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EMIGRANT REMITTANCES: IMPACT ON ECONOMIC DEVELOPMENT OF KYRGYZSTAN[1]

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ABSTRACT

This study seeks to assess the macroeconomic implications of growing inward remittances for a small open economy. The findings illustrated with data on Kyrgyzstan, where remittances as a share of GDP sharply increase and become one of the important sources of poverty alleviation and growth. The paper deals with statistical principles and methods of deriving estimates of the marginal propensity to consume, marginal propensity to invest and marginal propensity to import from time series of remittances, consumption, income, import and investment. The results show support for the view that remittances have a positive impact on economy both directly and indirectly through its multiplier effect.

Keywords: remittances, migration, economic development, Kyrgyzstan

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EXECUTIVE SUMMARY

Kyrgyzstan has an agricultural-based economy, despite the fact that the country is 95% mountainous and only 7% arable land. Of the republic's 5-million-strong population, 45% live below the poverty line, meaning that they are incapable of moving or traveling any significant distance. The question of remittances from persons of Kyrgyz migrants living outside of Kyrgyzstan to their relatives in the country becomes one of the most contentious among economic policy makers. Even if the economic and political impact on Kyrgyzstan of remittances were not significant — but we believe they are—the important role they play in the international debate on policy toward the Kyrgyzstan would make them worthy of study.

Today, the theoretical literature on remittances is becoming larger, in the sense that many researchers have at least informally suggested theories describing their role in the economy in order to motivate an empirical exercise. It is possible to construct long lists of plausible negative and positive consequences of remittance inflows, but extremely problematic — and perhaps not very constructive — to attempt to estimate their overall effect on development processes. The evidence regarding the direct impact of remittances on economic development and growth is limited. Macroeconomic studies indicate that although migrants' remittances are affected by the economic cycles of source and host countries, they often provide a significant source of foreign currency, finance imports and contribute to the balance of payment, increase national income. Remittances may also be positively linked to economic growth.

There is currently no public record of the number of Kyrgyz migrants abroad or their incomes. It is estimated that between 200,000 and 500,000 Kyrgyz people, out of an overall population of roughly 5 million, work abroad or are self-employed in trade or service professions. The research on labor migration was conducted by the International Organization for Migration. IOM has assessed the number of migrant laborers in Russia as 300,000, and Kazakhstan as 50,000. Migration significantly mitigates the problem of unemployment inside the country and serves as an important source of foreign exchange inflow (second only to exports).

Migration and remittances as statistical concepts are defined only vaguely. An International Technical Meeting on Measuring Migrants Remittances in early 2005 identified a number of areas where the statistical treatment of remittances needed to be improved. In particular, balance of payments conventions do not provide a robust basis for measuring remittances: the one-year rule does not allow identification of all migrants; the distinction between remittances and other private transfers is somewhat blurred; there is no methodology for compiling information about informal flows; and the impact of remittances on development is measured by household surveys in the sending and receiving countries. The statistical treatment of remittances is further complicated by differences in the definition of a migrant.

According the paper findings, for last years remittances reached about 46.9% of Kyrgyz exports of goods. About 28.9% of imports are recently covered by the inflow of emigrant remittances. The ratio of remittances to private consumption is a measure of the extent to which remittances can be used to finance private consumption of domestic inhabitants. Recently remittances represent more than 13% of

private consumption in Kyrgyzstan. Compared with GDP, remittances reached as high as 13.2% of GDP in 2005. Measuring remittances is notoriously difficult as they are often transmitted through informal channels or are remittances in kind. The real size of remittance flows in Kyrgyzstan can be from US $ 322 mln (officially in 2005) to US $ 527 mln (alternative assessment) or even higher.

Use of remittances is an important question for assessing whether remittances promote growth and development in Kyrgyzstan. Over a half (55%) of transfers are used by beneficiaries for everyday expenses, and 14% is spent for large purchases (home appliances, vehicles). On average, 10% of remittances are spent on items of an investment character (setting up businesses, exporting goods, extensive repairs), and the creation of human capital (education and treatment).

A very simple linear macro-econometric model is suggested, on these lines is of a Keynesian basis, but with a dynamic perspective, and consists of three behavioral equations, namely, a consumption function, an investment function and an imports function, and a national income identity. The goal of estimation is to determine first the effects of an exogenous shock of remittances on these endogenous variables. The dataset covers the 1995-2005 period. The results of estimations show a positive correlation between remittances and GDP which according to our estimations indicates that remittances fluctuate pro-cyclically. Furthermore, the coefficients on results of the regressions analysis are also positive and strong. Remittances have a correlated positive impact on GDP volume. The results also show the correlation between remittances and consumption, import, cumulative gross domestic investment and fully prove theoretical findings.

The study made assessment of impact of remittances on receiving economies depends by means of marginal propensity to consume, marginal propensity to invest and marginal propensities to import. In addition, the benefit to the local economy is larger then the total sent because of the large multiplier effect remittances have, typically as the expansion of one sector increases the optimal size of other sectors.

I. INTRODUCTION

Remittances — funds sent by migrant workers to their relatives in home countries — are an increasingly important source of external finance for low income countries especially for the many small economies. The total value of remittances has been increasing steadily over the past decade and the World Bank estimated that in 2005 the total value worldwide was over US $ 230bn equivalent, involving some 175 million migrants. For some individual recipient countries, remittances can be as high as a half of GDP. Remittances also now account for about a third of total global external finance; moreover, the flow of remittances seems to be significantly more stable than that of other forms of external finance. Many experts believe that informal flows of remittances are as large as formal flows.

Kyrgyzstan has an agricultural-based economy, despite the fact that the country is 95% mountainous and only 7% arable land. Of the republic's 5-million-strong population, 45% live below the poverty line, meaning that they are incapable of moving or traveling any significant distance. The question of remittances from persons of Kyrgyz migrants living outside of Kyrgyzstan to their relatives in the country becomes one of the most contentious among economic policy makers. Even if the economic and political impact on Kyrgyzstan of remittances were not significant — but we believe they are — the important role they play in the international debate on policy toward the Kyrgyzstan would make them worthy of study.

Official central bank statistics show significant amounts of formal sector funds being transferred into countries—up to 27% of GDP in the Kyrgyz Republic (EPI, 2005) and 20–50% of GDP in the case of Tajikistan (Kireyev A., 2005). However, very little is known about the structure of remittance flows in the region in terms of channels of remittance transfers and, perhaps more importantly, effects of remittances on poverty. This lack of information prevents both governments and financial institutions from responding with policy changes and new products to increase remittance inflows and their positive effects on financial sector development and poverty reduction. Additionally, local capacity to conduct applied research on remittances on an ongoing basis does not yet exist. Finally, regional institutions working on regional integration issues have not yet had sufficient information to consider regional options to improve remittance flows.

It is important to note that we are focusing on macroeconomic impacts of remittances on receiving economies and not on their microeconomic impacts.

The research analyzes the volume of remittances of Kyrgyz migrant laborers made from abroad and their impact on macroeconomic indicators of the country. Our intent is to verify empirically that remittances influence the national income and to assess the magnitude of this effect in the receiving economy. The key question of concern for our study is: how much remittances do contribute to sustained improvements in consumption and economic growth of the Kyrgyz Republic? Do remittances from migrants compensate for the labor leaving developing countries?

The study attempts to measure the effect of transfers on receiving economy. For the empirical analysis we expect elaborate an econometric model which should describe behavior mechanism of main economic indicators – consumption, investment, import and national income. Also our model lets us to estimate a multiplier effect of remittances in the context of increasing returns, typically as the expansion of one sector increases the optimal size of other sectors.

In this study, workers' remittances are defined as workers' remittances recorded under the heading "current transfers" in the current account of the balance of payments and as migrants' transfers—the flow of goods and changes in financial items that occur with migration (to or from the migrant as resident to the same person as nonresident) under heading "capital transfers" in the capital account.

The paper is organized as follows. Section II presents the literature review that can be divided into two parts: the first one focusing on the nature and uses of remittances, and the other one on the macroeconomic impact of remittances. Section III and IV present known facts about labor migration from, and remittances to, Kyrgyzstan, introduces the characteristics of remittances and their assessment. Sections V and VI review a theoretical framework of macroeconomic relations and present the econometric model of workers' remittances impact. The model's predictions are then used to empirically investigate their impact determinants on Kyrgyz economy in Section VII. Conclusions and policy implications are provided in Section VIII.

II. THE LITERATURE ON CAUSES OF REMITTANCES

Today, the theoretical literature on remittances is becoming larger, in the sense that many researchers have at least informally suggested theories describing their role in the economy in order to motivate an empirical exercise. It is possible to construct long lists of plausible negative and positive consequences of remittance inflows, but extremely problematic — and perhaps not very constructive — to attempt to estimate their overall effect on development processes. Macroeconomic studies indicate that although migrants' remittances are affected by the economic cycles of source and host countries, they often provide a significant source of foreign currency, finance imports and contribute to the balance of payment, increase national income. While other capital flows tend to rise during favorable economic cycles and fall in times of economic downturn, remittances appear to react less violently and show remarkable stability over time (Ratha, 2003: 160). Thus, countries having a high share of remittances relative to other capital flows might be experiencing more stable inflows of funds (Buch et al., 2005: 6). Remittances may also be positively linked to economic growth. Finally, remittances may have a positive effect not only on the quantity but also on the quality of investments. Migrants and their dependants may have a better understanding of local conditions and investment opportunities in comparison with foreign creditors and investors (op cit.: 8).

Other studies adopting a macroeconomic approach point in the opposite direction: remittances fail to help the economy and decrease the likelihood of an improved economy in the future. The transfer of funds can be deceptive if it creates dependence among recipients, encourages continued migration of the working age population and decreases the likelihood of investments by the government or foreign investors because of an unreliable workforce. If spent on imported consumer goods rather than locally produced ones, the potential multiplier effect may decrease while simultaneously increasing import demand and inflation (for an overview, see Puri and Ritzema, 1999). This has the effect of making exports less competitive, while stimulating imports.

However, within the present context of globalization, the macroeconomic effects of migration may be much more complex and multidirectional than studies limiting the dependent variable to remittances would lead one to believe. Indeed, a large number of developing countries are heavily dependent on a limited number of export products and constantly affected by the vagaries of the world market. In this context, the export of labor can be seen as an element in a diversified economy where different uncertainties may complement each other.

Development economics has traditionally considered foreign savings as key to increasing a country's capital output ratio. Factors such as foreign direct investment, official development assistance, foreign trade, the transfer of technology and, most recently, remittances have entered into these analyses. The broader macroeconomic dynamics of migrants' long-distance transnational ties have nevertheless been neglected by development economists and policy makers, some because of their newness, others because of the dominant nonlinear analytical focus (south-north flows of migrants; north-south flows of other transfers). However, the economic effects of migrants' transnational ties and activities are much more varied and multidirectional than hitherto acknowledged.

A. NATURE OF REMITTANCES AND ITS UTILIZATION

Remittances are characterized by stability, in the sense that they are not as volatile as official flows and do not vary substantially over time. These are characteristics that make remittances contribute significantly to poverty reduction. Remittances in many cases represent a relatively small part of GDP it is difficult to find a relationship between remittances and growth. However, if remittances make up a large share of the trade deficit, a strong relationship between remittances and the exchange rate can indeed be traced. Large remittance inflows, like any large influx of foreign currency, can lead to appreciation of the local currency.

The extent to which remittances lead to additional investments has been much discussed, though some of the discussion has been confused. The issue of whether the cash received is actually spent on investments is not the point. First, remittances represent a fungible source of funds to the household; a more appropriate starting point is therefore to examine whether families with incomes enhanced by remittances save more. Next, it should be recognized that spending on education, housing and land are forms of investments. Another thing is what may be an investment by one family may or may not be an investment for the country. For example, if the household receiving remittances buys additional land, an existing house, or even repays outstanding debts, the question arises as to how the recipient of these payments spends the income. Finally, at the macroeconomic level, the mere inflow of remittances on balance of payments account does not imply addition national investment any more than do additional inflows on capital account; the inflow may instead be consumed either privately or through government spending. How much is invested depends upon the returns that can be obtained by those whose incomes are increased by the remittances. In turn, this raises some important questions about the role of publicly provided infrastructure as a complement to induce investments out of remittances, and of the potential for microfinance institutions to channel resources effectively.

At the macroeconomic level, for the poorest countries of CIS (Armenia, Georgia, Kyrgyzstan, Tajikistan, Moldova) that are encumbered with debt overhang, are experiencing severe and chronic trade imbalances and difficulties attracting foreign direct or financial investors, or that are otherwise constrained in production by inability to import materials, the contribution of remittances to economic expansion is potentially considerable. Whether the foreign exchange inflow is permitted to translate into monetary expansion is largely discretionary. Nonetheless, remittances may increase upward pressure on prices, where key production capacities are limited, through demand expansion. In addition, remittances may allow a real appreciation of the exchange rate, or at least postpone real depreciation, which in turn serves to limit development of import competing and export industries, together with their employment potential. This last effect has led some observers to compare the effects of remittances to those of the Dutch disease problem, engendered by foreign exchange inflows from mineral exports.

For the macroeconomist unfamiliar with the Kyrgyz Republic a cursory inspection of the foreign economic situation would erroneously produce an impression of the threat of the “Dutch disease” on the part of the export of gold, as this item makes up about 40% of total exported goods. However,

gold's effect on the economy is imperceptible – net gains from export do not come back into the country. A potential danger is more likely to come from workers' remittances during the mid term.

The general discussion of the economic consequences of remittances may readily be divided into two: the effects on poverty and inequality; and the influences upon investment, growth and macroeconomic stability.

A recent study by Roberts and Banaian (2004) on remittances in Armenia conclude that overall, empirical evidence suggests that the propensity to save out of remittance income is high (almost 40%) and remarkably consistent across studies. According to income data in Armenia, for households receiving remittances, remittances make up 80% of household income on average. Remittances do appear to be going to some of the most vulnerable households in Armenia. The same percentage of urban and rural households received remittances (Roberts, B. and K. Banaian, 2004).

Within the literature on the consequences of remittances for inequality, a further distinction must be made. Most of the contributions examine only the impact effects on inequality; whether rich families or poor families receive more remittances. A smaller number of contributions go further and look at inequality, across families, given adjustments within the family induced by remittances, such as labor force participation adjustments and asset accumulation. An even smaller subset recognizes the (local) multiplier effects of spending from remittances. On the other hand, distribution within the family seems to have been rather neglected.

Overall, "The evidence on the impact of remittances on income inequality is mixed" (Ratha, 2003).

Early results for the Philippines in 1983 suggested that the impact effect of remittances were fairly neutral with respect to inequality, whereas data from 1991 indicate that the main beneficiaries were from the top income deciles, especially in urban areas. Stark et al. (1986) hypothesize exactly the opposite evolution over time and find supporting evidence from two villages in Mexico. In particular, Stark et al. suggest that, as long as international migration is confined to an elite few, the effects of remittances add to pre-existing inequality; but as network effects spread information about migration opportunities and lower the costs of moving, migrants become drawn from a wider social spectrum and remittances prove equalizing.

Within the rural sectors of both Egypt and Pakistan, Adams (1991, 1998) finds that remittances sharpen inequality. Measuring incomes inclusive of remittances Adams notes, in the case of Egypt, that the poorest quintile of households produces a proportionate share of still-abroad migrants, the richest forty per cent of households produce more than their share, but the second and third quintiles are under represented. "It is these variations in the number of migrants produced by different income groups - and not differences in either migrant earnings abroad or marginal propensities to remit - that cause international remittances to have a negative effect on rural income distribution.". In the context of Pakistan, Adams (1998) notes that the lack of remittances sent to poorer rural families may also reflect inability to finance international migration and hence under representation of the poorest among the migrants.

In contrast, Taylor and Wyatt (1996) find an impact effect of remittances (81 per cent of which are from the US) within rural Mexico that reduces inequality marginally. Moreover, the effect of remittances on household incomes is shown to depend upon the initial assets of the household. Possessing more animals (a liquid asset) diminishes the impact of remittances on family income, whereas possessing non marketable land rights enhances the income effect of remittances. Taylor (1992) uses this to demonstrate that, whereas in the short-run remittances sharpen inequality once the induced effect of remittances on farm income is accounted for, in the long run-the income distribution becomes more equal through the liquidity provided for capital accumulation (and particularly of livestock).

B. Macroeconomic Impact of Remittances

The effects of remittances on macroeconomic expansion are no less contentious than are the effects on inequality. The World Bank's *Global Development Finance Report* puts a positive spin on the expansionary effects; "If remittances are invested, they contribute to output growth, and if they are consumed, then also they generate positive multiplier effects" (Ratha, 2003, p.164.)

The *Global Development Finance Report* goes on to cite the case of high savings out of remittances in Pakistan. Other case studies indicated signs that remittances may indeed have served to accelerate investment in Morocco and perhaps in India. More generally, Glytsos (2001) estimates a simple dynamic, simultaneous model of aggregate investments, consumption, imports and the feedback of these components through GDP, for seven Mediterranean countries from about 1969 to 1993. Simulating the direct and indirect effects of remittances on incomes and hence on investment through this framework, Glytsos finds that over a six year period investment rises with remittances in six out of the seven countries, and in four of these investment rises by more than the initial amount remitted. Similarly, León-Ledesma and Piracha (2001) find a significant positive association between remittances and aggregate investments in eleven transition economies in Eastern Europe during 1990-1999, controlling for such factors as GDP per capita, the real rate of interest and inflation. Rural households tend to consume more domestically produced goods—and hence generate larger multiplier "nationality" effects—than urban households.

The evidence on multiplier effects from remittance spending, particularly from housing construction, is also substantial. All of these studies tend to agree that the multiplier effects are quite large. However, this result ought not to be too surprising, for it seems the possibility of limited capacity thwarting domestic expansion is not a feature of these simulations; rather it is assumed that limited aggregate demand is the principal constraint on output. Yet, in practice, it seems that in some contexts additional remittances have served to drive up relative prices of land and housing, perhaps indicating a lack of excess capacity, though it is less clear that remittances have commonly fueled sustained inflation.

Nonetheless some reservations must be expressed; there are also reasons to anticipate that remittances may actually slow economic expansion. First there is the issue which arose in the course of discussing both Albania and Moldova, a situation similar to Dutch disease in which the inflow of remittances causes a real appreciation, or at least postpones depreciation, of the exchange rate. The limitations which this may impose on export performance can readily limit output and employment, though

surprisingly little attention seems to have been granted to this aspect in the empirical literature. Second, the role of remittances in accelerating urbanization, or the contraction of agriculture through labor withdrawal, arose in the contexts of both Albania and Morocco. More generally, it has been hypothesized that the income from remittances may permit remaining family members to reduce their work effort, which Chami *et al.* (2003) set out to test. This study looks at cross country GDP growth data, both in the cross section and in panel form over time.

The issue of whether remittances diminish growth, given investment levels, is thus contentious. On the other hand, there is evidence, at least in some contexts, that remittances have enabled greater rates of investment and hence growth. More certainly, remittances probably raise income levels and not merely those of remittance recipients, though again there may be exceptions where over valued exchange rates result. Finally, the increments to average incomes appear to be sufficient to outweigh any detrimental effects to income distribution in most contexts, in the sense of resulting in widespread poverty alleviation.

III. KYRGYZ ECONOMY AND MAGNITUDE OF REMITTANCES

In 1996, after a major decline (by almost 50%) caused by a transformation shock and loss of transfers from the USSR budget, GDP of Kyrgyzstan started to recover. In 1996-2004 the average annual rate of GDP growth amounted to 5.2% with the following characteristics:

- growth rate was unstable, varying between 0% in 2002 and 9.9% in 1997;
- growth was concentrated mostly in a few sectors, such as gold mining, agriculture, trade, and some other services; a major role was played by a couple of major investment projects funded from external sources (Kumtor gold mine, road construction, telecommunications, etc.);
- nearly all GDP growth went to private consumption, while government consumption experienced only a minor increase, and exports (without gold) and capital investments fell as compared to 1995.

There is currently no public record of the number of Kyrgyz migrants abroad or their incomes. Available estimates are mostly based on incomplete information and anecdotal evidence gathered by officials, observers, and participants in the market for cross-border transfers. It is estimated that between 200,000 and 500,000 Kyrgyz people, out of an overall population of roughly 5 million, work abroad or are self-employed in trade or service professions. The research on labor migration was conducted by the International Organization for Migration (Economic Policy Institute, 2005). IOM has assessed the number of migrant laborers in Russia as 300,000, and Kazakhstan as 50,000. Migration significantly mitigates the problem of unemployment inside the country and serves as an important source of foreign exchange inflow (second only to exports). Labor migrants' transfers have become one of the most important factors contributing to poverty reduction in the last few years but they have not yet been used to finance domestic investments to a significant extent.

The overall understanding of migration and remittances is inadequate given the importance of this economic phenomenon. An ad hoc survey of the European Union (EU) member states undertaken by Eurostat in 2004 shows that, while most European countries compile data on the overall amounts and estimate the share of remittances sent to developing countries, they all harbored serious reservations about their quality (European Commission, 2004). Data on remittance flows from the EU to developing countries are not systematically reported, and a geographical breakdown of remittance flows to third countries, including developing countries, is available only for some EU countries. In most countries there is a minimum threshold for remittances below which individual transfers are simply not recorded. While some countries estimate the transfers below this threshold in the balance of payments, many others simply ignore them, resulting in an underestimation of remittances. The analysis of the evolution of remittances over time also presents a problem, as improvements in reporting systems, lower transaction costs, and a potential shift from informal to formal channels of remittance flows, all complicate intertemporal comparability of data.

Migration and remittances as statistical concepts are defined only vaguely. An International Technical Meeting on Measuring Migrants Remittances in early 2005 identified a number of areas where the statistical treatment of remittances needed to be improved (for details, see Alfieri et al., 2005; Hussain, 2005). In particular, balance of payments conventions do not provide a robust basis for measuring remittances: the one-year rule does not allow identification of all migrants; the distinction between remittances and other private transfers is somewhat blurred; there is no methodology for compiling information about informal flows; and the impact of remittances on development is measured by household surveys in the sending and receiving countries. The statistical treatment of remittances is further complicated by differences in the definition of a migrant. Broadly, three balance of payments components are seen as most relevant for capturing remittances: (i) compensation of employees — earnings by resident individuals for work performed in another country and paid for by residents of that country; (ii) workers' remittances — current transfers by migrants who are employed in new economies and considered residents there and nonresidents of the home economy; (iii) migrants' transfers — the flow of goods and changes in financial items that occur with migration (to or from the migrant as resident to the same person as nonresident).

From the perspective of balance of payments of the Kyrgyz Republic, undervaluation of the capital inflow is evident from a positive amount of the "Errors and Omissions" item in 2003 and 2004 was very high compared to previous years. This happened against the backdrop of a growing trade deficit and simultaneous interventions of the National Bank of the Kyrgyz Republic on the purchasing of foreign currency on the domestic market. This shows that resources coming into the country from abroad are in large excess covering the financing of the foreign balance of payments.

The overwhelming majority of migrants are heading to Russia and Kazakhstan in search of jobs. Labor migrants have been keeping the country financially afloat in recent years. According to the official estimates, labor migrants remitted nearly $200 million in 2005 to family members back to Kyrgyzstan, a figure that is roughly half the state's budget. Remittances have risen steadily year-on-year, providing further evidence of an explosion in labor migration. "Labor migrants in Russia sent $160 million via Western Union [back to Kyrgyzstan] in 2004," Kyrgyz MP Kubanychbek Isabekov, who chairs parliament's Labor Migration Committee, said. Souren Hayriyan, the CEO of Unistream, a Moscow-based cash-transfer system, said the volume of his company's traffic between Russia and Kyrgyzstan rose 400 per cent in 2005, reaching a total of $83 million*. "The money transfer market is growing incredibly," Hayriyan said. "The CIS market grew from 25 to 30 per cent over the past year and we expect further growth. The main reason for this is that the Russian economy is growing and more people from CIS countries tend to stay and work here."

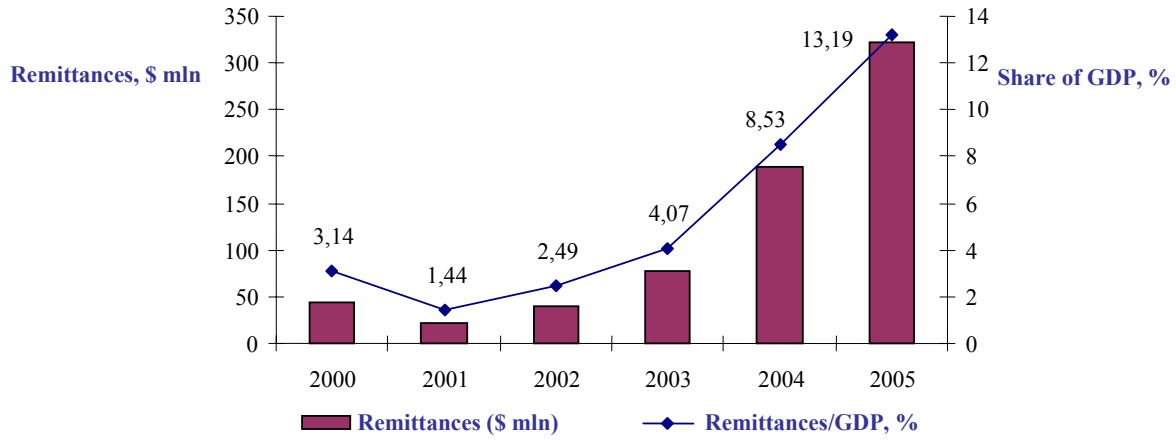
For many years, trade and current account deficits were substantial and their financing was provided by the international finance institutions loans. Recently, the current account deficit significantly decreased and transfers from abroad (both external grants and workers' remittances) have begun to play a more important role. FDI, though less important so far, plays an increasing role in the balance of payments

* http://www.unistream.ru/en/news/detail.php?ID=920&PHPSESSID=c2d2936472a8149f27b4b8e546f8c1d8

(8% of GDP in 2004). However, taking into account the country's investment needs, their volume is still insufficient.

Some observers believe the actual volume of remittances from Kyrgyz labor migrants could be much higher than officially reported totals. Many Kyrgyz migrants, especially those living in more remote parts of the mountainous Central Asian nation, tend to shun wire transfer systems. Instead, they quietly repatriate their foreign-earned income without officially declaring it.

Figure 1. Remittances as Share of GDP



Source: National Statistic Committee, National Bank, own estimations

To illustrate the importance of remittances to Kyrgyzstan, Table 1 shows the officially recorded volumes. The table shows that remittances become essential for Kyrgyzstan's balance of payments in recent years. One can observe a steady trend of increasing remittance flows. Since then, remittances have been growing reaching almost US $ 322 millions in 2005 and ranged between 8.5 - 13.2 per cent of GDP. Remittances are inherently difficult to reliably measure. Here we use official balance of payments (BOP) and National Bank data on remittances that are usually constructed using data on wire transfer flows officially reported by financial institutions and they do not include remittances in kind and unrecorded remittances. The scale of unrecorded remittances is unknown.

Table 1. Official Remittances in Kyrgyzstan 1995-2005

Year	Remittances ($ mln)	Remittances/ Export, %	Remittances/ Import, %	Remittances/ Consumption, %	Remittances/ GDP, %	Remittances Per-Capita, $	GDP Per-Capita, $
1995	0.8	0.20	0.15	0.06	0.05	0.18	327.19
1996	2	0.38	0.26	0.11	0.11	0.43	394.86
1997	3	0.48	0.46	0.20	0.17	0.64	378.35
1998	2	0.37	0.26	0.11	0.12	0.42	343.97
1999	1	0.22	0.18	0.08	0.08	0.21	257.00
2000	43	8.42	8.48	3.66	3.14	8.76	279.14
2001	22	4.58	4.89	1.75	1.44	4.45	308.29
2002	40	8.03	6.99	2.89	2.49	8.03	322.13
2003	78.1	13.23	10.79	4.30	4.07	15.50	380.87
2004	188.7	25.74	20.86	8.92	8.53	37.05	434.21
2005	322	46,90	28,90	13,22	13,19	62,66	475,03

Source: National Statistic Committee, National Bank, own calculations

For last years remittances reached about 46.9% of Kyrgyz exports of goods. About 28.9% of imports are recently covered by the inflow of emigrant remittances. The ratio of remittances to private consumption is a measure of the extent to which remittances can be used to finance private consumption of domestic inhabitants. Recently remittances represent more than 13% of private consumption in Kyrgyzstan. Compared with GDP, remittances reached as high as 13.2% of GDP in 2005. Finally, the remittance per-capita indicator shows how many US $ are in average remitted for each inhabitant in Kyrgyzstan. To reflect growth in real terms, remittances must increase at annual rates exceeding both population growth and inflation rates. Data in Table (1) also show that about 13.2% of GDP per-capita is generated from the inflow emigrant remittances.

The surge in remittance flows over the past few years reflects a mix of factors, in addition to natural increase of volume. In some part, there have been significant reductions in remittance costs. Improvements in data recording by central banks — in response to growing recognition of the importance of remittances by national authorities, and as a result of broader efforts to improve data quality — have generated sharp increases in remittance flows in some cases.

IV. ALTERNATIVE ASSESSMENT OF REMITTANCES IN KYRGYZSTAN

The Economic Policy Institute made an alternative assessment of remittances from abroad in the Kyrgyz Republic. The average size of remittances from abroad is US $ 1,419 a year. As mentioned in the survey of the Economic Policy Institute (EPI, 2005), the category of migrants with regular work sends an average of US $ 2,065 a year to the Kyrgyz Republic, while seasonal migrants send less per quarter.

Table 2. An Average Size of Workers' Remittances

	Russia	Kazakhstan	Other CIS countries	Europe	Asia	America	Others	Average
By occupation								
Regular work	1 491	2 616		3 947	3 162	1 318	1 598	**2 065**
Temporary/seasonal work	1 096	1 141	1 000	3 792	2 651	3 366	1 448	**1 274**
Permanent residence	1 514	825		3 672	3 286	2 458	565	**1 909**
Study	1 811	233		387	394	1 340		**744**
Other	942	566	953	500	233			**890**
By geographic origin of migrant laborers								
Rural Area	1 077	972	1 000	5 150	2 534	1 862	2 791	**1 219**
Urban Area	1 473	2 383	953	2 580	2 286	2 368	767	**1 894**
Country Average	*1 165*	*1 361*	*969*	*3 324*	*2 424*	*2 301*	*1 234*	***1 419***
Number of respondents, persons	*789*	*221*	*3*	*76*	*45*	*30*	*13*	***1 177***

Source: Economic Policy Institute "Bishkek Consensus", Kyrgyzstan

It is evident that migrant laborers who come from urban areas have better education and opportunities, and tend to send larger amounts of money to the Kyrgyz Republic compared to migrants from rural areas.

According "A Survey of the Customers of the Association of Agro-Businessmen of Kyrgyzstan (AAK)" remittances to the households of AAK customers in rural areas increased from an average of US $114.10 in 2003 to US $222.20 in 2004. The data on remittances to non-customer households are remarkably different. In 2003 the average remittance for non-customers was US $193.90 and increased significantly to US $535.70 in 2004 (IFDC, 2005).

EPI estimated a total inflow of all workers' remittances based upon data of the National Bank of the Kyrgyz Republic (Approach 1). Assuming that 50,000 Kyrgyz migrants are outside CIS countries, they have taken IOM figures and have estimated that there are 400,000 migrant laborers abroad. Information about remittances sent to banks (including international money transfers) was taken from "The Balance of Payments of the Kyrgyz Republic" of the National Bank. While it is known from the survey that of

US $ 100 transferred to Kyrgyzstan, 34 of them come through banks; they have adjusted the figure of the National Bank for lacking the amount of transfers in the form of cash, and have obtained a total amount of all remittances. For instance, in 2003 the National Bank estimated the receipt of workers' remittances for US $ 70.3 mln, after adjusting the amount for all workers' transfers; we will obtain US $ 207 mln in 2003. In 2004 the volume of remittances has rose sharply and reached US $ 527 mln.

Table 3. Assessment of workers' remittances. Approach 1

	2000	2001	2002	2003	2004
Workers' remittances (National Bank of Kyrgyz Republic)	1.3	1.8	28.2	65.2	163.6
Receipt	2.2	3.5	30.3	70.3	179.1
Outflow	-0.9	-1.7	-2.1	-5.2	-15.4
Adjustment for other channels	**6**	**10**	**89**	**207**	**527**

Source: Economic Policy Institute "Bishkek Consensus", Kyrgyzstan, own calculations

The crucial part of this approach is its dependence upon the reliability of estimates of remittances made by the National Bank itself. Although the National Bank has complete information about money flows through banks, the accuracy of the classification of these receipts of transfers (including workers' remittances) and commercial payments is very questionable.

Another approach supposes to multiply an average amount of remittances by the number of migrant laborers abroad. If we use the above mentioned estimates of IOM about the number of workers in Russia and Kazakhstan, plus EPI assumptions about the number of workers in other countries, and take an average size of remittances from EPI survey, we get an estimation of US $ 520 mln annually for the 2003-2004.

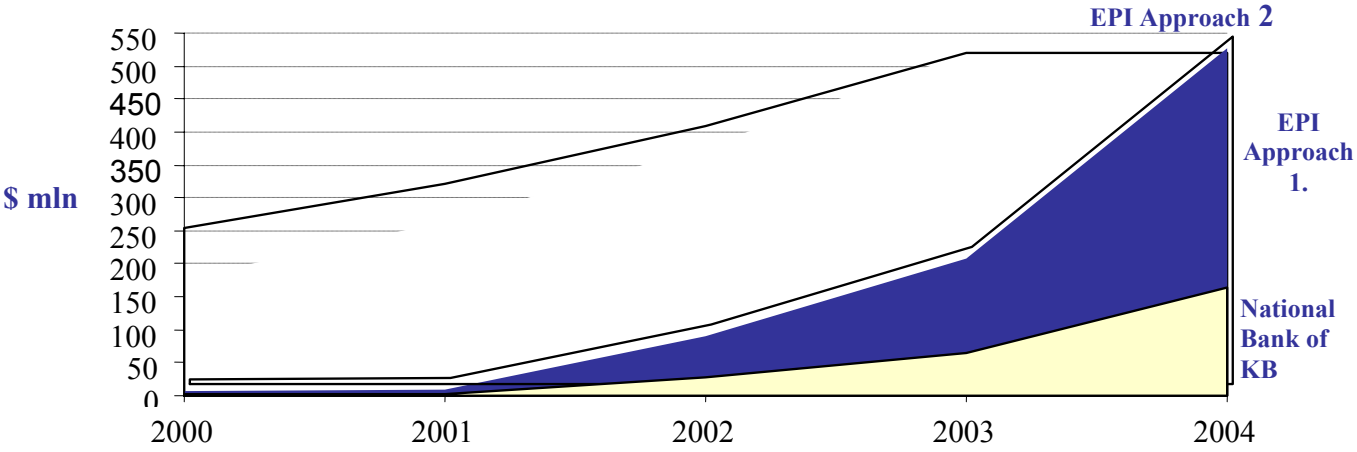
Table 4. Assessment of workers' remittances. Approach 2

	2000	2001	2002	2003	2004
Number of migrants, thous. persons					
In Russia	154	192	240	300	300
In Kazakhstan	36	41	45	50	50
In other countries	43	45	48	50	50
An average size of remittances, $					
from Russia	937	1 008	1 084	1 165	1 165
From Kazakhstan	992	1 103	1 225	1 361	1 361
From other countries	1 758	1 850	1 948	2 050	2 050
Total remittances into the country, mln.$	255	322	408	520	520

Source: Economic Policy Institute "Bishkek Consensus", Kyrgyzstan

The number of migrants in 2000-2002 was built by EPI upon the assumption that numbers of migrant laborers abroad has increased every year by 20% up to 2003. Presumption on the growth of the average size of remittances is based upon tempos of economic growth of these countries.

Figure 2. Three approaches for assesment of remittances



Source: Economic Policy Institute "Bishkek Consensus", Kyrgyzstan

Figure 2 gives the total value of remittance flows from migrant workers under different assumptions on average monthly remittance sent home and average number of migrant workers. The most plausible estimates of EPI Approach 1 are somewhat above the National Bank official estimate.

Spending of remittances

Use of remittances is an important question for assessing whether remittances promote growth and development. Despite the expectation that the money would be spent on human resource development and investments, the situation is much simpler. Over a half (55%) of transfers are used by beneficiaries for everyday expenses, and 14% is spent for large purchases (home appliances, vehicles). On average, 10% of remittances are spent on items of an investment character (setting up businesses, exporting goods, extensive repairs), and the creation of human capital (education and treatment). This is a significant factor of maintaining an investment demand in the country (Economic Policy Institute "Bishkek Consensus", 2005).

The fact that 55% of remittances are spent on household expenditures is perhaps explained by the fact that most migrant workers represent the major income source of their households. It also indicates a serious dependence of families on employment abroad. Further, increase in income levels abroad leads to increase in expenditures for domestic consumption, directly influencing the economic growth of the country.

Table 5. Spending money transfers

Expenditures	%
Everyday expenses	55.1
Big purchase	13.5
Education and treatment	9.8
Export of goods	2.4
Business set-up	5.0
Extensive repairs	3.0
Other	11.2

Source: Economic Policy Institute "Bishkek Consensus", Kyrgyzstan

It is common to hear economists in remittance receiving countries complaint of the bulk of money transfers are spent on consumption. In the case of poor families, it is hardly surprising that remittances are used to augment subsistence consumption, and therefore little is saved and very little invested in projects that could stimulate economic growth. Nonetheless in so far as remittances finance the consumption of domestically produced goods and services such as housing, there are wider multiplier effects.

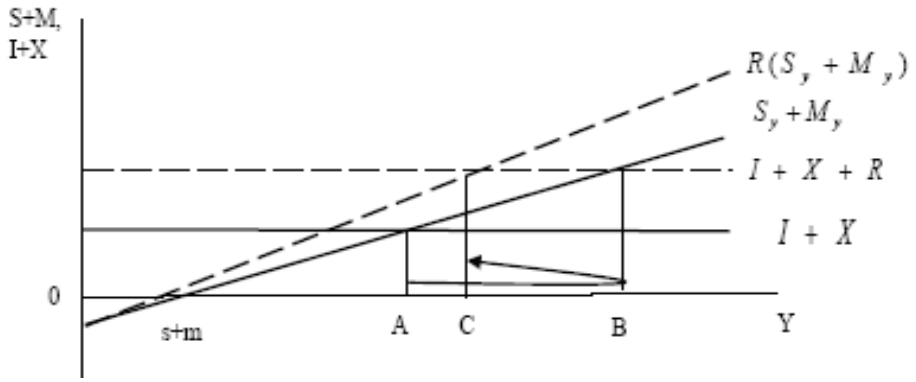
V. The General Theoretical Framework of Remittances' Impact

Possible theoretical treatment of remittances was made by Kireyev, 2006. Here we used the three approaches which he had suggested to describe effect of remittances on macroeconomic indicators.

The Keynesian model

Driven by remittances, an increase in income and therefore demand has a magnified effect on real GDP growth. The magnification depends on the multiplier and the size of remittances. The multiplier itself depends on marginal propensities to import and to save. In the classic Keynesian model investment *(I)* and exports *(X)* are completely autonomous from the level of output *(Y)*. Therefore, an increase in a country's overall income by way of remittances *(R)* can be represented either as an autonomous increase in export receipts or as additional investment. Savings *(S)* and imports *(M)* consist of an autonomous component independent of *Y*, and an income induced component. In a spending-output space, where *S* and *M* are seen as leakages and *I* and *X* as injections, an additional inflow *R* will initially lead to an increase in equilibrium output from *A* to *B*.

Figure 3. The Keynesian Model



Source: Kireyev, 2006

However, the final equilibrium will crucially depend on the impact of *R* on the marginal propensities to import *(m)* and to save *(s)*. Most likely, both will also increase, and the concomitant leakage will push the final equilibrium back from *B* to *C*, with the output level only marginally higher than the original. If $m+s=1$, the Keynesian multiplier equals unity, and the whole amount of *R* will be leaked with *Y* unchanged. The more open the economy, the smaller the multiplier and the less significant the impact of remittances on output.

The Mundell-Fleming model

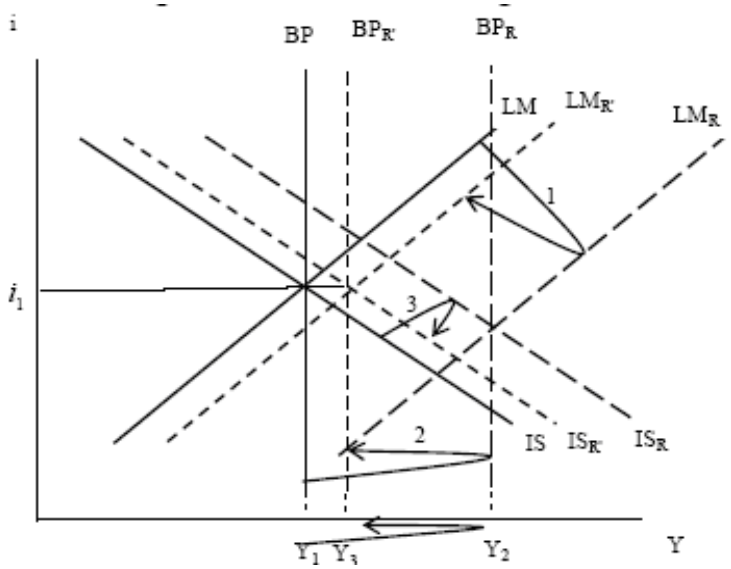
The impact of a nominal shock on real growth depends on the exchange rate regime (Kyrgyzstan use the managed exchange rate float system) and the degree of capital mobility. Assume that capital flows do not react to changes in the interest rate and are overall insignificant, remittances therefore can be

viewed as part of the money supply. Monetary policy is an efficient instrument for stimulating real growth under a flexible exchange rate arrangement and inefficient with a fixed exchange rate regime. In the real income (*Y)* and real interest rate (*i*) space, the real (*IS*), monetary (*LM*) and external (*BP*) sectors are in simultaneous equilibrium, when output is at Y_1 and the interest rate is at i_1. The *BP* curve is perfectly inelastic as capital flows do not respond to changes in the interest rate.

Driven by the inflow of remittances (*R*), the expansion of money supply to LM_R in principle should immediately produce a substantial growth in output to Y_2, making more domestic credit available.

However, the inflow of foreign exchange and the corresponding rise in demand for local currency will cause pressure on the exchange rate toward its appreciation. The resulting decline in export demand and the incipient balance of payments deficit will hamper all, or at least a significant part, of the initial impact of the monetary expansion on growth and can reduce output from Y_2 to Y_3, where $Y_1 > Y_3$ or — at the extreme and depending on elasticities — it can even be that $Y_1 \leq Y_3$.

Figure 4. The Mundell-Fleming Model



Source: Kireyev, 2006

Money demand adjusts to the lower output level. But as the interest rate declines, real sector activity may pick up driven by higher investment financed by remittances. Therefore, even with contracting export demand, the ultimate outcome of the adjustment to the inflow of remittances depends on the behavior of the real sector. With increased investment helping growth, and appreciation hampering it, the outcome is ambiguous. In the best-case scenario, the whole economy moves to a new equilibrium with just a slightly higher output level at Y3, and an interest rate equal, higher, or lower when compared to its pre-remittances level.

A NATIONAL ACCOUNTS APPROACH

The direct impact of remittances is an increase in aggregate demand defined in this case as gross national disposable income

$Y = (C+I)_g + (C+I)_p + (X-M+NCT+NY)$,

where the latter two components – net factor income (*NY*) and net current transfers (*NCT*) - capture remittances and the last bracket is current account balance (*CAB*). Unlike aid, which works into the economy through the official accounts, remittances, as private flows, initially only affect private consumption and investment, i.e. $(C + I)_p$. As long as the economy is operating below potential, an increase in consumption should be supported either by higher domestic output or higher imports. Therefore, one immediate consequence of remittances is a higher private component of the aggregate demand.

Once remitted to the home country, remittances can be saved, consumed, or invested.

- Case 1. *Assume that all remittances are saved.* As S = I – C = I +*CAB* and if remittances are saved by the private sector at a given level of income, private sector consumption should decline. The impact on investment is ambiguous, however, as it depends on the response of the current account. If remittances are saved in dollars outside the banking system, their inflow has no monetary implications. If they are deposited, the foreign currency component of broad money supply will increase. If remittances are converted into local currency but saved outside the banking system, they will create upward pressure on the exchange rate, but without impact on recorded money supply. If they are converted into local currency and deposited in banks, they contribute to both exchange rate appreciation and an increase in money supply.

- Case 2. *Assume that all remittances are consumed.* As C = Y- I - *CAB* at a given level of income, private consumption can increase only if investment declines with an unchanged current account or the current account deteriorates with unchanged investment. Any increase in investment in parallel with growing consumption leads to a significant current account deterioration.

- Case 3. *Assume that all remittances are invested.* Along the same line of reasoning, as I =Y–C-C*AB*, an increase in private investment at the given level of overall income can be the result of either a decline in consumption with unchanged current account or a deterioration in the current account with unchanged consumption. Any simultaneous increase in investment and consumption requires significant current account deterioration.

This section provides us with the three different approaches for elaboration of the econometric model of remittances' impact on Kyrgyz economy. In view of research framework of the paper we should concentrate on the real sector / production side of economy which described in Keynesian model and in national account system. These two approaches let us create rather effective and compact method system for the further estimations below.

VI. ECONOMETRIC MODEL FOR KYRGYZSTAN

A very simple linear macro-econometric model would be appropriate. The model we construct in this section will therefore be based on research of Glytsos (2001). His model adopted, on these lines is of a Keynesian basis, but with a dynamic perspective, and consists of three behavioral equations, namely, a consumption function, an investment function and an imports function, and a national income identity. Our goal is to determine first the effects of an exogenous shock of remittances on these endogenous variables.

STRUCTURE OF THE MODEL

Glytsos experimented with alternative forms of the consumption function, backed by different theoretical hypotheses, and applied equation (1) that performs best for small open economies.

$$C_t = \alpha_0 + \alpha_1 Y_t + \alpha_2 C_{t-1} \qquad (1)$$

where C = Private Consumption, Y = GDP + Remittances, subscript t standing for time.

One deviation of our empirical consumption function from the theoretical postulates of the model is that the income variable is not the private disposable income as it should be, but a kind of a national disposable income summing GDP and remittances.

This is a dynamic long-run consumption equation and is backed by two different distributed-lag hypotheses, i.e. adaptive expectations and partial adjustment model, and may produce estimates of short- and long-run effects of income on consumption. This equation seems satisfy our criterion for a model suitable for transition countries, where various uncertainties are present concerning income changes, with the component of remittances generating considerable income fluctuations.

We save assumption that private investment is correlated with business profits and that profits are positively related to national income and negatively related to the stock of capital, in the sense that there is some desired stock of capital toward which businessmen are orienting their investment activity (Christ, 1966, pp.582-583). Consequently, investment (I) is a positive function of income (Y) and a negative function of a lagged capital stock (Kt-1), allowing some time for investment to adjust to that stock.

$$I_t = \beta_0 + \beta_1 Y_t + \beta_2 K_{t-1} \qquad (2)$$

The import equation comes straight from the life-cycle hypothesis as developed for consumption by Ando and Modigliani and others (see Davidson, Hendry et al, 1978), incorporating the influence of income and wealth (assume that it have lagged effect) and is of the form

$$M_t = \gamma_0 + \gamma_1 Y_t + \gamma_2 (Y_{t-1} - M_{t-1}) \qquad (3)$$

Imports make up a relatively high proportion of consumption, to which the life-cycle hypothesis may apply more than it does to domestically produced very basic goods. Variable M_{t-1} carries the effect of past incomes on current imports, indicating adaptive expectations, remarks Glytsos.

To summarize, the structural model consists of equations (1), (2) and (3), and an income identity, which also includes remittances, i.e.:

$$C_t = \alpha_0 + \alpha_1 Y_t + \alpha_2 C_{t-1} \quad (1)$$

$$I_t = \beta_0 + \beta_1 Y_t + \beta_2 K_{t-1} \quad (2)$$

$$M_t = \gamma_0 + \gamma_1 Y_t + \gamma_2 (Y_{t-1} - M_{t-1}) \quad (3)$$

$$Y = C_t + I_t + G_t + X_t - M_t + R_t \quad (4)$$

Endogenous variables:

C = private consumption expenditure; I = gross domestic investment (private and public), including change in stocks; M = Imports of goods and non-factor services; Y = a kind of national disposable income, made up of GDP and the volume of migrant remittances

Exogenous variables:

K = cumulative gross domestic investment $\sum I_t$ (as proxy of capital stock); G = general government consumption expenditure; X = exports of goods and non-factor services; R = migrant remittances; t = stands for time.

The dynamic nature of the Glytsos's model emerges from the introduction of lagged endogenous variables into the system.

VII. THE EMPIRICAL RESULTS

This section reports and discusses the regression results of the study. In order to estimate our model, we collected a panel of aggregate data on remittances from the National Statistic Committee and National bank of Kyrgyzstan. These sources have been supplemented by the International Monetary Fund (IMF) Balance of Payments Yearbooks. The dataset covers the 1995–2005 timeframe. As mentioned, we define remittances as the sum of two items in the Balance of Payments statistics: "Workers' Remittances," and "Migrants' Transfers." All data are in US $. We had made own calculations simply dividing nominal values of macroeconomic indicators in national currency on an average exchange rate in each year. Only data on remittances, export and import were in US $ from official statistics.

Table 6. Data for econometric model, $ mln

Years	GDP	Rem	Cons	Invest	K	EXPOR	IMPOR	GOV	inflation, %	Rate, som/$
1995	1492,1	0,8	1119,3	273,7	273,66	408,9	530,9	291,53	32,1	10,82
1996	1827,6	2,0	1500,5	460,5	734,2	531,2	782,9	338,43	34,8	12,80
1997	1776,9	3,0	1224,8	385,2	1119,4	630,8	646	307,32	13,0	17,27
1998	1640,4	2,0	1447,5	253,3	1372,7	535,1	755,7	292,88	16,8	20,84
1999	1250,9	1,0	971,32	225,5	1598,2	462,6	551,1	239,19	39,9	38,97
2000	1369,9	43,0	899,79	274,1	1872,3	510,9	506,9	274,54	9,6	47,71
2001	1525,0	22,0	988,52	274,5	2146,8	480,3	449,8	266,50	3,7	48,45
2002	1605,6	40,0	1084,3	282,7	2429,5	498,1	572,1	298,96	2,3	46,94
2003	1918,5	78,1	1494,7	227,0	2656,5	590,3	723,8	322,91	5,6	43,72
2004	2211,4	188,7	1718,4	320,4	2976,9	733,2	904,5	365,09	2,8	42,67
2005	2441,0	322,0	1975,3	379,7	3356,6	686,6	1120,7	460,82	4,9	41,01

Source: National statistic committee, National Bank, IMF's Balance of Payments statistics

The results of estimations show a positive correlation between remittances and GDP which, according our estimations indicates that remittances fluctuate pro-cyclically (Table 7). Furthermore, the coefficients on results of the regressions analysis are also positive and strong. We therefore conclude that remittances (REM) have a correlated positive impact on GDP volume. We do not account underreporting and make no adjustment to the official figures reported by national governments. The results also show the correlation between remittances and consumption, import, cumulative gross domestic investment (K) and fully prove theoretical findings. There is interesting thing – correlation of remittances and government expenditures and government expenditures and import. In our opinion it can be evidence that increased import contribute more taxes in a state budget.

Table 7. Data correlation matrix

	GDP	Consum	GOV	Invest	K	Export	Import	REM	Exrate	Inflat
GDP	1									
Consum	0,946	1								
GOV	0,952	0,914	1							
Invest	0,513	0,463	0,568	1						
K	0,593	0,470	0,533	-0,132	1					
Export	0,872	0,788	0,755	0,411	0,641	1				
Import	0,919	0,975	0,927	0,488	0,502	0,802	1			
REM	**0,845**	**0,772**	**0,885**	**0,241**	**0,790**	**0,745**	**0,819**	1		
Exrate	0,055	-0,095	0,018	-0,439	0,821	0,190	-0,047	**0,400**	1	
Inflat	-0,467	-0,254	-0,363	0,086	-0,760	-0,540	-0,222	**-0,504**	-0,643	1

Interestingly, remittances contribute very little to explaining inflation or exchange rate movements, in contrast to other indicators. Regarding inflation when it comes to the results of the study, it can be exceedingly difficult to disentangle the reverse causality and determine whether remittances cause reduction of inflation, or whether inflation causes possible remittances fall. And correlation of an exchange rate (EXRATE), soms per US dollar, and remittances has positive sign that makes the problem of Dutch disease ambiguous. Though, the correlation level - -0.504 and 0.4 correspondingly – is not so significant and here used official data that do not include real volumes of remittances in Kyrgyzstan. The instrument used in the model does not seem to be effective in eliminating the bias.

The model is estimated in EViews 5.1 by ordinary least squares (OLS) and is applied individually to Kyrgyzstan. The results of the analysis conducted in accordance with the model are indicated in Tables 8 to 11. The most of the coefficient estimates on worker remittances generally are statistically significant, and in some specification they are statistically insignificant.

The model seems to fit rather well the data of Kyrgyzstan, with almost all signs as theoretically expected, and with very significant coefficients in most of the cases. The lagged dependent variables in the consumption and imports equations, expressing the dynamic nature of the model, are not very significant (except two).

Table 8. Simple Regression and Other Results for Consumptions

Dependent Variable: CONSUM

Method: Least Squares

Sample (adjusted): 1996 2005

Included observations: 10 after adjustments

White Heteroskedasticity-Consistent Standard Errors & Covariance

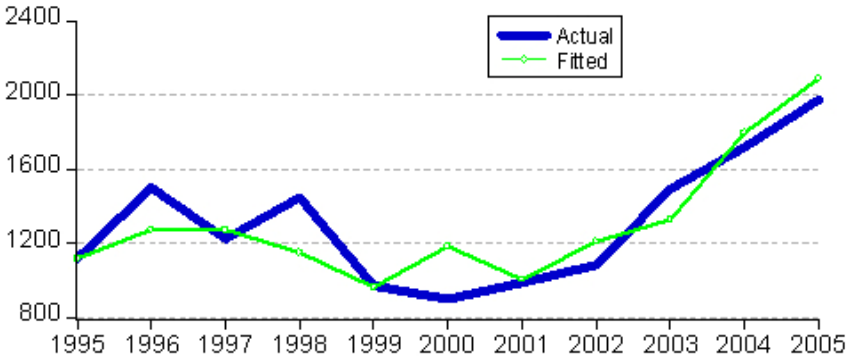
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-58.86643	179.0078	-0.328848	0.7519
Y	0.680809	0.068115	9.994940	0.0000
CONSUM(-1)	0.116964	0.147979	0.790406	0.4552
R-squared	0.871185	Mean dependent var		1330.511
Adjusted R-squared	0.834381	S.D. dependent var		355.7487
S.E. of regression	144.7766	Akaike info criterion		13.03159
Sum squared resid	146721.9	Schwarz criterion		13.12236
Log likelihood	-62.15793	F-statistic		23.67078
Durbin-Watson stat	2.122316	Prob(F-statistic)		0.000767

CONSUMPTION = -58.86643111 + 0.6808093953*Y + 0.1169636703*CONSUM(-1)

C stands for constant. The sign of the regression coefficient Y is positive, implying that remittances contribute to consumption. The regression coefficient has a high t ratio, indicating that it is significant at acceptable 1% levels of significance. With a low t ratio, the constant and lagged variable's coefficient are insignificant at both 5 percent and 1 percent levels of significance. On the basis of the values of the adjusted R squared and the F ratio, the regression equation as a whole is significant.

As anticipated, we find that increases in workers' remittances and national income influence the consumption. In particular, the coefficient on Y is positive and statistically significant, suggesting that a doubling of workers' remittances and national income raises the consumption by 68%. Also this coefficient shows the value of the marginal propensity to consume (see below).

Figure 5. Consumption function and its fitted values (regression model)



Source: own estimation

Table 9. Simple Regression and Other Results for Investment

Dependent Variable: INVEST

Method: Least Squares

Sample (adjusted): 1996 2005

Included observations: 10 after adjustments

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	141.6700	40.00508	3.541299	0.0095
Y	0.169828	0.025774	6.589052	0.0003
K(-1)	-0.083603	0.018436	-4.534796	0.0027
R-squared	0.765884	Mean dependent var		308.2962
Adjusted R-squared	0.698994	S.D. dependent var		77.31164
S.E. of regression	42.41627	Akaike info criterion		10.57627
Sum squared resid	12593.98	Schwarz criterion		10.66704
Log likelihood	-49.88133	F-statistic		11.44987
Durbin-Watson stat	1.821718	Prob(F-statistic)		0.006209

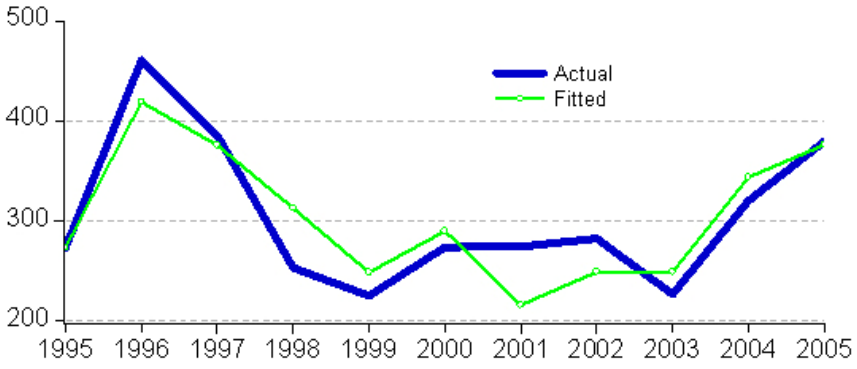
INVESTMENT = 141.6699646 + 0.1698278923*Y - 0.08360292836*K(-1)

The estimated investment equation behaves uniformly and as expected with highly significant coefficients of the income variable, which reflects profits, demonstrating a prompt response in investing them. The investment restraining factor of the capital stock has the right behavior and has good statistical significance. The fairly high value of the t ratio is an indication that the constant and coefficient are significant at 1% level of significance. The values of R squared and the adjusted R

squared are somewhat high; the value of the F ratio is an indication that the regression as a whole is significant at 1% level of significance.

Overall, the results in Table 9 reaffirm that remittances insignificantly affect investments in Kyrgyzstan. A doubling of workers' remittances and national income increase investments by approximately 17% (coefficient on Y), an amount essentially lower than in our previous estimate. Also this coefficient shows the value of the marginal propensity to invest (see below).

Figure 6. Investment function and its fitted values



Source: own estimation

Table 10: Simple Regression and Other Results for Import

Dependent Variable: IMPORT

Method: Least Squares

Sample (adjusted): 1996 2005

Included observations: 10 after adjustments

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-120.3355	106.0329	-1.134889	0.2938
Y	0.286893	0.134789	2.128451	0.0708
Y(-1)-IMPORT(-1)	0.281379	0.278291	1.011093	0.3456
R-squared	0.860949	Mean dependent var		701.3500
Adjusted R-squared	0.821220	S.D. dependent var		202.9409
S.E. of regression	85.80827	Akaike info criterion		11.98543
Sum squared resid	51541.42	Schwarz criterion		12.07621
Log likelihood	-56.92716	F-statistic		21.67059
Durbin-Watson stat	1.356451	Prob(F-statistic)		0.001003

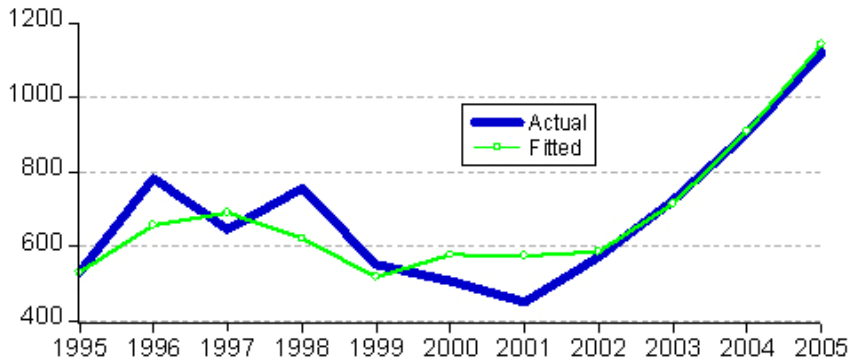
IMPORT = -120.3355275 + 0.2868926131*Y + 0.2813785986*(Y(-1)-IMPORT(-1))

The positive sign of lagged income in the import equation would be an indication of asset liquidation, but such a possibility is negligible and statistically insignificant. The regression coefficient has a low t ratio, indicating that it is not significant at acceptable levels of significance. With a comparative high t ratio, the constant is significant at only 10% level of significance. According to our theoretical hypothesis, the positive but insignificant coefficient of lagged imports could not be an indication of an influence of adaptive expectations in the purchase of imports. However the values of the adjusted R squared and the F ratio, the regression equation as a whole is significant.

We find that a doubling of transfers in the form of workers' remittances result in imports growth of about 28.7% (coefficient on Y) in our estimation for the Kyrgyz economy. Also this coefficient shows the value of the marginal propensity to import (see below).

As it was mentioned above (the Mundell-Fleming model) workers' remittances do appreciate the real exchange rate and increase of imports, with its indirectly associated loss in external competitiveness, imposes an unintended economic cost on the producers of export goods in the remittance-receiving countries. This parallels the concern raised in Dutch Disease where resource discoveries result in real exchange rate appreciation and the subsequent shifting of resources from the traded to the nontraded sectors of the economy.

Figure 7. Import and its fitted values



Source:own estimation

High import, particularly in recent years, in parallel with growing inflows of remittances, suggests that a substantial part of remittances is spent on consumption. The estimation results provide opportunity to assess impact of remittances on receiving economies depends by means of marginal propensity to consume. This embodies the fundamental psychological law indicating that an increase in income induces changes in consumption.

The marginal propensities to consume (MPC) are expressed by respectively by

$$\frac{dC_t}{dY_t}$$

The MPC is the slope of the consumption line and thus forms the foundation of the slope of the aggregate expenditures line. This marginal propensity is also key to the magnitude of the multiplier process.

The findings show that the effect of an income change on consumption in the current year is quiet serious, with a **MPC = 0.68** roughly (coefficient from Consumption function in Table 8). This MPC ratio are signalizing that higher spending in the current year generates a higher new demand that may induce more output (or more imports or inflation), but it also means a lower additional saving in the current period, with possible dampening effects on output on the supply side. Since remittances are part of disposable income, their influence on the economy is reflected in this behavior.

The lack of data precludes any numerical assessment of the marginal propensity to save (MPS). But according National Bank of Kyrgyzstan propensity to save is still sufficiently low. In part, that situation is connected with the financial system stance and performance of economy on the whole. Also, backward consumer culture, which is typical character of developing economy, is worth to take into consideration. Lack of confidence between different economic agents undermines financial inter-mediation, which is base for demand to expand.

The marginal propensity to invest is important (MPI) to the study of remittances' impact on Kyrgyz economy. It can be calculated using the following formula:

$$\frac{dI_t}{dY_t}$$

First, according Keynesian theory the MPI reflects induced investment. Second, the MPI is the slope of the investment line, which makes it important to the slope of the aggregate expenditures line, as well. Third, the MPI affects the multiplier process and affects the magnitude of the expenditures and tax multipliers. Our estimations shows that **MPI=0.17** (coefficient from Investment function in Table 9).

Turning to imports, while the actual effect will be determined by remittances' marginal propensity to import, under this approach the current account can never be worse with more remittances. The marginal propensity to import is illustrated in the standard formula for an expenditures multiplier:

$$\frac{dM_t}{dY_t}$$

Estimation shows that Kyrgyzstan experiences low marginal propensity to import. This suggests that the immediate concern of consumers in Kyrgyzstan is to raise their consumption (that naturally includes imported goods). In our case **MPM=0.29** (coefficient from Import function in Table 10) and it's a relatively low. If a household earns one extra dollar of disposable income (including remittances), then of that dollar, the household will spend 29 cents on imported goods and services. Here we should

not forget about model constraints, we used data for a period of 1995-2005 where official records do not reflect all real volumes of remittances.

A. Multiplier Effects of Remittances

This benefit to the local economy is larger then the total sent because of the large multiplier effect remittances have. The largest use of remittances is on health care and other basic needs. This use stimulates retail sales and employment, which feed the economic cycle of productivity. In effect, remittances serve to prime the pump of this positive economic cycle.

The multiplier is actually a set of multipliers that differ based on (1) the autonomous shock and (2) assumptions concerning what is induced by the changes in aggregate production and income. The simplest multiplier, which is often used to illustrate the basics of the multiplier process, is the simple expenditures multiplier - the ratio of the change in aggregate production to an autonomous change in an aggregate expenditure when consumption is the only induced expenditure. It is typically used to analyze shocks caused by changes in investment expenditures.

The formula for this simple expenditures multiplier, m, is: **m = 1 / (1 - MPC) = 1 / MPS.**

In our study, however, we need a more complex multiplier in which other induced components are included. And the cumulative multiplier of income made of remittances for the open economy would be equal to

Multiplier = 1 / (1 - MPC - MPI + MPM).

This complex multiplier can be used to determine the change in aggregate output resulting from a change in any autonomous expenditure, including consumption, investment, and net exports.

Multiplier = 1 / (1 – 0.68 – 0.17 + 0.29) = 2.3

This multiplier naturally gives the unit potential impact of remittances, but the magnitudes of overall effects on growth of our macroeconomic variables depend on the size of remittances and their annual changes.

Thus the increase in income made of remittances of $1 has led to a larger increase in national income of $2.3. For example, each dollar sent by Mexican migrants to the United States was estimated to boost Mexican GDP by $2.90 (Adelman and Taylor 1992).

VIII. CONCLUSIONS AND POLICY IMPLICATIONS

This study is motivated by the uncertainties surrounding the role of remittances in growth and development of labor exporting countries. The rise in economic migration across the CIS has given rise to increasing interest in the size and role of remittances in supporting economic growth. From a theoretical perspective, remittances can contribute positively to growth by providing a stable source of foreign exchange (relative to official development assistance and foreign direct investments) and supporting domestic demand for both inputs and consumption goods (with potential poverty-reducing effects) and domestic savings and investment in the medium term.

Labor migration and flow of remittances have played a significant role in improving growth and reducing poverty in Kyrgyzstan. This has had a significant impact on the balance of payments and has helped to smooth the economic and social impact of transition. At the same time, however, they may be a source of moral hazard to the individual, if they reduce incentives to work in the receiving household (hence reducing labor participation rates), or to the government (if they reduce incentives for implementing sound macro-economic policy). Measuring remittances is notoriously difficult as they are often transmitted through informal channels or are remittances in kind. The real size of remittance flows in Kyrgyzstan can be from US $ 322 mln (officially in 2005) to US $ 527 mln (alternative assessment) or even higher.

In this paper, we have developed a model for examining the role of remittances in the development process of Kyrgyzstan. It is a dynamic demand oriented model, with a sound theoretical basis, suitable, in our view, for the issue at hand, and appropriate for pinpointing structural characteristics and effects. The short-/long-run distinction of remittance effects reveals different intercountry priorities in the urgency of remittance spending on consumption, investment or imports. The model through its consecutive phases culminates with the estimation of the growth generating capacity of remittance flows for Kyrgyzstan over time.

Thus the increase in income made of remittances of $100 has led to a larger increase in national income of $230. This is called the multiplier effect. It has arisen because of the extra consumer spending that has been generated out of any change in income being passed on to generate more income to other factors of production. The size of the multiplier will depend upon the size of the MPC and thus the size of the marginal propensities to invest and to import (MPI and MPM). It is important to note that the period studied in this chapter (1995–2005) was one of substantial economic fluctuation in Kyrgyzstan, because of the Asian financial crisis and the structural reforms.

Overall, our empirical analysis provides the first macroeconomic evidence of how remittances and domestic demand (consumption, investment, and import) in Kyrgyzstan may interact in promoting growth. The findings could have implications on the debate about the size of remittances, their impact on Kyrgyz economy and give rise to a number of suggestions for policy formulation. From a policy point of view, our study points to the need to further understand the various impacts of remittances in order to devise economic policies that take full advantage of these gifts.

In short, the issue of remittances as a resource for development requires better answers to some fundamental questions such as: how can governments best estimate the actual flows of remittances; are there better ways to estimate more precisely how remittances are transferred and used, and what alternative ways can be envisioned; to what extent can the multiplier effect of remittances be increased by initiatives to encourage local purchase of locally-produced goods and other productive investments?

The governments should continue to give careful consideration to the implications of such remittances on the design and implementation of monetary and exchange rate policies, and in the context of the evolution of the balance of payments. Therefore, Kyrgyzstan could further utilize the entrepreneurial skills of its citizens living abroad, which along with the attachment to their home country, could potentially increase remittances through investment and boost Kyrgyzstan's economic growth.

However we should not forget one crucial misconception. Given the scale of remittances today, growth in remittances is no cause for celebration in Kyrgyzstan. Remittances are not a development model – but rather a sign of the failure of development.

DATA SOURCES AND DEFINITIONS

Variable	Acronym	Data source
Workers' remittances (credit), $ mln	R, REM	National Bank, IMF Balance of Payments Yearbooks
Remittances Per-Capita, $		National Statistic Committee, own calculations
GDP Per-Capita, $		National Statistic Committee, own calculations
Number of migrants, thous. persons		Economic Policy Institute "Bishkek Consensus"
Gross Domestic Product , $ mln	GDP	National Statistic Committee, own calculations
Consumption, $ mln	C, Cons, CONSUM	National Bank, own calculations
Investment, $ mln	I, Invest	National Bank, own calculations
Cumulative gross domestic investment, $ mln	K	National Bank, own calculations
Export, $ mln	X, Expor	National Bank
Import, $ mln	M, Impor	National Bank
Government expenditure, $ mln	G, GOV	National Bank, own calculations
Inflation, %	INFLAT	National Bank
Exchange rate, som/US $	EXRATE	National Bank

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