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THE IMPACT OF PERSONAL REMITTANCES FROM ABROAD ON THE CROATIAN ECONOMY

ABSTRACT

The dynamics of the population of Croatia in history was influenced by many adverse factors that contributed to a significantly slower development of the Croatian society and economy. The demographic implications of such movements, which are reflected in reduced fertility and in the additional worsening of age-sex structure, have already been explored in domestic literature and domestic demographers. From the economic consequences of research, greater emphasis has been put on the unsustainability of the pension system in the future. Although the changes in the age structure suggest a decrease in the labor contingency that would be manifested in the future in the lack of labor force, it is already felt in certain activities. Nonetheless, the restrictive effect of such demographic trends (mostly derived from emigration) on economic growth is rarely spoken. However, consideration of the economic consequences of emigration must also take into account the impact of remittances from abroad, whose level the CNB estimated at around 3-4% of GDP over the majority of analyzed period. However, Croatia's entry into the EU in 2013 opened the labor markets of most EU members for Croatian citizens, leading to a new emigration wave. These migration trends have intensified the pace of remittances, which made above 4% of the GDP from 2015 to 2017. But their share in reality, due to coverage problems, may be higher. The relatively high inflow of remittances to Croatia has encouraged us to investigate their impact on the growth of the Croatian economy. Similar surveys abroad do not give an unambiguous answer. Many researches show a positive or conditional positive relationship, but there are also those whose influence on economic growth is insignificant or even negative. The results of our research exclude the long-term link between remittances and economic growth and the short-term positive effects are limited only to the crisis and the post-crisis period.

Key words: *remittances, emigration, GDP and GDP growth, regression analysis*

1. Introduction

Before the recent crisis (1999 – 2008), the Croatian economy grew at an average annual rate of 4.2%. This was particularly influenced by the growth in investments and personal consumption, which was largely financed by the inflow of debt capital. In contrast, during the crisis (2008-2014) the economy fell at an average annual rate of 2.2% which worsened labor market conditions.

Unfavorable developments in the labor market have contributed to the emigration of the Croatian population, especially after the opening of the labor market of the European Union countries after the accession of Croatia in 2013. Although that scenario could have been expected because majority of EU10 countries („new” EU member states, joined since 2004) witnessed significant growth of emigration rates after joining the EU, institutional preparation in Croatia was limited. EU accession combined with the longest recession among EU countries (in recent crisis) proved to be the fertile ground for high scale emigration.

However, the tradition of emigration from Croatia is considerably longer and in modern times it covers the whole of the twentieth century (especially the 1970s and wartimes) and the second half of the 19th century. Long-term emigration had a negative impact on the development of the Croatian population, which has already been confirmed in Croatian demographic literature. Today, the unfavorable changes in the total population and age structure are highlighted as a strategic issue that is largely linked to long-term emigration, but is associated with economic weakness as well as development policy in the first twenty years after Second World War. Hence the 1960s are considered the key years in the development of the Croatian population (Akrap, 1999, 2014).

However, actual emigration “wave” from Croatia brings one important change: the significant proportion of families with children among emigrants (Akrap, Strmota and Ivanda, 2017). Although recent data shows the rise in remittances, it is unknown to what extent the “new” emigration takes part in remittance growth. Emigration of families with children, at least according to the New economics of labor migration theory (NELM) and similar theoretic reasoning, should lead to lower future remittances from those emigrants because whole family (or at least the core family members) moved abroad, making the usage of remittances substantially lower (e.g. towards older parents or relatives) or even obsolete. Nevertheless, the rise in mobility of families with children does not mean that remittance levels will fall, we just argue that remittance amount “per emigrant” could potentially be lower because of that.

Although emigration may seem as a purely negative process for the source economy, it may have a several positive effects, especially if the institutional response aligns with those effects. The most common way are personal remittances to relatives or for building a local infrastructure that can stimulate domestic demand. Another way is to encourage the entrepreneurial layer of our emigrants to invest in Croatia, but it needs a quality institutional framework to improve the business climate. Furthermore, they can buy Croatian goods abroad and stimulate exports or lobby for Croatian companies. Also, following the theoretical positive aspects of emigration on source country, we can expect the rise in wages, but it has not yet been observed for the case of Croatia (Bogdan and Ivanda, 2018). Other positive aspects of emigration for the source country are lower unemployment in occupations of emigrants and increased human and financial capital of returnees (Atoyán et al., 2016).

The best-known example of emigrations positive effect are remittances. Migration theories, a broad term for theories comprising economic, sociologic, demographic and other viewpoints of migration process present remittances as an important factor in explaining migration process, both on micro, meso and macro perspective. For instance, one of the well-known migration theories, the above-mentioned NELM, puts remittances in the core of its functioning. NELM explains migration from micro and meso level, thus giving the decision on migrating on both individual and his family/household. According to NELM, migration should improve economic position or provide other positive function for both levels, individual and family/household. Family/household act rationally and try to minimize or diversify risks, resulting in some

members of the group migrating and some not, rather staying with different functions. The main channel through that happens are remittances, as they stabilize household income, minimize the risk of job loss and wage fluctuations (Taylor, 1999; Massey et al., 1993).

Recently, more and more papers are investigating the impact of personal remittances to national economies and these are mainly related to developing countries. This is understandable because these are areas with high fertility rates, high emigration and low income. As a result, the share of remittances from abroad in the GDP of these countries is often high. According to Eurostat data, Croatia and Latvia are the EU member states that are most dependent on remittances from abroad. But in Croatia the effect of remittances on the economy is insufficiently explored and the aim of this paper is to fill this gap. Only Bogdan (2017) examines the impact of remittances from abroad on the Croatian economy and confirms level effect on domestic demand and GDP. The hypothesis that is being tested in this paper is: *The long-term link between the remittances from abroad and the economic growth in Croatia does not exist. The positive short-term effects of remittances on economic growth in Croatia are limited to the recent crisis and the post-crisis period.*

Economic theory does not give a clear answer to the impact of remittances on national economies, so it is necessary to investigate empirical researches in the section 2. Empirical model was done and the obtained results were presented in the section 3. Finally, section 4 concludes our findings.

2. Literature review

There is no strictly economic dispute that the inflow of remittances from abroad encourages domestic demand and economic activity. But, economists do not care about level effect as the effect on growth rates. However, higher domestic demand can increase domestic inflation and cause real appreciation *via* higher inflation or higher unit labor costs. Additionally, foreign currency inflow may result in a Dutch disease and further deterioration of price competitiveness. Weaker competitiveness may be reflected in slow or negative economic growth. Also a safe inflow of transfers can improve household disposable income and result in a better living standard but at the same time can reduce the initiative for work and prospects for sustainable economic growth in the future.

Accordingly, economic theory cannot answer whether remittances affect economic growth positively or negatively, so it is important to investigate the results of empirical researches. The number of papers exploring the impact of remittances on the economic growth of countries or individual economies has recently increased. It is understandable that almost all these researches are related to post-transitional countries or developing countries.

Most of the available works show that the remittances positively affect economic growth in the European transition countries (León-Ledesma and Piracha, 2004; Goschin, 2014; Meyer and Shera, 2017; Comes, Bunduchi, Vasile and Stefan, 2018). Opposite them Gjini (2013) shows that such relationship is negative.

Surveys on a much larger sample of countries lead to different conclusions. Adams Junior and Page (2005) displays that remittances reduce poverty and stimulate growth in the developing countries. Catrinescu, Leon-Ledesma, Piracha and Quillin (2008) confirm that remittances improve growth in the countries with good quality institutions and appropriate economic

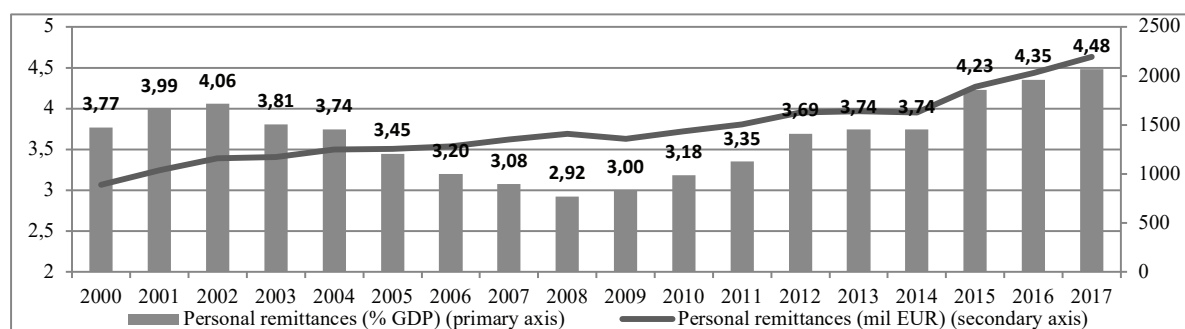
policies but Giuliano and Ruiz-Arranz (2009) and Sobiech (2019) showed that positive relationship is possible in less financially developed countries which confirms argument that remittances and financial development are substitutes. Chami, Fullenkamp and Jahjah (2005) find negative relationship between remittances and growth. Polat (2019) did not confirmed significant relationship between remittances and growth in eight countries that receive the highest portion of total remittances inflows in all over the world. Lartey, Mandelman and Acosta (2012) showed that Dutch disease phenomenon exists as a result of higher remittances inflow. Feeny, Iamsiraroj and McGillivray (2014) did not confirm relationship between remittances and growth with an exception of small island countries.

All these papers did not lead to a single conclusion on the impact of remittances on economic growth. Although many of them point to a positive relationship, in some of them, it is conditioned by the characteristics of the countries. In some researches the relationship is not significant or even assumes a negative sign. Since we are not pre-secure in the correlation sign, it is important to explore the effects in individual countries as well. As a country with a long tradition of emigration, Croatia imposes itself as an interesting example.

3. Empirical model and results

The introduction has already emphasized that EU accession in combination with long-lasting recession has been a fertile ground for emigration of Croat population. Remittances showed to be the reflection of that process. Not only they grew absolutely, but their growth significantly surpassed the growth of many other balance of payments components. The result is a significant growth of remittances as a part of GDP, even though GDP showed a growth higher than the EU average in recent times. Movements of remittances based on Croatian National Bank (CNB) data are presented in the figure 1. The data shows a steady increase in remittances from 8.9 million (2000) to 2.2 billion euros (2017). During the period of expansion of the Croatian economy (before 2008) it was lower than GDP growth, which reduced the share of remittances in GDP from 4.1 (2002) to 2.92% (2008). The dynamics of the remittances has been intensified since 2013. According to this data, the average annual increase in remittances between 2000 and 2014 was around 4.4%, and between 2015 and 2017 it grew to 7.9%. There is no doubt that a strong emigration wave from Croatia after entering the EU (2013) has significantly increased the inflow of remittances to Croatia. It remains to be seen the dynamics of remittances in the future, but it can be expected that with the firing of the emigrant wave it will return to the path it had until 2014.

Figure 1: Payments in Croatia in millions of euros and as% of GDP

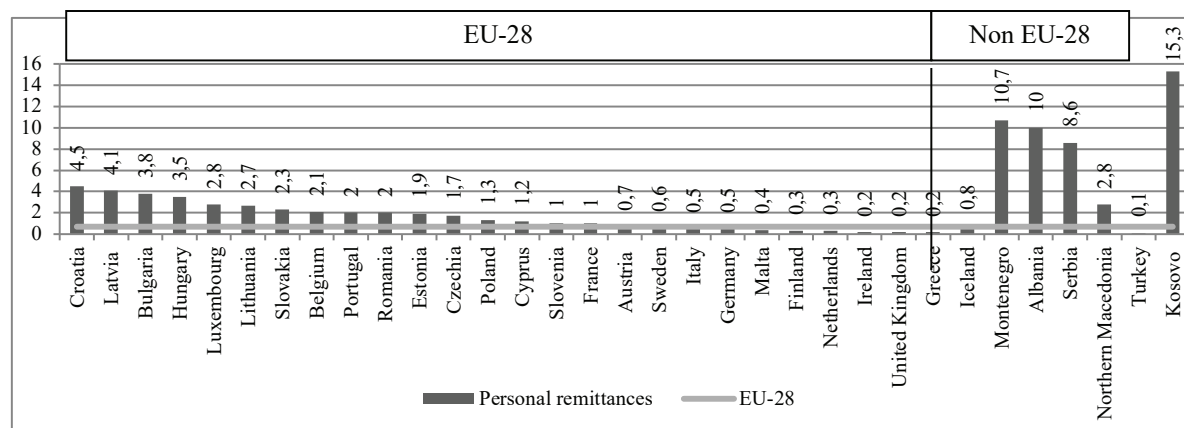


NOTE: Keep in mind that some emigrants send cash to their relatives, so these estimates of the CNB surely underestimate actual inflow of remittances

SOURCE: Croatian National Bank

It is useful to determine the size of these remittances by comparing with other EU members. Figure 2 shows that in Europe, the countries of former Yugoslavia and Albania receive the highest share of remittances in GDP. However, within the EU-28 Croatia and Latvia are most dependent on remittances from abroad.

Figure 2: Inbound personal remittances, % of GDP (2017)



NOTE: Missing Denmark, Spain, Switzerland
SOURCE: Obrzut (2018)

The summary of the dynamics of remittances from abroad points to the importance of researching of their impact on the Croatian economy. However, in the introductory part of the paper, it has already been emphasized that the influence of personal remittances from abroad on economic activity in Croatia is insufficiently explored. Empirical papers from section 2 give different answers about the effect of remittances on the growth rates of analyzed economies. Following the theoretical positive aspects of emigration on source country, we can already state the remittances pose a significant financial factor in Croatia, never mind its positive, neutral or negative effect.

This paper tries to investigate the impact of remittances on the Croatian economy. Quarterly remittance data was obtained from the CNB and prepared according to the *Balance of Payment Manual* (Sixth Edition). The time series starts with first quarter of 2000 and include 66 observations which are seasonally adjusted and logarithmic (variable LNR1_SA). LNR1_SA is confirmed as trend stationary using ADF (Dickey and Fuller, 1979, hence augmented DF test or ADF) and KPSS tests (Kwiatkowski, Phillips, Schmidt and Shin, 1992, hence KPSS). Growth rate is calculated using log-differences of GDP taken from Croatian Bureau of Statistics (CBS) and Eurostat. Since GDP is available quarterly and seasonally adjusted, we used quarterly growth rate *i.e.* log-differences of current GDP and last quarter GDP (labeled GDP_GROWTH and confirmed stationary using ADF and KPSS tests). It seems that relationship between GDP growth and remittances is possible only in the short run.

Estimated model basically takes form:

$$GDP_GROWTH_t = \alpha + \beta LNR1_SA_t + error_t \quad (1)$$

Since required econometric properties include residual normality (tested using Jarque and Bera (1987) test), absence of autocorrelation (tested using Breusch-Godfrey test) and homoscedasticity (tested using Breusch-Pagan-Godfrey test), basic model is augmented with several dummy variables to capture certain quarters. Keep in mind that GDP growth is unlikely to be explained by only one variable, the autocorrelation is possible and stationarity of residuals is required to avoid spurious regression. Several dummy variables capture first and last quarter of 2007 and 2008 as well as first quarters of 2009 and 2012. Two types of models are tested –

first model also include dummy variable CRISIS to capture the fact that growth rate is lesser after first quarter of 2009. Second type include deterministic trend. Namely, quarterly growth rates show slow positive trend after first quarter of 2009. However, this approach could be misleading since trend component is almost perfectly correlated with LNR1_SA and can cause multicollinearity. The consequence of multicollinearity could be wrong signs but omitted problematic variable can cause misspecification (Bahovec and Erjavec, 2009). The statistic characteristics of analyzed variables and empirical results are shown in table 1 and table 2. The minimal value of variable GROWTH is achieved in the first quarter in 2009 (-3.75%) and the maximum in the first quarters of 2007 and 2008 (4.0%). However, the minimal value in the pre-crisis period is in the fourth quarter of 2007 (-1.5) and fourth quarter of 2008 (-3.0%) and the “second minimal” value during crisis is in the first quarter of 2012 (-1.8%). All these values are captured by an adequate dummy variable in an empirical estimation. Although the crisis period lasts from the first quarter of 2009 to the third quarter of 2014, growth rates after the first quarter of 2009 show a slight positive trend. Trend component in the pre-crisis period is not apparent at least until the end of 2005 and thereafter a negative trend is obvious. The minimum and maximum values of variable LNR1_SA were achieved at the beginning and end of the sample showing a clear positive trend.

Table 1: Summary statistics for used variables **Table 2: Results of regression analysis**

	GROWTH	LNR1 SA
Mean	0.392632	5.827271
Median	0.338874	5.822415
Maximum	3.997723	6.246630
Minimum	-3.754758	5.289065
Std. Dev.	1.273498	0.197040
Skewness	-0.072795	-0.308528
Kurtosis	5.361942	3.180063
Jarque-Bera test	15.16657	1.136247
Probability	0.000509	0.566588
Sum	25.52110	384.5999
Sum Sq. Dev.	103.7949	2.523613
Observations	65	66

SOURCE: Own calculations

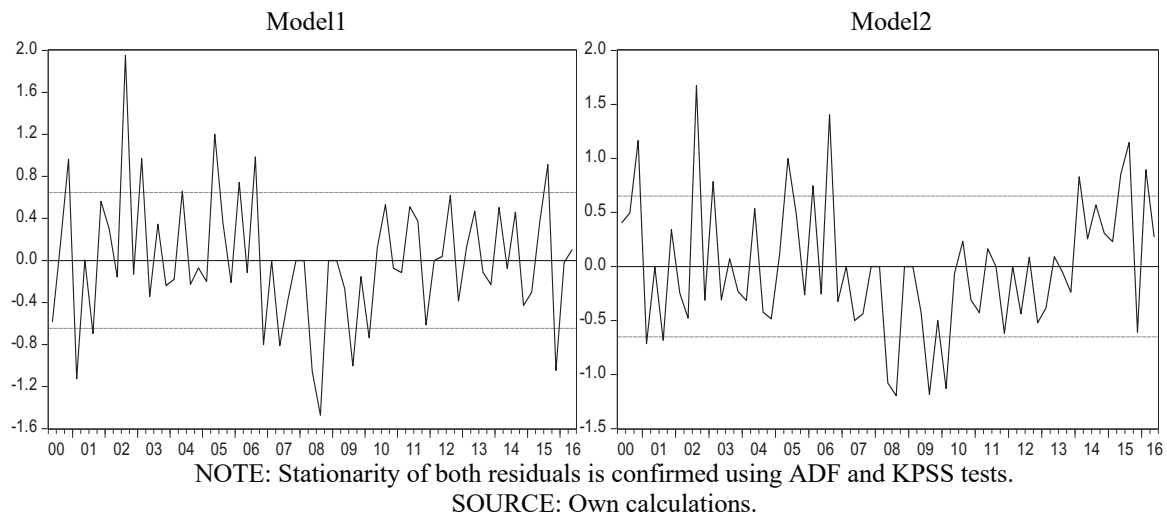
	Model1	Model2
LNR1 SA	-0.880997	4.965758
	(0.478436)	(1.510246)
DUMMY2007Q1	3.170764	3.350213
	(0.654653)	(0.656943)
DUMMY2007Q4	-2.322144	-2.101348
	(0.655072)	(0.656687)
DUMMY2008Q1	3.155636	3.524716
	(0.654841)	(0.656428)
DUMMY2008Q4	-3.765556	-3.509997
	(0.656198)	(0.656948)
DUMMY2009Q1	-3.655181	-3.830822
	(0.664678)	(0.663544)
DUMMY2012Q1	-1.528474	-2.136466
	(0.662311)	(0.662377)
CRISIS	-0.928692	-
	(0.192613)	
@TREND	-	-0.069912
		(0.014871)
Intercept	5.938424	-26.20584
	(2.764792)	(8.344936)
Number of observations	65	65
R2	0.774794	0.771490
Adjusted R2	0.742621	0.738846
Durbin-Watson statistics	2.217444	1.914397
F test	24.08260	23.63329
p-value	0.000000	0.000000
Breusch-Godfrey stat.	4.763856	6.763853
p-value	0.3124	0.1489
Breusch-Pagan stat.	6.147222	3.568642
p-value	0.6307	0.8938
Jarque-Bera test	3.067686	2.394951
p-value	0.215705	0.301956

NOTE: S.E. in parentheses

(**Bold** significant at 5%, *italic* at 10 %)

SOURCE: Own calculations

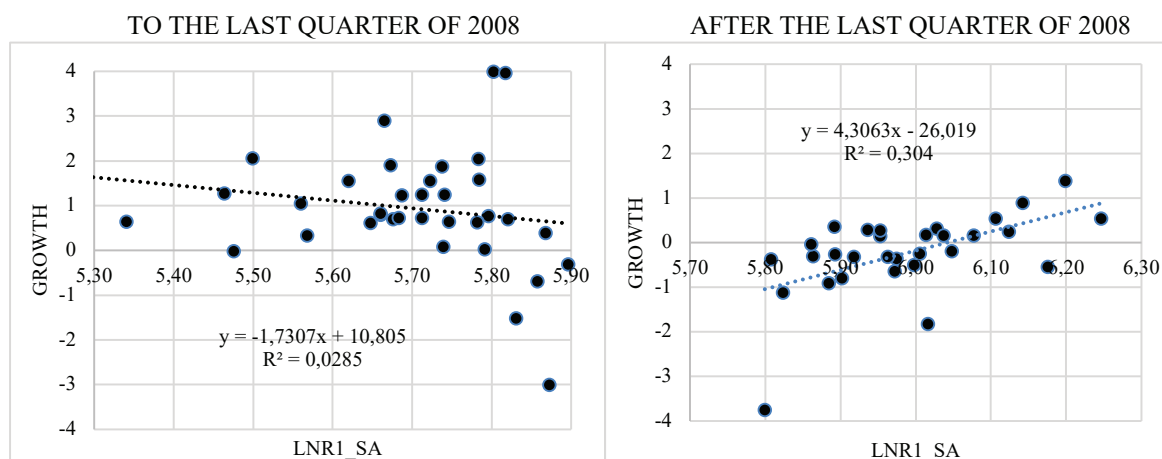
Figure 3: Residuals of the models from Table 2



Many dummy variables are included in both models to achieve normal residuals (table 2). The residual normality is necessary for the t-test and the F-test to be reliable (Bahovec and Erjavec, 2009). Also residual stationarity is required to avoid spurious regression (figure 3). Additionally, autocorrelation and heteroscedasticity of residuals is not confirmed in both models. Since both variables are quarterly, autocorrelation has been tested up to the fourth order. Here the Durbin-Watson test does not have interpretative importance because it tests the first order autocorrelation, but its low values can signal the spurious regression.

The signs of parameters with the dummy variables of both models are the same and the magnitude varies only in the case of variable DUMMY2012Q1. However, the conclusions on the impact from abroad on growth rates are not the same. In the Model 1 the relationship is negative at significance level of 10 percent but in the Model 2 it turns to be positive at significance level of 5%. It should be noted that the inclusion of the trend component in Model 2 disrupted Klein's first criterion of multicollinearity (partial correlation coefficient between LNR1_SA and @TREND (about 0.95) is higher than multiple correlation coefficient (about 0.88)). A serious problem of multicollinearity can lead to wrong signs, so the question of the correctness of these two models arises. The correlation coefficient (calculated on the whole sample) between GROWTH and LNR1_SA is around -0.30 and point to a weak negative correlation in favor of the first model. But, scatter plot diagram is better option which is presented on the figure 4. The left scatter plot shows that a weak negative link is possible before the recent crisis. But the link becomes positive after the last quarter of 2008 as shown on the right scatter plot.

Figure 4: Scatter plots between GROWTH and LNRI_SA



NOTE: The equations in the plots do not reflect the estimates in Table 2.

SOURCE: Own calculations.

From figure 2 it can be concluded that the results of Model 1 are more acceptable for the period before the recent crisis and the results of model 2 for the crisis and post-crisis period. Despite this, the short-term significant positive effects of remittances from abroad are limited to the period following the last quarter of 2008. The absence of positive correlation for the period before 2009 does not mean that the remittances did not positively affect their recipients, but that their positive effect could not be captured by the model shown. Namely, before the recent crisis Croatia has achieved relatively strong economic growth based on strong domestic demand growth, financed by external debt. In addition, quarterly growth rates in the pre-crisis period were stagnant or had slight negative trend. In such circumstances, it is difficult to expect a positive link between remittances and economic growth. Moreover, a confirmed negative link (at significance level of 10%) before the recent crisis does not necessarily mean that inflow of remittances *causes* a reduction in growth rates. Of course, apart from the remittances, other factors could have reflected on the rate of income growth, but research on their impact was left for future papers. However, the tested hypothesis in this paper can be accepted.

4. Conclusions

Remittances are a reflection of the emigrant flows and as such present a financial link between individuals from home country and abroad. Croatia has witnessed high emigration rates since joining the EU and following increase in remittances is big enough to put Croatia on top of the EU countries for remittances as a share of GDP. It makes Croatia an interesting example for studying the impact of remittances on the national economy. Although there is no dispute that remittances can positively affect domestic demand, economists have also pointed to possible negative consequences such as Dutch disease or reduced motivation to work. Similar researches for developing and post-socialist countries lead to mixed conclusions.

The effect of remittances on GDP growth in Croatia was widely held as strongly positive based on the sheer amount of financial inflow, but this topic has not been scientifically explored. The new insights in the influence of emigrant' remittances has been done by testing the hypothesis: *The long-term link between the remittances from abroad and the economic growth in Croatia does not exist. The positive short-term effects of remittances on economic growth in Croatia are limited to the recent crisis and the post-crisis period.* Remittances and growth rates were

confirmed as stationary variables, which excludes long-term relationship. However, a positive short-term impact was confirmed only in the crisis and post crisis period. Such a result approves the conclusion from Bogdan (2017) that, due to the negative economic performances, the absence of remittances from abroad would further deepen the recession in Croatia. Conversely, the negative link (at the significance level of 10%) before crisis probably means that the effect of remittances to the Croatian economy was minimal in that period, rather than the inflow of remittances actually reduced the rate of economic growth. Nevertheless, the hypothesis set out in this paper can be accepted.

In addition, the presented model can be augmented with additional regressors or the analysis can be focused on the GDP components. These results relate to the impact of remittances on GDP growth rates, but it is understandable that they may also extend to the growth of personal consumption as the largest component of GDP. It would also be useful to investigate the impact of remittances on the investments, which are the component of GDP with the strongest contribution to the future economic growth. Contribution from abroad to a financial development in Croatia as well as creation of physical and human capital is also left for future researches. If positive link between these variables and remittances would be confirmed, then the conclusions of this article will be discouraged.

The results of this article should not lead to the conclusion that emigrants cannot boost the growth of the Croatian economy. Entrepreneurs from “migrated Croatia” can invest in Croatia, stimulate technological transfers, improve the productivity of the Croatian economy, and thus stimulate economic growth. An essential prerequisite for these activities is to improve the business climate in Croatia. However, they were not the subject of this research since they are not related to the remittances but foreign direct investments.

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