

# **Impact of remittances on economic growth in selected Asian and Former Soviet Union countries**

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## **Abstract**

Recent increase in the international remittance transfers from developed to developing countries has caught great attention among academic scholars and policymakers. This paper investigates the potential impact of these workers' remittances on the long-term economic growth of recipient countries. The results of the empirical regression analysis indicate that remittances have positive effect on the per capita income growth of 10 selected countries. Furthermore, the paper investigates the channels through which these worker' remittances can have positive impact on the economic growth. The results suggest that remittances have no impact on physical capital accumulation but positive impact on human capital accumulation in these countries.

**Key words: Remittances, Economic Growth, Panel Data Analysis, GMM method, Capital Accumulation.**

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List of abbreviations:

EBRD	European Bank for Reconstruction and Development
FDI	Foreign direct investment
GDP	Gross domestic product
GMM	Generalized method of moments
HIC	High income countries
IV	Instrumental variable
IMF	International Monetary Fund
LIC	Low income countries
MENA	Middle East and North Africa
MIC	Middle income countries
NELM	New Economics of Labor Migration
ODA	Official development assistance
OLS	Ordinary least squares
TFP	Total factor productivity
TSLS	Two stage least squares
UNDP	United Nations' Development Program
UNICEF	United Nations Children's Fund
USA	United States of America
USD	United States dollar
WDI	World Development Indicators
WLD	World

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## **1. Introduction**

### 1.1. Background

In recent years workers' remittance flows from developed to developing countries have received great attention among scholars and policymakers. The reason is that transfers in the form of remittances undertaken by migrant and immigrant workers to their countries of origin increased substantially in the last decades. These transfers of workers' remittances now represent more inflows to the developing countries than other sources of inflows such as foreign direct investment and foreign development assistance transfers. According to Adolfo et al (2009), in the latest decade remittance flows amounted on average to 30-35 % of export earnings, more than double of private capital flows, almost 10 times official capital flows and more than 12 times official transfers, and they have become even as large as foreign direct investment flows to the developing countries.

Lately, there have been quite big improvements in banking sectors of the developing nations which caused reduction of rates charged for the international transfers like remittances, and increased trust in banking systems. It can be argued that these improvements have caused more remittance transfers to go through official channels than before.

The table below shows the remittance transfers in different parts of the world. One of the interesting facts in the table is that the remittance transfers jumped up substantially from 1970 to 1980 in the most regions of the world. This indicates possibly the initial stage of the process that immigrant workers in the host countries start sending back their shares of income earned abroad to their home countries. Since then, remittances continued growing in amount and contributing more and more to the economies of the recipient countries as a whole and households as individually.

**Table 1. Remittance transfers in different regions of the world.**

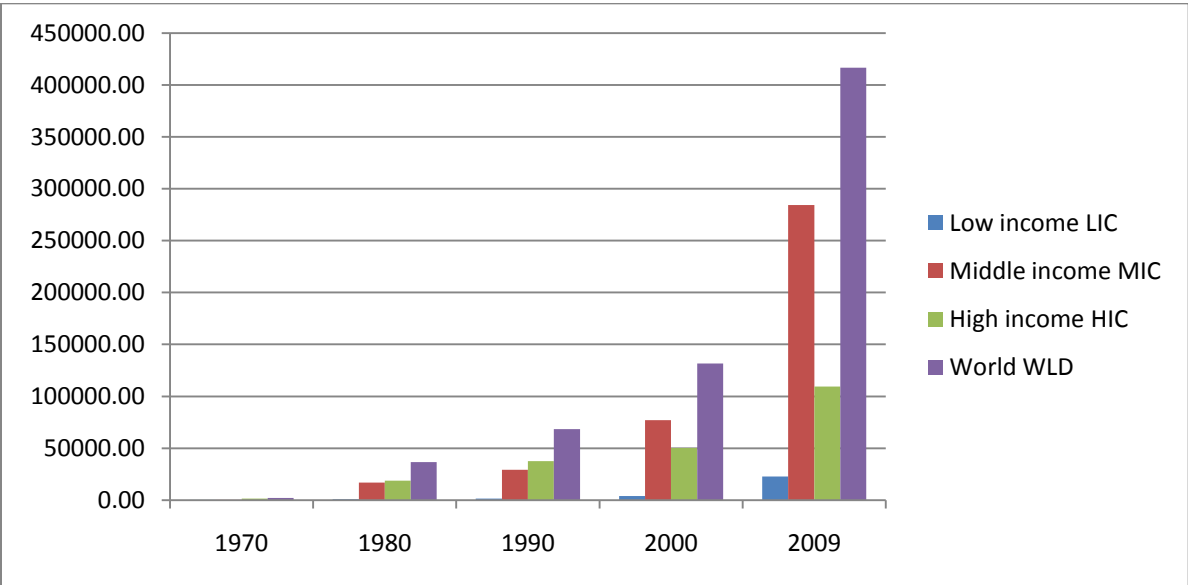
Regions/years	1970	1980	1990	2000	2009
Arab World	211,00	6403,25	11517,91	13219,00	35660,02
East Asia & Pacific (all income levels)	180,32	2309,49	7257,51	20189,72	97087,50
Europe & Central Asia (all income levels)	1387,80	19146,46	34462,18	52753,33	128848,03
Latin America & Caribbean (all income levels)	55,50	1933,28	5739,94	20359,76	56797,98
Middle East & North Africa (all income levels)	283,00	6532,63	12302,48	13520,47	35010,83
Sub-Saharan Africa (all income levels)	22,66	1399,39	1880,49	4636,83	20748,70

Source: WDI, www.worldbank.org. Remittance flows (annual) in millions of current US\$.

From Table 1. it is clear that in all regions of the world remittance flows increased and in some regions they have risen substantially. From year 2000 to 2009 the remittance flows increased almost 3 times in Arab world and Middle East and North Africa according to the table above. In East Asia & Pacific and Sub-Saharan Africa the transfers of remittance increased by almost 5 times. Europe & Central Asia and Latin America & Caribbean regions the remittance flows increased almost 2.5 times from 2000 to 2009.

The figure below shows that remittances have transferred more in amount in the middle and high income countries than in low income countries. It can be viewed as a support for the earlier argument of migration which states that high migration costs could be born only by those who can afford, limiting the poor or the poorest to migrate to earn abroad.

**Figure 1. Remittance flows in low, middle, high income countries and the world.**



Source: WDI, www.worldbank.org. Remittance flows in millions of current US\$.

## 1.2. Research question and disposition

In general, the picture is portrayed as that, migrants usually leave family members in their countries of origin and support them with steady flow of remittances. Therefore, these flows directly or indirectly affect millions of people. As remittances are mostly spent on consumption and other necessities as medicine, shelter, they might help to lift huge amount of people out of poverty by providing steady flow of income. This poverty alleviating effect of remittance flows is widely recognized (Adolfo et al., 2009). Besides the poverty alleviating effect, worker's remittance flows have other macroeconomic impacts. These macroeconomic implications might be ambiguous. However, in many cases, remittance flows are treated as similar to FDI and other private international capital flows. Hence, it is generally believed that they have similar effects, that is, positive effects on economic development of the recipient country. For example, Ratha and Mohapatra (2007) state the remittance flows to be an important source of external finance for developing countries.

So, in the presence of such a belief that remittances are similar to FDI and other capital inflows, therefore they add to the economic growth, the main question of the paper will be whether remittance flows enhance recipient countries' long term economic growth. This paper contributes the existing literature by widening the scope of the study in the context that it analyzes the impact of workers' remittances on the economic growth of recipient countries. Furthermore, paper goes on to investigate the main channels of how remittance transfers affect economic development, which are often neglected in the previous papers.

The rest of the paper is organized as follows: section 2 gives description of the countries of interest, section 3 discusses the theory of remittances, section 4 reviews briefly the literature, in section 5 data, methodology, definitions of the variables and their expected signs are discussed, section 6 outlines and discusses empirical findings and results, section 7 concludes the paper.



## 2. Background for the countries of interest

Lately, remittance inflows have become very important source of income for the households in the countries of Central Asia, Bangladesh, Pakistan and the countries of the south Caucasus<sup>1</sup> as these countries have sent many immigrant workers abroad. Originally, countries of interest for this paper were Central Asian countries but with the purpose of getting more cross-sections for the applicability of the econometrical model three more countries from South Caucasus which were Former Soviet countries as well and two countries from South Asia are added to the group of countries of the paper. Similarities of Central Asian countries to South Caucasus countries are that they all were countries of Soviet Union and became independent almost in the same period and now they are transition economies, while to south Asian countries similarities can be religious and cultural.

The remittances increased in the last decade in these countries, their share in the national income, especially, in the household income has grown, hence making more and more people in the region be dependent on these transfers.

**Table 2. Remittances as % of GDP.**

Countries/years	2002	2009
Armenia	5,51	8,83
Azerbaijan	2,91	2,96
Bangladesh	6,01	11,77
Georgia	6,79	6,65
Kazakhstan	0,83	0,11
Kyrgyz Republic	2,29	21,66
Pakistan	4,91	5,38
Tajikistan	6,43	35,12
Turkmenistan*		0,18
Uzbekistan*		8,86

\* For Turkmenistan and Uzbekistan data is not available for the year 2002.

<sup>1</sup> Central Asia comprises Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and South Caucasus comprises Georgia, Azerbaijan and Armenia all of which are former Soviet Union countries.

From the Table 2. it is worth to notice that remittances may play a big role in the economies of countries like Armenia, Bangladesh, Kyrgyzstan, Tajikistan and Uzbekistan, whereas their importance for the economies of Kazakhstan and Turkmenistan is negligible.

The table below plots the FDI, net inflows, transfers for net official development assistance (ODA) and remittance inflows into the countries of interest for years 2002 and 2008/2009, respectively.

**Table 3. FDI net inflows, Net Official development assistance (ODA) and remittances.**

Countries/years	FDI, net inflows		Net ODA received		Remittances	
	2002	2009	2002	2008/09	2002	2009
Armenia	110,74	777,50	299,59	302,63	130,98	769,45
Azerbaijan	1392,44	473,31	349,31	235,09	181,71	1273,73
Bangladesh	52,34	674,25	906,1	1226,94	2858,06	10523,1
Georgia	160,21	658,40	314,44	887,71	230,45	714,34
Kazakhstan	2590,22	12600,76	188,82	332,55	204,93	123,66
Kyrgyz Republic	4,66	189,38	185,61	359,93	36,72	991,80
Pakistan	823	2387	2092,14	2780,61	3554	8717
Tajikistan	36,07	15,82	168,32	290,64	78,56	1748,15
Turkmenistan*	276	1355	40,52	39,88		35
Uzbekistan*	65,3	750	189,25	190,3		2845

Source: Data is available at [www.worldbank.org](http://www.worldbank.org). All figures are in millions of current USD.

\* Data for Turkmenistan and Uzbekistan is not available for remittances for the year 2002.

Table 3. indicates that except Kazakhstan and Turkmenistan, all other countries have had almost the same or more remittance inflows into these economies than other inflows such as FDI and net official development assistance inflows. In the case of Georgia, all inflows in almost equal quantities in the year 2008/2009 and in Armenia remittances are almost equal amounts as FDI and double the amount of ODA received. However, Kyrgyzstan and Tajikistan show significant difference between workers' remittance inflows and FDI, and net ODA funds received, as remittances make approximately 3 times of net ODA received and 5 times of FDI in Kyrgyzstan, while they make 6 times of net ODA received and amazingly more than 100 times of FDI in Tajikistan during the same period. In the beginning of the decade Azerbaijan got big amounts of net FDI inflows and net ODA payments in

comparison to workers' remittance inflows, but this inflows changed to reverse in the end of this decade, as remittance inflows comprised approximately 2.5 times of net FDI inflows, and 5 times of the net ODA funds received. Kazakhstan may have succeeded in persuading investors for better economic prospects, hence was able to get great amounts of FDI inflows in comparison to the other inflows such as net ODA inflows and remittance inflows, in the end of the first decade of 21<sup>st</sup> century. Uzbekistan got remittance transfers into the country as much as 4 times of FDI net inflows and approximately 14 times of net ODA received in 2008/09. In Bangladesh remittances comprised approximately 13 times of FDI and 7 times of net ODA received at the end of decade, while in Pakistan the figures were modest and comprised approximately 3.5 times of FDI and ODA inflows.

### 3. Theory of remittances on economic growth

Before discussion of theory of the remittances on economic growth, it can be beneficial to look at some benefits and costs of the remittances. Bryan R. (2004) suggests potential benefits and costs of remittance flows as follows:

**Table 4. Potential costs and benefits of remittances.**

Potential benefits	Potential costs
Stable source of foreign exchange that ease the foreign exchange constraints and help finance external debts	Ease pressure on governments to implement reforms and reduce external imbalances (moral hazard)
Potential source of savings and investment for capital formation and development	Reduce savings of recipient families and thus negatively impact on growth and development (moral hazard)
Facilitate investment in children's education and human capital formation	Reduce labor effort of recipient families and thus negatively affect on growth (moral hazard)
Raise standard of living of recipients through increasing consumption	'Brain drain' negative impacts on economy that are not fully compensated by remittance transfers
Reduce income inequality	Increase income inequality
Reduce poverty	'Dutch disease' hence negative impact on economic growth*

\* 'Dutch disease' added by the author of this paper.

Understanding the impact of how remittances reduce savings of recipient families and thus negatively impact on growth (moral hazard) may seem little tricky. However, if people consider that remittances continue for foreseeable future, then according to the permanent income hypothesis, they tend to increase current spending and consumption by cutting back their saving. As a result, in the long run the outcome turns out to be negative rather than positive for the development of the economy. Empirical support will be given to some costs and benefits of the remittance inflows in the literature review part of the paper.

For the theoretical part of this paper, previous research papers, primarily Adolfo et al (2009), are used as a framework for the building blocks of the theory of how remittance flows affect the economic growth. In the theory, the impacts are not comprehended or grasped as one model, instead, different papers studied different implications of the remittances on the economic growth. In most papers the theory is just stated but not discussed deeply. So, the attempt in this paper is to combine the different impacts into Adolfo's et al (2009) framework. That can help to grasp most of impacts of worker's remittances on economic growth. The possible channels that remittances may have effects on the economic development, can be through capital accumulation, labor force growth and total factor productivity (TFP) growth. There is much general theory of domestic government performance and remittances which may refer to effects of all channels discussed below.

### 3.1. Capital accumulation effects of remittance inflows.

Capital accumulation can be divided into two types: physical capital and human capital accumulation. Physical capital is primarily understood as machinery or/and technology that is used in the production process, while human capital, as knowledge and know-how skills of the labor force.

#### 3.1.1. Remittances and physical capital.

Ways of observing the effects of workers' remittance inflows on capital accumulation may be different. If financing of investments relies on domestic sources of income, then there may be direct increase in capital accumulation relative to remittances. For example, if households face financial constraints because of undeveloped financial system, remittances directly serve to ease these constraints, allowing increase in physical and human capital. Besides, remittance inflows may improve the creditworthiness of domestic economy, and large inflows of remittances lower the cost of capital, which allow additional borrowing to invest domestically. And debt can be served by future remittance inflows. According to Sufian (2009) remittances are beneficial to the recipient country as they increase country's creditworthiness and enhance their access to international capital markets and he shows that in the case of MENA countries, indebtedness ratio (ratio of debt to export of goods and services) would be significantly lower if remittances were included in the estimation equation. The other mechanism is that remittances increase the macroeconomic stability of domestic economy, hence tend to lower risk premium demanded by the firms to undertake investment, which in turn makes the domestic investment more attractive. Ratha and Mohapatra (2007) state that when a recipient country experiences economic downturn because of a financial crisis, natural disaster or political conflict then remittances tend to rise.

Contrarily, the workers' remittances have compensatory nature, and it is more likely that remittances are received by households with high propensity to consume, and hence they may not be directed in significant amounts towards investment. Second, remittances may cause additional consumption rather than investment, even in the presence of credit constraints, if remittances are assumed to be permanent. However, positive impacts of remittances on the economic growth can persist, even in the presence of high propensity to consume, as the leftover amounts from consumption could be directed to the investment purposes.

### 3.1.2. Remittances and human capital.

Remittances stimulate additional investment in human capital accumulation. It operates directly by bearing the cost of the investment in human capital (education, improved medical care etc.) or by lowering the need for the younger members of the family to abandon school in order to work and contribute to the household income. Edwards and Ureta (2003) by using the sample of more than 8000 families in El Salvador find that remittances play a significant role in keeping younger members of the family at schools and hence financing human capital. Yang (2004) shows that appreciation in migrants currency against Philippine peso (recipient country's currency) increases household's remittances received from overseas and in turn enhances human capital accumulation by more child schooling, reduced child labor and increased expenditure on education in origin households. However, the impacts on economic growth depend on the participation of these educated children in the domestic labor force, and if this extra or improved education financed with remittances makes it possible for the recipients to emigrate, then positive effects on economic growth will be under question. Again, the precaution may not impose serious problem in identifying the direction of the impact of remittances on human capital. If the amount of the educated children with the support of remittances is proportionately far larger than the amount of emigrating educated youth, then overall impact can be expected to be positive.

### 3.2.Labor force growth and remittance inflows.

Influence of remittances on economic growth may be through their effects on the rate of growth of labor inputs with assumption of fixed human capital. The assumption of fixed human capital is important as it helps to draw the clearer picture of implications of remittances on the labor input growth. Remittances could impact labor inputs through labor force participation in the economy or through fertility. There is general view of negative impact of remittances on labor force participation. The reason is that households may simply

substitute unearned remittance for labor income. In addition, regardless of their intended use, these flows may be subject to moral hazard problems because remitter and recipients are usually separated with long distances. Distance makes it difficult for the remitter to monitor and enforce applicable measures in order to use remittance efficiently. Itzigsohn (1995) in the case of households in the capital cities of four Caribbean Basin countries Haiti, Jamaica, Guatemala and Dominican Republic, finds that remittance inflows have a significant positive effect on nonparticipation of the head of the family and other members in 3 capital cities, whereas in Guatemala the effect is still positive, but it is not statistically significant. Better economic and financial conditions and more leisure time (nonparticipation in the labor market) especially among women in the recipient countries following by the remittance inflows may encourage higher fertility rates. Generally, it can be accepted as true, but this statement needs to be treated with caution. Fargues (2007) by using time series of birth rates and migrant remittances for Morocco, Turkey and Egypt finds strong negative relationship between remittances and fertility for Morocco and Turkey and positive relationship for Egypt. In general, existing literature supports the idea that remittances tend to increase nonparticipation rate of household head and other members in the labor market, as they reduce their labor market effort.

### 3.3.TFP growth and remittances.

TFP (total factor productivity) can be affected by remittances through efficiency of domestic investment and through the size of domestic productive sectors. In turn, efficiency of investment may be affected by remittances through changing the quality of domestic financial intermediation. Effect on the efficiency of investment would be to the extent whether the family member investing on behalf of remitter has informational advantage or disadvantage relative to official domestic financial intermediaries. If the family member is less skilled in allocating capital than official domestic financial intermediaries, then efficiency

of domestic investment would decrease rather than increase. Efficiency of domestic investment, generally, depends on the amount of remittances intended to be invested as well.

Financial systems development can be anticipated if the remittances expand the amount of funds flowing through the banking systems. Development in financial system may lead to higher economic growth by increased economies of scale in financial intermediation.

As stated earlier, remittance inflows could be associated with equilibrium real exchange rate appreciation which implies a potential for Dutch disease effects in the remittance receiving country. In the presence of Dutch disease effects, the result would likely be contraction of sectors of production that can generate dynamic production externalities such as exports of manufactured goods.

#### 3.4. Remittances and domestic government performance.

There are wider political economic effects of remittances which may operate through all channels discussed above. Remittance inflows may result in no or little incentive for the people to monitor and assess the domestic government's performance. Because remittances transfers come from outside and provide a source of income to the households that is not related to the domestic production process. Moreover, migrants transfer more remittances when the economy back at home countries is at odds and this process shifts costs of poor macroeconomic policy performance at home, at least partially to migrants. That creates moral hazard problems for the domestic government. This in turn, may affect adversely for the capital accumulation, growth in labor inputs and TFP growth. Abdih et al (2008) identify a new channel that remittances affect economic growth and find that despite their nature of being household-to-household private transfers, remittance inflows might have adverse effects on the domestic institutional quality, especially quality of domestic governance. This effect of remittances is similar, in this respect, to those of large resource



flows and the domestic government engages more in corruption, because access to remittance income makes government corruption less costly for the domestic households to bear.

From the discussion of the existing theory of implications of remittance on economic growth, it may be clear that there exist many potential effects of remittances concerned with economic growth. However, the magnitude of these effects is highly uncertain and the directions of these effects are conflicting. Hence, main emerging implication of the effects of remittance inflows on economic growth in the recipient countries is theoretically unclear and ambiguous. The paper investigates the direct impact of remittances on economic growth along with their effect on capital accumulation. Investigating and estimating effect of remittances on economic growth through other channels are beyond the scope of this paper.

#### **4. Brief literature review**

There is large amount of theoretical literature on remittances, in the sense that theories have been suggested at least informally by many researchers describing their role in the economy with the purpose of motivating an empirical exercise. According to Chami et al (2005) various costs and benefits of remitting were identified and defined by early approaches to the theory of remittances and family ties in the form of mutual caring that believed to be prime motivation for remitting, and that was acknowledged by many economists even before the advent of the New Economics of Labor Migration (NELM). However, in recent years literature and hence theory alter the scope and direction away from the causes of remittances and they tend to describe the effects of remittance flows on economic growth and/or on poverty regardless of the cause of remitting. Besides, remittances are widely viewed as compensatory transfers between family members, but some other effects of remittances appeared. Stahl and Arnold (1986) argue that as remittances have possible multiplier effect from use of them for consumption purposes, they may have positive effect on growth.

Wide range of data availability over quite longer periods and for many countries lately, made it possible to conduct empirical analysis of remittance flows on economic growth. According to Adolfo et al (2009) there are two types of studies of the growth effect of remittances. First, growth effect of remittances is considered in the traditional cross-country growth literature using either cross-section or panel data. The second type literature investigates specific channels through which remittance inflows may affect growth such as Dutch disease effects.

Quite large number of research papers follows to the first type of studies as they try to investigate growth effects of remittances by applying traditional cross-country growth models. Simultaneously, there are several studies related to the investigation of individual channels of remittance inflows on economic growth. An example for the second type of study is Emmanuel et al (2010) by employing an unbalanced panel data set comprising 109 developing and transition countries for the period 1990-2003. The authors find ‘Dutch disease’ effects of rising levels of remittances in these emerging economies (that is increase in the relative price of non-tradable goods and real exchange rate appreciation; resource reallocation from tradable sectors to non-tradable ones which is related to increasing service sectors vis-à-vis declining manufacturing sector).

Gyan P., et al (2008) find positive effect of workers’ remittances on economic growth by applying fixed effect and random effect approaches for the panel data of a sample of 39 developing countries for the period of 1980-2004. Their finding is that the impact of remittances on growth is not very large in size and the coefficient of the remittances in explaining the economic growth is significant only in two regressions out of four.

Fayissa and Nsiah (2008) using neoclassical growth framework with an unbalanced panel data for 37 African countries for the period from 1980 to 2004, argue that remittance flows have positive effect on economic growth in countries, where the financial

systems are less developed, by providing an alternative way to finance investment and helping overcome liquidity constraints. They find that 10% increase in remittances would lead to 0.3% increase in GDP per capita, which can be considered as a very small impact. The same authors (Fayissa and Nsiah, 2010) find the similar results using unbalanced panel data for 18 Latin American countries for the period between 1980 and 2005 by applying a conventional neoclassical growth framework. In both papers the authors apply Arellano-Bond GMM method to estimate the effects of remittances on economic growth.

Sufian (2009) reports the positive impact of remittances on the economic growth, as the author describes, direct and indirect ways through their interactions with financial and institutional channels. With the regression of panel data for 7 MENA<sup>2</sup> countries during the period 1975-2006 with fixed effect model of regression the author finds significant positive effect of remittances on per capita income growth rate in these MENA countries.

Ratha and Mohapatra (2007) state that remittance may play an important role as a source of external finance for developing countries. However, they don't provide any empirical support for their argument.

Using panel data for 17 countries in the Asian and Pacific region for the period 1993-2003 Jongwanich (2007) finds only a marginal impact of remittances on the economic growth operating through human capital formation and development and domestic investment. The author uses GMM method to estimate the impact of remittances on economic growth and investment. For the estimation of effect of remittances on human capital the author applies fixed effects model.

Abdul Qayyum et al (2008) report positive and significant effect of remittances on the economic growth through empirically testing the data for Pakistan for the period between 1973 and 2007 by applying ARDL (autoregressive distributed lag) approach. This

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<sup>2</sup> MENA countries: Algeria, Egypt, Jordan, Morocco; Syria, Tunisia and Sudan.

approach, as they argue, is more appropriate for small sample size irrespective of the variables, whether the variables are I(0) or I(1).

IMF (2005) study using time invariant instrument by applying cross-section data for 101 countries within the period ranging from 1970 to 2003, finds no statistically significant effect of remittances on economic growth.

Adolfo et al (2009) report that their ‘findings suggest that decade of private income transfers-remittances- have contributed little to the economic growth in remittance-receiving economies and may have retarded growth in some’. They have run regression analysis of OLS with IV (instrumental variables) and fixed effects model for the sample of data comprising 84 recipient countries with annual observations for the years 1970-2004.

Glytsos (2005) uses the model of two stage least squares (TSLS) for the sample of five countries: Egypt, Greece, Jordan, Morocco and Portugal with annual data observations for the periods 1969-1998 and concludes that decreasing remittances more severely slow down economic growth than they speed up it while increasing, or with the words of the author ‘induced growth decelerates faster as a result of falling remittances than it accelerates as a result of rising remittances’.

Chami et al (2003) develop a model of remittances based on the economics of the families and they distinguish remittances as compensatory transfers from other inflows like FDI etc., and find robust negative correlation between remittances and economic growth by using panel data annual observations for 113 countries over the period 1970-1998. Although, the authors run regression analysis using cross-section and panel data as in the case of first type of studies, they emphasize the determinants or causes of remitting. The authors run regression for the determinants of remittance and use income gap between country  $i$  and the USA and real interest rate gap between country  $i$  and the USA, (where  $i=1, 2, \dots, N$ ) as explanatory variables for the determinants of remitting. Findings suggest that income gap is

very significant at 1% confidence level as a determinant of remitting. They use income gap and interest rate gap as instrumental variables and find robust negative impact of remittances on economic growth.

## 5. Data and methodology

### 5.1. Data description

This paper investigates the responsiveness of per capita GDP growth to workers' remittances ( $rem_{it}$ ) along with traditional sources of economic growth. The table below shows the description of data.

**Table 5. Description of data**

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$rem_{it}$	<i>workers' remittances is the sum of wages and salaries by nonresidents and current transfers by migrants, in millions of USD.</i>
$iny_{it-1}$	<i>log of initial per capita GDP's, year 1995 is taken as the base year for initial per capita, in current US</i>
$gcf_{it}$	<i>investment in physical capital formation is the log of gross capital formation as a percentage of GDP used here as a proxy for investment in physical capital.</i>
$enr_{it}$	<i>human capital formation is the log of secondary school enrollment (in percentage) used as a proxy for the measure of investment in human capital.</i>
$aid_{it}$	<i>foreign aid is log of aid which is the sum of net official development assistance and aid received, in millions of current USD.</i>
$fdi_{it}$	<i>foreign direct investment is log of net FDI inflows, in millions of current USD</i>
$tra_{it}$	<i>log of the ratio of the sum of imports and exports to the GDP which gives the measure of openness of the economy, often terms of trade are used as a proxy for the openness.</i>
$cons$	<i>final consumption expenditure as % of GDP</i>
$rint$	<i>real interest rates</i>

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All the observations in the data set are annual observations for the period 1995-2009. The data are taken from the World Bank's World Development Indicators (WDI, 2009), except data on remittance transfers for Tajikistan, Turkmenistan and Uzbekistan which are available at website of the Central Bank of Russia. And data for the educational enrollment in secondary school in Turkmenistan is taken from UNICEF's country website for Turkmenistan. The data for interest rates for Kazakhstan, Turkmenistan and Uzbekistan are taken from the reports of UNDP, EBRD and sources are indicated at the Appendix with relative links.

The table representing the summary statistics will be given in Appendix at the end of the paper.

## 5.2. Models

### 5.2.1. Static model

Basic empirical model based on research studies primarily Fayissa and Nsiah (2008), and other papers Sufian (2009), Gyan et al (2008), Jongwanich (2007). Jongwanich (2007) states this is the extended version of the neoclassical economic growth model.

The general form of the regression equation is given below.

$$Y_{it} = \alpha_i + \delta_t + (X_{it})\beta + \varepsilon_{it}, \quad \varepsilon_{it} \approx IID(0, \delta_u^2). \quad (1)$$

$Y_{it}$  –natural logarithm of per capita GDP in country i at time t;

$X_{it}$  –is the vector of the independent variables (remittances, initial per capita GDP, physical capital and human capital investments, official foreign aid inflows, foreign direct investment flows, openness to trade) for countries  $i=1, 2, \dots, n$ , and at time  $t=1, 2, \dots, T$ .

$\alpha_i$  –country specific, time invariant effect;

$\delta_t$  –time specific country invariant effect;

$\beta$  –scalar vector of coefficients of  $\beta_1, \dots, \beta_7$ ;

$\varepsilon_{it}$  –error term with  $E(\varepsilon_{it})=0$  and  $\text{var}(\varepsilon_{it})= \sigma_\varepsilon^2$ .

Assumptions:

Ordinary least squares (OLS) method is applied if country specific effects are constant over time and there is not time specific effect. The second method of the regression equation assumes constant but not equal country specific effects, which leads to fixed effects model. The third method of the regression analysis assumes non-constant country specific effects and the time effects are absent, which leads to the random effect model and estimated with the generalized least squares (GLS) method.

### 5.2.2. Dynamic model

One of the potential problems concerned with estimation of the growth effects of remittances is the presence of endogenous (explanatory variables are correlated with the error terms) independent variables in the model. According to Fayissa and Nsiah (2008) some traditional factors that determine the economic growth are either pre-determined or endogenous or both.

So, the dynamic variant of the model in this paper is estimated by GMM method based on the Arellano-Bond (1991) estimation technique:

$$\Delta Y_{it} = \delta' \Delta Y_{i,t-1} + \beta' \Delta X_{i,t-1} + \gamma' Z_{it} + \alpha_i + \varepsilon_{it}$$

$\Delta Y_{it}$  –first difference on the log of per capita income growth in country  $i$  at time  $t$ ;

$\Delta Y_{i,t-1}$  –lagged difference of the log of per capita income growth;

$\Delta X_{i,t-1}$  –vector of lagged level and differenced endogenous variables;

$Z_{it}$  –vector of exogenous variables

$\delta, \beta$  and  $\gamma$  –coefficients of parameters to be estimated;

$\alpha_i$  –country specific effects which have independent and identical distribution over the countries;

$\varepsilon_{it}$  –noise stochastic disturbance term and assumed to be independently distributed.

For the estimation of remittance's effect on physical and human capital investments, the regression equations used in this paper are based on Jongwanich (2007). The

main difference of the equation in this paper from the equation of the reference paper is that Jongwanich (2007) includes only per capita income, remittances and constant in the regression of human capital. In this paper, I add two more independent variables in the equation which are official assistance and aid transfers along with total consumption expenditure, respectively.

### 5.3. Description of variables and their expected signs

Workers' remittances can affect economic growth positively or negatively as suggested by theory and existing literature. Therefore, it is difficult to predict the exact sign of the coefficient of  $\log(\text{rem})$  in advance.

Theory of economic growth predicts that countries that start out with low levels of per capita income tend to grow relatively faster than the countries with higher initial per capita income and that allows low level per capita income countries to converge to the higher per capita income countries. Hence, it is logical to expect negative sign of the coefficient of this parameter, but there some studies which contradict this prediction of convergence. Casselli et al (1996) find that approximate years of convergence to the steady state point is 7 years contradicting 30 years by previous papers and they state that 'most economies will usually be very near to their steady states, and the important differences in per-capita income levels across countries will mainly be explained by differences in their steady-state values'. Barro (1991) finds negative relationship between initial levels of per capita GDP and the growth rate of per capita output with sample of data for 98 countries during the period 1960-1985, which suggests the existence of conditional convergence among countries. Therefore, it is not possible to predict the sign of the initial level of GDP per capita coefficient.

According to several researchers investment in human capital has positive effects on the economic growth of developing countries. Schultz (1980) in his Noble Prize lecture states that 'population quality and knowledge do matter', and improvement in



population quality and acquiring useful knowledge imply favorable economic prospects. In his endogenous model of economic growth Romer (1986) assumes the knowledge (hence human capital) to be an input in production process which has increasing marginal productivity.

There are two opposing conclusions or views about the impact of foreign aid, and that impact of external source of finance on economic growth is captured by the log of foreign aid in our model. Overseas capital flows, argued by the proponent researchers, are necessary for the economic growth of less developed countries. For example, Papanek (1973) using cross-country regression analysis for 34 countries during the 1950s and for 51 countries during 1960s argues that savings and foreign inflows (including foreign aid which has positive and significant effect in economic growth when regressed separately) explains over one third of growth rate of these developing countries. Levy (1987) in the case of sub-Saharan Africa by applying both cross-section and time series finds positive and significant correlation between foreign aid and economic growth in these countries and Quazi (2005) uses cointegration method with data range of years between 1973-1999 for Bangladesh and finds marginal effect of foreign aid on economic growth, however if aid is separated into loans and grants he argues, loans significantly increase GDP growth whereas grants do not. On the other hand, there is a negative impact of foreign aid, argued by opponents of foreign aid, on economic growth and domestic savings in developing countries. Boone (1995) argues that foreign aid doesn't significantly increase investment and economic growth, nor benefit the poor as measured in human development indicators, based on his test results for the data on non-military foreign aid in 96 countries. At the same time, there exist several research papers about the impact of foreign aid on the economic growth which are inconclusive, meaning that there may not be clear relationship between them. Teboul and Moustier (2001) find no possibility to conclude whether foreign aid is efficient or not in promoting economic growth

in south Mediterranean region with sample including three North African countries, Egypt, Syria, Israel, Jordan, Cyprus and Turkey on the panel data for the period 1960-1996.

$fdi_{it}$  shows the impact of external source of capital that is foreign direct investment on the growth rate of the country. The sign of this parameter is expected to be positive as foreign direct investment is widely viewed as transfer of (new) technology and (new) knowledge which enables the recipient country to exploit the experience of others for their development. Chami et al (2005) state that foreign direct investment is positively correlated with output growth during the 1990s.

$tra_{it}$  used to capture impact of trade, or openness of the economy on economic development of the country where the openness to trade for each country under consideration, measured by the sum of imports and exports as the ratio of GDP. Traditional views of openness of the country to trade describe positive effect of the openness on the economic growth, allowing countries to allocate resources efficiently by promoting innovation and entrepreneurial activities resulting from competition and access to larger markets. Berg and Kruger<sup>1</sup> (2003) states that ‘trade openness contributes greatly to growth’ based on support from variety of sources such as cross-country and panel data growth regression analysis, industry and firm level research and case studies.

$cons$  used to measure impact of consumption on investment in physical and human capital. Higher consumption leads to less saving and thus less investment. Therefore, the expected sign of consumption coefficient on capital accumulation is negative.

$rint$  estimates the effect of interest rates on investment. High interest rates discourages investment therefore it sign expected to be negative.

#### 5.4.Potential problems and limitations

At the same time, it should be kept in mind that there are some difficulties in obtaining the true data on the workers’ remittance flows. In recent years there were steps put

forward to ease the transfers of the remittances through official channels. Such implementations were reduction in rates charged for remitting and opening up large number of affiliates in remote areas in many countries by the banks operating in this sector of the finance. Yet, there are some amounts of these remittance flows which are being transferred through informal channels. According to Glytsos (2005), in the recent IMF estimates for 15 developing countries, 10 billion USD of remittances transferred through informal channels, where this number may reach to 35 billion USD in the late 1980s. The vast outflow of immigrant workers from these countries of the Former Soviet Union has the direction towards Russia as the point of final destination in order to settle and earn their income and send back to their home countries. These workers usually visit their families once a year, and they bring quite big amount of their salaries and employment compensation payments with them in their pockets and these transfers or inflows go unrecorded. This could suggest that real numbers showing the value of the remittance transfers could be higher than the statistically indicated figures.

**Measurement errors and endogeneity:** the above factors may lead to measurement errors and endogeneity in variables. To get consistent estimators from the regression analysis proper instrumental variables should be used to instrument the endogenous variables.

**Weak instruments:** variables used in the models to instrument the endogenous variables may be weak, that is they may have very low level of correlation with endogenous variables. In the case of serial autocorrelation in the error terms, the validity of instruments may be suspected.

**Lack of data and model application:** several observations are missing in the data set and observations for several variables are missing totally. That makes the process of getting proper data difficult. The model of GMM by Arellano-

Bond is designed to the application of panel data with many cross-section observations when time series are limited.

However, data collection process improved considerable in these newly independent countries in recent years. Increased, trust in financial institutions, especially in the local banks along with decreased rates for the transfer transactions resulted that quite large amount of remittance transfers to go through the official channels. This may indicate that quality of data could have been improved. Besides, GMM method with estimation technique proposed by Arellano-Bond (1991) will be used to deal with these potential biases and the problems of endogenous variables. As stated early in section 2. of the paper, the number of countries increased from 5 to 10 in order to get more cross-sectional observations. Moreover, several observations collected from other sources than WDI. All these attempts may give us a hope to get economically plausible and intuitive results.

## **6. Empirical results and findings**

### 6.1. Static model results.

First, the unbalanced panel data (cross-sections have data available for different length of time etc.) regression is run for ordinary least squares (OLS), fixed effects and random effects models.

The Table 5. indicates results. All the variables are in log forms. The expected signs of the parameters are according to our assumptions except for the coefficient of human capital. Before going to further discussion it is worth to mention that the parameters of the variables in OLS and random effects models are much the same. It is because of the software program, but in most cases it is normal to get similar results when applying OLS and random effects model.

The results indicate that the countries with higher initial level of per capita income tend to grow faster than the countries with low levels of initial per capita income. This result contradicts the conditional convergence proposed by the economic growth theory and by some research papers. However, the coefficient of initial per capita income in all models is very high, as it shows almost one to one effect on the growth of per capita income. Besides, in all regression methods this result is highly significant. Very close time lag, just one year ahead, has been used to capture the effect of initial per capita income and that may be the reason for such a high coefficient.

**Table 6. Static model results.**

Dependent variable: per capita GDP				
	OLS	Fixed effects	Random effects	
Constant	0.57 (0.65)	0.09 (0.91)	0.57 (0.65)	
ln.gdp	0.98 (0.05)***	0.93 (0.082)***	0.98 (0.053)***	
Rem	0.045 (0.0099)***	0.065 (0.017)***	0.045 (0.0099)***	
Gcf	0.14 (0.05)***	0.15 (0.06)**	0.14 (0.05)***	
Enr	-0.039 (0.043)	-0.028 (0.029)	-0.039 (0.043)	
Aid	-0,081 (0.028)***	-0.062 (0.047)	-0,081 (0.028)***	
Fdi	0.006 (0.014)	0.004 (0.013)	0.006 (0.014)	
Tra	0.11 (0.051)**	0.06 (0.08)	0.11 (0.051)**	

Robust standard errors are in parenthesis. \* indicates significance at 10% confidence level, \*\* at 5% confidence level and \*\*\* at 1% confidence levels respectively.

Remittances add to the economic growth of the recipient countries positively. Even though their effect is small, they are highly significant in all three equation models. It is worth to note that doubling the remittances causes 4-7% increase in per capita GDP growth. As expected, physical capital formation boosts per capita income growth. Thus, 10% increase

in the gross capital formation leads to 1.5% rise in per capita GDP. The coefficient of physical capital is significant in all three models. In these regression models, there is one economically meaningless result. It is the negative sign of variable  $\log(\text{enr})$  which is used for the capture of human capital effect on per capita income growth in the equations. Simultaneously, it is highly insignificant in all of three equations. Official development assistance and aid transfers have negative impact on the economic growth in the recipient countries. That contradicts the suggestion of the proponents of the aid transfers, as they argue development assistance and aid transfers are necessary for the development of overseas countries. These funds are significant in OLS and random effects model, however insignificant in fixed effects model. FDI and openness of the country to international trade have positive effects on the economic development of the countries. However, in all three equations FDI is highly insignificant. Trade openness is significant in OLS and random effects models but fixed effects model shows that there is no significant link between trade openness and development.

#### 6.2. Dynamic model results

GMM approach is employed to estimate the joint effect of workers' remittances and other explanatory variables on the economic growth, while controlling for the potential bias due to the endogeneity of some of the regressors including the lagged dependent variable.

1-step Arellano-Bond (1991) GMM method is run on different specifications of the model. First specification is running the regression on all the explanatory variables available for the model. Second and third specification is excluding some independent variables from the equation based on their significance level.

From the Table 7. it is clear that now all the variables have expected signs although many of them have become insignificant in the later GMM regression models. The results still contradict the conditional convergence of the countries which states that countries start with low levels of initial per capita income tend to grow faster than the countries with

high levels of initial per capita income. In all equations, the coefficient of the initial per capita income is statistically significant. Although, the coefficient of initial per capita income reduced from the early results, they are still unusually high.

**Table 7. GMM regression results.**

	Dependent variable: per capita GDP		
	Arellano Bond (1991) 1-step GMM estimator	Arellano Bond (1991) 1-step GMM estimator	Arellano Bond (1991) 1-step GMM estimator
Initial per cap.gdp	0.92 (0.05)***	0.90 (0.046)***	0.898 (0.042)***
Rem	0.088 (0.033)***	0.081 (0.031)**	0.087 (0.03)***
Gcf	0.13 (0.056)**	0.12 (0.052)**	0.125 (0.053)**
Enr	0.024 (0.13)	0.11 (0.16)	0.108 (0.17)
Aid	-0.095 (0.05)*	-0.07 (0.038)*	-0.073 (0.038)*
Fdi	-0.003 (0.007)		
Tra	0.093 (0.12)	0.086 (0.116)	

Robust standard errors are in parenthesis. \* indicates significance at 10% confidence level, \*\* at 5% confidence level and \*\*\* at 1% confidence levels respectively.

Contrary to the reduced impact of initial per capita income, implication of remittance inflows in latter regression analysis has increased from that of the previous regression results. It is reflected in the increased parameter of the remittances. Coefficient of remittance is statistically significant in all 3 equations. Now, doubling remittances can add up till 9% to the growth of per capita GDP in these countries, which is 4-6% in the previous regressions. The physical capital formation also keeps its positive sign and it is in accordance with the expectations. In all the regression equations the coefficient of physical capital is significant. However, it has decreased from 14-15% in the earlier regression results to 12-13%

in the latter results. Contrary to the former regression results, the sign of enrollment rate has changed to positive which is according to the expectations. However, the coefficient of enrollment is still insignificant. Reason for such counterintuitive results might be that after the collapse of Soviet Union enrollment in these 8 countries decreased while economies grew during the analysis period. That indicates that other factors played important role in economic growth. However, in the longer run the decreased enrollment rate could have negative impact on development if necessary measures are not implemented. Negative sign of official assistance development and aid transfers persists in these regression results as well, being significant at 10% confidence level. And their negative effect on economic growth has increased slightly with GMM models. Here, there is one economically meaningless result as FDI has now negative sign, however it is highly insignificant in explaining the per capita income growth. Trade openness is still positive in GMM models but is has become insignificant.

From the results of both static and dynamic models, I have found direct positive effect of remittances on growth of per capita GDP. Application of GMM method based on Arellano-Bond estimation technique to address the endogeneity problem in the model, has proposed even higher direct impacts of remittances on development in these countries. The positive direct effect may have originated from the fact that remittances can ease the transactions by providing hard currency, as IMF (2005) states that for many developing countries, remittances constitute one of the largest sources of foreign exchange. These countries, especially transition economies, attempt to import primarily machinery and technology from outside after they became independent from the Soviet Union. Therefore, the direct positive effect of remittance revealed by the findings in this paper is plausible, because these machinery and technology increase the productivity and lead to development. Besides their direct impact, remittances can have indirect impact on the economic growth through



affecting the capital accumulation, TFP growth etc. as discussed in the theoretical part of the paper.

### 6.3. Results from regression of remittances on physical and human capital.

Direct positive effect of remittance flows on economic growth found in the previous analysis. Now, the channels through which remittances affect the growth of per capita income will be assessed. For that, we regress the gross capital formation and enrollment rate on remittances along with other independent variables. These regression equations based on the research paper by Jongwanich (2007) as stated earlier in methodology. The first equation the gross capital formation is regressed on explanatory variables such as remittances, per capita income, consumption, official development assistance and aid, and real interest rates (rint). In this equation all variables are in logarithmic forms except real interest rates because there are some negative values of real interest rates.

**Table 8. Remittances’ effect on physical capital.**

	Dependent variable: gross capital formation	
	Fixed effects	GMM
Constant/ ini.gcf	2.63 (2.28)	0.67 (0.08)***
Rem	0.0065 (0.0079)	0.06 (0.042)
GDP per cap	0.182 (0.06) ***	-0.045 (0.09)
Cons	0.178 (0.293)	0.17 (0.12)
Aid	-0.081 (0.136)	-0.097 (0.18)
Rint	-0.006 (0.0027)**	-0.003 (0.0025)

Robust standard errors are in parenthesis. \* indicates significance at 10% confidence level, \*\* at 5% confidence level and \*\*\* at 1% confidence levels respectively. Instead of constant, in GMM model the coefficient of lagged gcf is given.

In this regression the dependent variable is log(gcf) and the coefficients of all independent variables- remittances, per capita income, final consumption expenditure, official

development assistance and aid transfers and real interest rates- are estimated. The results indicate that remittances have positive effect on the gross capital formation in fixed and GMM models, although their effect is insignificant. The implications of income on capital accumulation are expected to be positive but only in fixed effects model, the coefficient of per capita income is positive. It is significant as well in fixed effects model. In GMM model coefficient of per capita income is negative and it is insignificant. Consumption and real interest rates are expected to affect capital formation negatively. However, consumption has unexpected sign in the both models regardless of their insignificance in explaining physical capital accumulation. Real interest rate is significant in the fixed effects model but it has negligible coefficient as doubling interest rate tends to lower investment in capital formation by very small amount of 0.006. So, generally speaking, the remittance transfers don't have significant influence on the formation of physical capital.

Now we turn the attention towards the second form of capital accumulation which is human capital. Although in static model enrollment has negative sign while in the dynamic model its sign is positive but not significant, human capital is important for the development. Therefore, it will be of high importance to estimate the effect of remittances on human capital. To estimate the relationship between human capital and remittances, the enrollment rate to the secondary school, as it is the measure of human capital throughout this paper, is regressed on independent variables such as remittances, per capita GDP, consumption and official aid transfers.

The expected signs of the independent variables are as follows: remittances could enhance education and therefore its sign is supposed to be positive, as well per capita income. If governments use official assistance transfers and aid funds received to improve educational systems in the countries, then these aid funds could have positive effect on human capital. Sign of consumption coefficient is expected to be negative.

**Table 9. Remittances' effect on human capital.**

	Dependent variable: enrollment rate	
	Fixed effects	GMM
Constant/ ini. Enr	1.63 (0.69)**	0.38 (0.13)***
Rem	0.045 (0.0041)***	0.037 (0.018)**
GDP per cap	-0.062 (0.021)***	-0.012 (0.02)
Cons	-0.099 (0.049)**	-0.05 (0.06)
Aid	0.13 (0.043)***	0.015 (0.02)

Robust standard errors are in parenthesis. \* indicates significance at 10% confidence level, \*\* at 5% confidence level and \*\*\* at 1% confidence levels respectively. Instead of constant, in GMM model the coefficient of lagged enrollment is given.

The signs of the coefficients are in accordance with the expectations except the sign of per capita income in the fixed effects model. The fixed effects model also indicates that all independent variables are significant. Remittances add positively and statistically significantly to the human capital accumulation in this fixed effects model. Doubling remittances would lead to approximately 5% increase in human capital accumulation. In the GMM model all explanatory variables' signs are not contradicting the expectations. This model indicates, as well as the fixed effects model, the positive implications of remittances on human capital accumulation and it is statistically significant. However, all other explanatory variables have become insignificant in the GMM model. So, the latter two models of unbalanced panel data support the argument that remittances have positive impact on human capital accumulation, and the impact is bigger in fixed effects model.

## 7. Conclusion and recommendations for further research.

The primary purpose of the paper is to investigate the implications of remittances on the economic growth of 10 selected countries from Asia and the South

Caucasus. The results indicate that remittance transfers have positive impact on per capita income growth in these countries. According to the empirical results doubling the remittances would lead to 5-9% increase in growth per capita income relative to the choice of model in this paper. Further analysis of channels through which these impacts turn into economic growth are conducted. The results show that remittances have no impact on physical capital accumulation. However, the effect of remittances on human capital is positive and its coefficient is statistically significant. Regression results indicate that doubling the remittances could lead to approximately 5% increase in human capital accumulation. Generally, overall effect of remittances on economic growth is positive.

However, Gupta et al (2007) argue that remittances cannot be either a cure or substitute for a sustained and domestically engineered endeavor for solving the problem of low income countries. Besides, large scale emigration could have severe negative impacts on the domestic economy in sectors of education, manufacturing and research and development if the emigrants are highly skilled or highly educated young people. Migrant remittances could help to educate more young generations which can lift the burden of difficulties on financing education, but should not be viewed as the only source of economic growth. The governments could concentrate more on other sources of growth, while attempting to turn these remittances into more productive sectors of the economy.

The remittances have been a large source of income for millions of people and households around the world for the last 3-4 decades and they make quite big share of GDP in several countries. However, it is difficult to exhibit any one country as a success story of economic growth based on remittance inflows. Therefore, it seems that the negative impacts of remittances such as the Dutch disease, moral hazard problems associated with local government and “brain drain” which is followed by large scale emigration of skilled labor, may be more severe than the positive effects that our findings suggest. But I do believe that

finding the ways that can channel remittances into productive means and investments in the economy can boost economic growth. That can help to lift up massive population out of poverty. These are the hope and belief of me and millions of people in these countries of our analysis throughout this paper.

Moreover, further research in other channels through which remittance impact on development, can shed light on the matter and help to better understand the effects of remittances on economic growth. The policy that how the governments of recipient countries can channel these remittance inflows into efficient and effective means and investments along with research in more channels of how remittances affect economic growth are beyond the scope of this paper and can be recommendations for further research in this field.

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## Appendix

### Summary statistics and data description.

	Mean	St. dev.	Min	Max
GDP per capita (current USD)	1127.2	1359.6	139.41	8513,56
Remittances received (millions, in current USD)	1216.6	1944.9	1.24	10523.1
Gross capital formation (% of GDP)	23.4	8.4	4.03	57.99
Enrollment rate (% , secondary)	74.6	24.6	17.6	105.62
Official development assistance payment and official aid (millions, in current USD)	437.76	528.22	12.3	2780.61
Foreign direct investment, net inflows (millions, in current USD)	968.2	210.59	1.9	15779.8
Openness of country measured with trade ((exp+imp)/GDP)	0.8	0.4	0.3	2.00
Fertility rate (per woman)	2.7	0.9	1.6	5.3
Final consumption expenditure (% of GDP)	84.3	18.1	35.1	134.2
Real interest rate*	15.1	15.5	-19.7	84.0

Table 8. Data description.

\*interest rates for Kazakhstan, Turkmenistan and Uzbekistan are not real interest rates.