

## ***REMITTANCES SENT TO EU NEW MEMBER STATES: DO THEY MAKE A DIFFERENCE FOR THE HOUSEHOLD CONSUMPTION?\****

**Zizi GOSCHIN<sup>a</sup>, Bogdan ILEANU<sup>b</sup>**

### **Abstract**

*Researches all over the world have revealed that remittances might have a large range of effects in the receiving countries, both at micro- and macro-economic level. In this context, our paper addresses the question of how much influence the remittances have on the aggregate consumption of households in EU new member states. We answer this question by means of an econometric model, using macroeconomic datasets provided by the World Bank. For reasons of data availability and comparability between the countries, the analysis was limited to the period from 1995 to 2009. We developed a panel data model to appraise the effects of the remittances on the living standard in countries of origin, using as dependent variable the household final consumption per capita and as regressors: earnings, remittances, credits, taxes, GDP per capita, unemployment, imports, etc. We applied fixed-effects, as well as random-effects panel regressions, but found no evidence that the growth in the amount of remittances conveyed through the official network has significantly influenced the household consumption in EU new member states.*

**Keywords:** migration, remittances, consumption, EU new member states.

**JEL Classification:** C70, F22, F24

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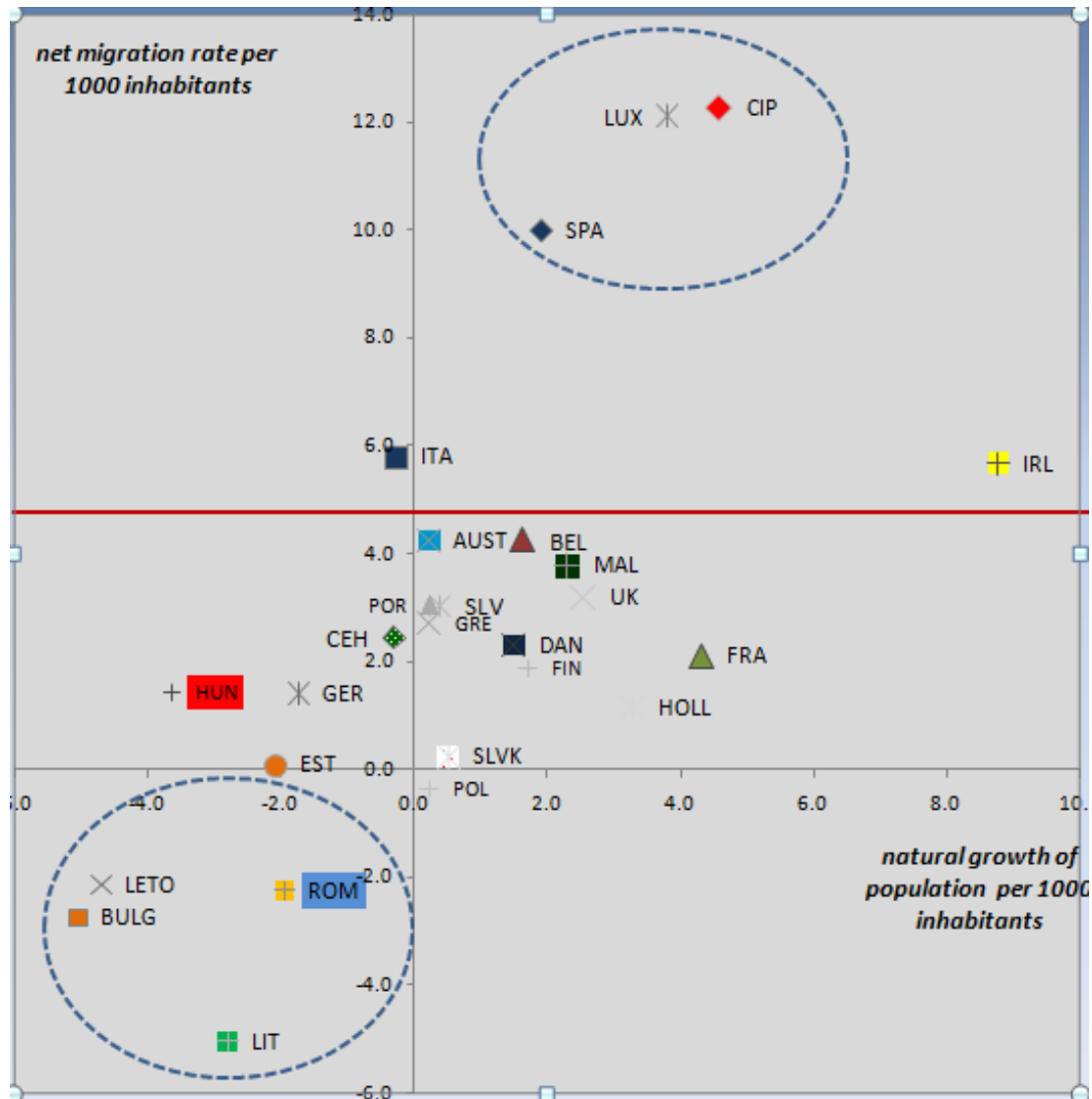
## **1. Introduction**

The impact of remittances on migrants' countries of origin is a long-running subject in migration economics. Researchers all over the world approached this topic from different perspectives and found mixed effects of the remittances in the receiving countries: consumption growth, poverty alleviation, better nutrition and access to health care in poor countries, illiteracy reduction and better school attendance, economic growth driven by enlarged aggregate demand, direct investments in physical capital and enterprise creation, improvement of the balance of payments, as well as increased consumption of imported goods and consequential rise in prices, more income inequality, extended real estate and land speculation, etc. (Adams, 1991; Aizenman, 2006; Combes and Ebeke, 2011; Gammage, 2006; Grigoraș, 2006; Încalțărău and Maha, 2012; Kageyama, 2008; Litan, 2009; Ratha, 2005; Straubhaar and Vadean, 2006; Takenaka and Pren, 2010).

The multifaceted impact of remittances sent by the international migrants might be uncovered both at micro- and macro-economic level. The effects at micro-economic level are directly derived from the higher income of receiving households, while the effects at macro-economic level are indirect and depend on remittances' alternative destinations for consumption or investment. Moreover, remittances need to exceed a certain threshold in order to have a significant macroeconomic impact (Combes and Ebeke, 2011).

One of the direct and most visible effects of remittances is the increase in consumption expenditures. Undoubtedly, the well-being of poor households is considerably improved by the remittances, but is the impact of remittances relevant from a macro-perspective as well? To answer this question, our study examines the significance of remittances, among other macro-economic factors that might influence aggregate household consumption, focusing on the EU New Member States.

The current debate on migration, remittances and development is putting a strong emphasis on the former communist countries in the Central and Eastern Europe.



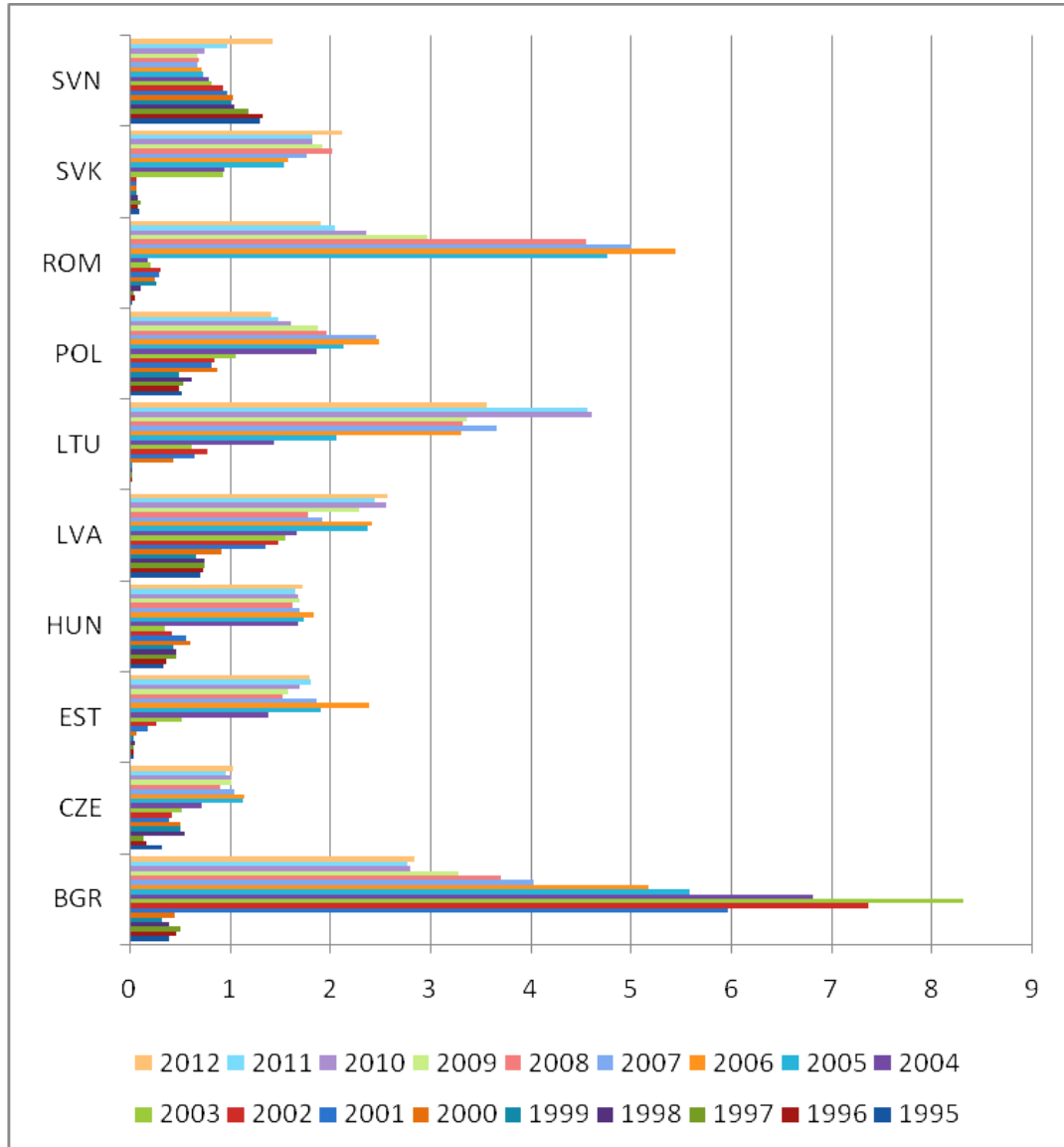
**Fig. 1. Migration and population growth in European Union**

Source: own processing based on World Bank data.

Figure 1 indicates the former communist countries in the Central and Eastern Europe as important migrant - sending countries along with the persistent decline in their population.

There has been an increased interest in remittances sent to these countries following their accession to European Union. Out-migration and the related remittance inflows should have significant social and economic impact in these countries, given their strong growth after EU accession. Moreover, despite the decline induced by the current economic crisis, remittances remain high, as many migrants, even when faced with economic difficulties, continue to send money to support their families.

The remittances to GDP ratio largely varied in time and across CEE countries. The ratio peaked at 8.3% in 2003 in Bulgaria, at 5.4% in 2006 in Romania, at 4.6% in 2010 in Lithuania, but in all other selected countries never exceeded 2.5% during 1995-2012 (Figure 2).



**Fig.2. Remittances, as percentage of GDP, in selected CEE counties**

Source: own processing based on World Bank data.

Our analysis is based on macroeconomic datasets provided by World Bank and by the national statistical institutes of the countries included in the study and covers the interval 1995 to 2009, therefore partially captures the effects of the economic crisis.

The remainder of this paper proceeds as follows. The next section briefly reviews the main findings in the remittance literature, focusing on income inequality and household

consumption. Section 3 describes the model, variables and data, and discusses alternative remedial measures for autocorrelation in errors. Section 4 comments on the results from the panel data models, using both level and differenced variables, and section 5 concludes.

## **2. Brief review of the relevant literature**

The large remittance flows in the last decade triggered the debates on their broader effects on the receiving countries and households. The economic and social impact of remittances from migrant workers is commonly approached from the perspective of receiving countries (e.g. Sassen, 1988), since remittances play a major role not only to the well-being of the receiving households, but can have a sizeable impact at macro-economic level as well.

Several social and economic effects of migration and remittances are largely acknowledged in the literature: out-migration of the workforce relieves the pressure from the labour markets in the sending countries, compensating for low employment (Gammage, 2006); the money received by the households help alleviate poverty and improve quality of life in poor countries (Ratha, 2004; Skeldon, 2007); remittances stimulate imported goods consumption, favour price increases (especially real estate) and land speculation, finally increasing inequality (Aizenman, 2006); remittances generate new business opportunities due to increased inflows of financial resources in the country (Taylor, 2004; Straubhaar and Vadean, 2006; Ratha, 2005), etc.

Remittances might also have an important impact on the income distribution among households in the receiving countries. Many studies addressed this subject, but the results are mixed: while some of them found that remittances tend to alleviate income inequalities, others reported just the opposite. One common measure employed in empirical work attempting to capture the income distribution effects of remittances is the Gini inequality index (Stark et al., 1988), but the results of different analysis using it are contradictory. Ahlburg (1996) and Taylor (1999) reported that remittances had an equalizing effect on income distribution in Tonga and Mexico, respectively, while Adams (1991), using the same Gini index formula, found that remittances actually contributed to the increase in inequality in rural Egypt. Similar results were reported in the Philippines, where as much as 7.5 % rise in rural income inequality in the 1980s was produced by remittances, although their share in the households' income was rather low (Rodriguez, 1998), as well as in Peru (Takenaka and Pren, 2010) and in Yugoslavia, where the remittances generally fuelled income divergence, the effects varying according to the periods and social categories (Milanovic, 1987). One reason for this inequality-effect might be the better position of wealthier households, which are more able to pay for the costs of migration (Straubhaar and Vadean, 2006) and

consequently collect more remittances. Straubhaar and Vadean also suggest that the lack of conclusive evidence in the literature on remittances' impact on consumption and income inequality in receiving countries is due to the diversity in the environments researched (in terms of initial inequality) and to the differences in methodology as well.

A more sophisticated approach based on a dynamic model of migration and income distribution, developed by Stark et al. (1986 and 1988), revealed that the effect of remittances on consumption and inequality depends critically on the migration history and on the distribution of migration opportunities across households. They found an inverse U-shape relationship between migration and income distribution: in the first stage wealthy families benefit from the migration, therefore income inequality upsurges, while in the second stage poor families also acquire information, start migrating and take advantage from remittances, inducing a decrease in inequality.

Combes and Ebeke (2011) found, in a large panel of developing countries, the ability of remittances to reduce instability in consumption expenditures of households. This effect is the more powerful the less financially developed the country is and it is particularly significant in countries receiving an amount of remittances above 6% of GDP.

The extent of the migrant remittances' influence on consumption expenditures in the home countries might be also expressed in terms of their multiplier effects. For instance the multiplier effect from the expenditure on remittances in Mexico was 3.25 in 1988 (Durand et al, 1996), but seem to have had very limited impact on productive activities in El Salvador (Gammage, 2006), where remittances have increased the trade deficit, determining higher dependency on imports.

Many studies undertaken in Romania indicate that the biggest part of the remittances received goes to consumption and construction/modernisation of houses, leaving only a small amount to be invested (e.g. Noica and Stoiciu, 2006; Grigoraş, 2006; Lăzăroiu and Alexandru, 2008), although there is nevertheless a positive effect of remittances on the investments made in Romania (Litan, 2009; Soros Foundation Romania, 2011; Încălţărău and Maha, 2012).

### **3. Model, variables and data**

Our paper addresses the question of remittances as a factor of influence for the living standard of households in EU new member states, at macroeconomic level. To answer this question we developed a panel data model that appraises the impact of remittances on aggregate households' consumption in ten EU member states: Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovak Republic and Slovenia.

The dependent variable in our models is the household final consumption expenditure per capita. The variable of interest is remittances, as a potential significant factor of influence for consumption. Since our study is not limited to the remittance-receiving families, we aim to capture the broader effect on household consumption owing to multiplier effects.

The control variables are other macroeconomic factors that might influence household consumption, such as the development level captured by GDP per capita, main macroeconomic indicators relevant for the labour market: labor participation rate and unemployment, as well as indicators for domestic earnings: annual net earnings, taxes on income, profits and capital gains, domestic credit, and for aggregate supply: imports and trade. Table 1 offers the description of all the variables that have been tested. Some of them did not reach significance and were excluded in the final specification of the model.

**Table 1. The variables**

<b>Variable name</b>	<b>Description</b>	<b>Measurement</b>
Consumption	Household final consumption expenditure per capita	constant 2000 US\$
Remittances	Personal remittances, received. According to IMF's Balance of Payments definition, it includes personal transfers and compensation of employees.	constant 2000 US\$ millions
GDP	Gross Domestic Product per capita	constant 2000 US\$
Credit	Domestic credit provided by banking sector, as percentage of GDP	%
Earnings	Annual net earnings	constant 2000 US\$ millions
Taxes	Taxes on income, profits and capital gains	% of revenue
Imports	Annual imports of goods and services as percentage of GDP	%
Labour	Labor participation rate, as percentage of total population ages 15+	%
Trade	Imports and exports ratio to GDP	%
Unemployment	Unemployment, as percentage of total labour force	%

We estimated firstly a simple pooled Ordinary Least Squares model (model 0):

$$y_{it} = \beta_0 + \sum_j \beta_j X_{jit} + e_{it}, \text{ for } i = 1, \dots, 10 \text{ (counties) and } t = 1995, \dots, 2009, \quad (1)$$

where  $y_{it}$  is the endogenous variable (household consumption) for country  $i$  in year  $t$ ;  $X_{jit}$  is the exogenous variable  $j$  for country  $i$  in year  $t$ ;  $\beta_0$  is the common constant for all regions and  $e_{it}$  is the error.

To control for country unobserved characteristics, we further estimated the fixed effects panel model (model 1):

$$y_{it} = \beta_{0i} + \sum_j \beta_j X_{jit} + e_{it}, \text{ } i = 1, \dots, 10 \text{ and } t = 1995, \dots, 2009, \quad (2)$$

where  $\beta_{0i}$  represents the individual time-invariant effect for country  $i$ . These effects are able to capture additional country characteristics that might have influenced household consumption and were stable over the period of interest.

The final panel model assumes the existence of random effects (model 2):

$$y_{it} = \beta_0 + \sum_j \beta_j X_{jit} + u_{it}, \text{ } i = 1, \dots, 10 \text{ and } t = 1995, \dots, 2009, \quad (3)$$

where composite errors are defined as  $u_{it} = \varepsilon_i + e_{it}$ . Region's  $i$  specific error  $\varepsilon_i$  is thereby added to the previous error  $e_{it}$ .

Finally, the Hausman test has to be employed to determine whether the random effects model is better than fixed effects.

In case of autocorrelation phenomena from one temporal period to another, it is possible to analyze the "changes of the differences" of these observations, using the first or last period as the baseline, as Yaffe (Yaffe, 2005) suggested citing Wooldridge's experience (Wooldridge, 2002). If autocorrelation appears across these observations, the model may be first partial differenced to control these phenomena effects on the residuals (Greene, 2005).

Another possibility to deal with autocorrelation effects is to introduce lagged dependent variables (Arellano & Bond, 1991) in the model, under the assumption that  $T$  (the number of periods) is much larger than number of explanatory variables ( $K$ ).

The Parks method, which assumes an autoregressive error structure of the first order along with contemporaneous correlation among the cross-sections, could be another way to deal with autocorrelation phenomena. Parks model is estimated by a two-state generalized least squares procedure (SAS Institute, 1999).



Taking into account these experiences, we define quasi-differenced variables  $Y_{it}^* = Y_{it} - \hat{\rho}Y_{it-1}$  and  $X_{it}^* = X_{it} - \hat{\rho}X_{it-1}$  in order to try to avoid the autocorrelation effects. In this case we make the assumption that every  $\hat{\rho}_i \approx \hat{\rho}$ , or in fact there are no significant differences between them.

We run the previous models using both level and differenced variables. The datasets were provided by World Bank online database. Because of country differences in data availability and accuracy, in order to achieve comparability between the countries included in the panel we had to limit our analysis to the interval 1995 to 2009.

Data on the amount of remittances are not very reliable. Their most important caveat is that currently available statistics systematically under-estimate the dimension of remittance flows because are based mainly on banking information and therefore omit the money conveyed by informal channels, such as family and friends, as well as transfer of goods instead of money. There is empirical evidence that a considerable share of remittances is transferred through informal means. For instance, Lazaroiu and Alexandru (2008) showed that approximately 40 per cent of the transfers are conveyed through informal channels.

#### 4. The results

The results from running the regression equations (1) to (3) for the initial and quasi differenced variables, using the data for ten EU new member states over 1995-2009, are reported in Table 2.

**Table 2. Household Consumption modelling (Y)**

Determinants (X)	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
	Initial variables	Initial variables	Initial variables	Quasi differenced ( $\hat{\rho}=0.9$ )	Quasi differenced ( $\hat{\rho}=0.9$ )	Quasi differenced ( $\hat{\rho}=0.9$ )
Applied on→	Pooled OLS	Panel fixed effects	Panel random effects	Panel fixed effects	Panel fixed effects on cross section	Panel random effects on cross section
Remittances	-0.68	-0.14	-0.14	-0.002	not included	not included
Credits	-0.52	7.36**	6.71**	0.68	not included	not included
Earnings	0.64	0.34**	0.37**	0.189**	0.195**	0.24**
Imports	10.54	20.7**	19.85**	9.72**	9.798**	11.05**
Trade	-8.90	-3.27	-4.89*	-3.66*	-3.687*	-4.52**
Unemployment	-34.23	-30.62**	-31.87**	-34.31**	-34.32**	-31.82**

C	1806.92	1064**	1257.07	290.29	291.79**	267.87**
Adj R squared	0.85	0.97	0.89	0.63	0.63	0.43
Durbin Watson statistic	0.16	0.8	0.64	1.21	1.17	1.1

The results from the models 1 and 2, using the initial variables, indicate, as expected, that direct earnings, credits provided by banking sector (currently supplementing the money available for household expenditures) and imports (that enhance domestic supply of goods and services) do exert a significant positive influence on the household final consumption expenditure per capita in new EU countries. The negative effect of unemployment on the household consumption is also in accordance to the economic theory. Increase in trade seems to have negative effect as well, probably due to the prevalent negative balance of trade in the countries in the panel.

The main finding is that the amount of remittances received was not significant for the household consumption in the selected CEE countries over 1995-2009. This result contradicts the conclusions of many studies based on poor countries of Latin America and Africa, where a large part of the population is dependent on remittances such that their economic impact is highly significant. We must keep in mind that the social and economic context is different in the former socialist countries in Central and Eastern Europe. Although transition to market economy of these countries brought about increased income uncertainty, making remittances important additional resources for the receiving families, only a small proportion of the households depend on the money from abroad. At macroeconomic level remittances account for a low ratio relative to GDP, compared to countries in Africa and Latin America. Over the period 1996-2009, that was the focus of our study, the average remittances to GDP ratio has been below 1% in Czech Republic, Estonia, Slovakia, Slovenia and Hungary, between 1% and 1.5% in Poland, Lithuania and Latvia, 1.75% in Romania and 3.74% in Bulgaria. Considering these low percentages, our results on remittances' insignificance at macroeconomic level are consistent with the findings of Combes and Ebeke (2011).that remittances relative to GDP should exceed a certain threshold in order to gain significant macroeconomic impact.

Given the low value of Durbin Watson statistics in models 0 to 2 (Table 2), we use the classical estimation of autocorrelation coefficient  $\hat{\rho} = 1 - 0.16/2=0.92$  to compute the differenced variables in order to estimate the models 3, 4 and 5. Apart from the credit variable (that became insignificant), the results are similar to the previous ones, as regards the sign and significance of the variables.

With an overall test of significance, Hausmann we may reject the null hypotheses and accept that the fixed effect model is more appropriate (see Annex 3 for details). From an econometrical point of view model 4 is more indicated for economic evaluation (Annex 1 and

2). Since the fixed effects model is the most appropriate for our dataset, this is an indication that unobserved country characteristics, roughly stable during 1995-2009, have influenced the households' consumption in the CEE countries in our panel.

## **5. Conclusion**

The great social and economic changes faced by the former socialist countries since 1990 transformed consumption patterns as well, one important change being the large amount of remittances received from international migrants. In this context we have conducted a retrospective insight into macroeconomic effects of remittances in ten new EU member states from Central and Eastern Europe. Specifically, we aimed at highlighting their impact on the households' final consumption expenditure.

We found no evidence that the large growth in the amount of remittances conveyed through the official network affected significantly the living standard of households in the countries included in our panel. This can be easily explained given that remittances received by these countries account for a low ratio relative to GDP, compared to countries in Africa and Latin America where the impact of remittances was found to be highly significant.

Since our study is not limited to the remittance-receiving families, it reflects the broader effect on household consumption based on aggregate data. Although remittances certainly matter for the receiving households in CEE countries, it appears they have no significant impact at macroeconomic level.

The results from the models also indicated that earnings, credits and imports do indeed exert a significant positive influence on the household final consumption expenditure per capita, while unemployment and the negative balance of trade have negative impact. Some other variables suggested in the literature were also tested without reaching significance in the final specification of the model.

Further research, covering a longer period, needs to be done to reach more detailed insight into consumption patterns and the relationship with remittances.

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## Annex 1

Dependent Variable: \_CONS

Method: Panel Least Squares

Date: 07/28/11 Time: 01:10

Sample (adjusted): 1996 2009

Periods included: 14

Cross-sections included: 10

Total panel (balanced) observations: 140

Variable	Coefficient	Std. Error	t-Statistic	Prob.
_EARN	0.195127	0.035335	5.522269	0.0000
_IMP	9.798874	2.874801	3.408540	0.0009
_TRADE	-3.687791	1.873907	-1.967969	0.0513
_UNEMPL	-34.32324	6.367937	-5.390010	0.0000
C	291.7999	30.74974	9.489509	0.0000

### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.668538	Mean dependent var	424.6625
Adjusted R-squared	0.634340	S.D. dependent var	230.4151
S.E. of regression	139.3316	Akaike info criterion	12.80623
Sum squared resid	2446077.	Schwarz criterion	13.10039
Log likelihood	-882.4361	Hannan-Quinn criter.	12.92577
F-statistic	19.54880	Durbin-Watson stat	1.175173
Prob(F-statistic)	0.000000		

## Annex 2

Dependent Variable: \_CONS

Method: Panel EGLS (Cross-section random effects)

Sample (adjusted): 1996 2009

Periods included: 14

Cross-sections included: 10

Total panel (balanced) observations: 140

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
_EARN	0.242445	0.033518	7.233210	0.0000
_IMP	11.05781	2.772374	3.988571	0.0001
_TRADE	-4.529855	1.800380	-2.516055	0.0130
_UNEMPL	-31.82154	6.303166	-5.048501	0.0000
C	267.8749	34.76745	7.704761	0.0000

Effects Specification			
		S.D.	Rho
Cross-section random		56.75907	0.1423
Idiosyncratic random		139.3316	0.8577
Weighted Statistics			
R-squared	0.447283	Mean dependent var	232.9493
Adjusted R-squared	0.430907	S.D. dependent var	194.9027
S.E. of regression	147.0313	Sum squared resid	2918457.
F-statistic	27.31203	Durbin-Watson stat	1.091363
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.467287	Mean dependent var	424.6625
Sum squared resid	3931245.	Durbin-Watson stat	0.810200

### Annex 3

Correlated Random Effects - Hausman Test

Equation: MODEL5\_REM

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.332781	4	0.0007

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
_EARN	0.195127	0.242445	0.000125	0.0000
_IMP	9.798874	11.057809	0.578425	0.0979
_TRADE	-3.687791	-4.529855	0.270160	0.1052
_UNEMPL	-34.323243	-31.821541	0.820722	0.0058

Cross-section random effects test equation:

Dependent Variable: \_CONS

Method: Panel Least Squares

Date: 07/28/11 Time: 01:18

Sample (adjusted): 1996 2009

Periods included: 14

Cross-sections included: 10

Total panel (balanced) observations: 140



Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	291.7999	30.74974	9.489509	0.0000
_EARN	0.195127	0.035335	5.522269	0.0000
_IMP	9.798874	2.874801	3.408540	0.0009
_TRADE	-3.687791	1.873907	-1.967969	0.0513
_UNEMPL	-34.32324	6.367937	-5.390010	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.668538	Mean dependent var	424.6625
Adjusted R-squared	0.634340	S.D. dependent var	230.4151
S.E. of regression	139.3316	Akaike info criterion	12.80623
Sum squared resid	2446077.	Schwarz criterion	13.10039
Log likelihood	-882.4361	Hannan-Quinn criter.	12.92577
F-statistic	19.54880	Durbin-Watson stat	1.175173
Prob(F-statistic)	0.000000		