

ASIAN DEVELOPMENT BANK

**INTERNATIONAL MIGRANTS' REMITTANCES
IN CENTRAL ASIA AND SOUTH CAUCASUS**

**CHAPTER 7
GENERAL EQUILIBRIUM ANALYSIS OF THE EFFECTS
OF REMITTANCE INFLOWS ON ARMENIA AND KYRGYZ REPUBLIC**

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1. Introduction²

Remittance income can be said to lead three lives in a recipient economy, playing different roles at the micro, meso, and macroeconomic levels. The microeconomic effects of remittances are perhaps the most transparent, providing a welcome source of income, usually representing superior returns to household labor and, in the case of international migration, denominated in often-scarce foreign exchange. At the meso level, remittances alter patterns of domestic purchasing power in ways that may increase import penetration and shift resources away from tradable production activities. At the aggregate level, remittance inflows can contribute to both nominal and real exchange rate appreciation, adversely affecting the competitiveness of tradable domestic production activities. Recent evidence in some countries also indicates that remittance income may attenuate domestic labor supply, further undermining domestic real GDP potential.

In this chapter, we examine these issues for two central emerging economies with relatively high levels of remittance income, Armenia and the Kyrgyz Republic. Using a calibrated general equilibrium (CGE) policy simulation framework, we assess impact of a cyclical decline in remittances for each country's growth and poverty reduction objectives. The CGE framework is well suited to this analysis because of its capacity to follow detailed linkages across product and factors markets, both domestically and in relation to external trade flows. In addition to assessing the potential importance of remittances at the three levels mentioned above, we consider how remittances interact with other growth fundamentals like factor productivity and discuss how policy makers can take advantage of the benefits remittances offer, as well as averting potential negative effects. Generally speaking, we find that the growth and sustained poverty reduction potential of remittances can be considerable and, by symmetric reasoning, falling remittances can seriously undermine these goals.

The next section provides a discussion the theory and research literature relevant to our analysis, followed by a brief description of the Armenian and Kyrgyz data and models. We then present an assessment of the two economy's vulnerability to loss of remittance income. A final section presents concluding remarks and discusses extensions of the present work.

² This work draws heavily on Ganiev and Roland-Holst (2008). The models used for this analysis are also more fully documented there.

2. Remittances and Economic Growth

Ultimately, the economic effects of remittances depend upon how domestic agents respond to and use these external inflows.³ As suggested in the last section, the microeconomic properties of remittances are in many ways less ambiguous than more aggregate effects. As long as labor has been mobile between regions with significantly different real wages, households have aspired to send migrants to higher wage destinations and improve the returns on their labor assets. In the modern era, this basic microeconomic impetus translates into movements of hundreds of millions, within and between countries, at low as well as high income levels. While there are many individual uncertainties in the migration experience, the overall dynamics are driven by simple and rational incentives to improve returns to human capital.

Microeconomic Effects

In remittance receiving communities, sending households generally enjoy substantial economic advantages in the form of higher real income, savings, and resources for further wealth accumulation and income/expenditure smoothing. While this may contribute to increased inequality, change social capital, and have other complex effects within their communities, the incentives for the sending households are relatively simple and universal. In the short run, cash constraints are alleviated and purchasing power increased. In the longer term, capital constraints may be alleviated to permit investment in physical and human capital for expanding domestic production and income opportunities (Stark:1991). Finally, even a single a migrant offers access to network externalities that can increase the probability of additional migration and transfer endogenous growth factors (knowledge, technology, market access, etc.) back to sending households. A large and growing body of empirical evidence supports this view of microeconomics of migrant sending/remittance receiving institutions (e.g., Massey et al., 1994; Stark, Taylor and Yitzhaki, 1986; Oberai and Singh, 1980; Knowles and Anker, 1981).

With these considerations in mind, policy makers in most countries generally take a benign view of domestic migration as a means of allocating labor more efficiently and transferring growth potential from high to lower income regions. When migration crosses national borders, political considerations emerge that complicate economics and policy, and sending countries can also become concerned about stratified migration that depletes the domestic skill base. Microeconomic

³ There is extensive discussion of remittance effects in the migration and more generally economic development literature. See e.g. Todaro, Borjas:1989

incentives to migrate may persist, but policy concerns may lead to interventions that undermine these incentives. For example, high income countries may limit immigration to reduce labor market competition, while lower income countries may provide both migration and repatriation incentives to facilitate remittances as a source of external income.

Mesoeconomic Effects

At the mesoeconomic level, the effects of remittances on economic development become more ambiguous. Remittance income changes domestic purchasing power and, through a combination of demographic diversity and Engel (income elasticity) effects, the composition of domestic demand. In particular, abundant evidence links increased remittance income to higher levels of demand for imports and nontradable domestic goods (especially construction and other services). Shifting demand in these two directions combines to increase pressure (mainly via higher resource costs) on domestic activities that produce tradables, and can undermine export competitiveness. This contributes to a structural problem often called “Dutch Disease” to evoke comparison with that country’s loss of competitiveness induced by the influx of large energy export revenues. In the face of a large foreign windfall, domestic demand in a higher income country naturally shifts to services, tilting relative prices away from domestic tradable commodities and pulling resources in the same direction. To the extent that income elasticities are higher for nontradables, any country can experience this structural distortion from external inflows. The significance of this for each country is of course and empirical matter, and in low income countries income elasticities for consumer goods are of course very high.

The effect of increase import demand is also ambiguous, since increased imports serve to moderate real exchange rate appreciation. Certainly, import penetration will be unwelcome to producers of domestic substitutes, but again the degree of import competitiveness is an empirical matter that will be country-specific. Given the many microeconomic benefits of remittances, as well as the advantages of access to international product standards and technology, it is probably too simplistic to argue that remittances present a direct risk of Dutch Disease.

Another challenge at the mesoeconomic level relates not to remittances themselves, but to the outflow of workers. To the extent that these may be more skilled individuals who would otherwise be employed in formal sector manufacturing or other tradables, induced labor scarcity might reinforce real exchange rate appreciation and undermine national skill development and value added capture.

Dynamic Asian export economies have maintained their competitiveness and growth prospects, even as they transit to higher income, more mature economies,

this despite sustained accumulation of external surpluses and the attendant upward exchange rate pressure. By channeling external inflows to investment, productivity growth is sustained and, with it, rising real wages and economic modernization.

Thus the challenge posed by real exchange rate appreciation can be met if remittances are channeled into productive investment. In the case of FDI, this kind of capital allocation is assumed to be part of the process, but with remittance income to domestic households, the problem is more complex. Many rural societies have limited access to technology, ill defined property rights, and lack financial intermediaries to put their savings to productive use by other enterprises. The result is often over-investment in non-productive assets like housing, which denies local communities productivity growth and can indeed contribute to real exchange rate appreciation.⁴

If remittances are to make growth contributions more like those of FDI, and overcome any adverse effects like Dutch Disease, complementary policies may be needed to promote local and small enterprise development, financial intermediation, and educational opportunities to invest in human capital. In the policy experiments that follow, we shall see that even modest productivity returns to remittances can significantly leverage growth potential and overcome adverse real exchange rate effects.

Macroeconomic Effects

Remittances can be an important source of domestic income to developing countries, as the data in Table 1 make clear. Because they represent a foreign exchange inflow, however, they have macro-structural implications for both the sending and receiving economies. The latter economies are usually much smaller, and the induced macroeconomic effects may be important. At the most aggregate level, remittances represent the classic Transfer Problem elucidated by Keynes and many others (see e.g. Johnson: 1956, Samuelson:1952,1954, and Chipman:1989 for seminal contributions). The challenge posed in this context by unrequited inbound transfers is to the real exchange rate. When some goods are nontradable, the receiving country income effect will not be fully offset by imports, and the real exchange rate must appreciate to compensate for the difference.

⁴ See e.g. Moglievsky (2007) for discussion of the Kyrgyz Republic.

**Table 1: Aid, Exports, and Remittances as a Percent of GDP
(1990-97 averages)**

Country	Remittances	Aid	Exports
CE Europe & Central Asia	4.16	2.70	37.00
Turkey	1.96	0.33	17.82
East Asia & Pacific	1.05	3.41	42.88
Philippines	5.46	1.96	34.67
Indonesia	0.24	1.07	26.82
Latin America & Caribbean	2.17	4.56	27.54
Colombia	1.16	0.23	17.24
Mexico	1.19	0.09	21.92
Middle East & N. Africa	7.19	3.07	32.20
Egypt	8.69	6.85	23.84
Morocco	6.68	2.76	26.08
South Asia	2.87	4.68	17.50
Bangladesh	3.05	4.49	9.19
India	1.59	0.64	9.70
Sub-Saharan Africa	3.71	15.06	27.42
Ethiopia	0.28	16.89	10.15
Nigeria	2.11	0.91	43.13
Senegal	3.04	12.99	28.84

Source: Faini (2002), World Bank.

Once again, the degree of this appreciation will depend on individual country consumption patterns, and omitted considerations like increasing returns and productivity effects can overcome this in any case. Suffice to say for the present that no country has moved to sterilize remittance inflows as they have with larger resource based export earnings, and there is scant evidence that remittances alone would justify sustained exchange rate interventions.

Labor Markets

Another topic of relevance is how remittances affect domestic labor markets. Migration generally affects vacancy rates and contributes to domestic labor scarcity, but the actual affect on domestic wages and employment depends on the elasticity of domestic labor supply. In some countries, leakage of higher skill groups can pose a

special challenge to domestic growth potential, while the growth opportunity cost of unskilled workers is probably much lower.⁵

Both the vacancy and income effects can contribute to higher domestic wages, via increased domestic labor scarcity and higher reservation wages, respectively, and this in turn can undermine growth potential. As in other cases, the actual importance of adverse labor market effects will vary from country to country. In the next section, we evaluate these issues for the Kyrgyz Republic, a largely agrarian Central Asian economy where remittances are an important and increasing percentage of GDP. Current estimates (Mogilievsky:2007 and ADB data) indicate that about 10% of the population is currently working abroad and repatriating at least USD200 million formally (IMF, about 8% of GDP) and up to USD300 million annually.

3. Results

Policy simulation models of the kind used here are well suited to evaluating all the effects discussed in Section 2 above. In particular, the CGE framework combines the institutional detail and aggregate consistency needed to elucidate the effects of remittances within and between the micro, meso, and macro levels. In this section we examine the detailed effects of events that are likely to arise in parallel with emerging economies like Armenia and the Kyrgyz Republic, fluctuations in remittance inflows with an adverse global economic cycle. Just as growth dynamics in a global economy can be transmitted via migrant labor movements and attendant remittance income, so can a global recession spread by attenuating remittance flows. More specifically, we conduct comparative static experiments with CGE models calibrated to new baseline data for the Armenian and Kyrgyz economies in 2007.⁶

Remittances and Cyclical Economic Risk

Domestic policy makers can facilitate or limit remittance flows by influencing migration, transactions costs, and alternative economic opportunities. To a

⁵ Stalker (1994) for example, finds that Sub-Saharan Africa lost 30% of its skilled labor overseas between 1960 and 1987. Similarly, Jamaica loses 80% of domestically trained doctors, and the Philippines has the world's highest percentages of nursing graduates per capita but a chronic national shortage of nurses. Latin America has similar experience with 20 percent of Mexicans degree holders resident in the United States, 30 percent of Dominicans, and 27 percent of El Salvadorians (Carrington and Detragiache :1998).

⁶ We have chosen a comparative static framework for transparency in a setting where sequencing and discounting are not important considerations. Looking at the same policies in a dynamic context would compound effects and yield larger numbers, but not change detailed qualitative results that reveal the essential relationships.

significant extent, however, remittance income is exogenous to domestic policy. For this reason, remittances present an important source of economic risk for countries with significant macroeconomic dependence on them. Adverse economic cycles elsewhere can be transmitted to their economies, inducing shortfalls in an important source of external income.

The scenarios below examine the extreme case where Armenia and the Kyrgyz Republic lose all remittance income in the year 2007, as might occur from a severe regional economic downturn among the Central Asian economics. Given high current levels of initial dependence, a dramatic fall in remittance income would seriously affect either country.

Table 2: Macroeconomic Results – Complete Loss of Remittance Income
(percent change from 2007 baseline)

	Kyrgyz Republic	Armenia
Disposable Income	-13.95	-18.98
Rural HH Income	-21.30	-16.62
Urban HH Income	-9.38	-22.25
Real Consumption	-8.01	-8.83
Rural HH Cons	-16.33	-6.17
Urban HH Cons	-3.37	-12.37
Consumer Price Index	-6.22	-11.31
Rural CPI	-6.16	-11.13
Urban CPI	-6.29	-11.49
Employment	-.57	.54
Unskilled Labor	-.48	1.01
Skilled Labor	-.66	-1.95
Real Wage	-6.85	-12.09
Unskilled Labor	-6.77	-10.78
Skilled Labor	-6.94	-13.40
External Trade		
Exports	9.83	21.37
Imports	-3.58	-10.80
Real Exchange Rate	-7.92	-13.13

Table 2 compares the over macroeconomic impacts, and important similarities and differences are immediate apparent. Both countries experience serious reductions in real income, consumption, and the price level. All are to be expected from a shortfall in external income flows, but the real side of the economy is also strongly influenced by foreign demand and supply. For example, lower foreign

income induces real exchange rate depreciation, making domestic goods more competitive abroad and significantly stimulating exports. Conversely, imports are more expensive for domestic buyers and thus fall significantly. Because falling factor prices are compounded by the income decline, exports are even more competitive on a resource cost basis and expand more than imports contract, and this new demand helps offset net domestic output and employment effects.

Differences in the economic outcomes are as instructive as similarities, and these depend on aggregate remittance dependence, how remittances are distributed and the employment composition of domestic production and trade. Armenia is significantly more remittance-dependent, so it experiences more dramatic adjustments. For example, both countries experience substantial real aggregate household income declines. Rural households in the Kyrgyz Republic are more adversely affected, while urban households are in Armenia. This difference reflects the composition of migrant populations, primarily rural dwellers from the first country and urbanites from the second.

For both countries, spatial incidence of the impact is unequal but in opposite directions. In Armenia, urban households are harder hit than those in the countryside, while in the KR rural households experience more than twice the income shortfall of urban households. Effects on real consumption are moderated by two factors, price declines, dissaving, and a small real exchange rate effect. The CPI for all households falls with economywide income/consumption declines, and this provides a modest cushion for living standards. Because poorer household consumption is largely for necessities, savings are further reduced to sustain consumption. Finally, a small depreciation of the real exchange rate increases the domestic price of imports and reduces this component of demand.

Investment is hit by a combination of declining aggregate demand and dissaving, which is compounded slightly by a rise in the cost of net foreign financial obligations. On the current account, moderate reverse Dutch Disease is apparent, as falling remittances induce real exchange rate depreciation, stimulating exports and repressing import demand. This effect is much stronger for Armenia, but the export effect is stronger than the import effect in both countries because we assume they are small suppliers relative to their external markets (i.e. export demand is much more elastic than domestic demand for imports). In any case, this trade effect more than compensates for the remittance income effect in Kyrgyz labor markets, as external demand stimulates a little more job creation than is lost from domestic deflation. In Armenia, skilled workers are net losers in the domestic-external demand trade-off, while unskilled workers find more jobs in export production than they lose from domestic market contraction.

These results highlight the complex nature of remittances, as they exert four fundamental aggregate effects across the economy:

1. Income effects – particularly on the poor
2. Domestic demand effects - an extension of the former, but mediated by income elasticities and prices
3. Saving/investment and Enterprise Development – an important downstream financial effect of remittance income
4. Domestic and external terms-of-trade – Relative price adjustments between rural and urban goods/services and between tradable and nontradable goods are essential determinants of structural adjustment. The former represent the rural sector’s potential to alleviate poverty by participation in urban markets, while the latter represents the domestic economy’s ability to do the same with respect to external markets.

The results in Table 2 indicate the aggregate significance of these factors, but more detailed results can elucidate the adjustment process that would ensue from this adverse scenario. Clearly, these two countries would have to respond with very different mitigating policies if remittances fell substantially, e.g. agricultural extension services vs. urban workforce development. The trade adjustments suggest how this might begin, with export facilitation for rural sector products in the Kyrgyz Republic and relatively low skill intensive light manufacturing in Armenia.

**Figure 4: Sectoral Domestic Output
(percent change from 2007 baseline)**

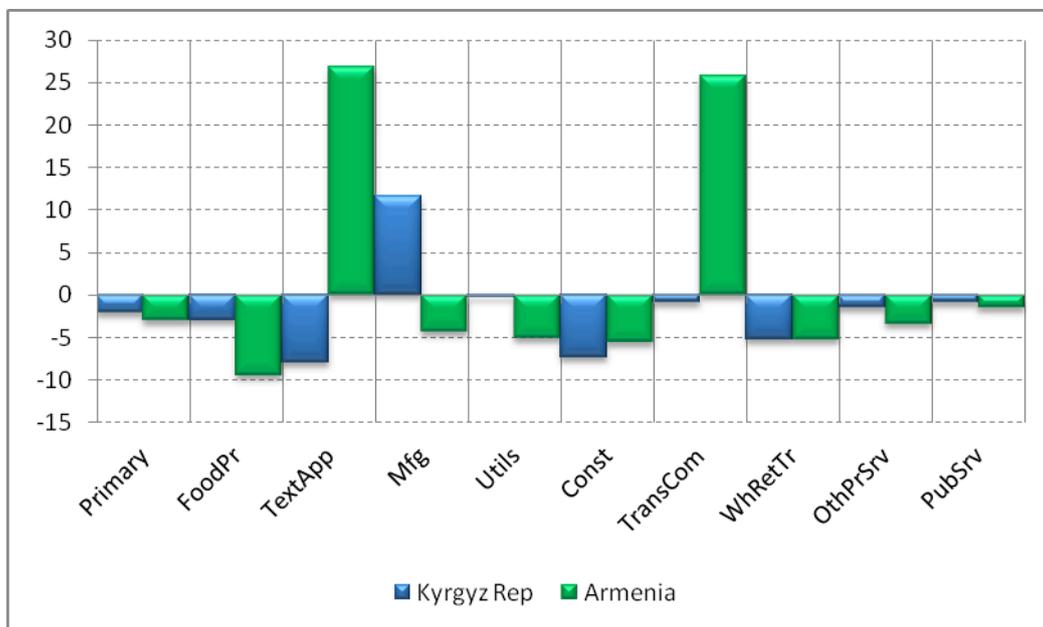


Figure 4 illustrates more detailed structural adjustments for both countries, and the observed effects are clearly mixed. With staples and nontradables (services) declining while exportables and mediating services (Transport and Communication)

expand. Of particular interest in the former category is Construction, which is well known to be a sink for remittance spending, as well as domestic distribution services, which have high income elasticities in both countries. Armenia exhibits strong export-driven growth in textiles and apparel, while a similar effect for the Kyrgyz Republic is evident in manufacturing. In Armenia, this appears to be an expansion of low skill intensive employment (Table 2), while employment effects are more balanced in the KR.

Conclusions

This chapter examines the economywide effects of an adverse remittance shock on two economies, Armenia and the Kyrgyz Republic. After some theoretical discussion of how remittances influence domestic resource allocation, we provide empirical results suggesting that the potential for remittances to act as a growth catalyst also works in reverse. Generally speaking falling remittances are directly immiserizing, undermining most livelihood indicators (income, real consumption, employment, real wages), while indirectly improving external competitiveness.

If the economic growth potential of remittances is to be more fully realized, and today's receiving economies are eventually to become less vulnerable to adverse remittance cycles, it is essential that governments commit to developing the complementary resources, infrastructure, and institutions needed to leverage remittances for investment in future domestic productive capacity. This would include, but is not limited to, an enabling commercial environment of clearly defined property rights, contractual transparency and enforceability, financial intermediation, and infrastructure to reduce the costs of market access. Without this, remittances flows will stagnate in local expenditures, primarily on luxury goods and construction services, with little or no downstream multiplier, productivity, or sustained growth domestic benefits.

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