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Remittances and Business Cycles in North Macedonia: A Reliable Relationship?

Rilind Ademi - Mother Teresa University – Skopje (rilind.ademi@unt.edu.com)

Kreshnik Bekteshi – independent researcher (kreshnik.bekteshi@hotmail.com)

Valon Ramadani - Mother Teresa University – Skopje (valon.ramadani@unt.edu.mk)

Abstract
Workers' remittances are often argued to have a tendency to move countercyclically with the GDP in recipient countries since migrant workers are expected to remit and support more during downturn cycles of economic activity back home. This paper aims to analyze the behavior of remittances during the recent Covid-19 pandemic crisis, and the response they gave during the downturn in business cycles during that period. In general, the results tend to be country-specific and show that, for some migration and remittance corridors, remittances are counter-cyclical while, for others, they are pro-cyclical, and for this reason we will try to study the behavior of remittances in North Macedonia in recent years with a focus on the recent crisis, to see their procyclical or countercyclical nature. By combining descriptive analysis with regression models, the findings point clearly toward a predominantly procyclical pattern, especially with respect to economic conditions in the European Union—the main host region for Macedonian migrants.
Keywords: business cycles, North Macedonia, countercyclical hypothesis, migrant transfers, external vulnerability, EU economic conditions**.**
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1. Introduction

Remittances sent by migrants are highly relevant for several developing countries. In 2019, they represented 1.6 percent of GDP for low and middle-income countries. This is roughly equivalent to the share of foreign direct investment inflows (World Bank 2020). For this reason, understanding which factors drive remittances is critical for recipient economies. There are at least two key drivers of international remittances that have been identified in the literature. First, economic conditions at the migrant's place of destination. In this case, remittances could increase (decrease) if labor market conditions improve (deteriorate) in the destination economy. Second, economic conditions in the recipient economy. In this case, remittances could act as a co-insurance mechanism for the family and could increase if economic conditions deteriorate in the origin economy. Therefore, remittances could act as a cushion to smooth consumption during harsh times.

In contexts where formal mechanisms of insurance and social protection are weak, international migration and remittances have been portrayed as informal mechanisms that diversify household income and buffer negative income shocks in migrants' countries of origin (Amuedo-Dorantes, Catalina, & Pozo, 2011) (Combes & Ebeke, 2011). Remittances tend to increase in response to economic crisis (Yang), natural disasters (e.g., Halliday 2006; Yang and Choi 2007) or idiosyncratic household-level shocks such as health-related events (Christian & Cuecuecha, 2013) (Juan, Olivié, & Onofa, 2011).

In addition to this increasing trend, remittances are often observed to be a generally less volatile source of funding than private capital flows that tend to move procyclically with the output in recipient countries. As a result, while the inflows of private capital often boost incomes during an upturn, they would reduce them further during a downturn causing any economic crisis in the recipient country to get even deeper. On the contrary, remittances are often argued to have the potential to increase during times of economic hardship in the home countries of migrant workers.

Sources of economic growth have been the focus of economists for more than half a century. Despite the rising magnitude of remittances at a global level, the empirical literature on the impact of remittances on economic growth is rather scarce. The majority of them cover Asian countries (Pakistan, Bangladesh, India, etc.), Latin American countries, and sub-Saharan countries, while only a few studies refer to European countries (Haller,

Butnaru, & Butnaru, 2018). SEE countries, as a group of countries, are underrepresented in these studies (Saadi, 2020) (Polat & Rodríguez Andrés, 2019) (De Haas, et al., 2019), although these countries have been experiencing a relatively stable inflow of remittances flows in the last two decades and are among the highest remittance recipients in the world (World Bank 2022). For most of these countries, remittances, followed by FDI, represent the largest source of external imbalances financing (Ratha, 2019). During the global financial crisis of 2008, remittances to SEE countries remained relatively stable and more sustainable than FDI and other capital inflows, mainly due to the social contract that binds migrants to their families in their home countries. After the crisis, they recovered faster than FDI, resuming the level of growth rates registered in the pre-crisis period. However, today they are again under threat by the most devastating shock that hit the global economy since the Second World War, the Covid-19 pandemic, which is simultaneously hurting both countries of origin and countries of destination.

However, the role of migrant remittances during shocks that hit origin and destination countries alike is uncertain. At the onset of the pandemic, most observers expected a decline in remittances due to soaring unemployment rates in many high-income countries and job losses among migrants (e.g., World Bank 2020). Although remittances fell globally, and the crisis also affected the workplaces where immigrants were located, initially there was a decrease in remittances in Macedonia, especially during 2020, but then a return to normal after a year and an increase after two years. This observation has been interpreted by some as a sign of resilience and evidence that migrants support their family left behind, even under adverse conditions at destination (Higgins & Thomas, 2020) (Ratha et al.2021). Others have questioned this interpretation, arguing that remittances data show an artificial increase because travel restrictions during the pandemic caused a shift from cash carried by travelers to formally registered wire transfers (Dinarte et al. 2021).

The phenomenon of the impact of remittances has been little studied for North Macedonia. In one of the directions of analysis we have the study of the impact of remittances on the trade balance and the current account (Ademi, Beqiri-Luma, & Bela, 2022). Also, the impact of remittances has often been seen through the prism of a group of countries including North Macedonia, e.g. it was proven that remittances have a positive impact on economic growth in 6 SEE countries (Bucevska, 2022).

We contribute to this debate by asking a questions: What is the elasticity of remittances with respect to origin and destination country shocks? We expect remittances to decline in response to higher unemployment at migrants' destination and to increase in response to lower employment at migrants' places of origin. Through statistical analysis, we will see which effect has been more dominant.

2. Important considerations regarding the nature of remittances

When migrants send home part of their earnings in the form of either cash or goods to support their families, these transfers are known as workers' or migrant remittances. They have been growing rapidly in the past few years and now represent the largest source of foreign income for many developing economies. It is hard to estimate the exact size of remittance flows because many take place through unofficial channels.

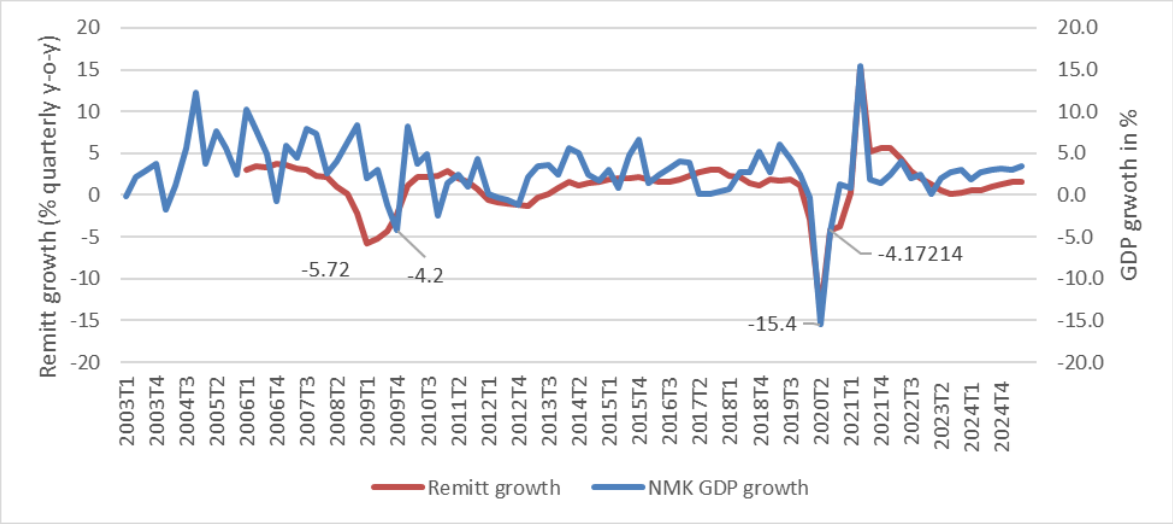
There is recognition in the literature that remittance transfers combine a complex mixture of motives for sending money back home - including altruism, repayment of loans, investment, and insurance arrangements (see Rapoport & Docquier, 2006).

These motives for remitting may provide insights into the expected response of remittances to cyclical fluctuations in home-country output. Take, for instance, the altruism motive in which migrants remit in order to improve the living conditions of their families back home. If the migrant cares about household well-being and if negative cyclical fluctuations affect an important share of the households in the home country, then remitters may respond to the economic downturn by increasing their money transfers. However, the intuition changes if we look at the investment motive. In this case, an economic downturn in the home country is likely to relate to fewer investment opportunities there, and remittances may decrease after negative cyclical fluctuations in output. Finally, if remitters send money home for reasons that are generally unrelated to home-country economic conditions (e.g. to cover a debt) then remittances may not be correlated with the cyclical fluctuations of the home country.

While these are suitable explanations for the cyclical behavior of remittances, it is important to note that simply looking at them does not provide us with sufficient information to identify and elaborate on the main motives for remitting on the part of migrants. First, any cyclical behavior may still involve individuals from the

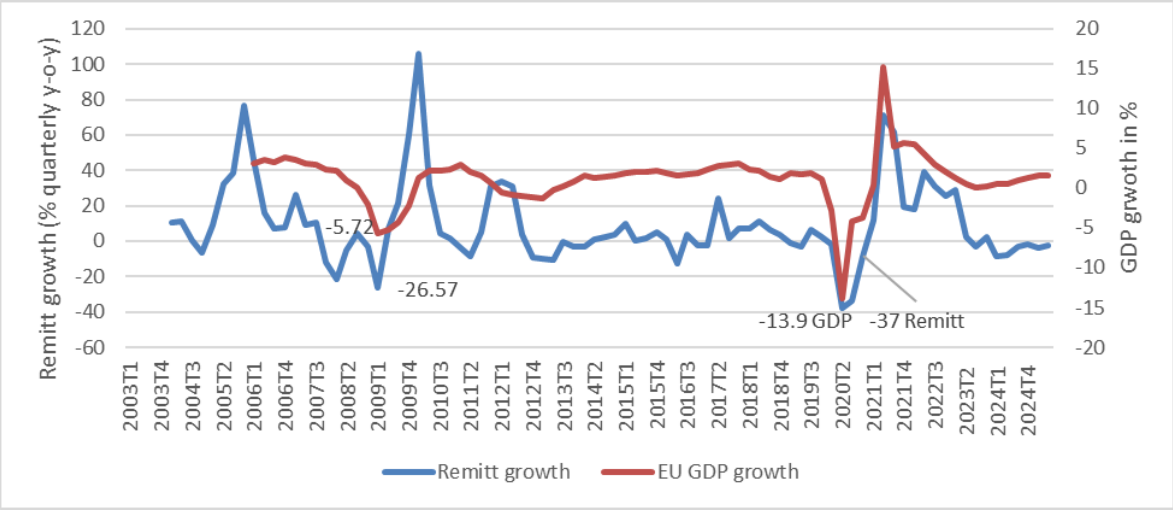
same country who remit for very different reasons. Second, the same individual may have multiple motives for remitting. Third, a downturn in the home country may lead to more emigration and, as a consequence, to a higher aggregate level of remittances, even if previous migrants are remitting less. However, to analyze this we would need a measure of remittances per migrant, but there are no high-frequency data on this issue. Fourth, many other things are at play in the real world, and the fact that remittances and home-country output both decrease could simply reflect the strong influence of a third factor - the EU economy. We present additional evidence on this point below. Finally, two or more motives for remitting may lead to the same prediction regarding the response of migrants to a downturn in the home economy and it is not possible to make a distinction between them. The general point is that, while the motives for remitting may have some impact on the cyclical behavior of remittances, the evidence in favor or against this counter- (or pro-)cyclical behavior does not provide information on the motives for remitting.

Figure1: Remittances and GDP in North Macedonia T12003-T42024



Source:Eurostat and stat.gov.mk

Figure 2: Remittances and GDP in EU for T12003-T42024



Source:Eurostat and stat.gov.mk

Figure 1 and 2 show the upward and downward trends of two variables; GDP growth and remittance growth (change in remittance flow on a quarterly basis compared to the previous year). Looking at figure 1 which shows the developments of these two variables for North Macedonia, we can see that in the two periods when there was an economic crisis (business cycle downturn) in 2009 as a result of the global financial crisis where the economic decline in the fourth quarter of 2009 was 4.2% is followed by a decline in remittances in the four quarters of 2009, where each quarter with a decline of 4-5% compared to the quarters of the previous year. Even in 2019-2021, as a result of the Covid-19 crisis, the economic decline during 2021 was around 4%, followed by a decline in remittances of 5% throughout the year and in each quarter of 2021 compared to the same quarters of 2020. This shows us a procyclical relationship between these two variables, which means that an increase in remittances is accompanied by economic growth, and conversely, a decrease in remittances is accompanied by economic decline.

In the figure 2, it shows the developments on the connection of remittances sent to Macedonia and the economic situation of the countries where they work. It is very likely that in crises where countries are widely affected, we have a decrease in remittances in the country of origin as a result of the deterioration of economic conditions in the host country. In fact, the procyclical nature of these two variables is also confirmed by the second figure, which brings economic ups and downs together with the fluctuations of remittances. During the global crisis period where economic declines in the EU reached 2.5%, remittances decreased to the level of 10.65%, and also during the Covid-19 crisis where economic declines reached the level of 4.9%, remittances decreased to the level of 18%. It confirms the procyclical connection of remittances and economic conditions in the host country. The same relationship can be confirmed by Figures 1.1 and 1.2 in the appendix, where the positive relationship between these two variables is seen, but seeing that the largest positive correlation is between the variables GDP in the EU and remittances.

3. Regression Model Specification

This dataset contains quarterly time series data from 2004 Q1 to 2025 Q2 with the following variables:

Remitt growth — growth rate of remittances (%) (Dependent variable)
NMK GDP growth — GDP growth rate of North Macedonia (%)
EU GDP growth — GDP growth rate of the European Union (%)
Lag1 EU_GDP — EU GDP growth lagged by one quarter
Lag1 NMK_GDP — NMK GDP growth lagged by one quarter
Lag2 NMK GDP — NMK GDP growth lagged by two quarters

The regression equation would be:

$$Remitt\_growth = \beta_0 + \beta_1(NMK\_GDP\_growth) + \beta_2(EU\_GDP\_growth) + \beta_3(Lag1\_EU\_GDP) + \beta_4(Lag1\_NMK\_GDP) + \beta_5(Lag2\_NMK\_GDP) + \varepsilon$$

In the appendix you can see the summary table and the ANOVA in detail, but interpretations can be made in this form.

- The model is statistically significant overall ($F = 5.235$, $p < 0.001$).
- $R^2 = 0.284$ indicates the model explains about 28% of the variation in the dependent variable.
- Adjusted $R^2 = 0.230$ suggests moderate explanatory power.
- Standard Error of 19.97 indicates the average prediction error magnitude.
- With 86 observations, the regression has adequate sample size.
- ANOVA confirms that at least one predictor significantly contributes to the model.

Table 1: Regression coefficients

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.84679	3.277209643	1.47893801	0.1431333	-1.676332729	11.36991	-1.67633	11.36991
NMK GDP growth	0.050244	0.793237514	0.06334096	0.9496549	-1.528655349	1.629144	-1.52866	1.629144
EU GDP growth	3.04	1.170751707	2.59662218	**0.011223****	0.709676866	5.370323	0.709677	5.370323
Lag1 EU_GDP	2.405313	1.415357663	1.69943821	**0.09317131***	-0.411886068	5.222512	-0.41189	5.222512
Lag1 NMK_GDP	-0.76388	0.854549554	-0.8938995	0.374090825	-2.46481983	0.937057	-2.46482	0.937057
Lag2 NMK GDP	1.482232	0.800660552	1.85126147	**0.06786899***	-0.111442931	3.075907	-0.11144	3.075907

Source: author's calculation

The dependent variable is growth of remittances (quarterly, year on year based) Remitt growth, to see how the independent variables (economic growth in the country of origin and in the host country affect remittances). They are also introduced with one and two time lags, knowing that an increase/decrease in GDP does not immediately reflect remittance flows. A positive causality (positive impact) has been proven in all two time series for the variable GDP growth in the host country (in this case EU GDP growth), which leads us to conclude that economic growth in the EU increases remittances and vice versa, confirming the procyclical behavior of this phenomenon. This is statistically significant at the 1% level, indicating a very strong link, where a 1% increase in EU GDP growth increases remittances by about 3.04 %. Lagged EU GDP (Lag1) is marginally significant where suggests EU economic conditions impact remittance flows with a delay, but the effect is weaker than contemporaneous EU GDP.

Also on the other hand, we can conclude the direct positive relationship between the dependent variable (Increase in remittances) and the independent variable (Economic growth in the country of origin, in this case in North Macedonia). Causality is weaker between the GDP of North Macedonia and remittances, imposing an interpretation that these phenomena have an acyclical relationship. Also, the coefficient of the variable with a lag time is negative, which can conclude a counter-cyclical relationship between remittances and GDP growth in the home country, but it is not statistically significant. The relationship is statistically significant only with two lag times, which emphasizes that a 1% increase in GDP will cause an increase in remittances of 1.48%. A significant part of remittances also goes for investments, and these flows can increase or decrease depending on the economic situation in the country.

4. Policy explanation

4.1. Remittances are strongly tied to economic conditions in the EU

Since EU GDP growth is the only statistically significant predictor, this means:

- Migrant workers living in EU countries increase their financial support to families when EU economies expand.
- Conversely, EU recessions or slowdowns can directly reduce remittance inflows, creating vulnerability for the home economy.

Policy implication:

Countries heavily dependent on remittances must closely monitor economic cycles in host economies (especially the EU) and prepare counter-cyclical support mechanisms when external downturns occur.

4.2. Domestic GDP conditions show weaker and slower effects

Lagged domestic GDP (e.g., Lag2 NMK GDP) may affect remittances with a delay, suggesting:

- Migrants may respond to **home-country economic stress**, sending more money home when conditions worsen.
- But this effect appears neither strong nor immediate.

Policy implication:
Domestic economic improvements alone **will not reliably increase remittances**. Remittances act more as a private social safety net than as a growth-driven inflow.

4.3. Remittance dependency creates external vulnerability

Because remittances depend more on foreign economic performance than domestic fundamentals, the economy is exposed to:

- **External shocks** (e.g., EU recessions, inflation, unemployment)
- **Changes in EU labor demand or immigration policy**

Policy implication:
Authorities should treat remittances as **volatile, externally driven inflows** and avoid using them as a guaranteed revenue source for fiscal planning.

4.4. The government can stabilize remittance usage through financial infrastructure

Even if policymakers cannot control EU economic cycles, they can influence how remittances are used:

- Encourage formal remittance channels (lower fees, more competition)
- Promote savings products targeting remittance recipients
- Create investment incentives (diaspora bonds, tax benefits, matching grants)
- Improve financial literacy among remittance-receiving households

Policy implication:
Shift the focus from the **amount** of remittances to **how effectively they are channeled into investment, education, and enterprise creation.**

5. Conclusions

This study set out to examine the cyclical behavior of remittances in North Macedonia and to assess the extent to which economic conditions in both the origin and destination economies shape remittance flows. By combining descriptive analysis with regression models, the findings point clearly toward a predominantly **procyclical pattern**, especially with respect to economic conditions in the European Union—the main host region for Macedonian migrants.

The results show that **EU GDP growth is the strongest and most consistent predictor of remittance inflows**, indicating that migrants remit more when economic conditions in host countries improve. This finding reinforces the view that remittances are highly sensitive to labor market performance abroad and that migrant workers' ability to send money home depends largely on their own employment security and income prospects. Such a strong linkage underscores the external dependence of remittance-receiving economies like North Macedonia, particularly during periods of widespread economic disruption such as the 2009 global financial crisis and the Covid-19 pandemic.

On the other hand, the relationship between domestic economic conditions and remittances appears weaker and more delayed. While a two-quarter lag of domestic GDP shows a positive and borderline significant effect, contemporaneous and one-quarter lagged domestic GDP growth do not exhibit statistically robust influence. This asymmetry suggests that remittances to North Macedonia function only partially as a countercyclical stabilizer for the home economy. Rather than responding immediately to domestic downturns, migrants may increase transfers only when local economic pressures persist or when investment opportunities arise after periods of recovery.

Overall, the findings emphasize that **remittances in North Macedonia behave primarily as an extension of migrant workers' economic well-being abroad**, rather than as an automatic insurance mechanism against domestic shocks. This has important implications: the country's reliance on remittances exposes it to external macroeconomic developments, making domestic stability partly contingent on the performance of EU economies. At the same time, the irregular and lagged response of remittances to domestic business cycles limits their effectiveness as a countercyclical buffer during local crises.

In conclusion, while remittances remain a vital and stable source of external income for North Macedonia, their behavior is shaped predominantly by conditions outside national borders. Policymakers should therefore prepare for fluctuations associated with global and regional economic cycles and work to strengthen the resilience of the domestic economy. Enhancing financial infrastructure, improving remittance intermediation channels, and promoting productive use of remittances could help leverage these inflows more effectively and reduce vulnerability to external shocks. Future research should explore household-level dynamics, migrant characteristics, and sector-specific developments to shed further light on the mechanisms through which remittances interact with the broader macroeconomic environment.

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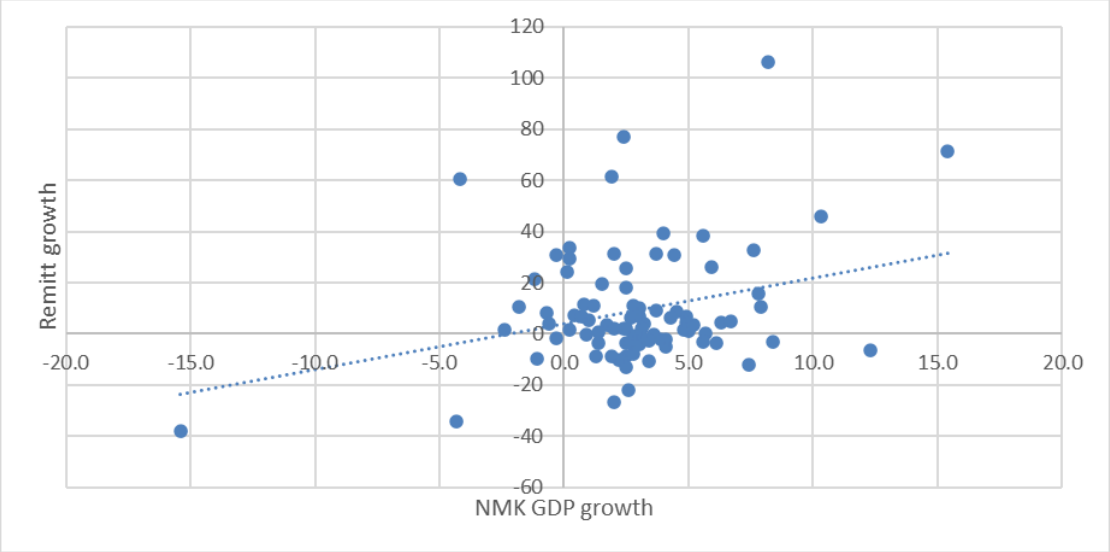
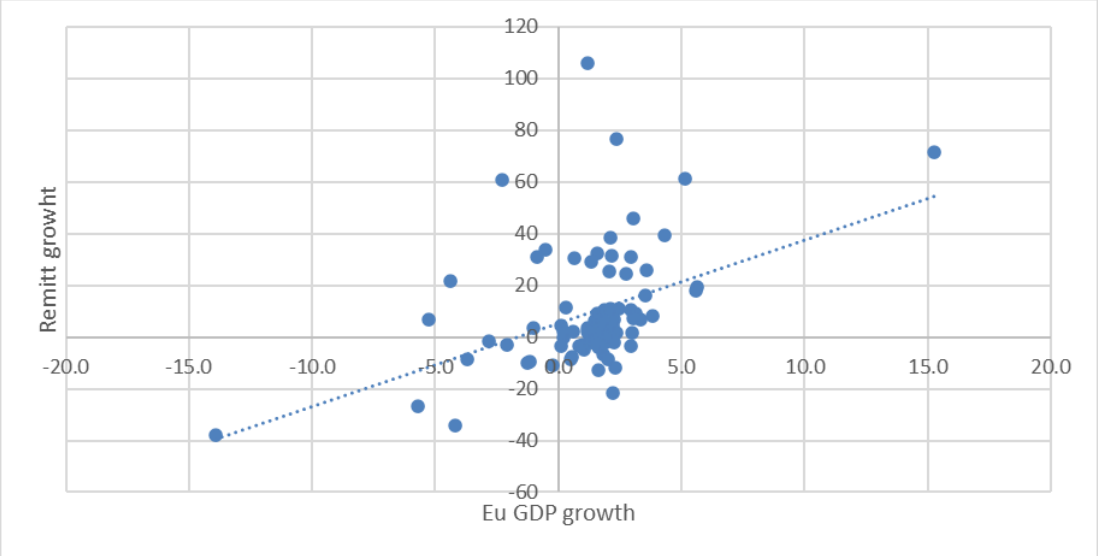
Appendix

Figure 1.1. Relations between GDP growth and remittances in North Macedonia in T12003-T42024



Source:Euostat and stat.gov.mk

Figure 1.2. Relations between GDP growth in EU and remittances in North Macedonia in T12003-T42024



Source:Euostat and stat.gov.mk

Table:1.3. Descriptive statistics

	Remitt growth	NMK GDP growth	EU GDP growth	Lag1 EU_GDP	Lag1 NMK_GDP	Lag2 NMK GDP
Mean	9.215506031	2.901162791	1.244086395	1.238705465	2.885232558	2.895930233
Standard Error	2.454349152	0.403641069	0.332098168	0.332086734	0.4037238	0.403901268
Median	3.728229551	2.75	1.647445	1.647445	2.7	2.7
Mode	#N/A	2.5	#N/A	#N/A	2.5	2.5
Standard Deviation	22.76069769	3.743213284	3.079751717	3.079645678	3.743980495	3.745626274
Sample Variance	518.0493592	14.01164569	9.48487064	9.484217505	14.01738995	14.02971618
Kurtosis	4.259826707	7.176600629	10.96786975	10.96486135	7.154634171	7.145749942
Skewness	1.602929565	-0.767561067	-0.677802086	-0.672517621	-0.754200853	-0.761725684
Range	144.0972427	30.8	29.20468	29.20468	30.8	30.8
Minimum	-37.94289563	-15.4	-13.92	-13.92	-15.4	-15.4
Maximum	106.1543471	15.4	15.28468	15.28468	15.4	15.4
Sum	792.5335187	249.5	106.99143	106.52867	248.13	249.05
Count	86	86	86	86	86	86

Source: author's calculation

Table:1.2. Correlation matrix

	Remitt growth	*NMK GDP growth*	*EU GDP growth*	*Lag1 EU_GDP*	*Lag1 NMK_GDP*	*Lag2 NMK GDP*
Remitt growth	1					
NMK GDP growth	0.295011	1				
EU GDP growth	0.435705	0.61063	1			
Lag1 EU_GDP	0.249206	0.281963	0.606149	1		
Lag1 NMK_GDP	0.10167	0.296365	0.238634	0.610526	1	
Lag2 NMK GDP	0.034725	0.084711	0.14761	0.238325	0.295382	1

Source: author's calculation

Table 1.3. Summary output and anova

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.533384
R Square	0.284499
Adjusted R Square	0.230157
Standard Error	19.9704
Observations	86

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6	12527.66284	2087.94381	5.235344757	0.000139152
Residual	79	31506.53269	398.81687		
Total	85	44034.19553			

Source: author's calculation