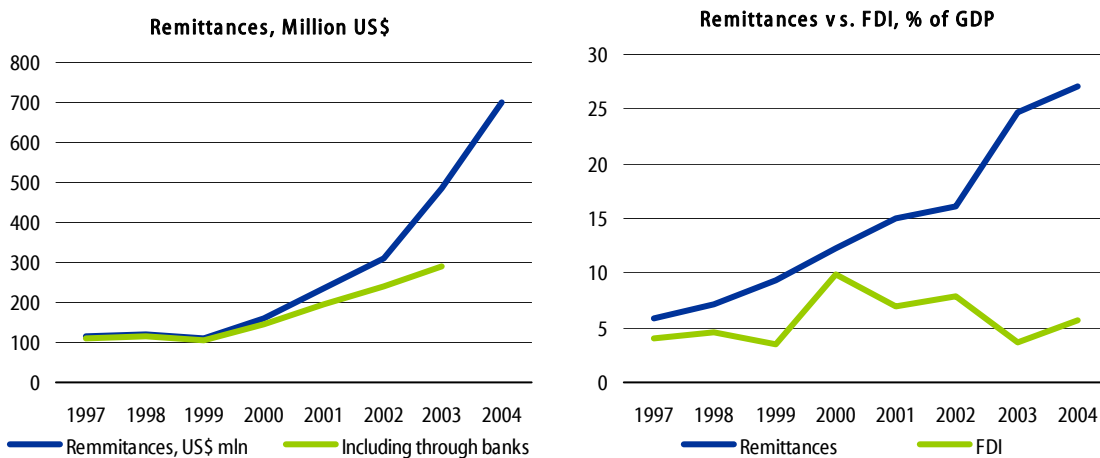


Note: 1/ The estimates for 2004 cover the period of January-October.

Source: Department of Statistics and Sociology (Households Budget Survey) and CBS-AXA (2005).

It is estimated that remittances have crossed the 1 billion dollar mark in 2005, or over a third of GDP. Remittances for 2004 alone (\$701 million) were comparable to Moldova's total exports for that year (\$950m) and rivaled the total *cumulated* foreign direct investments received from 1997 to 2004 (\$774 million).

**Figure 6** Remittances and FDI dynamics

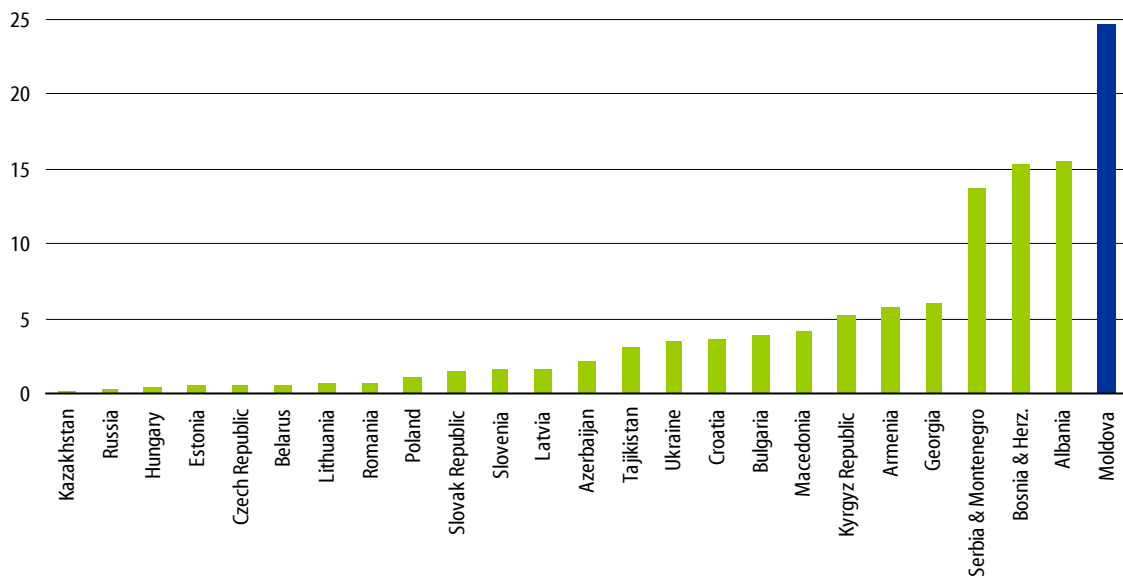


households, of which 1,006 with at least one migrant. The sample was stratified (e.g., urban and rural localities; size of localities) and randomly chosen.

Source: *Moldova Economic Trends on the basis of data by the National Bank of Moldova*

The amount of workers' remittances sent to Moldova is large both from a regional and an international perspective. As illustrated in figure below, Moldova clearly stands out compared to all CIS and CEE countries, and it also fares highly compared to the rest of the world. Using 2002 data, Ratha (2003) ranks Moldova as one of the top ten receivers of workers' remittances in terms of GDP.

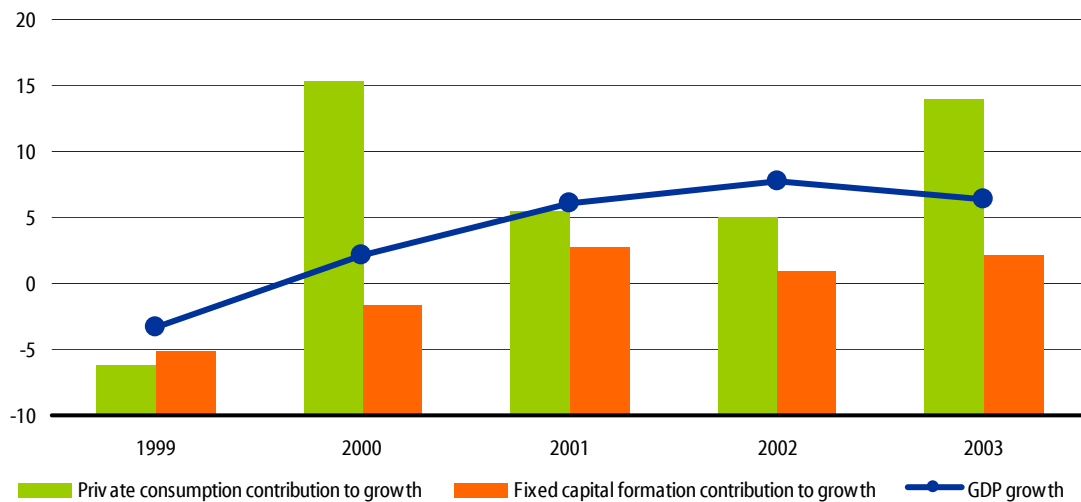
**Figure 7** Remittances as share of GDP, 2003



Source: IMF (2005)

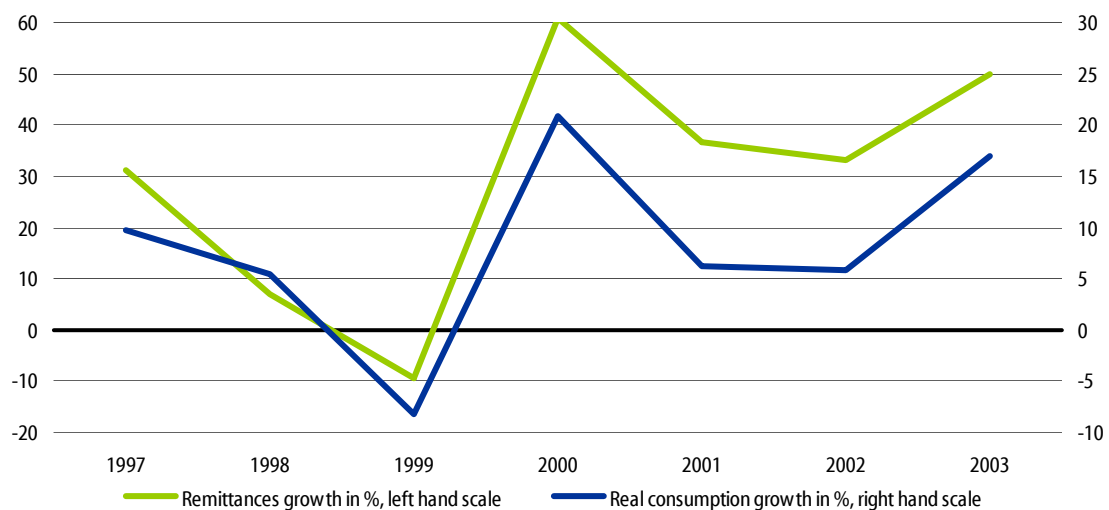
## 4.2 Short-term impact on growth

Moldova's GDP grew 6 to 8% since 2001, with consumption contributing the greatest share to growth.

**Figure 8** Contribution of Consumption and Fixed Capital Formation to Real GDP Growth, 1999-2003

Source: *Moldova Economic Trends*

The question then is whether this consumption boom is financed by remittances. The graph below clearly shows that the growth rates of the two are highly correlated.

**Figure 9** Workers' Remittances and Consumption Growth, in real terms

Source: *IMF (2005)*

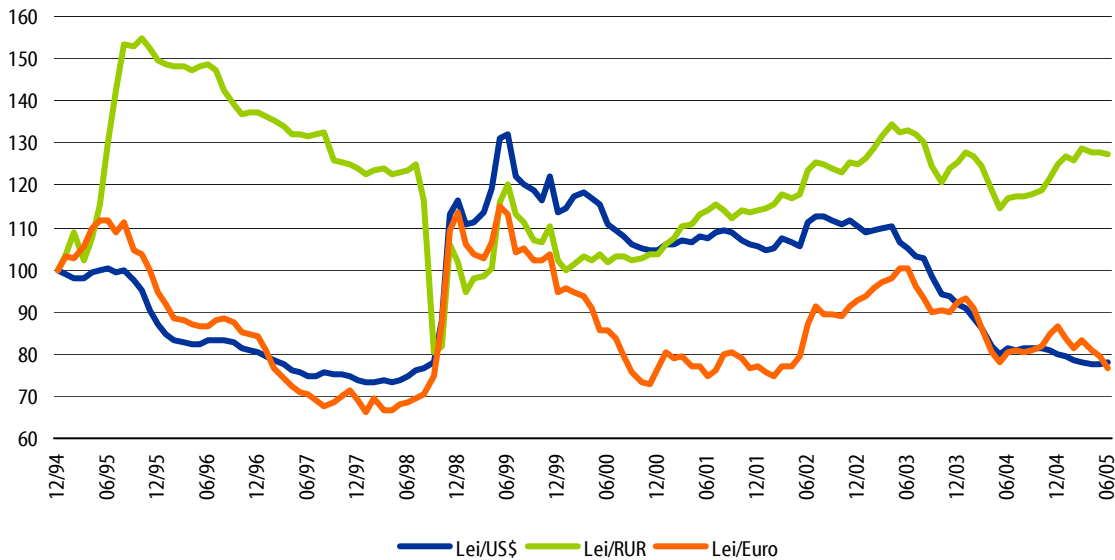
We can safely conclude that the growth rates in excess of 7% over the last three years are to a great extent due to remittances.

### 4.3 A case of Dutch disease?

Another symptom of the Dutch disease is the appreciation of the local currency. The Moldovan leu has appreciated in real terms vis-à-vis the dollar from mid-1999 to mid-2004,

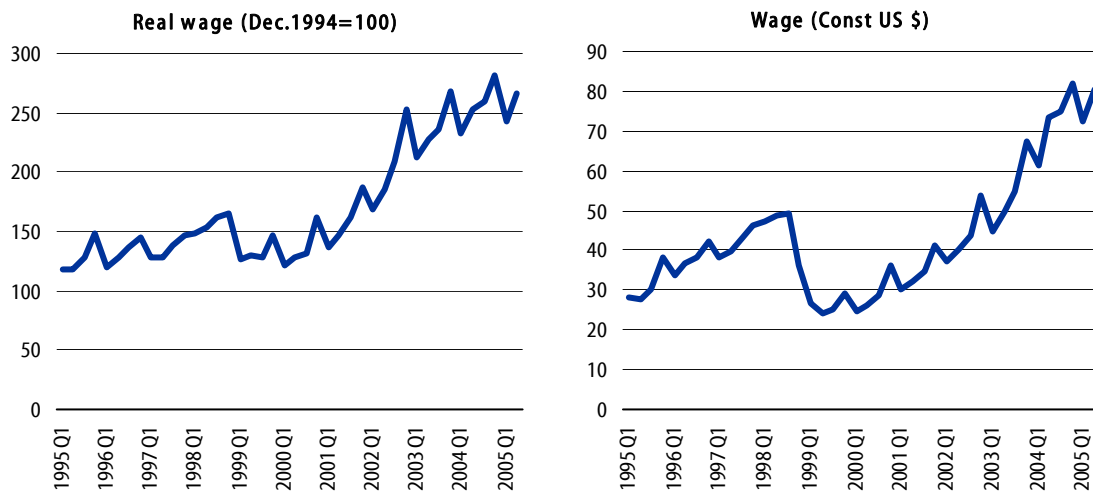
when the National Bank of Moldova started sterilizing its exchange rate purchases. The leu has remained relatively stable vis-à-vis the Russian ruble, as Russia itself is experiencing an oil-caused Dutch disease.

**Figure 10** Real exchange rate dynamics vis-à-vis the dollar, euro and ruble.



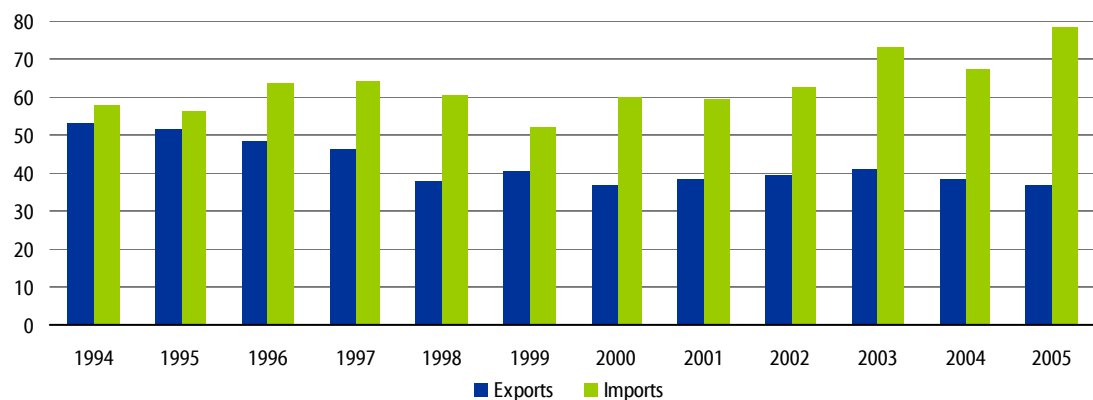
Source: *Moldova Economic Trends* based on data from the National Bank

Real wages have doubled since 2000. Although this has increased the welfare of households, it has simultaneously increased the costs of firms. The situation appears even worse when viewed through the perspective of exporting firms. These firms care about wages denominated in the currency of the country to which they export. We see that wages have more than tripled in constant dollar terms since 2000. Of course, it is impossible to determine from these graphs whether the wage is too high today or was too low lack in 2001. IMF (2004) computes equilibrium wages using alternative methods, to arrive at the conclusion that the real wage is still below equilibrium.

**Figure 11** Wages in real terms and in dollar terms

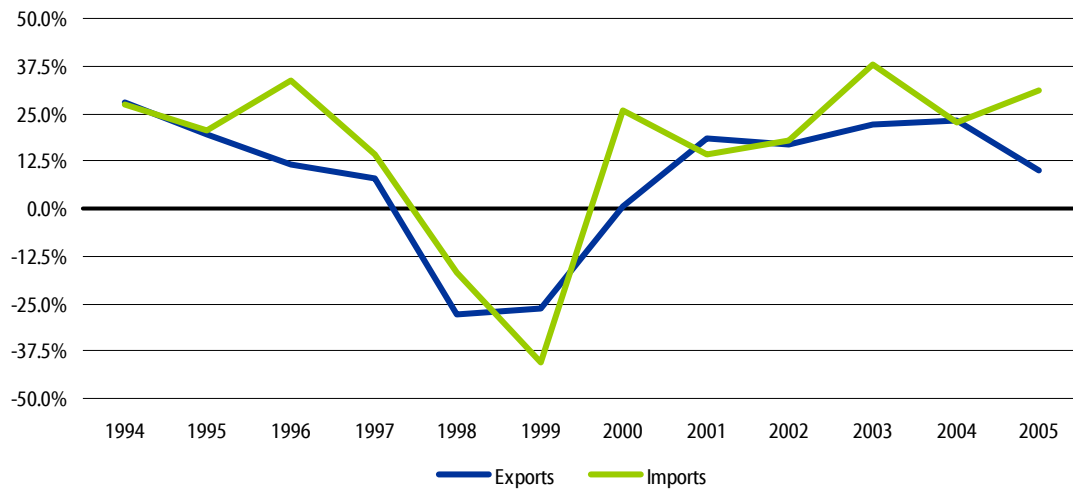
Source: *Moldova Economic Trends*

However, the final test for the impact of migration and remittances on export competitiveness is the export performance itself. From figure 12 we see that exports have steadily decreased as a share of GDP, while imports have approached 80% in 2005. In fact, in 2005 imports were more than twice larger than exports.

**Figure 12** Evolution of exports and imports relative to GDP

Source: *Moldova Economic Trends*

The rates of growth for exports and imports tell a somewhat different story. The two have grown at comparable rates during the past ten years. Export growth surpassed 20% in the period of 2001-2004, which is more than a respectable performance, and then dropped to 10% in 2005. This cannot be blindly attributed to a Dutch disease, since 2005 marked an increase in political tensions between Moldova and its main trading partner, Russia. This led to the imposition of non-tariff barriers on traditional Moldovan exports.

**Figure 13** Export and import growth

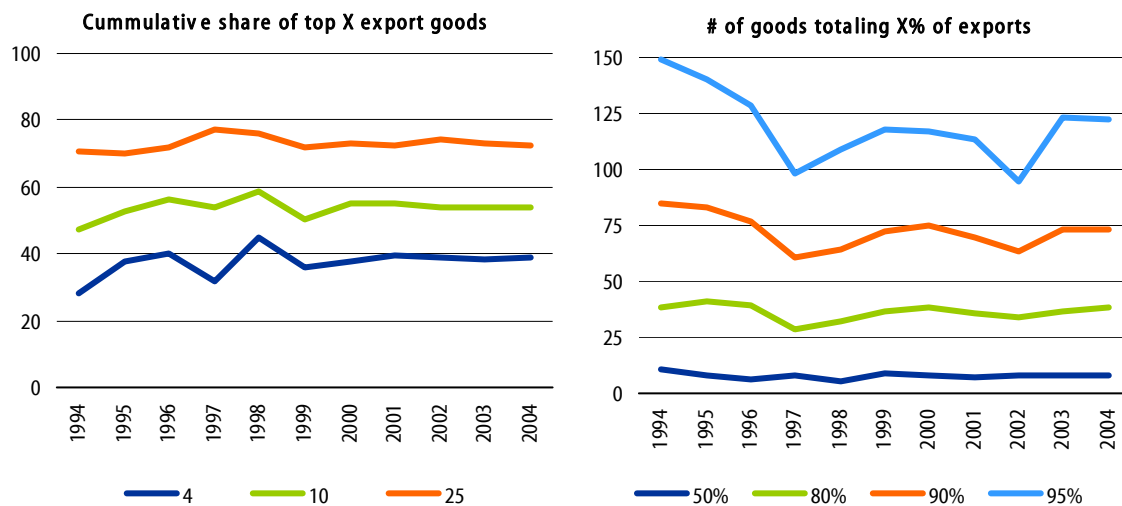
Source: *Moldova Economic Trends*

The Ricardian model presented in Annex 1 predicts that migration and remittances should result in a reduction in the number of goods produced. More broadly, if Dutch disease and labor outflow constitute problems, we should observe an increased concentration in the types of goods Moldova produces.

The small diversification of Moldovan exports has often been mentioned, but never formally measured. However, it may be that the concentration of exports in very few commodities is a normal phenomenon for a very small economy.

To assess concentration of exports, we use several measures to evaluate the concentration of markets (used primarily by competitiveness of markets). I use the Comtrade database, which provides disaggregated data on all exports. The analysis of summary statistics reveals that the share of Moldova's main export—wine—has increased from 11% in 1994 to 25% in 2004. The total number of goods in the export basket has decreased insignificantly from 700 in 1997 to 680 in 2004, as defined by the HS1992 4-digit classification.

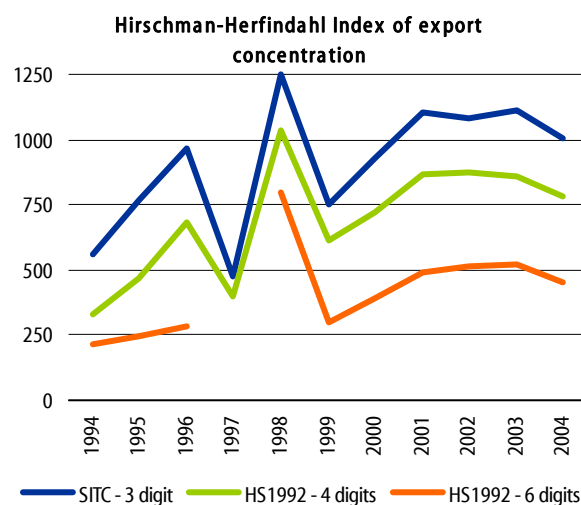
Figure 14 provides two simple measures for alternative measures at assessing concentration. On the left I have plotted the cumulative value share of the top X (4, 10, 25) commodities, in accordance with the HS1992 4-digit classification. On the right we conduct the inverse exercise, by computing the number of goods that constitute together a certain share (50%, 90%, 95%) of total exports.

**Figure 14** Simple measures of export concentration

Note: Data for 1997 are not reliable and should generally be disregarded.

Source: Comtrade database, author's calculations

These simple measures have a number of drawbacks: they do not tell us how the entire distribution behaves over time and how the number of goods affect concentration. The concentration measure that addresses these weaknesses of simple share coefficients is the Hirschman-Herfindahl Index (HHI) of export concentration, which takes into account both the value shares of goods, as well as the number of goods in the export basket. It is computed as the sum of squared percent shares of all goods in the export basket (higher values of HHI correspond to higher concentration). Figure 15 presents the evolution of the HHI for the different goods classifications.

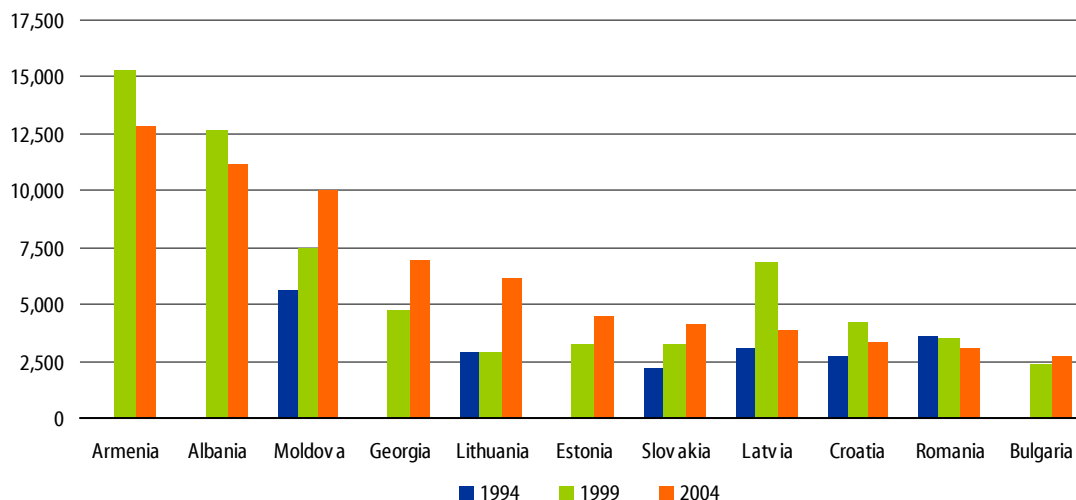
**Figure 15** The dynamics Hirschman-Herfindahl Index for exports

Note: Data for 1997 are not reliable and should generally be disregarded.

Source: Comtrade database, author's calculations

Both HHI and the simpler measures show little evolution in recent years. The 1998 Russian crisis marks the only spike. However, it helps to compare Moldova to some of its neighbors, in particular to those with economies of comparable size. As we see from figure 16, Moldova's export basket is among the most concentrated in the region. Also, unlike most countries in the sample, the HHI for Moldova has increased over time. Viewed in this light, the steady levels of HHI can no longer be interpreted as adequate.<sup>11</sup>

Figure 16 The Hirschman-Herfindahl Index for select countries in the ECA region



Source: Comtrade, author's calculations

Overall results are mixed. It is obvious that migration and remittances do play an important role on driving up wages and the real exchange rate. A back of the envelope calculation using a slightly modified version of the Ricardian model shows that the outflow of migrants and inflow of remittances account for 100% of the changes in relative wages between Moldova and its main trading partners, of which approximately two-thirds is due to remittances and one-third to migration itself.

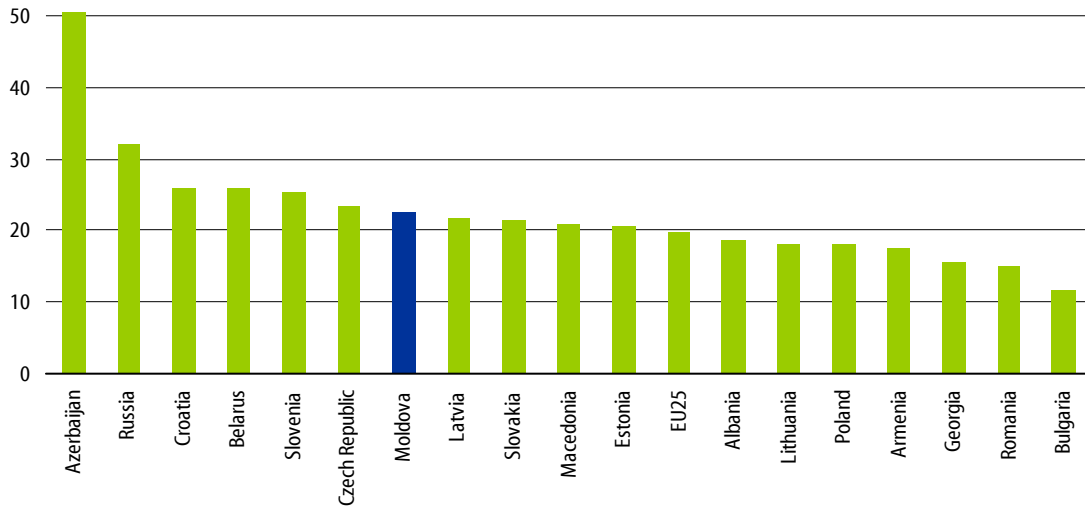
This is accompanied by a relative decrease of exports, although in absolute terms export growth was respectable, save for year 2005. However, the analysis of export concentration portrays a less optimistic situation – in relative terms, Moldova is losing grounds.

<sup>11</sup> Further research in this area could focus on creating an index of expected HHI (conditional on income levels, economy size, etc.), in a manner similar to the EXPY index (expected productivity of exports) introduced by Rodrik and Hausmann. While EXPY measures the quality of exports, EXPHHI would help better assess if countries have sufficiently diversified export baskets. Such an index could help better compare the concentration across countries.

### 4.4 Financial intermediation

Before beginning to devise policies that attempt to raise the propensity to save out of remittances, we must look at the level of savings compared to other relevant countries. As we see from the figure below, Moldova, with a savings rate of 20% ranks relatively high in the region, especially in comparison to other non-oil exporting countries.

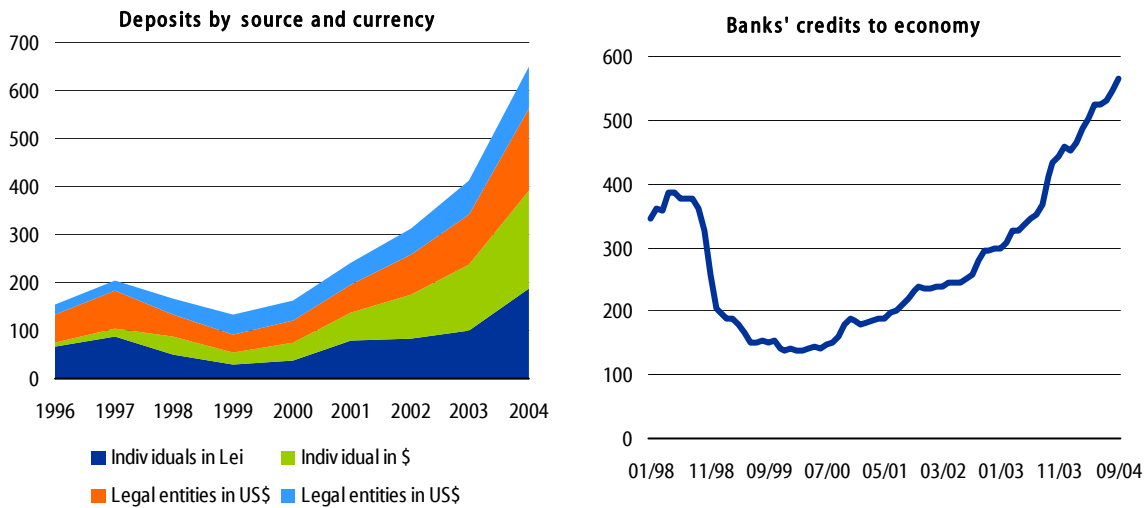
**Figure 17** Gross savings rates: Moldova vs. CEE and CIS



Source: EIU Data Services

We also see that savings have increased considerably over the last few years.

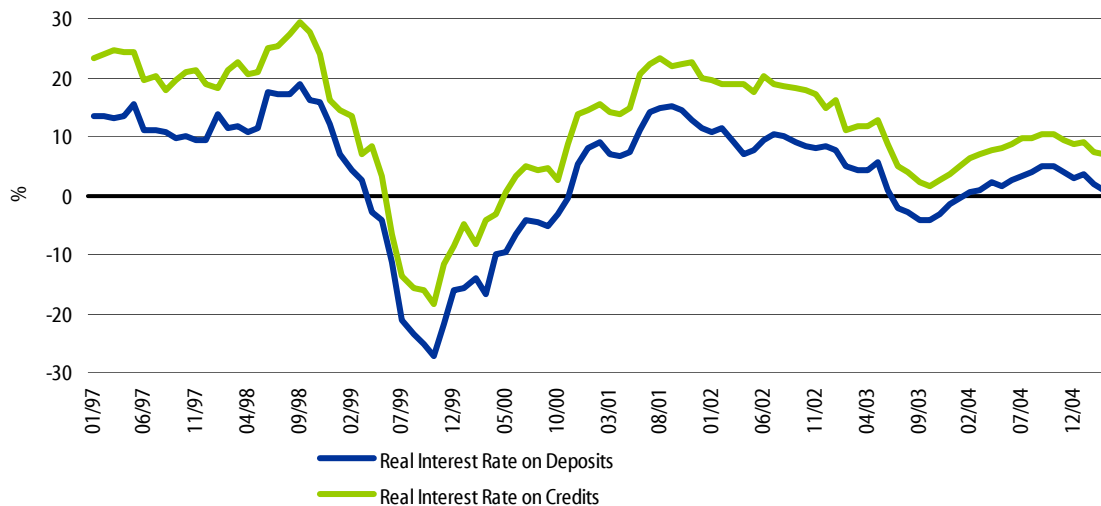
**Figure 18** The size of the financial sector, million US\$



Source: Moldova Economic Trends

Real interest rates have oscillated dramatically over the last decade. However, spreads have remained almost constant in absolute terms. Returns on bank deposits during 2004 were very low at under 5%. More importantly spreads have remained relatively high and constant, at over 7% for the last three years.

**Figure 19** Real interest rates



Source: *Moldova Economic Trends*

We can also test the hypothesis that remittances are channeled into investments as a result of existing imperfections in financial markets. I use the dataset from Ghencea and Gudumac (2004) and find that the amount of remittances is strongly correlated with the probability and amount of business investments. Regression results are presented in the table on the next page. In the presence of well-functioning capital markets, we would see no effects between remittances and investments.

**Figure 20** OLS regressions on the probability and share of productive investments

	Business investment (yes/no), Probit	Business investment (% remittances), OLS
Urban	0.01 (1.12)	0.01 (1.27)
Age	-0.00 (0.28)	0.00 (0.20)
Migrant is female	-0.02 (2.22)**	-0.01 (1.39)
Higher education	0.01 (0.79)	0.01 (0.56)
Special/technical education	0.00 (0.15)	0.00 (0.24)
LOG remittances	0.02 (3.56)***	0.01 (3.20)***
LOG Per capita monthly average budget before migration	0.00 (0.15)	0.00 (0.06)
Migrant manages remittances	0.01 (1.00)	0.03 (1.56)
Migrant is businessman manager/investor	0.21 (7.02)***	0.12 (4.92)***
Constant		-0.12 (2.38)**
Observations	652	652
R-squared		0.165

Source: Ghencea and Gudumac (2004) dataset. Author's calculations.

## 4.5 Public sector

Migration and remittances have affected some other aspects of the economy. The following are a synthesis of the findings of Cuc, Lundbäck, and Ruggiero (2005):

- Since 1999, migration has reduced the number of unemployed receiving benefits by almost ten-fold: from 12 thousand people in 2000 to around a thousand by the end of 2004.
- At the same time the dependency ratio has increased from 1.02 in 1998 to 1.42 in 2004, which has applied additional stress to an already poorly-functioning pension system.
- The increase of imports has lead to a corresponding increase of VAT on imports. Imports generated 56.7% of all VAT in 1999, increasing to 67.4% by 2004. This has lead to a steady increase of VAT revenues in total budget revenues from 41.4% in 1999 to 52.5% in 2004. Effectively, VAT on imports (excluding duties) finance 35% of the budget.

## 4.6 Government's migration- and remittances-related action to date

Before I turn to sketching several policy options in the next section, it helps to review what the government has done so far in this area.

The Government has neither announced an official position on migration and remittances, nor has it pursued consistent actions in this area. On one hand it has signed a number of bilateral treaties that would facilitate temporary legal migration of Moldovan citizens into several European states (Czech Republic, Italy), indicating a rather aggressive pro-migration stance. On the other hand, it has yet to look into opportunities for reducing transfer costs of remittances. This is a typical intervention that many countries pursue at the beginning.

Official views on the inflow of foreign currency also diverged. President Vladimir Voronin was quoted saying "I cannot see how an inflow of funds can be detrimental for the national economy." However, individual agencies hold a less positive stance on this issue. The Ministry of Economy expressed to the National Bank of Moldova (NBM, the central bank) its discontent with the "appreciated" currency, which has decreased the competitiveness of domestic exports.

The Ministry of Finance was upset with the appreciation for fiscal reasons – the appreciation had wiped out all the revenues on the National Bank's foreign reserves, which the Bank was supposed to transfer to the budget in 2004. The budget was computed based on a predicted exchange rate of 15.4 lei/\$, and provided for 256 million lei in income from the National Bank. Instead, the Bank transferred only 6 million (less than 3%). The Ministry of Finance has never acknowledged, however, the fact that the appreciation has effectively reduced foreign debt servicing by approximately 270 million lei. The fact that the appreciated currency was partially responsible for increased fiscal revenues (VAT on imports) and easier terms of foreign debt financing was also never acknowledged. In an attempt to "remedy" the situation, the Bank started purchasing foreign currency in 2004. Although the Bank increased its purchases of foreign reserves, the lack of good sterilization instruments has prevented the Bank from maintaining inflation within the boundaries of preannounced targets.

## 5 Next steps

This section sketches several policy recommendations that stem either directly from the policy analysis framework presented in sections 2 and 3, or from quantitative economic data.

### 5.1 Promote migration, fight it or manage consequences?

In the case of present-day Moldova, there are several characteristics that prevent us from clearly isolating the sign of the growth impact of migration and remittances based on historical data:

- The phenomena of migration and remittances in Moldova has only emerged in the past decade. Only in the last five years have the flows of migrants and remittances been large enough to have a substantial impact on the economy.
- Moldova is a small agricultural economy that is disproportionately affected by outside events (e.g. economic crises and booms in the economies of trading partners). Decisions to migrate and to remit are affected by these events, and hence are endogenous to economic performance.
- Migration and remittances do not happen in a vacuum. Moldova is going through rapid economic transformations characteristic of transition economies. This further complicates the task of isolating the growth effect of variables of interest.

In addition, there are objective reasons that can serve as a rationale for a high discount factor, i.e. putting limited weight on the growth impact of remittances. Moldova faces a range of uncertainties, e.g. the Transnistria gridlock, the gas wars with Russia, and the unclear position of Moldova in tomorrow's Europe.

These facts further strengthen the position that managing the consequences of migration and remittances is the only viable strategic option.

### 5.2 Is there a place for remittance-investment programs in Moldova?

The success of the Mexican three-for-one matching program hinges on the success of the hometown association. However, we do not expect to see such strong organizations in a country that has only recently experienced an exodus of labor force: the diasporas have not

had time to form or are not at the level of organization that more involved programs require. This is definitely true for Moldova, where around 80% of migration is temporary.

On the other hand, there are projects in Moldova that, over time, could assume a role similar to that of the state governments in Mexico. Moldova Social Investment Fund, a World Bank project, operates a scheme similar to the one described for Mexico—rural infrastructure development projects co-financed by *local* residents.<sup>12</sup> As of now, the Fund does not explicitly target recipients of remittances or returning migrants. There is room for the government to negotiate with the World Bank on the issue of introducing a remittance/migration component to the project.

### 5.3 Anticipating a Dutch disease

Results in the previous section indicate that the Dutch disease is a reality that the government should seriously address. While exports themselves have been growing at a healthy rate (that is, if the recent low 2005 results are not setting a new trend), the export basket remains extremely narrow. Regional comparisons paint an even bleaker picture – Moldova is losing markets in relative terms.

The first step is to step up the monitoring of exports. As this study shows, there is more to assessing the performance of exports than measuring their growth dynamics. Concentration, relative sophistication of exports (as measured by the EXPY index of Rodrik and Hausmann) and the introduction of new products should also be included in the analysis.

Preventing the appreciation of the currency may provide short-term relief to exporters. However, in the long run only productivity increases can offset the negative effects of migration and remittances on competitiveness. Instead, the government should look into opportunities for developing a sound industrial policy. The subject is outside the scope of this study—a comprehensive analysis of this subject can be found in Rodrik (2004).

The experience of countries that have faced a commodity-based Dutch disease should be further analyzed. Of course, in the case of remittances it is impossible to finance the stabilization funds in the usual manner—by taxing the commodity that is causing the Dutch disease. However, in the case of Moldova remittances finance half of the imports (the rest being covered by exports). Hence, half of the revenues from the VAT on imports constitute, effectively, taxes on remittances. That is 15% of all revenues of the Moldovan government can be treated as direct revenues on imports. There is a case to be made for rerouting a fraction of this amount into a stabilization fund. The question remains regarding what the optimal use of these funds should be. I suggest looking into the experience of Fundacion Chile, a public

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<sup>12</sup> More information on the Fund can be found at <http://www.msif.md>.

institution that has been at the origins of most of Chile's modern/high-value added export industries.

#### 5.4 Banking sector reform

The government has been preventing foreign banks from entering for over four years now. The low level of competition (and some argue the collusion between banks) has been responsible for high interest rate spreads and slow roll-out of new banking products (e.g. online banking). In addition, local banks often cannot offer its customers the lowest prices on international money transfers, which allows Western Union and similar non-banking intermediaries to maintain high fees.

The situation calls for the opening of the market to foreign banks. In particular, Raiffeisen Bank has expressed its interest in entering the market since 2004. The bank has an extensive network of offices around Europe, which would allow the bank to service almost all Moldovan migrants. The government now has the opportunity to negotiate with the Bank a mutually beneficial agreement, in which Raiffeisen could provide low-cost transfers to Moldova.

#### 5.5 Managing fiscal consequences

Cuc, Lundbäck, and Ruggiero (2005) devote a large part of their discussion of policy implications to fiscal and monetary policy. Their monetary policy recommendations are in line with the general ideology of the IMF—inflation control is the overriding objective of the National Bank, and the flexible exchange rate is the appropriate regime for a small open economy. Fiscal policy recommendations are somewhat more directly related to the phenomena of migration and remittances.

The authors suggest that efforts should be directed at **broadening the contribution base** by bringing a greater number of contributors into the system. The government decision to lower contribution rates (from 30 to 28 percent by 2006) is aimed at encouraging greater participation in the plan. In addition, the authorities intend to engage the business sector in a debate over Social Fund reform. This includes seeking ways to broaden the contribution base, while lowering contribution rates.

**The link between contributions and benefits should be strengthened.** This was one of the main objectives of Moldova's pension reform, to be achieved initially through a blended system where benefits would depend increasingly on past contributions. However, the weight of past contributions in determining pensions remains relatively small. Greater weighting of past contributions would make the link between contributions and benefits more

transparent, encouraging greater participation in the scheme. It would also signal to those who choose to stay outside the system—including those who have decided to seek employment abroad—that they would need to assume greater responsibility for financing their own retirement.

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# Annex 1. Migration and remittances in a Ricardian model with a continuum of goods.

## A1.1 The basic setup

Following Krugman, we start with a two-country Ricardian model with a continuum of goods first introduced by Dornbusch, Fischer and Samuelson (1977). Let there be a continuum of goods that can be produced, each of them indexed by  $z \in [0, 1]$ . If the good  $z$  is produced at home, with a unit labor requirement  $a(z)$ , its price is  $p(z) = a(z)w$ , where  $w$  is the wage at home.<sup>13</sup> The other country may also produce this good with  $a^*(z)$ . Hence, the foreign price of producing good  $z$  is  $p^*(z) = a^*(z)w^*$ . A good is produced at home if:

$$p(z) < p^*(z) \quad (1)$$

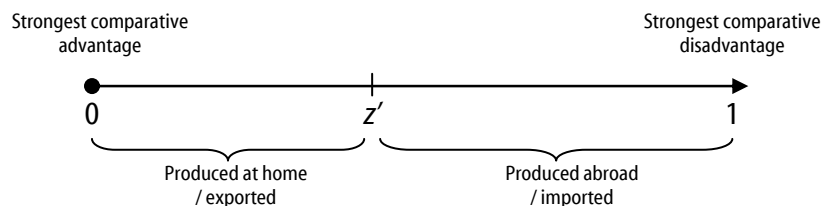
$$a(z)w < a^*(z)w^* \quad (2)$$

We can order the goods by decreasing comparative advantage of the home country, i.e. decreasing in  $a^*(z)/a(z)$ . Since we look at the world from the point of view of a developing country, it can help to think of high- $z$  goods as “modern” goods, while low- $z$  goods are “traditional” goods. For given home and foreign wages, there must exist a good  $z$  such that unit costs of production are the same in the two countries:

$$a(z')w = a^*(z')w^* \quad (3)$$

Goods to the left of  $z'$  are produced at home (with a fraction of output exported to the other country), and goods to the right are produced abroad.

**Figure A1** Graphical representation of the continuum of goods



<sup>13</sup>  $a$  can be viewed as inverse of productivity/technology. Higher  $a$  corresponds to *lower* productivity.

For a given  $z'$ , we can determine the relative wages  $\omega$ :

$$\omega = \frac{w}{w^*} = \frac{a^*(z')}{a(z')} \equiv A(z') \quad (4)$$

The  $A(z')$  schedule defines the supply relationship for different levels of relative wages. The lower the relative domestic wage (the lower the  $\omega$ ), the higher is the range of goods produced and exported.

On the demand side, we assume that the two countries have identical preferences, given by a Cobb-Douglas utility function with constant shares of income  $\alpha(z)$  spent on each good. It can be shown that *each* country will spend a certain share  $v(z')$  of its income on the good produced in *our* country, where  $z'$  is the good that defines the boundary between the goods produced domestically ( $z < z'$ ) and those produced abroad ( $z > z'$ ). This imposes the following form on the balance of payments equation:

$$\underbrace{[1 - v(\tilde{z})]wL}_{\text{Imports}} = \underbrace{w^* L^* v(\tilde{z})}_{\text{Exports}} \quad (5)$$

Where  $[1 - v(z')]$  is the share of imported goods in the consumption basket, and  $wL$  is the domestic national income. Therefore, to keep the trade balance at zero, the relative wage must be:

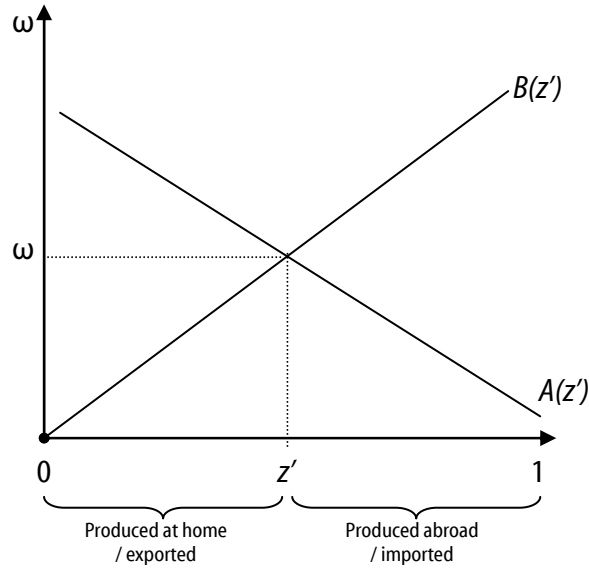
$$\omega = \frac{w}{w^*} = \frac{v(z')}{\underbrace{1 - v(z')}_{\text{Increasing in } Z}} \frac{L^*}{L} \equiv B(z) \quad (6)$$

However, we have so far not allowed for the existence of a non-tradable sector. If we assume that a non-zero  $(1 - k)$  is spent on non-tradable goods (and only  $k$  is spent on tradables), the balance of payments equation and the demand-side equilibrium relative wage are modified are follows:

$$[1 - (1 - k) - v(z')]wL = w^* L^* v(z') \quad (5')$$

$$\omega = \frac{w}{w^*} = \frac{v(z')}{\underbrace{k - v(z')}_{\substack{\text{Increasing in } z, \\ \text{decreasing in } k}}} \frac{L^*}{L} \equiv B(z') \quad (6')$$

We can now determine the equilibrium relative wage and range of goods produced by each country. Obviously, it will be located at the intersection of the  $A(z')$  and  $B(z')$ , as shown in figure A2.

**Figure A2** The equilibrium in the goods and labor markets

## A1.2 Modeling the combined impact of migration and remittances

We are now ready to analyze the effect of migration and remittances on the equilibrium. In this simple version, we will assume that the share of migrants is exogenously set at  $\mu$ .<sup>14</sup> The migrant, who earns the foreign wage  $w^*$ , remits a constant share of his income  $\rho$  to the home country.<sup>15</sup> This changes the balance of payments equation in the following manner:

$$\underbrace{[k - v(z')][wL(1 - \mu) + \rho w^* \mu L]}_{\text{Imports}} = \underbrace{[w^* (L^* + \mu L) - \rho w^* \mu L]}_{\text{Exports}} v(z') + \underbrace{\rho w^* \mu L}_{\text{CA deficit must equal total remittances}} \quad (7)$$

decreased labor force    migrant's remittances    Increased foreign labor force    Foreign income lost to remittances    CA deficit must equal total remittances  
 GDP    Total remittances    Foreign GDP    Foreign GNP

Dividing everything by  $w^*$  and rearranging, we obtain the following expression for the  $B(z')$  curve:

$$\omega = \frac{w}{w^*} = \underbrace{\left( \frac{\mu}{1 - \mu} \right) \left( \frac{1 - k}{k - v(z')} \right) \rho}_{\text{Remittances channel}} + \underbrace{\left( \frac{v(z')}{k - v(z')} \right) \frac{L^* - \mu L}{L(1 + \mu)}}_{\text{Labor movement channel}} \equiv B(z') \quad (8)$$

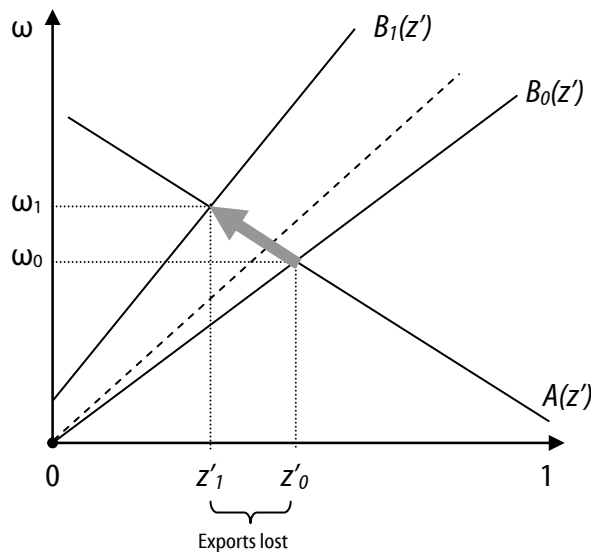
<sup>14</sup> A more complex model could endogenize  $\mu$  by making it a function of the wage differential  $\bar{\omega}$ , with  $\partial \mu / \partial \bar{\omega} < 0$ . However, the general conclusions of the model would not change.

<sup>15</sup> The share of income remitted could be endogenized in the same manner as  $\mu$ , with  $\partial \rho / \partial \bar{\omega} < 0$ .

Comparing expression (8) to the benchmark (6'), we see that relative wages are affected through two distinct channels—the remittance channel and the labor supply channel. Income from remittances allows the economy to import in excess of its export revenues. The positive effect on wages is increasing in the per-person remittances  $\rho$ , the share of the non-tradable sector  $(1-k)$ , and in the share of the emigrated labor force (up to the level of  $\mu = 0.5$ , which is unlikely to be surpassed). The labor movement channel increases the relative wage, since labor becomes more scarce (expensive) at home and abundant (cheaper) abroad. The positive effect on wages of the labor movement channel is increasing in the size of the non-tradable sector  $(1-k)$ .

Graphically, we see that the remittance channel affects both the intercept and the slope of the  $B(z')$  curve, while the labor channel affects only the slope. The dotted line indicates the hypothetical position of the  $B(z')$  if labor movement were not accompanied by migration, i.e. it isolates the effect of the labor movement channel.

**Figure A3** Effects of a remittance-induced Dutch disease, accompanied by a reduction in the labor force.

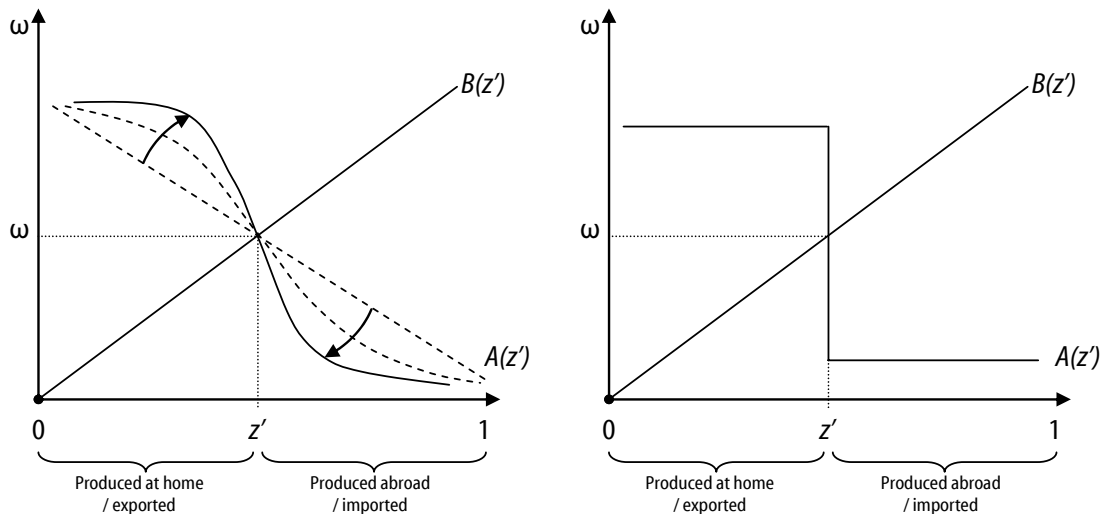


So far, there is nothing in the model that would suggest that the economy is worse off as a result of the migration + remittances combination. Wages are higher as long as the country continues to obtain remittances. If remittances dry out, the wages will still remain higher than in the pre-migration equilibrium (found at the intersection of  $A(z')$  with the dotted line in the figure above).

### A1.3 Introducing learning by doing

These optimistic conclusions change drastically when we extend our model to take into account learning by doing in the manner proposed by Krugman (1987). In the framework of this model, learning by doing can be interpreted as an increase in the productivity of those goods which the country is already producing. In this case, the unit labor requirement for good  $z$   $a_t(z)$  becomes a function decreasing in time for goods that are produced at home. This means that the comparative advantage for all goods produced will increase over time, while the comparative advantage for imported goods will decrease. Graphically, this can be shown as the gradual “steepening” of the  $A(z')$  curve around the borderline good  $z'$  (left graph in figure 3). In the limit,  $A(z')$  becomes vertical at  $z'$  (right graph in figure 3).<sup>16</sup>

**Figure A4** The equilibrium in the goods and labor markets



Let us now reevaluate the effect of migration and remittances in an economy characterized by learning by doing externalities. The  $B(z')$  curve moves in the same manner as before, as shown in the left graph in figure A5. However, as the home economy switches from exporting to importing the range of goods  $[z'_0, z'_1]$ , the foreign economy, by virtue of producing, catches up in productivity of goods previously produced by the home economy.

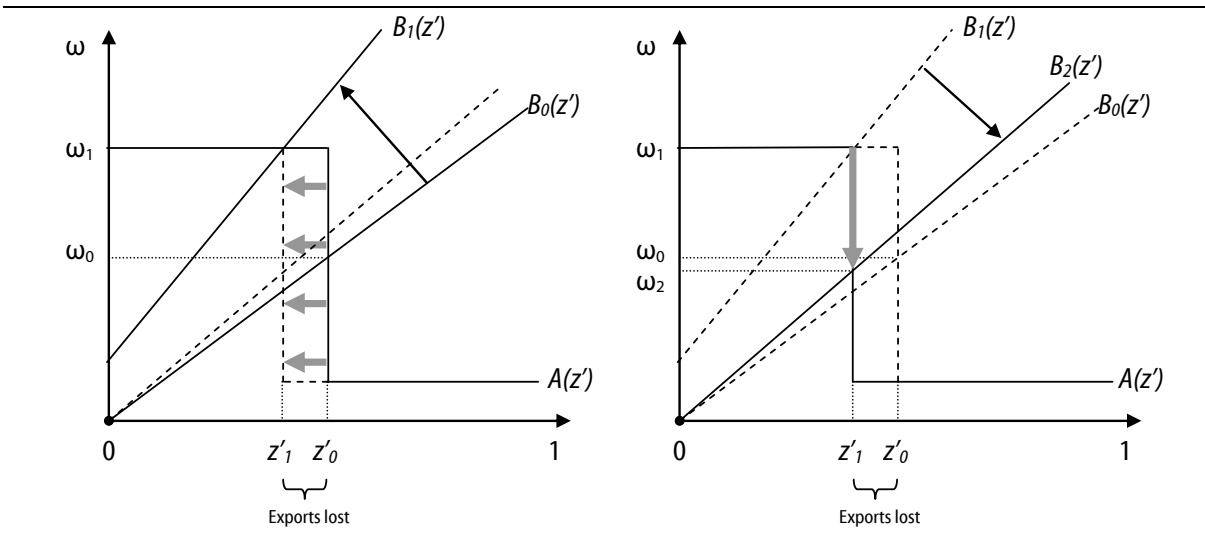
As long as remittances remain at the same high level, this loss of competitiveness does not affect the welfare of the home economy. If the remittance flows dry up (e.g. 2<sup>nd</sup> generation migrants no longer care about relatives at home), the economy may return to a relative wage

<sup>16</sup> The wedge between the wages for the two sections of  $A(z')$  depends on the diffusion of learning by doing externalities across countries. The higher the level of diffusion, the lower will be the wedge.

that is lower than the original one. This situation is depicted in the right graph in figure A5 – the new equilibrium relative wage  $\omega_2$  is below the original level  $\omega_0$ .

We thus conclude that in the presence of dynamic comparative advantage determined by learning by doing, migration and remittances can have a negative impact on the welfare of the sending country.

**Figure A5** The equilibrium in the goods and labor markets



#### A1.4 Extensions of the model

There are a number of possible extensions of this model that would make its predictions even stronger. For example, Matsuyama (1999) relaxes the assumption of homothetic utility, with relative demand for high- $z$  goods now increasing with income (recall that from the perspective of the developing country, high- $z$  goods are “modern”, i.e. superior goods). Hence, the share of imports ( $k - v(z')$ ) in the consumption basket of tradable goods will increase in  $\omega$ . In this case, the  $B(z')$  will shift to the left even more in response to remittances – higher incomes will reduce domestic demand for locally produced goods.

Non-homothetic utility can be applied also in the case of the non-tradable sector, which, in the previous discussion was assumed to constitute a constant share of the economy. The fact that the tertiary sector (i.e. services, overwhelmingly non-tradable) represents a larger share of the output of developed countries points towards the conclusion that non-tradables can be assumed to constitute superior goods. In the framework of our discussion, this would imply that  $k$  decreases in  $\omega$ . As mentioned before, a larger non-tradable sector reinforces both the remittance and labor movement channels in equation (8).

We can conclude that the model presented here may greatly underestimate the actual length of the interval of goods  $[z'_0, z'_1]$  that the home economy loses as a result of the combined effect of migration and remittances.