



# The drivers and the barriers of incoming remittance flows in Europe: Analysis at the regional level

Maria Adamakou<sup>1, DMR</sup>, Dimitris Kallioras<sup>2, CMR</sup>, Panos Manetos<sup>3, FM</sup>, Lefteris Topaloglou<sup>4, MR</sup>, Maria Tsiapa<sup>5, CDM</sup>, Rafał Wiśniewski<sup>6, MR</sup>

<sup>1,2,3,5</sup>University of Thessaly, Department of Planning and Regional Development; Pedion Areos, Volos, Greece, <sup>1</sup>e-mail: [madamakou@uth.gr](mailto:madamakou@uth.gr), <https://orcid.org/0000-0002-4939-6216>; <sup>2</sup>e-mail: [dkallior@uth.gr](mailto:dkallior@uth.gr) (corresponding author), <sup>2</sup><https://orcid.org/0000-0003-3060-3745>; <sup>3</sup>e-mail: [pmanetos@uth.com](mailto:pmanetos@uth.com), <sup>3</sup><https://orcid.org/0000-0001-5016-8977>; <sup>5</sup>e-mail: [mtsiapa@uth.gr](mailto:mtsiapa@uth.gr), <sup>5</sup><https://orcid.org/0000-0001-5852-8156>; <sup>4</sup>University of Western Macedonia, Department of Chemical Engineering; Kila, Kozani, Greece, <sup>4</sup>e-mail: [etopaloglou@uowm.gr](mailto:etopaloglou@uowm.gr), <sup>4</sup><https://orcid.org/0000-0003-2024-2157>; <sup>6</sup>Polish Academy of Sciences, Institute of Geography and Spatial Organization, Warsaw, Poland, <sup>6</sup>e-mail: [rafwis@twarda.pan.pl](mailto:rafwis@twarda.pan.pl), <sup>6</sup><https://orcid.org/0000-0002-4700-2922>

## How to cite:

Adamakou, M., Kallioras, D., Manetos, P., Topaloglou, L., Tsiapa, M., & Wiśniewski, R. (2026). The drivers and the barriers of incoming remittance flows in Europe: Analysis at the regional level. *Bulletin of Geography. Socio-economic Series*, 71(71): 179-190. DOI: <http://doi.org/10.12775/bgss-2026-0011>

**Abstract.** The paper compiles a Poisson Pseudo-Maximum Likelihood econometric model aiming at detecting and assessing the drivers and the barriers of incoming remittance flows in Europe. The analysis focuses on 297 NUTS 2 level regions and covers the period 2010–2018. For the needs of the analysis, the paper compiles a dataset with interregional remittance flows “regionalising” the corresponding country-level data. The findings of the paper offer substantial insight into the roles of economic, demographic, geographical and institutional factors, not only enriching the discourse in economic integration theory but also presenting practical implications for policymakers engaged in regional economic planning and integration strategies.

## Article details:

Received: 19 November 2024  
Revised: 23 February 2026  
Accepted: 02 March 2026

## Key words:

incoming remittance flows,  
geography, planning &  
development,  
NUTS 2,  
European regions

## Contents:

1. Introduction .....	180
2. Definition of remittances and motivations to remit, and empirical literature on remittance flows .....	180
3. Research materials and methods: compilation of the database for interregional remittance flows .....	181
4. Results and discussion .....	182
5. Conclusions .....	185
Notes .....	186
Acknowledgements .....	187
References .....	187

## 1. Introduction

Europe is gradually moving from a “space of places” to a “space of flows” (Castells, 2020) as the pure essence of the process of economic integration boils down to the gradual elimination of the pecuniary and non-pecuniary impediments to interaction (Topaloglou et al., 2005; Kallioras et al., 2009). Indeed, as the process of European economic integration is in full swing, European regions have been experiencing a period of unprecedented change (Brühlhart et al., 2004; Crescenzi et al., 2014), being transformed into integral parts of the European economic space (Petraokos et al., 2005; Petraokos et al., 2011; Karanika & Kallioras, 2018). Of course, even though the process of economic integration has greatly enhanced the mobility of production factors, products, people and money, this does not imply the ubiquity of economic activity (Scott et al., 2001; McCann, 2008; Rodriguez-Pose & Crescenzi, 2008; Kemeny, 2011). Geography “matters” (Gertler, 2003; Kallioras et al., 2021), and this necessitates a thorough understanding of the spatial dynamics and externalities that are generated and/or reproduced within the framework of the European economic integration process. Unfortunately, the scarcity of data on economic flows at the regional level (i.e., interregional data) acts as a deterrent to this end. Hence, several important questions regarding the dynamics of the European economic integration process remain unsolved, for both scholars and policymakers.

The paper offers a new understanding of the interrelations among regional economies in Europe. Particularly, the paper compiles a Poisson Pseudo-Maximum Likelihood econometric model aiming at detecting and assessing the drivers and the barriers of incoming remittance flows in Europe. The analysis focuses on 297 NUTS 2 level regions and covers the period 2010–2018. The regions under consideration are situated in the EU countries, in the UK, and in the EFTA countries (i.e., Iceland, Liechtenstein, Norway and Switzerland) (*Note 1*). The period of analysis is extremely important as, by and large, it lasts from the immediate aftermath of the 2008 economic crisis to the relative economic wellbeing preceding the COVID-19 pandemic. For the needs of the analysis, the paper compiles a dataset relating to interregional remittance flows. The compilation of the dataset is based on a “regionalisation” of the corresponding country-level remittances data on the basis of a methodology that utilises country-level data and regional-level data on migration flows.

The contribution of the paper is threefold. First, the paper analyses economic flows at the regional level in Europe. Up to now, due to the scarcity of data, such analyses have been conducted in only a handful of recent studies (Manetos et al., 2022; Almazán-Gómez et al., 2023; Kapitsinis et al., 2023; Almazán-Gómez et al., 2024; Adamakou et al., 2024; Moral Carcedo & Llano, 2024; Almazán-Gómez et al., 2025; Tsiapa et al., 2025a; Tsiapa et al., 2025b). Second, the paper utilises data on remittance flows instead of utilising data on remittance stocks. Third, the paper analyses remittance flows that originate from developed economies and are directed to developed (rather than developing) economies.

The current section of the paper is introductory. The next section discusses the definition of remittances and the motivations to remit and comments on the empirical literature. The third section describes the methodology for compiling the database on interregional remittance flows. The penultimate section compiles the econometric model and conducts the econometric analysis. The last section of the paper offers the conclusions.

## 2. Definition of remittances and motivations to remit, and empirical literature on remittance flows

Remittances refer to non-commercial transfers of money and represent “household income from foreign economies arising mainly from the temporary or permanent movement of people to those economies” (IMF, 2009: 272) (*Note 2*). The main components relating to remittances in a national Balance of Payments (*Note 3*) are personal transfers and compensation of employees (Azizi, 2019). Personal transfers refer to those transactions to resident households from non-resident households, while compensation of employees refers to the income of border, seasonal and other short-term workers who are employed in an economy where they are not resident and of residents employed by non-resident entities.

The income of migrant workers is not entirely transferred to the home countries. This is because an important part remains in the host countries in order for the migrant workers to meet their needs. In fact, the literature highlights that the volume of remittances, measured as monetary value remitted per year) decreases as length of stay increases (Merkle & Zimmermann, 1992; Bauer & Sinning, 2011; Sinning, 2011). Factors influencing this decline might be the saving of money in the

host country with the intention of setting up a business on return to the home countries or buying a house when migrants obtain a permanent resident status in the host country (Ghosh, 2006).

Research shows that migrants' motivations for sending remittances are often driven by either pure altruism or self-interest (such as for purposes of investment or as a form of insurance) (Inglis et al., 2020). Since altruistic motivations are inherently abstract and challenging to quantify; their influence on migrant behaviour has typically been assessed using indirect methods (Lucas & Stark, 1985; Agarwal & Horowitz, 2002; Bouhga-Hagbe, 2006). For self-interested motivations, migrants often choose a specific remittance strategy due to their desire to eventually return home or to invest in their home country. Broadly speaking, the literature suggests that altruistically motivated remittances tend to decrease during periods of economic growth in the home country and rise during downturns, whereas remittances motivated by self-interest tend to exhibit the opposite pattern (Azizi, 2017).

Within this framework, empirical literature on bilateral remittance flows remains extremely limited and inconclusive. This is so because the lack of (high-quality) data has proven to be an insurmountable hurdle. Existing empirical evidence refers mostly to international remittance flows (*Note 4*). As regards the interregional remittance flows, there is, to the best of the authors' knowledge, only the study of Manetos et al. (2022) that provides a typology of European regions for the year 2018.

### 3. Research materials and methods: compilation of the database for interregional remittance flows

Statistical information regarding remittance flows across European space is scarce and relates only to the national level. World Bank (*Note 5*) and EUROSTAT (*Note 6*) provide only country-level data on remittance flows, and thus only the compilation of country-to-country origin–destination matrices on remittance flows is feasible (*Note 7*). Thus, the data on remittance flows at the regional level need to be “produced” (“generated”). Regional-level data on remittance flows will allow for the compilation of region-to-region origin–destination matrices on remittance flows.

The paper utilises World Bank national-level remittance flows data, given that the corresponding EUROSTAT data refer to significantly fewer

observations (i.e., country-pairs) due to more missing values. Although the World Bank dataset is the most comprehensive source for remittances data, it still contains some missing values. Whenever feasible, these missing values were filled using interpolation or extrapolation. If filling was not possible, the missing values were left as blank cells. Additionally, the dataset was thoroughly checked to ensure the absence of any “problematic” data, such as typographical errors.

Overall, the World Bank dataset satisfies the criteria for the assessment of data quality set by EUROSTAT (2020: 21), namely: relevance (the dataset meets the needs of users), accuracy (the dataset contains data that are close to true values), timeliness (the length of time between the availability of the dataset and the phenomenon that the data describe is short), punctuality (the dataset is immediately accessible), accessibility (the dataset is freely available), clarity (the dataset is easy to understand), comparability (the dataset contains data that are harmonised, overcoming differences among national methodologies for estimating remittance data), and coherence (the dataset contains data that are reliably combined in different ways and for various uses).

Due to the absence of regional-level data on remittance flows, the compilation of region-to-region origin–destination matrices on remittance flows is feasible – subject to the “regionalisation” of the corresponding national-level data. To this end, regional-level data on migration flows are utilised. This is because remittance flows and migration flows are directly linked, as the former can be considered the financial consequence of latter (World Bank, 2024; OECD, 2025). In other words, remittances are a detectable economic link between the migrants and their countries of origin. Particularly, inflows of remittances are associated with corresponding outflows of migration, while outflows of remittances are associated with inflows of migration (IMF, 2024; United Nations, 2025). It is worth noting that the World Bank estimates country-level remittance flows utilising migrant stocks, origin countries' incomes, and destination countries' incomes.

Ratha and Shaw (2007) present estimates of national-level remittance flows by applying three distinct allocation rules: (a) weights based on the number of migrants abroad, (b) weights based on estimated migrant incomes, calculated by multiplying migrant stocks by per capita income in the destination countries, and (c) weights that account for both migrants' income abroad and income in their home countries. The first rule's limitation is

its assumption that all migrants remit the same amount, irrespective of their location or income level in the host country, which reduces its accuracy given the substantial income variability among migrant-receiving nations. The second rule, while adjusting for income, assumes a fixed remittance share of each migrant's income, without considering the income level itself. The third rule provides a more refined approach, though it demands extensive data to implement.

To address the need for regional-level remittance estimates, a method is adapted based on the first allocation rule. In the European context, this rule's limitation is minimised because income variance across regions is relatively small, as all European countries are part of the developed world. Specifically, the paper refines the approach suggested by Petrakos and Kallioras (2007) and Kallioras and Petrakos (2010) (*Note 8*), estimating regional-level remittance flows using a formula that links national-level remittances with the proportion of regional migration stocks relative to national figures (Komornicki et al., 2023) (Eq. 1). Remittance flows to a destination region from an origin region (i.e., incoming remittance flows) in a given year are calculated as the product of the corresponding country-level remittance flows and the share of the stock of migration from the destination region of remittance flows to the origin region of remittance flows (i.e., external migration stock) in a given year to the corresponding country-level stock of migration, according to the formula:

$$REM_{rd,ro,t} = REM_{cd,co,t} * \left( \frac{MGR_{ro,rd,t}}{MGR_{co,cd,t}} \right), \quad (1)$$

where,  $REM$  = remittance flows,  $MGR$  = migration stock,  $cd$  = destination country of remittance flows,  $co$  = origin country of remittance flows,  $rd$  = destination region of remittance flows ( $rd \in cd$ ),  $ro$  = origin region of remittance flows ( $ro \in co$ ),  $t$  = time (i.e., year).

The application of the method rests on the assumption that the ratio of regional to national incoming (or outgoing) migration stocks is equal to the ratio of regional to national outgoing (or incoming) remittance flows. Considering that migration data are extremely sensitive to measurement errors (Komornicki & Wiśniewski, 2021), having access to high-accuracy migration data is a crucial element for the “production” of high-accuracy interregional remittance flow data (*Note 9*).

## 4. Results and discussion

The paper proceeds to an econometric analysis for the detection of the drivers and the barriers of interregional incoming remittance flows in Europe. To this end, a panel-data model is specified. Panel-data modelling is widely acknowledged as a methodology that controls for omitted variables and heterogeneity problems, capturing relationships over time and avoiding the risk of choosing an unrepresentative year (Antonucchi & Manzonchi, 2006). The issues of unobserved heterogeneity and omitted variables are crucial for the validity of the results. Thus, studies aiming to obtain unbiased estimates use fixed effects for remittance destination countries, origin countries and time (Hummels & Levinsohn, 1995; Matyas, 1997; Baltagi et al., 2003). The Ordinary Least Squares (OLS) estimation technique may lead to significant bias, mainly due to the assumption that the disturbance term is statistically independent from the dependent and independent variables of the model. Thus, a more appropriate approach for dealing with the defects of the OLS approach is the Poisson-type estimation technique, either in a standard or in a modified fashion (Wooldridge, 2002). Particularly, the Poisson Pseudo-Maximum Likelihood (PPML) estimation approach has been suggested (Santos Silva & Tenreyro, 2006) as a special case of Generalised Linear Model (GLM) that assumes that the variance is proportional to the mean.

Towards detecting the drivers and the barriers of intra-European interregional incoming remittance flows, a stochastic panel-data Poisson-type gravity model is specified, in a PPML fashion, allowing for both the dimensions of time and space and controlling for omitted variables and heterogeneity problems (Eq. 2), as follows:

$$\begin{aligned} \ln REM_{j,i,t} = & a_0 + a_1 \ln POP_{i,t} + a_2 \ln POP_{j,t} + \\ & a_3 \ln DIST_{j,i} + a_4 \ln PCGDPGAP_{i,j,t} + \\ & a_5 PCGDGPGR_{j,t}(-1) + a_6 \ln CRED_{j,t} + \\ & a_7 CONCOR_{j,t} + a_8 CONCOR_{i,t} + \\ & a_9 \ln EDHIGH_{i,t} + a_{10} \ln TAXES_{i,t} + \\ & a_{11} \ln EXP_{i,j,t} + a_{12} EMU_{j,i} + a_{13} CLBORD_{j,i} + \varepsilon_{j,i,t}, \end{aligned} \quad (2)$$

where,  $i$  = origin region,  $j$  = destination region,  $t$  = time,  $REM$  = (incoming) remittance flows (*Note 10*),  $POP$  = population (*Note 11*),  $DIST$  = distance (*Note 12*),  $PCGDPGAP$  = per capita GDP gap (i.e., origin / destination ratio),  $PCGDGPGR(-1)$  = per capita GDP growth (one-year time lag),  $CRED$

= credit availability (*Note 13*), *CONCOR* = control of corruption (*Note 14*), *EDHIGH* = migrants with higher education (*Note 15*), *TAXES* = average tax rates, *EXP* = exports (*Note 16*), *EMU* = EMU membership, *CLBORD* = common land border,  $\varepsilon$  = disturbance term.

The dependent variable of the model (*REM*) is the interregional incoming remittance flows in Europe and is expressed in both absolute values and as a share (%) of GDP.

The economic mass of the remittance destination and origin regions is represented by the level of population (*POP*). Regional population is considered to be more representative than regional economic development in explaining the possibility of being a recipient of remittances (Sirkeci et al., 2012) and for this reason population is used instead of GDP. Thus, a positive sign is expected for the population level of both the origin and the destination regions. This is especially so when remittances are expressed in absolute values.

Distance (*DIST*) between the region of origin and the region of destination is a proxy for the level of transaction costs (Frankel, 2011) and, more importantly (since financial assets are “weightless” [Ahmed et al., 2021]), as a proxy for information frictions (Portes & Rey, 2005). By and large, greater distance between economies is associated with increased costs of sending money and/or a greater information friction, and thus negatively affects remittance inflows (Mayda, 2010; McCracken et al., 2017). The coefficient of distance is thus expected to be negative to verify that adjacency magnifies the interregional remittance flows.

The difference in terms of the development level between the remittance origin and remittance destination country (*PCGDPGAP*) is included in the model as a proxy for the difference in the corresponding wages. The wage difference between the origin and the destination country has been shown to be a decisive factor in increasing remittances to the destination countries (Bunduchi et al., 2019). In principle, altruistic and self-interested motives of remittances may switch depending on the level of home income (i.e., income in the destination region) itself (Aydas et al., 2005), in the sense that a higher income at the destination region is associated with a dominant altruistic motive, whereas a lower income at the destination region reveals a self-interested motive (Singh et al., 2011).

The growth rate of the GDP per capita (*PCGDPGR*) of the destination region is also exploited in relation to remittances. An increase in the growth rate shows that migrants tend to send more remittances when the economic conditions back

home (i.e., destination region) improve, possibly for investment purposes. Thus, a positive sign of the coefficient is expected. In order to avoid any endogeneity issues, growth with a one-year time lag is used (Amuedo-Dorantes et al., 2010).

Credit availability (*CRED*) is an indicator of the overall development of a country. The case that increased credit availability in the destination region is related to high remittances signifies a financial deepening in the destination region, which attracts self-interested remittances. The opposite case signifies that increased availability of credit reduces the need for remittances, especially for self-interested ones (Arezki & Bruckner, 2011).

Governance institutions establish the incentive structure that shapes all forms of interaction (i.e., political, economic and social) in an economy (Effiong & Asuquo, 2017). Thus, the control of corruption (*CONCOR*) in both the destination and origin region is included in the model. The index reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the “capture” of the State by elites and private interests. The relation of remittances with the trustworthiness of institutions of a destination economy (i.e., destination region) can be both positive and negative. On the one hand, low levels of law and order may deter remittances, since such an environment is not conducive for investment purposes (IMF, 2005). On the other hand, an adverse institutional environment discourages the development of the private sector or the attraction of foreign investments (Gulzar Rammal & Zurbruegg, 2006) and intensifies the need for external financial support. The relation of remittances with the institutional trustworthiness of an origin economy (i.e., origin region) is expected to be net positive.

The presence of human capital (i.e., migrants with high education) in the origin region (*EDHIGH*) is included in the model, given its ability to generate higher incomes and, accordingly, higher remittances. The educational background of migrants has been shown to be a decisive factor in increasing remittances to their home countries, as more-educated people tend to send more money compared to less-educated ones, who, in fact, have far fewer opportunities to go abroad (Yoshino et al., 2018). Skilled migrants with greater potential for higher earnings might be more likely to remit more, mitigating thus the negative impact of the brain-drain effect in the origin country (Schiopu & Siegfried, 2006). Thus, a positive sign of the coefficient is expected. Of course, there is always the possibility for a negative relation between human capital and

remittances due to fact that the skilled migrants have longer migration periods and a higher probability of reuniting with their families at the place of migration (Dustmann & Mestres, 2010).

Higher taxes in the origin region (i.e., origin country) constitute another factor that could discourage migrants from sending remittances to the destination region, as they may create considerable pressure in income, profits and capital (Simionescu, 2006). Thus, the variable of average tax rate (i.e., taxes as a share of income) (TAXES) is included in the model.

Trade relations might be an important determinant for remittance flows since more remittances are sent from trade partners (i.e., from the destinations of the home country's exports) than from non-partners. Though remittances are generally less volatile than other sources of foreign exchange, they are likely to weaken when exports weaken (Lueth & Ruiz-Arranz, 2006). The volume of exports (EXP) from an origin region to a destination region is also included in the model, and the coefficient is expected to have a positive sign.

Any regulation in the financial sector and the transaction costs that might facilitate remittance flows could increase their actual volumes. Fewer restrictions on current-account transactions considerably enhance the volume of remittance flows (Beck & Martinez Peria, 2011). Facilitating the movement of capital transfers, significantly reducing the costs and barriers associated with remittances for migrants within the Eurozone while simultaneously providing a stable currency environment, the Economic and Monetary Union (EMU) has such a role. Thus, a dummy variable for EMU membership (EMU) is included in the model. The variable takes the value of 1 if both the origin and the destination region belong to the EMU, and the value of 0 otherwise. The coefficient of the variable is expected to be positive.

Considering that the abolition of economic barriers generates (releases) all kinds of spatial dynamics that relate to better access to foreign markets, the dummy variable of common land borders (CLBORD) has been included in the model to account for the physical proximity (Laurent et al., 2022). The variable takes the value of 1 if the origin and the destination region share land borders, and the value of 0 otherwise. Common land borders facilitate cross-border, seasonal and short-term work, and, overall, are usually associated with lower costs of sending money. The coefficient of the variable is expected to be positive.

Regional fixed effects (i.e., for both the origin and the destination regions) by time-invariant

dummy variables are added to account for unobserved heterogeneity. Time-fixed effects are also added to model specific unobservable time effects.

Remittances also depend on the unemployment rate of the host country, as it turns out that migrants choose to migrate to countries with low unemployment to have a better chance of lasting work and a permanent salary (Hunt, 2006). However, this variable has not been included in the final specification of the model given that it has been proven to be statistically non-significant.

Migration per se has not been included in the model as an independent variable, in order to avoid endogeneity problems, given the method that the paper employed for the estimation of interregional remittance flows (i.e., the dependent variable). The results of the econometric model provide insight into the determinants of interregional incoming remittance flows in Europe (Table 1).

Population size matters positively for remittances, as populationally larger economies both receive and send larger volumes of remitted earnings. Yet, when remittances in relative terms (i.e., as a share of GDP) are considered, population size matters positively only for the remittance-sending regions.

Distance has a negative impact, indicating that a higher cost of remitting or a greater friction of information reduces the volume of remittances.

The difference in development levels between the origin and the destination region has a positive impact, signifying that an important development gap between two regions enhance the interregional remittance flows and suggesting that remittances have an altruistic motive.

Growth rate (one-year time lag) is found to have a significantly positive effect on remittances (as a share of GDP), implying that a higher increase in the growth rate is associated with more remittances, possibly for investment purposes.

Credit availability is related negatively to remittances, implying the altruistic motive of remittances as remittances attempt to counterbalance the weakness of the economy to support the private sector.

The impact of corruption control in the destination region on remittance flows (as a share of GDP) is negative, indicating that remittances are driven more by altruistic behaviour than by a self-interested motive for investment opportunities. The impact that corruption control in the origin region has on the volume of remittance flows is positive.

The presence of human capital in the origin region is associated positively with remittance flows, highlighting the ability of skilled migrants

**Table 1.** Econometric results for the determinants of the incoming interregional remittance flows in Europe, period 2010–2018

	Remittances			
	Absolute values		Share of GDP	
	(1)	(2)	(3)	(4)
$\ln POP_{i,t}$	0.73***	0.69***	1.24***	0.99***
$\ln POP_{j,t}$	0.80***	0.74***	-0.59***	-0.70***
$\ln DIST_{j,i}$	-0.25***	-0.50***	-0.29***	-0.72***
$\ln PCGDPGAP_{i,j,t}$	0.49***	0.38***	1.11***	1.14***
$\ln PCGDPGR_{j,t}(-1)$		0.001**		0.003***
$\ln CRED_{j,t}$	-0.02***		-0.04***	
$CONCOR_{j,t}$		-0.07***		-0.51***
$CONCOR_{i,t}$		0.33***		0.49***
$\ln EDHIGH_{i,t}$	0.66***		0.27***	
$\ln TAXES_{i,t}$	-0.67***		-1.44***	
$\ln EXP_{i,j,t}$	0.24***	0.27***	0.35***	0.34***
$EMU_{j,i}$	0.15***		0.53***	
$CLBORD_{j,i}$	0.76***		1.52***	
constant	-14.26***	-10.40***	-71.02***	-63.46***
Regional fixed effects	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES
Observations	624,132	734,616	624,132	734,616

\*\*\* statistically significant at 1% level; \*\* statistically significant at 5% level

Source: Authors' elaboration

to generate higher incomes and, accordingly, higher remittances.

The coefficient of taxes in the origin region is negative, suggesting that high taxes drain the income of migrants and weaken their ability to send remittances.

The coefficient of exports from the origin to the destination region confirms the expectations that export flows boost remittance flows and the latter are procyclical to exports. However, this fact indicates the possible inability of remittances to be shock absorbers as they depend on exports growth.

EMU membership exerts a positive impact on remittance flows.

The existence of a shared border between origin and destination countries also exerts a positive impact on remittance flows.

## 5. Conclusions

The paper detects and assesses the drivers and the barriers of incoming remittance flows in 297 European regions (NUTS 2 level), covering the period 2010–2018. To this end, the paper compiles a dataset with interregional remittance flows and a PPML econometric model. In order to compile the dataset, the paper “regionalises” the (high-quality) World Bank country-level remittance flows data, developing a methodology under the assumption that the allocation weights of the data are based on migrant stocks abroad. Particularly, the paper estimates regional-level remittance flows based on a formula that links national-level remittance flows and the share of regional migration stocks to the corresponding national ones.

The econometric analysis reveals that several factors contribute to attracting remittance flows. Key drivers include the population size of remittance origin regions, the population of remittance destination regions (affecting only the absolute volume of remittances), the development disparity between origin and destination regions, the one-year lagged growth rate (only for relative remittance volumes), the level of corruption control in origin regions (only for relative remittances), the presence of skilled migrants (only for absolute remittances), trade relationships between origin and destination regions, EMU membership of both regions, and the presence of shared land borders. On the other hand, factors that hinder remittance flows include the population size of destination regions (only affecting relative remittance volumes), the physical distance between origin and destination regions, credit availability in destination regions (only for absolute remittances), corruption control in destination regions (only for relative remittances), and tax levels in origin regions (only for absolute remittances).

The findings of the paper offer substantial insights, not only enriching the discourse in economic integration theory but also presenting practical implications for policymakers engaged in regional economic planning and integration strategies. It has been verified that the process of European economic integration is associated with a set of divides and contradictions that still characterise the (integrated) European economic space.

The paper contributes to the discussion on flows in Europe, offering an up-to-now unknown layer of analysis. The findings of the paper provide a valuable input for the assessment of the type and intensity of relations between remittance flows and the array of flows that take place across European space. This may enable a better understanding of the linkages that exist among European regions but still need to be obtained. Particularly, the literature that focuses on the relation of remittance flows with migration flows may capitalise on the findings of the paper. This is especially so in the light of the mega-trends that are taking place in Europe (such as the post-BREXIT period, the post-COVID19 period, the implementation of the European New Green Deal Strategy) that “create” a new reality. This new reality may, in turn, reshape the regional distribution of certain economic activities, thus affecting remittance flows.

Through tackling the corresponding scarcity of data, the paper necessitates the need for having regional-level data on remittance flows, in a direct manner and on a regular basis. The provision of data – not only for remittances but also for a wide array of interregional flows (such as trade, migration,

commuting, investment, tourism) – is imperative. This is especially so for Europe, where an – unprecedented – process of economic integration is in full swing. Apparently, it behoves the European Central Bank (ECB) and EUROSTAT to bear the responsibility of performing such a task.

## Notes

1. These countries comprise the ESPON space. See: <https://www.espon.eu/espon-2030/espon-2030-programme>.
2. Note that a (statistical) problem with the definition of remittances is that it entails the risk of including earnings of locals working for foreign embassies and international organisations, which do not typically refer to remittances (Giuliano & Ruiz-Arranz, 2009; Clemens & McKenzie, 2018).
3. The Balance of Payments is the method countries use to monitor all international monetary transactions, usually on a quarterly and an annual basis, and it is the difference between all money flowing into the country and the outflow of money to the rest of the world (Sloman, 2006).
4. See: Fagiolo & Rughi (2023) for a survey.
5. See: <https://www.worldbank.org/en/topic/migrationremittancesdiasporaissues/brief/migration-remittances-data>
6. See: [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bop\\_rem6&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bop_rem6&lang=en)
7. The matrices have been compiled for the years 2010 to 2018. See: <https://irie.espon.eu/>
8. This methodological suggestion refers to the “regionalisation” of national-sectoral trade flows.
9. The data on country-level and regional-level migration flows satisfy the EUROSTAT (2020: 21) criteria for the assessment of data quality.
10. Interregional remittance flows data have been converted in constant prices using World Bank GDP deflators. See: <https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS>. The year 2018 is the base year (i.e., GDP deflator = 100). The GDP deflator measures the ratio of nominal (or current-price) GDP to the real (or constant-price) measure of GDP. Real GDP growth, and consequently real remittances growth, compensates for changes in the value of money (i.e., for the effects of inflation or deflation).
11. See: <https://ec.europa.eu/eurostat/data>
12. See: [http://www.cepii.fr/CEPII/fr/bdd\\_modele/presentation.asp?id=8](http://www.cepii.fr/CEPII/fr/bdd_modele/presentation.asp?id=8)
13. See: <https://databank.worldbank.org>
14. See: <http://info.worldbank.org/governance/wgi>
15. See: <https://stats.oecd.org/index.aspx>
16. Source: Pérez-Balsalobre et al. (2023)

## Acknowledgements

The authors would like to thank ESPON “Interregional Relations in Europe (IRiE)” partners for valuable comments and suggestions on earlier versions of the paper. Special thanks go to Nicolas Rosignol, project officer of the ESPON EGTC, and Xabier Velasco, manager of the ESPON-IRIE project at NASUVINSA. The usual disclaimer applies.

## References

- Adamakou, M., Kallioras, D., Manetos, P., & Topaloglou, L. (2024). Uncovering regional typologies in Europe in terms of interregional and intraregional direct investment flows. *European Journal of Geography*, 15(1), 11–25. <https://doi.org/10.48088/ejg.m.ada.15.1.011.025>
- Agarwal, R., & Horowitz, A.W. (2002). Are international remittances altruism or insurance? Evidence from Guyana using multiple-migrant households. *World Development*, 30(11), 2033–2044. [https://doi.org/10.1016/S0305-750X\(02\)00118-3](https://doi.org/10.1016/S0305-750X(02)00118-3)
- Ahmed, J., Mughal, M., & Martinez-Zarzoso, I. (2021). Sending money home: Transaction cost and remittances to developing countries. *The World Economy*, 44(8), 2433–2459. <https://doi.org/10.1111/twec.13110>
- Almazán-Gómez, M.Á., Llano, C., Pérez, J., Kallioras, D., & Tsiapa, M. (2025). Regional economic impact of the Next Generation European Union Recovery Plan. *Regional Studies*, 104(4), 100105. <https://doi.org/10.1016/j.pirs.2025.100105>
- Almazán-Gómez, M.Á., Llano, C., Pérez, J., & Mandras, G. (2023). The European regions in the global value chains: New results with new data. *Papers in Regional Science*, 102(6), 1097–1126. <https://doi.org/10.1111/pirs.12760>
- Almazán-Gómez, M. Á., Llano, C., Pérez, J., & Rauhut, D. (2024). Socioeconomic impacts of Russian invasion of Ukraine: A multiregional assessment for Europe. *Journal of Regional Science*, 64(2), 333–354. <https://doi.org/10.1111/jors.12676>
- Amuedo-Dorantes, C., Pozo, S, & Vargas-Silva, C. (2010). Remittances in small island developing states. *Journal of Development Studies*, 46, 941–960. <https://doi.org/10.1080/00220381003623863>
- Antonucci, D., & Manzocchi, S. (2006). Does Turkey have a “special” trade relation with the EU? A gravity-model approach. *Economic Systems*, 30(2), 157–169. <https://doi.org/10.1016/j.eco-sys.2005.10.003>
- Arezki, R., & Bruckner, M. (2011). Rainfall, financial development, and remittances: Evidence from Sub-Saharan Africa. *Journal of International Economics*, 87(2), 377–385. <https://doi.org/10.1016/j.jinteco.2011.12.010>
- Aydas, O.T., Metin-Ozcan, K., & Neyapti, B. (2005). Determinants of workers’ remittances. The case of Turkey. *Emerging Markets Finance and Trade*, 41(3), 53–69.
- Azizi, S. (2017). Altruism: Primary motivation of remittances. *Applied Economics Letters*, 24(17): 1218–1221. <https://doi.org/10.1080/13504851.2016.1267840>
- Azizi, S. (2019). Why do migrants remit? *World Economy*, 42(2), 429–452. <https://doi.org/10.1111/twec.12681>
- Baltagi, B.H., Song, S.H., & Koh, W. (2003). Testing panel data regression models with spatial error correction. *Journal of Econometrics*, 117(1), 123–150. [https://doi.org/10.1016/S0304-4076\(03\)00120-9](https://doi.org/10.1016/S0304-4076(03)00120-9)
- Bauer, T.K., & Sinning, M.G. (2011). The savings behavior of temporary and permanent migrants in Germany. *Journal of Population Economics*, 24, 421–449. <https://doi.org/10.1007/s00148-010-0306-z>
- Beck, T., & Martinez Peria, M.S. (2011). What explains the price of remittances? An examination across 119 country corridors. *The World Bank Economic Review*, 25(1), 105–131. <https://doi.org/10.1093/wber/lhr017>
- Bouhga-Hagbe, J. (2006). Altruism and workers’ remittances: Evidence from selected countries in the Middle East and Central Asia. *IMF Working Papers*, 06/130. Available at: <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Altruism-and-Workers-Remittances-Evidence-from-Selected-Countries-in-the-Middle-East-and-19178> (22.02.2026)
- Brühlhart, M., Crozet, M., & Koenig, P. (2004). Enlargement and EU periphery: The impact of changing market potential. *World Economy*, 27(6), 853–875. <https://doi.org/10.1111/j.1467-9701.2004.00632.x>
- Bunduchi, E., Vasile, V., Comes, C.-A., & Stefan, D. (2019). Macroeconomics determinants of remittances: Evidence from Romania. *Applied Economics*, 51(35), 3876–3889. <https://doi.org/10.1080/00036846.2019.1584386>

- Castells, M.** (2000). Space of flows, space of places: Materials for a theory of urbanism in the information age. In: LeGates, R.T., & Stout, F. (eds.), *The city reader*. London: Routledge.
- Clemens, M.A., & McKenzie, D.** (2018). Why don't remittances appear to affect growth? *Economic Journal*, 128(612), 62–70. <https://doi.org/10.1111/eoj.12463>
- Crescenzi, R., Pietrobelli, C., & Rabelotti, R.** (2014). Innovation drivers, value chains and the geography of multinational corporations in Europe. *Journal of Economic Geography*, 14(6), 1053–1086. <https://doi.org/10.1093/jeg/lbx020>
- Dustmann, C., & Mestres, J.** (2010). Remittances and Temporary Migration. *Journal of Development Economics*, 92(1), 62–70. <https://doi.org/10.1016/j.jdeveco.2008.12.002>
- Effiong, E. L., & Asuquo, E.** (2017). Migrants' Remittances, Governance and Heterogeneity. *International Economic Journal*, 31(4), 535–554. <https://doi.org/10.1080/10168737.2017.1410207>
- EUROSTAT (2020). *European Statistical System handbook for quality and metadata reports*. Luxembourg: Publications of the European Communities. Available at: <https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-gq-19-006> (Accessed: 22 February 2026)
- Fagiolo, G., & Rughi, T.** (2023). Exploring the macroeconomic drivers of international bilateral remittance flows: A gravity-model approach. *Economies*, 11(7), 195. <https://doi.org/10.3390/economies11070195>
- Frankel, J.A.** (2011). Are bilateral remittances countercyclical? *Open Economies Review*, 22, 1–6. <https://doi.org/10.1007/s11079-010-9184-y>
- Gertler, M.S.** (2003). Tacit knowledge and the economic geography of context, or The undefinable tacitness of being (there). *Journal of Economic Geography*, 3(1), 75–99. <https://doi.org/10.1093/jeg/3.1.75>
- Ghosh, B.** (2006). *Migrants' remittances and development: Myths, rhetoric and realities*. Geneva & Den Haag: International Organization for Migration & The Hague Process on Refugees and Migration.
- Giuliano, P., & Ruiz-Arranz, M.** (2009). Remittances, financial development, and growth, *Journal of Development Economics*, 90(1), 144–152. <https://doi.org/10.1016/j.jdeveco.2008.10.005>
- Gulzar Rammal, H., & Zurbrugg, R.** (2006). The impact of regulatory quality on intra-foreign direct investment flows in the ASEAN markets. *International Business Review*, 15(4), 401–414. <https://doi.org/10.1016/j.ibusrev.2006.05.001>
- Hummels, D., & Levinsohn, J.** (1993). Product differentiation as a source of comparative advantage? *American Economic Review*, 83(2), 445–449.
- Hunt, J.** (2006). Staunching emigration from East Germany: Age and the determinants of migration. *Journal of the European Economic Association*, 4(5): 1014–1037. <https://doi.org/10.1162/JEEA.2006.4.5.1014>
- IMF (2005). *World Economic Outlook 2005*. Washington: International Monetary Fund.
- IMF (2009). *Balance of Payments and International Investment Position manual* (6th ed.). Washington: IMF.
- IMF (2024). *Remittances: Funds for the folks back home*. Available at: <https://www.imf.org/en/publications/fandd/issues/series/back-to-basics/remittances> (Accessed: 22 February 2026).
- Inglis, C., Li, W., & Khadria, B.** (2020). *The SAGE Handbook of International Migration*. London: Sage.
- Kallioras, D., & Petrakos, G.** (2010). Industrial growth, economic integration and structural change: Evidence from the EU new member-states regions. *Annals of Regional Science*, 45, 667–680. <https://doi.org/10.1007/s00168-009-0296-5>
- Kallioras, D., Topaloglou, L., & Venieris, S.** (2009). Tracing the determinants of economic cross-border interaction in the European Union. *Spatium*, 21, 1–10. <https://doi.org/10.2298/SPAT0921001K>
- Kallioras, D., Tzeremes, N., Tzeremes, P., & Adamakou, M.** (2021). Technological change, technological catch-up and market potential: Evidence from the EU regions. *Regional Science Inquiry*, 13(1), 135–151. [https://www.rsijournal.eu/ARTICLES/June\\_2021/10.pdf](https://www.rsijournal.eu/ARTICLES/June_2021/10.pdf)
- Kapitsinis, N., Rasvanis, E., Topaloglou, L., Manetos, P., & Kallioras, D.** (2023). Regional investment flows from Greece to Bulgaria in the COVID-19 context: Is there a halt trend? *Tijdschrift voor Economische en Sociale Geografie*, 114(4), 352–369. <https://doi.org/10.1111/tesg.12591>
- Karanika, M., & Kallioras, D.** (2018). EU spatiality under question – Territorial cooperation in danger. *Territories*, 1(1), 59–72. <https://doi.org/10.5070/T21141511>
- Kemeny, T.** (2011). Are international technology gaps growing or shrinking in the age of globali-

- zation? *Journal of Economic Geography*, 11(1), 1–35. <https://doi.org/10.1093/jeg/lbp062>
- Komornicki, T., Pomianowski, W., Wiśniewski, R., Szejgiec-Kolenda, B., Mazur, M., Maruniak, E., Duma P., & Wójcik J.** (2023). *Interregional migrations flows*. Luxemburg: ESPON.
- Komornicki, T., & Wiśniewski, R.** (2021). The role of Poland's eastern border in global migration systems. *Europa XXI*, 40, 83–98. <https://doi.org/10.7163/Eu21.2021.40.7>
- Laurent, T., Margaretic, P., & Thomas-Agnan, C.** (2022). Neighbouring countries and bilateral remittances: A global study. *Spatial Economic Analysis*, 17(4), 557–584. <https://doi.org/10.1080/17421772.2022.2070656>
- Lucas, R.E., & Stark, O.** (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy*, 93(5), 901–918.
- Lueth, E., & Ruiz-Arranz,** (2006). A gravity model of workers' remittances. *IMF Working Papers*, 06/290. Available at: <https://www.imf.org/external/pubs/ft/wp/2006/wp06290.pdf> (Accessed: 22 February 2026).
- Manetos, P., Kallioras, D., Topaloglou, L., & Adamakou, M.** (2022). Uncovering regional typologies in Europe in terms of interregional remittances flows. *Europa XXI*, 43, 47–68. <https://doi.org/10.7163/Eu21.2022.43.3>
- Matyas, L.** (1997). Proper econometric specification of the gravity model. *The World Economy*, 20, 363–368. <https://doi.org/10.1111/1467-9701.00074>
- Mayda, A.M.** (2010). International migration: A panel data analysis of the determinants of bilateral flows. *Journal of Population Economics*, 23(4), 1249–1274. <https://doi.org/10.1007/s00148-009-0251-x>
- McCann, P.** (2008). Globalization and economic geography: The world is curved, not flat. *Cambridge Journal of Regions, Economy and Society*, 1(3), 351–370. <https://doi.org/10.1093/cjres/rsn002>
- McCracken, S., Ramlogan-Dobson, C., & Stack, M.** (2017). A gravity model of remittance determinants: Evidence from Latin America and the Caribbean. *Regional Studies*, 51(5), 737–749. <https://doi.org/10.1080/00343404.2015.1133904>
- Merkle, L., & Zimmermann, K. F.** (1992). Savings, remittances, and return migration. *Economics Letters*, 38, 129–134. [https://doi.org/10.1016/0165-1765\(92\)90165-U](https://doi.org/10.1016/0165-1765(92)90165-U)
- Moral Carcedo, J., & Llano, C.** (2024). How integrated regional financial markets are in Europe? A first gauge based on active securitised loans. *Investigaciones Regionales*, 59, 5–27. <https://doi.org/10.38191/iirr-jorr.24.009>
- OECD (2025). Migration, remittances and development. Available at: [https://www.oecd.org/content/dam/oecd/en/publications/reports/2005/11/migration-remittances-and-development\\_g1g-h5e4a/9789264013896-en.pdf](https://www.oecd.org/content/dam/oecd/en/publications/reports/2005/11/migration-remittances-and-development_g1g-h5e4a/9789264013896-en.pdf) (Accessed: 22 February 2026).
- Pérez-Balsalobre, S., Gallego, N., & Llano, C.** (2023). Interregional flows of goods in Europe: New insight with better data. *Unpublished manuscript*.
- Petrakos, G., & Kallioras, D.** (2007). Integration and structural change: Pre-accession experience in the regions of the EU new member-states. In: Getimis, P., & Kafkalas, G. (eds.), *Overcoming fragmentation in Southeast Europe: Spatial development trends and integration potential*. London: Routledge.
- Petrakos, G., Kallioras, D., & Anagnostou, A.** (2011). Regional convergence and growth in Europe: Understanding patterns and determinants. *European Urban and Regional Studies*, 18(4), 375–391. <https://doi.org/10.1177/09697764114078>
- Petrakos, G., Rodriguez-Pose, A., & Rovolis, A.** (2005). Growth, integration and regional inequalities in Europe. *Environment and Planning A*, 37(10), 1837–1855. <https://doi.org/10.1068/a37348>
- Portes, R., & Rey, H.** (2005). The determinants of cross-border equity flows. *Journal of International Economics*, 65(2), 269–296. <https://doi.org/10.1016/j.jinteco.2004.05.002>
- Ratha, D., & Shaw, S.** (2007). South-south migration and remittances. *World Bank Working Papers*, 102.
- Rodriguez-Pose, A., & Crescenzi, R.** (2008). Mountains in a flat world: why proximity still matters for the location of economic activity. *Cambridge Journal of Regions, Economy and Society*, 1(3), 371–388. <https://doi.org/10.1093/cjres/rsn011>
- Santos Silva, J.M.C., & Tenreiro, S.** (2011). Further simulation evidence on the performance of the Poisson Pseudo-Maximum Likelihood estimator. *Economics Letters*, 112(2), 220–222. <https://doi.org/10.1016/j.econlet.2011.05.008>
- Schiopu, I., & Siegfried, N.** (2006). Determinants of workers' remittances. Evidence from the European Neighbouring region. *ECB Working Papers*, 688. Available at: <https://www.ecb.europa>

- [eu/pub/pdf/scpwps/ecbwp688.pdf](#) (Accessed: 22 February 2026).
- Scott, A., Agnew, J., Soja, E., & Storper, M.** (2001). Global city-regions. In: Scott, A. (ed.), *Global city-regions: Trends, theory, policy*. Oxford: Oxford University Press.
- Singh, R.J., Haacker, M., Lee, K.W., & Le Goff, M.** (2011). Determinants and macroeconomic impact of remittances in Sub-Saharan Africa. *Journal of African Economies*, 20(2), 312–340. <https://doi.org/10.1093/jae/ejq039>
- Simionescu, M.** (2016). Macroeconomic determinants of permanent emigration from Romania. A Bayesian approach. *Journal of International Studies*, 9(2), 170–180. <https://doi.org/10.14254/2071-8330.2016/9-2/13>
- Sinning, M.G.** (2011). Determinants of savings and remittances: Empirical evidence from immigrants to Germany. *Review of Economics of the Household*, 9, 45–67. <https://doi.org/10.1007/s11150-009-9082-5>
- Sirkeci, I., Cohen, J.H., & Ratha, D.** (2012). *Migration and remittances during the global financial crisis and beyond*. Washington D.C. World Bank.
- Sloman, J.** (2006), *Economics* (6<sup>th</sup> ed.). Harlow: Pearson.
- Tsiapa, M., Kallioras, D., Manetos, P., & Pérez-Balsobre, S.** (2025a). Brexit's ripple effect: Transformations in European interregional trade. *Regional Studies*, 59(1), 2518279. <https://doi.org/10.1080/00343404.2025.2518279>
- Tsiapa, M., Kallioras, D., Petrakos, G., Rasvanis, E., Adamakou, M., Manetos, P., & Almazán-Gómez, M.Á.** (2025b), The geography of interregional FDI activity in Europe: Uneven distribution and determinants. *Spatial Economic Analysis*, 1-20. <https://doi.org/10.1080/17421772.2025.2456185>
- Topaloglou, L., Kallioras, D., Manetos, P., & Petrakos, G.** (2005). A border regions typology in the enlarged European Union. *Journal of Borderlands Studies*, 20(2), 67–89. <https://doi.org/10.1080/08865655.2005.9695644>
- United Nations (2025). Migrants and diaspora drive development through remittance flows. Available at: <https://www.iom.int/news/migrants-and-diaspora-drive-development-through-remittance-flows#:~:text=Beyond%20their%20impact%20on%20families,creating%20a%20win%2Dwin%20situation> (Accessed: 22 February 2026).
- Wooldridge, J.M.** (2002). *Econometric analysis of cross-section and panel data*. Cambridge Mass.: MIT Press.
- World Bank (2024). Remittances slowed in 2023, expected to grow faster in 2024. *Migration and Development Brief*, 40. Available at: <https://documents1.worldbank.org/curated/en/099714008132436612/pdf/IDU1a9cf73b51fcad1425a1a0dd1cc8f2f3331ce.pdf> (Accessed: 22 February 2026).
- Yoshino, N., Taghizadeh-Hesary, F., & Otsuka, M.** (2018). International remittances and poverty reduction: Evidence from developing Asia. *Journal of Comparative Asian Development*, 17(2), 21–42.

