

REMITTANCES AND ECONOMIC CYCLES – EVIDENCE FROM 11 TRANSITION COUNTRIES¹

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Abstract:

The paper investigates the nature of cyclicity between remittances and the GDP in 11 remittance receiving countries over the period 1993-2015. The findings show that remittances towards transition countries seem to be rather procyclical, in 4 countries there is a downturn in remittances when GDP decreases and vice-versa. Only in one country remittances are found to be countercyclical. For the remaining 6 countries, no pattern of cyclicity is found, the character of remittances being assessed as acyclical. The final part of the paper discusses possible explanations for these findings focusing on possible correlation of the sending and receiving countries' GDP.

Keywords: Remittances, Economic cycle, Migration, Transition countries

JEL Classification: F24, F22, E32, F32, F35

Shrnutí:

Studie se zabývá výzkumem cyklického vztahu remitencí a vývoje HDP v 11 zemích, které byly v období 1993 až 2015 příjemcem remitencí. Závěrem je prokázání spíše procyklického vztahu v případě tranzitivních ekonomik, v případě 4 zemí došlo k snížení remitencí v případě poklesu HDP (a naopak). Pouze v případě jedné země byl identifikován proticyklický vztah. Šest zbývajících zemí nevykazuje žádný vztah mezi ekonomickým cyklem a vývojem remitencí. Závěrečná část statě popisuje možné vysvětlení těchto zjištění se zaměřením na možnou korelaci mezi HDP vysílajícího a přijímajícího státu.

Klíčová slova: remittance, hospodářský cyklus, migrace, tranzitivní země

Introduction

Economic migrants usually send a certain share of their income to their families in the home country. These financial flows are a considerable source of income for receiving countries, in some cases even exceeding not only official development assistance, but also incoming foreign direct investments. Recorded remittance flows towards transition

1 This paper was prepared as an output of the research activity of the Faculty of International Relations of the University of Economics, Prague.

countries² were estimated to be 19,6 billion USD in 2015 (falling from 28,3 billion in 2014³), an amount representing over 4,5 % of their GDP in the year 2015, 5,3 % in 2014 (World Bank 2017a, own calculations). While not being amongst the top remittance-receiving countries in absolute terms, in relative terms (as percentage of GDP), three former Soviet Union members⁴ are in the top five worldwide (WB, 2017b).

Background and literature review

There are various views on remittances prevailing in the economic literature. In some cases, remittances are thought to increase economic dependency of receiving countries and distort economic development, serving as a transfer mechanism for economic cycles from sending countries towards recipient countries. Other studies point out that remittances serve as an important mechanism for internal development of receiving countries, facilitating access to better healthcare, education, encouraging business. Furthermore, remittances can reduce volatility of economic growth in these countries as they prove to be relatively resilient when compared to other types of financial flows.

There are numerous studies on how remittances affect receiving regions. Early studies on remittances were elaborated by Stark and Bloom (1985), Russell (1986). Later, the study of remittances divided into various directions. Most studies focus on the impact of remittances on development in migrant sending countries (economic growth, poverty, education, entrepreneurship, etc.). There are also studies that deal with the techniques of collecting remittance data (Reinke, 2007, Kapur, 2004). Much work concerning remittances and migration is being done by the World Bank, which has made attempts to examine both official and unofficial remittance flows (Maimbo and Ratha, 2005).

The literature on how remittances affect GDP in recipient countries is relatively rich. A recent study from Barajas et al. (2012) concluded that remittance flows significantly increase business cycle synchronization between receiving countries and the sending countries. The remittance channel was found to be an asymmetric transmitter, remittances being more effective in transmitting economic downturns than booms.

Hossain and Anjum (2014) have assessed the impact of remittances on the Pakistani GDP. The authors found a positive and significant connection between these two indicators. The authors even suggested that the government should support remittance inflows by establishing facilitation centers abroad and providing migrants with remittance cards.

Sayan (2006) investigated cyclicity of remittances with respect to their business cycles in 12 developing countries. He concluded that the character of cyclicity is strongly influenced by country-specific factors, while for the whole group he found that remittances are countercyclical with a one-year lag. Later papers from this author confirm that country-specific factors are crucial, for example Durdu and Sayan (2008) found that remittances to Mexico are countercyclical, while in Turkey they have a procyclical character.

2 Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

3 This fall is caused by the depreciation of Russian Ruble in 2015

4 42 % in Tajikistan, 30 % in Kyrgyz Republic and 26 % in Moldova

A more recent paper from Jidoud (2015) investigated the channels and mechanisms through which remittances affect macroeconomic volatility (output and private consumption volatilities) in African countries. He concluded that remittances have a significant smoothing impact on output volatility in these countries.

Isakovic and Ilgun (2015) have investigated cyclicity between remittances and output in Bosnia and Herzegovina. They found very strong positive cross correlation between remittance inflow and a GDP, concluding that that remittance inflow and Bosnian GDP tend to behave pro-cyclically.

While it is obvious that the relationship between remittances and output in the receiving economy varies across countries, Ruiz and Vargas-Silva (2004) argue that this relationship is not steady over time. In the same country it could be positive over certain time periods and negative during other periods.

This lack of similarity amongst countries and steadiness in time could be explained in many ways. One of the factors could be the changing institutional infrastructure for international money transfers. There are many ways to transfer money to the country of origin. The traditional formal ones are electronic transfers via specialized agents (like Western Union), electronic transfers from one bank account to another, transfers using electronic cards, etc. Significant but unknown amounts of money are transferred through unrecorded informal channels. This makes very difficult to estimate the true amount of remitted money. It is nevertheless estimated that with the rise of new technologies the share of informal channels decreases. New technologies have made a big difference for developing countries during the latest decade. The so-called “mobile money”⁵ have compensated limited infrastructure and thus access to financial services in developing countries.

For recipient countries it is important to understand how remitters behave. This knowledge is necessary in order to develop adequate policies. For example, knowing that remittances have a procyclical behavior, policymakers would could try to facilitate incoming transfers in times of economic hardship (for example by influencing remittance costs⁶). On the other hand, knowing that remitters behave countercyclically, could be useful when pursuing economic reforms with a potential negative impact on certain groups of population.

The current paper contributes to the existing literature by empirically examining behavior of remitters towards transition countries. Due to availability of data, a group

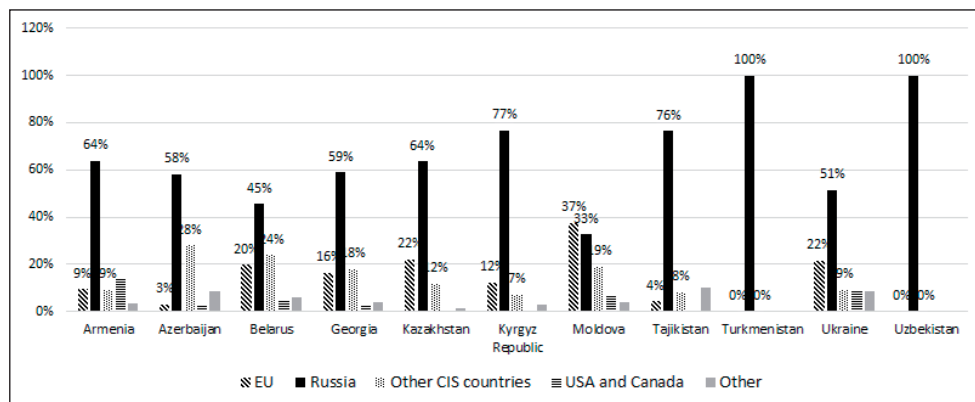
5 The first mobile money service was M-PESA in Kenya offered by a local mobile network Safaricom (“M” stands for “mobile”, “PESA” means “money” in Swahili). It has rapidly expanded to other countries in Africa and Asia (IOM, 2014)

6 Aycinena et al. (2010) have led a field experiment which confirmed that lowering transaction fees lead to an increase in remittance flows. In a partnership with a local provider of financial services they randomly offered migrants various discounts on transaction fees. They concluded that a 1 USD cut on transaction costs led to an increase in the remitted amount by 25 USD. Not surprisingly, the channel of increase was not the amount sent per transaction, but the frequency of transactions. The authors mentioned that there was „no evidence that this increase in remittances represents shifting of funds previously sent via other remittance channels, funds sent on behalf of others, or intertemporal substitution of funds that would have been sent later“.

of eleven countries was selected. Transition countries have experienced intense emigration after the fall of the Soviet Union. The yearly net emigration rate for the 11 countries has been 3 % in 1992 and people are continuing to emigrate from these countries at a rate of 0,2 % in the latest years⁷ (World bank 2017a, own calculations). These countries have certain common geographical, cultural and economic features, currently facing numerous problems related to political and economic instability (WEF, 2016). Immigrants coming from this area are relatively highly skilled; they have good premises to integrate in the host country both due to their language skills and cultural proximity to both Asian and European cultures.

The share of remittances on GDP is nevertheless not even through the analyzed group of countries. While some of them are highly dependent on money from migrants (Kyrgyz Republic, Moldova, Tajikistan), other report a nearly zero share of remittances on GDP (Turkmenistan, Kazakhstan) (World Bank 2017a, own calculations). The source of remitted money does prove to be similar for all 11 countries. As Figure 1 shows, in all cases the main source is Russia (from 51 % in Ukraine to 100 % in Uzbekistan). The only exception is Moldova with a share of 33 % of remittances originating in Russia. On the other hand, EU appears as an important source of financing for some of the countries in the dataset: Belarus (20 %), Kazakhstan (22 %), Ukraine (22 %), Moldova (37 %).

Figure 1 | Source of remittance receipts by country in 2015 (as a share of total remittances)



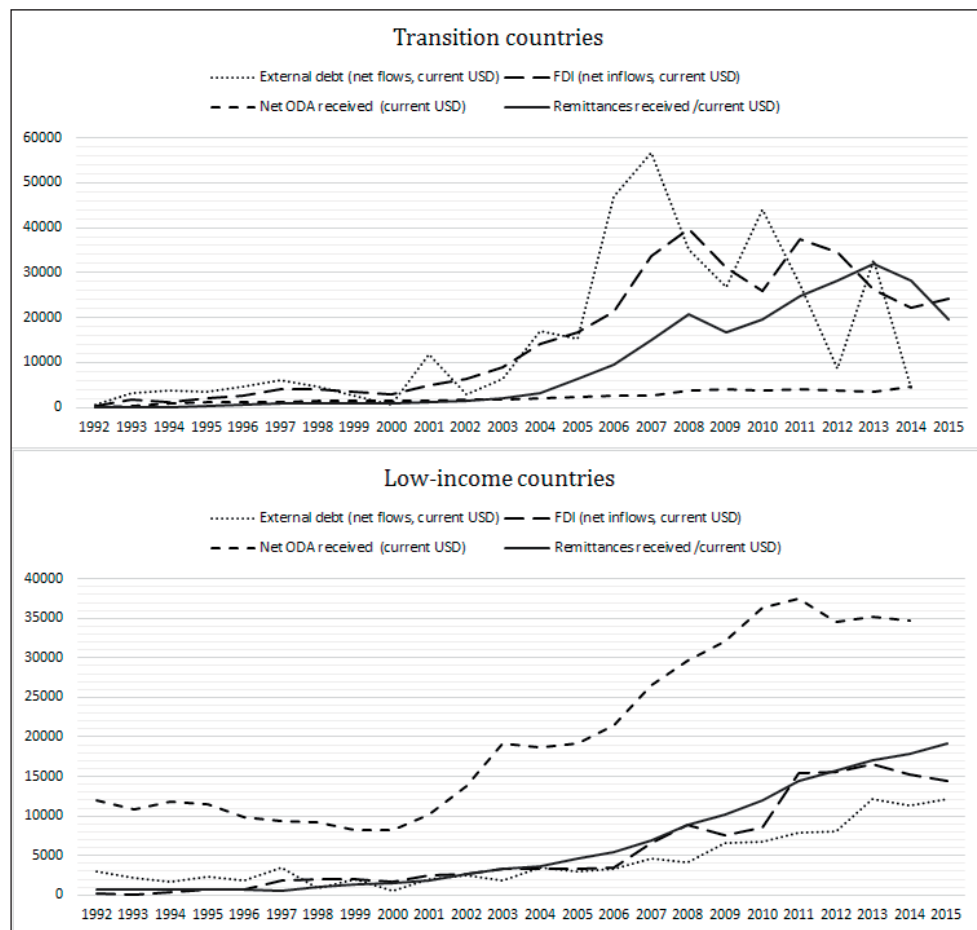
Source: World Bank, 2017a, own calculations

Figure 2 shows how remittances and other capital flows have developed over time. As a comparison, the bottom graph indicates the data for low-income countries. In both cases remittances prove to be resilient over time. Unlike other capital flows, remittances represent numerous small transfers between private individuals, often family members. This can partly explain why they have proven to be relatively less volatile than other financial flows. When observing the upward trend of remittances, one needs to keep in mind the rise of new technologies, which made transfers cheaper and available to

⁷ As a comparison, low-income countries have a net emigration rate oscillating between 0,2 %-0,5 %.

a larger number of migrants. The relatively low amounts of remittances in the past as seen in Figure 2 can reflect the fact that initially unofficial channels of transfer were preferred.

Figure 2 | Remittances receipts by transition countries and low-income countries compared to other external financial flows (billions USD, current prices)



Source: World Bank, 2017a, own calculations

Data

In this section, the paper analyzes how remittances react to changes in the receiving countries' output for each of the selected countries individually. The calculations were made for 11 countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan), using annual data between 1993 and 2015. In fact, only for two countries data covering the whole period was available (Belarus and Kyrgyz Republic), for some countries the data covered a much

shorter period (only 10 years for Turkmenistan and Uzbekistan). The reason for the data limitation are mainly the institutional changes after the fall of the Soviet Union, many of the transition countries had started to gather and report statistical data years after their establishment as independent states. To deal with this limitation, quarterly data could be used. This is however not the case of transition countries, as data broken down by quarters is not available.

Real GDP and real remittances served as input data. The real GDP was extracted from World Bank Databank, while real remittances were obtained by multiplying the share of remittances on GDP by the real GDP (for details on the Databank see World Bank, 2017a. The first step of the analysis is to detrend the time series⁸. Detrending was done by using a polynomial of degree k for output (see Equation 1) and remittances (see Equation 2). The paper follows the detrending methodology used in Sayan (2006).⁹

$$y_t^T = \alpha_0 + \alpha_1 t + \alpha_2 t^2 + \alpha_3 t^3 + \dots + \alpha_k t^k \quad (1)$$

$$r_t^T = \beta_0 + \beta_1 t + \beta_2 t^2 + \beta_3 t^3 + \dots + \beta_k t^k \quad (2)$$

After removing the trend, three types of correlations between cyclical components of real output and real remittances were run:

- contemporaneous correlation (between real output for year t and real remittances for year t)
- asynchronous correlations (remittances shifted backward or forward by one year compared to GDP)
- asynchronous correlations (remittances shifted backward or forward by two years compared to GDP)

These types of correlations were run to identify possible delays or anticipations in the way remittances responded to output shifts.

Results and discussion

The results of contemporaneous and asynchronous correlations are shown in Table 1 (Pearson correlation was run). The figures highlighted in bold represent the correlations with the lowest p-value.

8 Detrending by eliminating the estimated time trend makes possible to calculate deviations (cyclical components) of real GDP and real remittances from the trend. These cyclical components would be stationary to zero making possible to statistically assess procyclicality (in case remittances will be on the same side of the trend as output) or countercyclicality of remittances (in case remittances will be on the opposite side of the trend than the corresponding output value). The absence of any procyclical or countercyclical character will be interpreted as acyclicality of remittances.

9 As Sayan (2006) mentions, polynomial filters produce similar results to Hodrick-Prescott filter.

Table 1 | Results of correlation analysis

Pearson correlation coefficients	Remit(t-2)	Remit(t-1)	Remit(t)	Remit(t+1)	Remit(t+2)
ARM	0,404	0,459**	0,193	-0,004	-0,217
AZE	-0,154	0,212	0,370*	0,247	-0,176
BLR	0,481**	0,521**	-0,080	-0,756***	-0,455**
GEO	-0,226	0,186	0,485**	0,193	-0,198
KAZ	0,134	-0,020	-0,351	-0,350	-0,145
KGZ	0,154	0,144	0,188	0,137	-0,142
MDA	-0,149	0,364	0,651***	-0,229	-0,040
TDJ	0,158	0,554**	0,496*	-0,285	-0,529*
TKM	-0,539	0,539	0,250	-0,508	0,040
UKR	-0,001	0,051	0,027	0,098	-0,181
UZB	-0,045	-0,093	0,558	-0,007	-0,822

Note: Significance levels: *** p-value < 0.01 ; ** p-value < 0.05; * p-value < 0.10

Source: own calculations based on World Bank, 2017a

Table 2 summarizes the results. Remittances seem to be countercyclical only in Uzbekistan, while in 4 other countries (Armenia, Georgia, Moldova and Tajikistan) they are procyclical. No specific pattern of cyclicity was detected in the remaining 6 countries (Azerbaijan, Belarus, Kazakhstan, Kyrgyz Republic, Turkmenistan and Ukraine).

Table 2 | Character of correlation between real HDP and real remittances

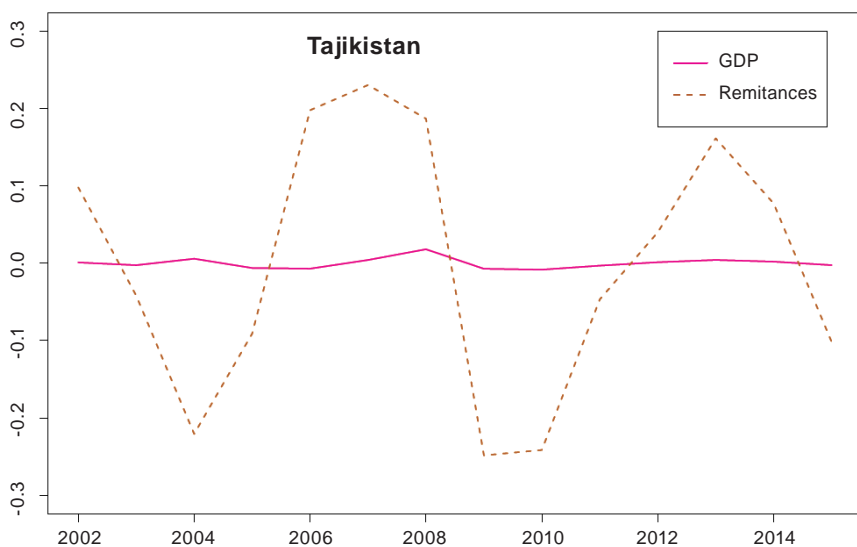
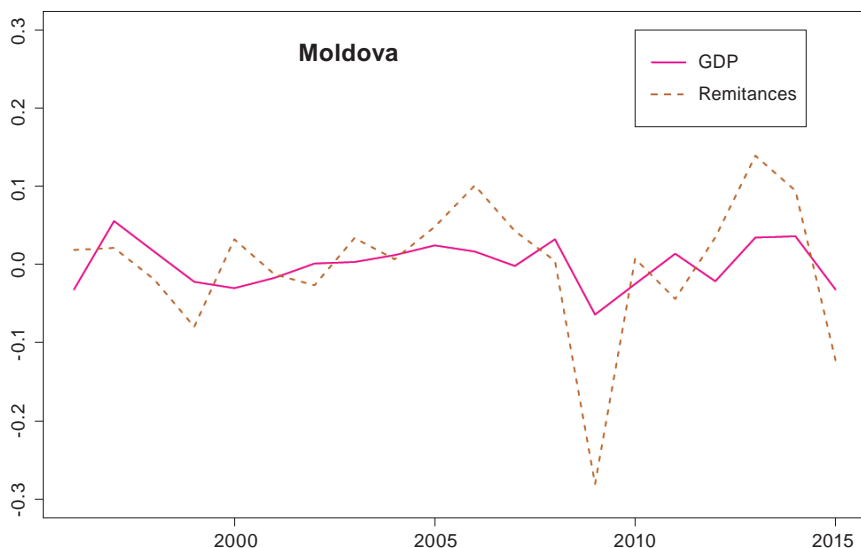
	Character of correlation (coefficient)	Share of remittances on GDP (2015)	Main sources of remittances	Length of time series (number of years)
ARM	procyclical (0,459)	14,2%	Russia (64%)	21
AZE	acyclical	2,4%	Russia (58%)	21
BLR	acyclical	1,4%	Russia (45%)	24
GEO	procyclical (0,485)	10,4%	Russia (59%)	19
KAZ	acyclical	0,1%	Russia (64%)	21
KGZ	acyclical	25,7%	Russia (77%)	24
MDA	procyclical (0,651)	23,4%	EU (37%), Russia (33%)	20
TDJ	procyclical (0,554)	28,8%	Russia (76%)	14
TKM	acyclical	0,04%	Russia (100%)	10
UKR	acyclical	3,4%	Russia (51%)	20
UZB	countercyclical (-0,822)	8,8%	Russia (100%)	10

Source: own calculations based on data of World Bank, 2017a and 2017c

For Armenia, Georgia, Moldova and Tajikistan the correlation coefficient is around 0,5 and is positive (see Table 2). This reflects a procyclical behavior of remittances respective to output. Remittances are synchronous in Moldova and Georgia (no time shift) and asynchronous in Tajikistan and Armenia (remittances react with a one-year delay to changes in output) (see Table 1). The last column of Table 2 indicates the length of time series for each country, as this is an important limiting factor of the analysis. Figure 3 shows the evolution of cyclical components for these four countries

Figure 3 | Evolwution of cyclical components for Armenia, Georgia, Moldova and Tajikistan

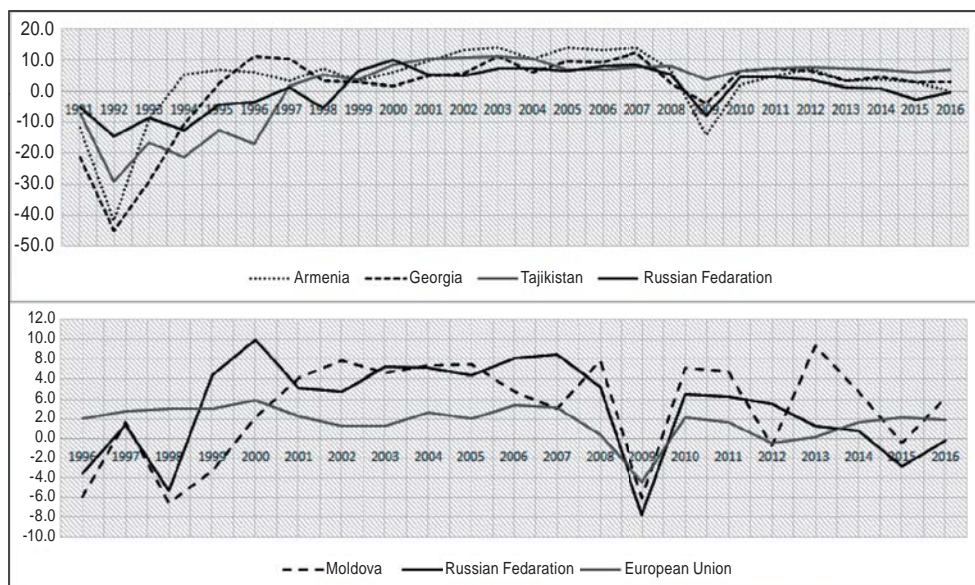




Remitters from these four countries lower their money transfers during economic downturn at home and vice versa, when GDP rises, remittances inflows also increase. This could indicate that their main motive to remit is to support investment and at a lesser extent to smooth consumption at home. Remitters could be risk averse, not trusting the home country in times of economic hardship and preferring to spend (or save) their gains otherwise than sending them home. Another plausible reason could be that that remittances are simply affected by the economic cycle in the remittance-sending

country. Given the fact that the share of remittances on GDP in these countries is high (14,2 % in Armenia, 10,4 % in Georgia, 23,4 % in Moldova and 28,8 % in Tajikistan in 2015), remittances might act as an economic cycle transmitter. Economic hardship in the countries where migrants are employed implies loss of jobs, reduction of wages, all these factors would cause a drop in amounts remitted. As Figure 4 suggests, economic cycles in Armenia, Georgia Tajikistan and to a certain extent Moldova have similar paths to the economic cycle in Russia (which is the main source for remittance flows for all these countries except Moldova). When there is less (or more) to remit because of economic downturn (or upturn), remittances would in fact act as a transmitter of economic cycle.

Figure 4 | Comparison of GDP growth in remittance-receiving and main remittance-sending countries (in %) – Armenia, Georgia, Moldova and Tajikistan

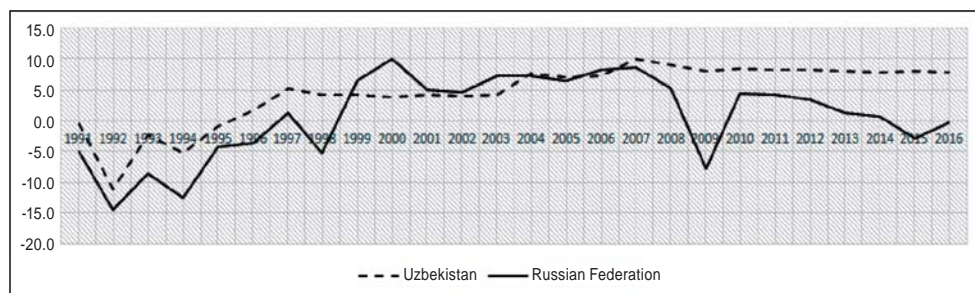


Source: World Bank, 2017a

The results for Uzbekistan indicate that Uzbek remitters increase money transfers towards their home country when GDP at home decreases and vice-versa (see correlation coefficient in Table 2). Furthermore, remittances react to changes in GDP with an anticipation of 2 years (see Table 1). These results are counterintuitive, as it seems quite improbable for migrants to anticipate changes in the home country GDP and act accordingly years in advance. In the case of Uzbekistan, the results were probably biased by the limited number of observations (only 10 years).

For the remaining 6 countries (Azerbaijan, Belarus, Kazakhstan, Kyrgyz Republic, Turkmenistan and Ukraine) the analysis did not show any correlation between remittances and economic cycles at home. Except Kyrgyz Republic, all these countries have a low share of remittances on GDP (under 3,5 %), which could be an explanation.

Figure 5 | Comparison of GDP growth in remittance-receiving and main remittance-sending countries (in %) – Uzbekistan



Source: World Bank, 2017a

In the case of Kyrgyz Republic, the share of remittances on GDP is 25,7% with 77% of them coming from Russia. The length of time series is 24 years, which is the longest in the dataset (together with Belarus). Given these numbers, one would expect a certain connection between the country's GDP (which could be correlated with the one of the Russian Federation) and behavior of remitters. The results obtained imply the question why there was no correlation found. One of the reasons could be the reliability of data on remittances. Even if official channels gain territory in time, there is still a high share of transfers which are not kept track of.

Table 3 | Spearman correlation coefficients

Pearson correlation coefficients	Russia	EU
ARM	0,606***	0,183
AZE	0,714***	0,334
BLR	0,565***	0,457**
GEO	0,263	0,114
KAZ	0,758***	0,245
KGZ	0,150	0,050
MDA	0,386*	-0,253
TDJ	0,606***	-0,116
TKM	0,104	-0,047
UKR	0,824***	0,302
UZB	-0,081	-0,271

Note: Significance levels: *** p-value < 0.01 ; ** p-value < 0.05; * p-value < 0.10

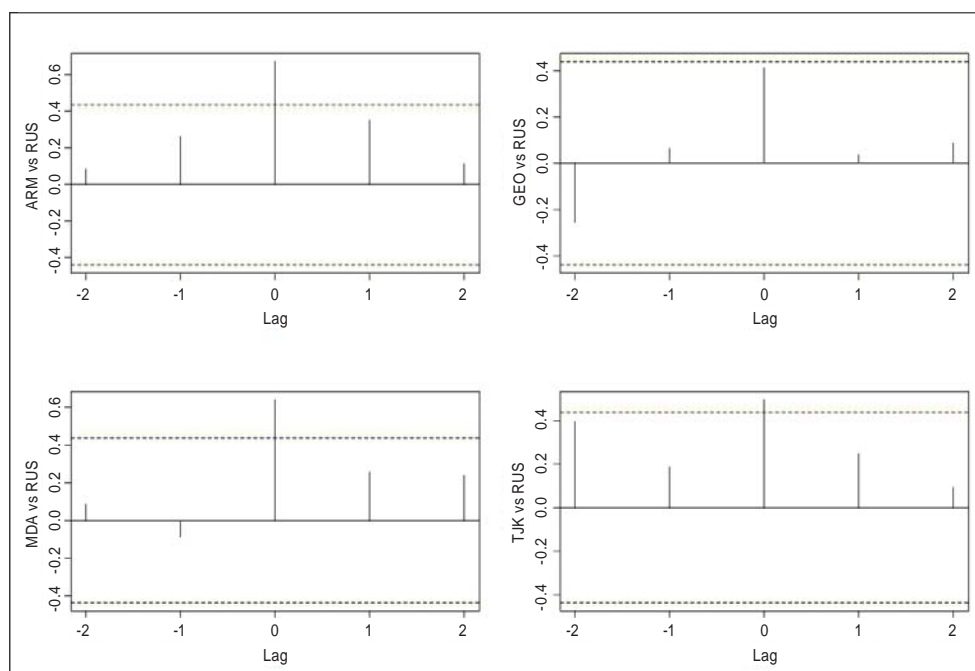
Source: own calculations based on World Bank, 2017a

To test the connection between sending and receiving countries' GDP a correlation analysis was run. The input data were the GDP growth rates of all 11 transition countries on one hand and Russia and EU on the other hand (EU being relevant mainly for Moldova). To better capture the correlations between countries, the input data was normalized using a technique called quantile normalization¹⁰.

Table 3 shows the results of the Spearman correlation analysis. The values highlighted in bold represent the values with the lowest p-value.

The results of the correlation analysis seem to indicate a certain correlation between the GDP growth rate in transition countries and Russia. This is especially the case of Armenia, Azerbaijan, Belarus, Kazakhstan, Tajikistan, Ukraine and to a certain extent Moldova. In four of these countries (those for which patterns of procyclicality of remittance were found) a Pearson correlation analysis between their and Russian GDP growth was run, including testing possible time shifts. Figure 6 shows the results.

Figure 6 | Autocorrelation functions for GDP growth between Russia and selected transition countries



In Armenia, Georgia and Tajikistan the GDP growth rate is synchronous with Russia. The value of correlation coefficient without any shift in time (i.e. with lag = 0) is over the calculated value of statistical significance at 5% (denoted by horizontal dashed lines at the figure). Contrary to the results from Table 3, there is no time lag for Armenia and Tajikistan, while remittances reacted with a delay of one year.

10 For more information on the technique see Martin, 2015. Due to normalization, potentially broad trends of GDP (for example overall growth in time) are eliminated, making possible to observe other interesting characteristics of the dataset.

Conclusions

The results of the analysis indicate that remittance receipts react rather procyclically to the economic activity in the home country in Armenia, Georgia, Moldova and Tajikistan, countercyclically in Uzbekistan (with serious suspicions on biased results due to limited data), while in the other countries no pattern of cyclicity was found. Countries with acyclical character of remittances also have a low share of remittances on GDP except for Kyrgyz Republic.

While countercyclical behavior of remittances indicates the prevalence of consumption smoothing motive of remitters, procyclical movements of remittances and output speak about remitters' risk aversion and predominance of investment reasons over consumption reasons of remitting. Another reason for remittances' procyclicality is the synchronicity of economic cycles in remittance sending and receiving countries. The basic correlation analysis run in the final part of the paper confirmed this suspicion, especially in the case of those transition countries with procyclical character of remittances.

The analysis showed that transition countries form a specific group of countries in terms of data availability. The results of the analysis could be improved by increasing the number of observations in the dataset. As adding more years is not possible due to structural and institutional changes of these countries after the fall of the Soviet Union, the use of more detailed data (for example quarterly or monthly data) comes into consideration. Another option could be to divide the time series into shorter period of times and try to identify patterns of cyclicity over these smaller time periods. However, the practical use of this method is limited due to the low number of observations (years).

The last conclusion regards reliability of remittance data. It is well-known that besides official channels, migrants also make use of unofficial money transfer channels, geographical proximity of transition countries and the main remittance source country being a strong reason for that. Technologies and information are increasingly accessible in time, migrants tend therefore to switch to official channels. The uneven capturing of genuine remittance flows in time can cause biased results.

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