Economic Uncertainty and Remittances Flow: Heterogeneity Matters

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Economic Uncertainty and Remittances to Developing Economies: A System GMM Approach

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Abstract

The recent Global Financial Crisis has threatened global economic and financial stability and as a consequence, reinforced our interest in examining the impact of economic uncertainty. Given the growing importance of remittances to the growth and development of economies, this paper examines how economic uncertainty shocks impact inward remittances of a panel of 53 developing and least developed countries over the period 1996-2018. Using a two-step system GMM approach, we find that economic uncertainty shocks induced a positive and statistically significant remittance response to developing and least-developed economies. The result is consistent with the predominant altruistic behavior of migrants from developing economies, and further, suggests the importance of migrants' remittances in moderating the potential adverse effects of uncertainty.

Keywords: Remittances, Uncertainty, GMM, Panel, Economic Policy

JEL Codes: F24, D73, C23, F68

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1 Introduction

Remittances[1] have become the single most important source of external funding, exceeding aid and foreign direct investments in developing economies. As of 2019, remittances to developing economies grew by 4.7%, reaching a record $551 billion (Plaza et al., 2019). This increase in remittance flow has significant implication for the growth and development of economies. Remittances help alleviate poverty and inequality (see, Arapi-Gjini et al., 2020; Azizi, 2019) boost investments and entrepreneurial activities (Kakhkharov, 2019), and spur economic growth (Hasan et al., 2019). Moreover, by increasing households disposable income and consumption, remittances could serve as a buffer that moderates the adverse effect of economic shocks (Yang and Choi, 2007).

This growing importance of remittances has attracted a lot of research attention with much emphasis on the determinants of remittances. Theoretically, Lucas and Stark (1985) provide three compelling arguments as to why people remit: First, people remit for purely altruistic reasons. According to this assumption, migrants care about their families and consequently derive some utility from their well-being. A migrant will therefore remit to maintain or increase not just their own utility but also, that of their families. Conversely, migrants could remit purposely for their self-interest and welfare. For instance, a migrant might remit to invest in physical capital or financial assets in preparation for their return. Finally, remittances could be motivated by the need to compensate for familial support. This could be reimbursement for family expenses on the migrant or a return on investment for the family of the migrant. Moreover, in the case where migrants have assets and children left behind, remittances could serve as compensation or payment for custodianship or services provided.

While the aforementioned framework provides the foundation for many empirical analyses on remittances, it largely ignores the uncertainties involved in the migrants' decision-making

[1] Remittances can be defined as migrants' transfers in cash or kind, sent to their countries of origin

process. Delpierre and Verheyden (2014) proposed an endogenous remittance model whereby they document that a migrant's propensity to remit depends to some extent on the level of uncertainties presented to them. We build on this framework to assess whether remittances are influenced by the economic uncertainty of the home country. Uncertainties in home countries can motivate remittances via several channels. Heightened economic uncertainty may signal high risk to migrants' investments and thus limit remittances. Conversely, uncertainties may present a precarious economic future for migrant families which in turn, may increase remittance in line with altruistic behavior. By extension, economic uncertainty has been found to increase unemployment(Caggiano et al., 2020), reduce credit growth (Hu and Gong, 2019), and dampen economic growth (Luk et al., 2020; Ren et al., 2020). This in turn has been documented to influence remittances. The consensus is that remittances increase with unemployment. The effect of economic growth on remittances is however mixed. Besides, increased economic uncertainty could push outward migration, increase migrant stock, and as a consequence increase remittance. Prolonged economic uncertainties in home countries can also stabilize migrant stocks as it discourages return migration.

Empirically, the extant literature on remittances has largely focused on the micro or macroeconomic determinants. Less emphasis has been given to economic uncertainty as a plausible determinant of remittance. So far, studies on economic uncertainty have widely focused on gauging its impact on unemployment (Caggiano et al., 2017), exchange rate volatility (Chen et al., 2020), domestic credit (Nguyen et al., 2020), economic activities (Junttila and Vataja, 2018), foreign direct investment (Canh et al., 2020), and financial stability (Phan et al., 2021). Despite the growing importance of remittance, and the increasing rate of uncertainty as documented by the recent financial crisis, the immigrant crisis in Europe and America, the recent Ebola outbreak, Brexit, the trade war between the U.S and China, and the ongoing Covid-19 pandemic, no empirical analysis exists on the effect of economic uncertainty on remittances.

This paper fills this research gap by analyzing the effect of economic uncertainty on

remittances for 53 developing and least developed countries over the period 1996-2018 while accounting for factors such as per capita GDP growth, inflation, financial development, interest rate, investment, trade openness, and exchange rate. Our paper contributes to the empirical literature in several ways. First, this paper provides the first empirical analysis on the effect of economic uncertainty on remittances flow using a novel and more holistic measure of uncertainty. Second, we consider a relatively large and representative sample of developing countries as oppose to the standard 21 (mostly advanced) cross-country analysis prevailing in the economic uncertainty literature. This allows us to have a more accurate assessment of the effect of economic uncertainty on developing economies. Third, we control for potential endogeneity using a two-step system Generalized Method of Moment (GMM) approach. This approach has proven to provide robust estimates even in an unbalanced panel. Overall, this paper contributes to the greater understanding of the mechanism of remittances and the role of global uncertainties.

We find a positive and statistically significant relationship between economic uncertainty and remittance to developing countries. This result implicitly indicates the prevalence of altruistic motives among migrants from developing economies. The results are also consistent with previous studies that emphasize the counter cyclical nature of remittances in developing economies (see, De et al., 2019).

The rest of the paper is organized as follows: Section 2 explores the data and empirical methodology. Section 3 reports and analyses the results, and section 4 concludes.

2 Data and empirical methodology

2.1 Data and descriptive Statistics

This study employs a panel data of 53 developing and least developed countries from 1996 to 2018 to examine the effect of EPU on remittances. The data on remittances as a dependent

variable is sourced from the World Development Indicators (WDI) database. The control variables including, the GDP per capita growth, investment, real interest rate, exchange rate, financial development, inflation, and trade openness are all obtained from the World Development Indicators (WDI) database.

Investment is proxied by the foreign direct investment as a percentage of GDP, while financial development is proxied by the domestic credit to the private sector as a percentage of GDP. Trade openness is computed as the sum of exports and imports of goods and services as percentage of GDP, and the exchange rate represents the value of domestic currency per United States dollar. Inflation capture the annual percentage change in consumer price index.

We use the world uncertainty index developed by Ahir et al. (2018) as a proxy for economic uncertainty. This data is obtained from the economic policy uncertainty website. For each country, the frequency count of the word "uncertainty" and its variants are computed from the Economist Intelligence Unit (EIU) report using text-mining technique. The EIU report provides an expert analysis of the economic and geopolitical conditions of each country with detail forecast of macro events. The raw counts of the word "uncertainty" as reported for each country are normalized according to the total words count in each report. Large values of the index denote higher levels of uncertainty and vice versa. Figure 1 shows the global progression of uncertainty since 1996. Overall, the index is associated with national and global events with major spikes experienced in the aftermath of the 9/11 terrorist attacks, the SARS outbreak, the Euro debt crisis, Brexit, and during the U.S 2016 election.

A detailed description of the variables, data sources, and summary statistics of the raw data used in this study are presented in Table 1 below. Figure 1 also depicts a scatter plot of average remittance and economic uncertainty (in natural logarithm) for the 53 developing countries from 1996 to 2018. The naïve correlation shows a weak positive relationship between remittance and economic uncertainty.

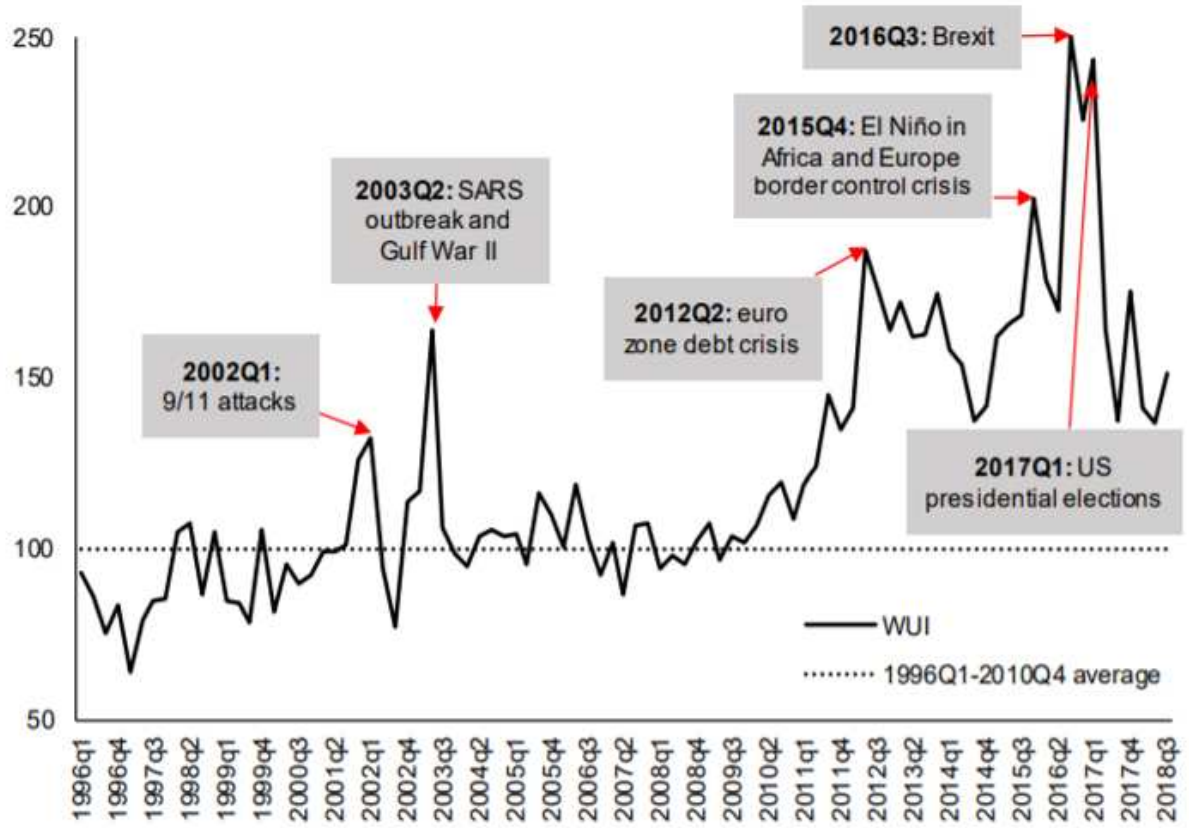

Figure 1: Global Uncertainty (source: Ahir et al. (2018))

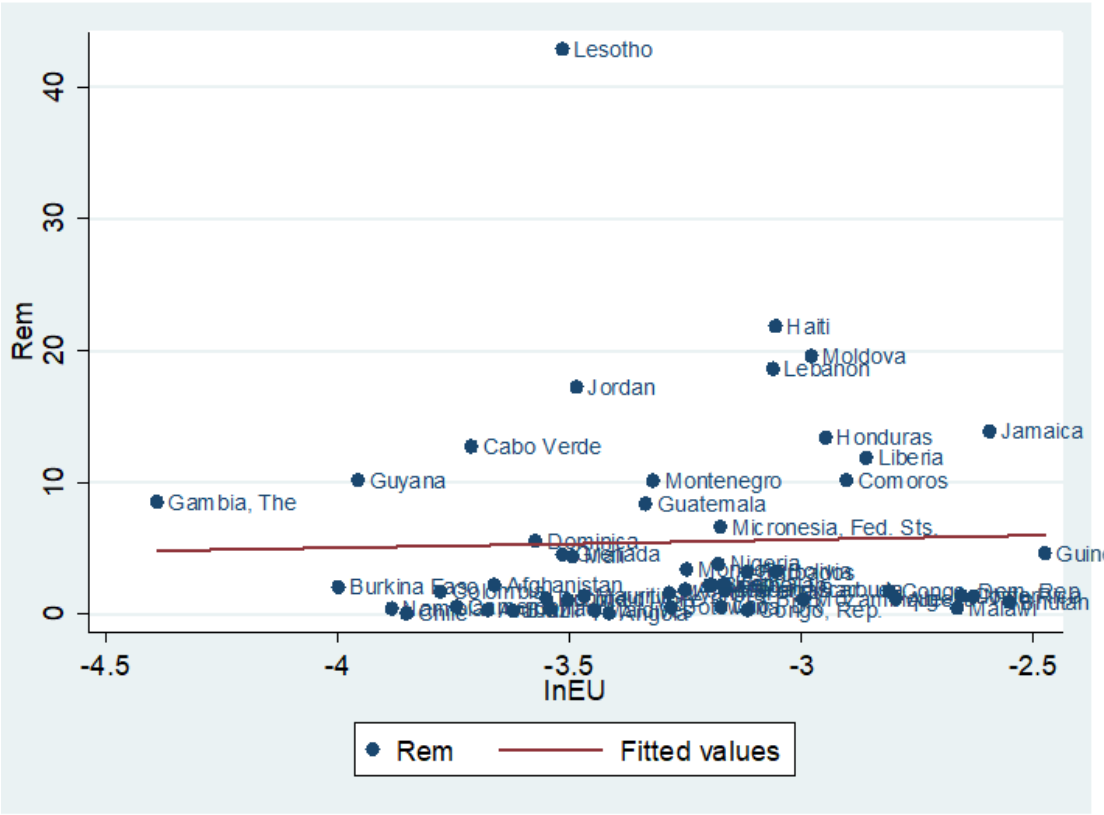

Figure 2: Remittances and Uncertainty (panel average from 1996 to 2018)

Table 1: Data sources and summary statistics

Variable	Description	Source	Obs.	Mean	Std. Dev.
Rem	Remittances (% GDP)	WDI	811	5.764	7.142
GDPPGRW	GDP Per Capita Growth	WDI	811	2.171	3.608
Financial development (FINDEV)	Domestic credit to the private sector % of GDP	WDI	811	33.511	24.944
Inflation	Annual percentage change in the consumer price index	WDI	811	6.657	8.32
Exchange rate	value of domestic currency per U.S dollar	WDI	811	475.29	1,241
Real interest rate	Real Interest Rate (%)	WDI	811	9.35	10.652
Trade openness	Share of trade (% of GDP)	WDI	811	80.062	38.471
Investment	Foreign direct investment (% GDP)	WDI	811	22.753	7.454
Economic uncertainty (EU)	Economic Uncertainty	Ahir et al. (2018)	811	0.06	0.05

WDI represents the Word Development Indicator Database. This paper used the most updated data from this database. The summary statistics reported here are only limited to the sample used in the final regression.

2.2 Model specification and empirical strategy

This study builds on the model developed by Delpierre and Verheyden (2014), where remittances are expressed as a function of uncertainty, a vector of explanatory variables, and an idiosyncratic error term as shown in equation (1) below:

$$Rem_{i,t} = \alpha_0 + \alpha_1 Rem_{i,t-1} + \alpha_2 lnEU_{i,t-1} + \alpha_3 \gamma'_{i,t} + \delta_i + \lambda_t + \epsilon_{i,t} \quad (1)$$

$$\text{i=1,2,}\ldots\ldots\ldots\text{N; t=1,2,3}\ldots\ldots\ldots\ldots\text{T, and } |\alpha_1| < 1$$

Where $Rem_{i,t}$ denotes remittances flow. We lag the remittances variable by one year to avoid reverse causality as suggested by Escribà-Folch et al. (2015). $lnEU_{i,t-1}$ is the natural logarithm of economic uncertainty, our variable of interest. The variable is lagged by one year to mitigate the problems of endogeneity. Our measure of economic uncertainty is derived from the novel country-specific uncertainty index developed by Ahir et al. (2018). Compared to other indicators, this index covers a large panel of 143 developed and developing countries[2] from 1996-2018. Moreover, the index encompasses a wide range of political and economic developments[3], collected from the respective country's economic intelligence report. A higher index denotes high levels of uncertainty and vice versa.

$\gamma'_{i,t}$ denotes a vector of control variables, δ_i denotes the unobserved country-specific

[2] The economic uncertainty index covers 37 countries in Africa, 22 in Asia and the Pacific, 35 in Europe, 27 in Middle East and Central Asia, and 22 in Western Hemisphere. These countries represent 99% of the Worlds GDP

[3] Issues covered includes, but are not limited to the 9/11 attack, SARS outbreak, Gulf War II, Euro debt crisis, El Niño, European border crisis, UK Brexit vote, and the 2016 U.S election.

fixed effect, while λ_t represents the time-specific effects. The subscripts 'i' and 't' denote country and time respectively. The selection of control variables is based on suggestions from prior empirical studies on the macroeconomic determinants of remittance. These variables include GDP per capita growth (GDPPGRW), investment (foreign direct investment as % GDP), inflation (annual percentage change in consumer price index), financial development (FINDEV) (domestic credit to the private sector as a % of GDP), exchange rate (value of domestic currency per US dollar), real interest rate, and trade openness (sum of exports and imports of goods and services as % GDP).

Equation (1) can be estimated using conventional panel data estimators such as the Ordinary Least Square (OLS), Random effects (RE), and Fixed effect (FE). However, this could lead to bias and inconsistent results (see, Nickell, 1981; Anderson and Hsiao, 1982). Indeed, several econometric problems arises when estimating a dynamic model using standard panel estimators. First, the independent variable such as the GDP per capita growth (GDPP-GRW) can be considered endogenous due to its plausible bidirectional causal relationship with remittances. Secondly, the unobserved time-invariant country characteristics such as geography may be correlated with the independent variables. Finally, the presence of the lagged dependent variable ($Rem_{i,t-1}$) leads to autocorrelation. To solve this problem, Arellano and Bond (1991) proposed the linear Generalized Method of Moments (GMM) which require, first differencing of variables to eliminate the fixed effects while introducing optimal lags of the dependent and independent variables as instruments. This estimator however perform poorly (i.e poor precision and finite sample bias) when the time series observations are small and the autoregressive parameter (α_1) approaches a random walk (Alonso-Borrego and Arellano, 1999; Ahn and Schmidt, 1995; Blundell and Bond, 1998).

We address these prevailing econometric problems by estimating equation (1) using the system Generalized Method of Moments (sys-GMM) proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The sys-GMM estimator corrects for endogeneity using internal instruments and avoids the Nickell (1981) bias associated with other panel estimators.

Moreover, it uses orthogonal deviations which minimizes data loss, making it applicable even in an unbalanced panel. It also explores additional moment conditions that result in the reduction of finite sample bias (Blundell and Bond, 2000). This bias may however persist in samples with large periods since the number of instruments increases exponentially with time (see, Roodman, 2009a). To address this problem, we collapse the instrument matrix into smaller sets while restricting the lag on regressors to one or two (see, Roodman, 2009b).

Nonetheless, the reliability of the sys-GMM estimator depends on two main things: the assumption that instruments are valid and exogenous to the error term, and that there exists no serial correlation among error terms. We thus, test the joint validity of instruments using the Hansen (1982) test for over-identifying restrictions. Failure to reject the null hypothesis suggests that instruments are valid. We test the serial correlation of errors using AR (1) and AR (2) tests. We also employ the Windmeijer (2005) finite sample corrected standard errors. These results are presented in Table 3.

3 Data analysis

3.0.1 Main results

Table 2 presents findings from the naive estimation of equation (1). Column (1) shows estimates from the ordinary least square (Pooled OLS) while columns (2) and (3) denotes the random and fixed effects estimates respectively. These estimates provide upper and lower bounds of the lagged dependent variable (see, Bond, 2002). The autoregressive coefficients (α_1) are positive and statistically significant, with values ranging from 0.87 to 0.971 (columns (3) and (2)). The strong positive effect of the lagged dependent variable signals the persistence and relative stability of remittances over time. These results are consistent with the theoretical assertion that migrants remit for altruistic purposes. And as a consequence, remittances are expected to persist so long as a good relationship between migrants and their family and friends at home exist.

Nonetheless, and as indicated earlier, remittances may depend on other factors including the economic environment of the home country. According to the baseline results (Table 1) the lagged log of economic uncertainty has a significantly positive impact on remittances in all specifications but much stronger in the fixed effect. This positive relationship holds steady even after controlling for factors such as economic growth, inflation, real interest rate, financial development, trade openness, investment, and exchange rate. While informative, estimating a dynamic panel with OLS or fixed effect estimator as aforementioned may lead to biased and inconsistent results (Baltagi, 2008). This is because the endogenous variable is likely to be correlated with the error term. We thus employ the Arellano and Bover (1995) and Blundell and Bond (1998) GMM approach to address this problem.

Table 3 reports the GMM estimates. For the difference GMM (column (1)), the estimated coefficient of the lagged log of economic uncertainty is positive and statistically significant with a point estimate value of 0.313. These estimates as noted by Roodman (2009a) may be biased considering that the difference GMM does not take into account the high degree of persistence of our endogenous variable (see, Table 2). These biases could be dramatically reduced in the system GMM (Blundell and Bond, 2000). We, therefore, employ the system GMM as the most preferred estimator for this study.

Columns (2) of Table 3 presents the results for the system GMM. The results for the autoregressive coefficient are both positive and statistically significant and lies within the lower and upper bounds given in columns (3) and (2) of Table 2. Specifically, 89% of the variations in remittances in the current year are explained by remittances from the previous year. The point estimate of the lagged log of economic uncertainty as shown in column (4) is 0.65, indicating that a 1% increase in economic uncertainty increases the steady-state value of remittances by 0.65 percentage points in the short run and 5.91 percentage points in the long run.[4] The positive effect of economic uncertainty on remittances is consistent with prior empirical literature which suggests the counter-cyclical nature of remittances.

[4] This long run affect is calculated using the formula $\alpha_2/(1-\alpha_1)$.

Table 2: Economic Uncertainty and Remittances: Baseline Model

Variables	(1)	(2)	(3)
Rem	OLS	RE	FE
L.Rem	0.975***	0.971***	0.87***
	(-0.008)	(-0.008)	(-0.016)
L.lnEU	0.099*	0.103*	0.136**
	(-0.055)	(-0.055)	(-0.061)
GDPPGRW	-0.047***	-0.049***	-0.055***
	(-0.015)	(-0.015)	(-0.017)
Inflation	0.001	0.001	-0.004
	(-0.007)	(-0.007)	(-0.008)
Interest rate	0.012**	0.012**	0.008
	(-0.005)	(-0.005)	(-0.007)
Trade Openness	0.003*	0.003*	0.008***
	(-0.002)	(-0.002)	(-0.003)
FINDEV	-0.007***	-0.007***	0.001
	(-0.002)	(-0.002)	(-0.006)
Investment	0.024***	0.025***	0.043***
	(-0.007)	(-0.007)	(-0.008)
Constant	0.463**	0.478**	0.503
	(-0.227)	(-0.232)	(-0.429)
Observations	811	811	811
R-squared	0.958	0.817	0.82

Note: ***, **, *, denotes the statistical significance at the 1%, 5%, and 10% levels, respectively. L. represents the first lag, and robust standard errors are reported in parenthesis Exchange rate values are excluded from this table as values are zero and statistically insignificant in all specifications.

Accordingly, remittances increase during periods of natural disasters and economic downtowns (De et al., 2019). Besides, economic uncertainty has been found to have a detrimental effect on consumption and unemployment, which in turn affects remittances (see, Balta et al., 2013). By extension, our results imply that prolonged economic uncertainty may be inducing remittances in line with altruistic behavior. Our results also highlight the general economic condition, financial development, and foreign direct investment as important determinants of migrants remittances to developing economies.

The results for the diagnostic test indicates a well-specified model across all specifications. In all instances, the Hansen test for over-identifying restrictions fails to reject the null hypothesis that instruments used are valid. The test for serial correlation also shows a statistically significant first-order autocorrelation and the absence of a significant second-order autocorrelation of disturbances. Our results are also devoid of instrument proliferation.[5]

4 Conclusion

This paper employs a dynamic panel model that controls for endogeneity to investigate the effect of economic uncertainty on remittances. Economic theory suggests that economic uncertainty could either stimulate or discourage remittances in line with altruistic and self-interest motives respectively. This theoretical assertion has not been exploited empirical until now due to the lack of credible and consistent data on economic uncertainty.

Using a novel data comprising 53 developing countries over the period 1996-2018, and a system GMM approach, we find that economic uncertainty has a positive and significant long-run effect on remittance. A 1% increase in economic uncertainty increases the steady-state value of remittances by 0.65percentage points in the short run and 5.91 percentage points in the long run. These results remain relatively unchanged qualitatively in the pooled OLS,

[5] As indicated by (Roodman, 2009a) having too many instruments can bias the Hansen test for over-identifying restrictions. Following the rule of thumb, we limit the number of instruments below the number of countries in all our specifications.

Table 3: Economic Uncertainty and Remittances: GMM Estimates

Variables	(1)	(2)
Rem	Diff-2-GMM	Sys-2-GMM
L.Rem	0.83***	0.89***
	(-0.111)	(-0.076)
L.lnEU	0.313*	0.65***
	(-0.184)	(-0.221)
GDPPGRW	-0.015	-0.26**
	(-0.041)	(-0.112)
Inflation	0.005	-0.067
	(-0.011)	(-0.061)
Interest rate	-0.011	-0.018
	(-0.017)	(-0.023)
Exchange Rate	0.002*	0.000
	(-0.001)	(-0.001)
FINDEV	-0.051**	-0.096**
	(-0.022)	(-0.046)
Trade Openness	-0.01	0.005
	(-0.012)	(-0.019)
Investment	0.035***	0.037***
	(-0.01)	(-0.136)
Constant		6.013***
		(-1.972)
AR(1) (p-value)	0.005	0.005
AR(2) (p-value)	0.496	0.42
Sargan (p-value)	0.003	0.000
Hansen (p-value)	0.865	0.267
No. of Countries	53	53
No. of Instruments	47	50
Observations	755	808

Note: ***, **, *, denotes the statistical significance at the 1%, 5%, and 10% levels, respectively. L. represents the first lag, and robust standard errors are reported in parenthesis. The dependent variable in columns (1) and (2) is the remittances (Rem). The lag of remittance is considered as predetermined while the GDP per capita growth, is treated as endogenous. For the system GMM, the (Windmeijer, 2005) finite sample correction for standard errors is employed. To avoid instrument proliferation, we collapse the instruments matrix and used a maximum of two lags on all instruments as suggested by Roodman (2009b) . The values reported in the row for the Sargan-Hansen test, AR (1), and AR (2) are the p-values for the test for over-identifying restrictions, and the first and second-order correlations respectively.

fixed effect, and the difference GMM. The result is consistent with the smoothing hypothesis which suggests the counter-cyclical nature of remittances in recipient (home) countries.

The results also highlight the importance of migrant remittances in moderating the potential adverse effect of economic policies. An in-depth understanding of how migrants respond to economic uncertainty shocks at the national level is thus recommended. Clarity and openness in domestic policymaking especially during periods of global shocks could enhance migrants' understanding of home country policies, and lead to a more stable remittance flow in developing countries.

References

Ahir, H., Bloom, N., and Furceri, D. (2018). The world uncertainty index. *Available at SSRN 3275033*.

Ahn, S. C. and Schmidt, P. (1995). Efficient estimation of models for dynamic panel data. *Journal of econometrics*, 68(1):5–27.

Alonso-Borrego, C. and Arellano, M. (1999). Symmetrically normalized instrumental-variable estimation using panel data. *Journal of Business & Economic Statistics*, 17(1):36–49.

Anderson, T. W. and Hsiao, C. (1982). Formulation and estimation of dynamic models using panel data. *Journal of econometrics*, 18(1):47–82.

Arapi-Gjini, A., Möllers, J., and Herzfeld, T. (2020). Measuring dynamic effects of remittances on poverty and inequality with evidence from kosovo. *Eastern European Economics*, 58(4):283–308.

Arellano, M. and Bond, S. (1991). Some tests of specification for panel data: Monte carlo evidence and an application to employment equations. *The review of economic studies*, 58(2):277–297.

Arellano, M. and Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, 68(1):29–51.

Azizi, S. (2019). The impacts of workers' remittances on poverty and inequality in developing countries. *Empirical Economics*, pages 1–23.

Balta, N., Fernandez, I. V., Ruscher, E., et al. (2013). Assessing the impact of uncertainty on consumption and investment. *Quarterly Report on the Euro Area (QREA)*, 12(2):7–16.

Baltagi, B. H. (2008). Forecasting with panel data. *Journal of forecasting*, 27(2):153–173.

Blundell, R. and Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, 87(1):115–143.

Blundell, R. and Bond, S. (2000). Gmm estimation with persistent panel data: an application to production functions. *Econometric reviews*, 19(3):321–340.

Bond, S. R. (2002). Dynamic panel data models: a guide to micro data methods and practice. *Portuguese economic journal*, 1(2):141–162.

Caggiano, G., Castelnuovo, E., and Figueres, J. M. (2017). Economic policy uncertainty and unemployment in the united states: A nonlinear approach. *Economics Letters*, 151:31–34.

Caggiano, G., Castelnuovo, E., and Figueres, J. M. (2020). Economic policy uncertainty spillovers in booms and busts. *Oxford Bulletin of Economics and Statistics*, 82(1):125–155.

Canh, N. P., Binh, N. T., Thanh, S. D., and Schinckus, C. (2020). Determinants of foreign direct investment inflows: The role of economic policy uncertainty. *International Economics*, 161:159–172.

Chen, L., Du, Z., and Hu, Z. (2020). Impact of economic policy uncertainty on exchange rate volatility of china. *Finance Research Letters*, 32:101266.

De, S., Islamaj, E., Kose, M. A., and Reza Yousefi, S. (2019). Remittances over the business cycle: Theory and evidence. *Economic Notes: Review of Banking, Finance and Monetary Economics*, 48(3):e12143.

Delpierre, M. and Verheyden, B. (2014). Remittances, savings and return migration under uncertainty. *IZA Journal of Migration*, 3(1):1–43.

Escribà-Folch, A., Meseguer, C., and Wright, J. (2015). Remittances and democratization. *International Studies Quarterly*, 59(3):571–586.

Hansen, L. P. (1982). Large sample properties of generalized method of moments estimators. *Econometrica: Journal of the Econometric Society*, pages 1029–1054.

Hasan, S. B., Akhter, R., Saha, S., et al. (2019). Impact of remittance on economic growth in bangladesh. *American Journal of Trade and Policy*, 6(1):41–48.

Hu, S. and Gong, D. (2019). Economic policy uncertainty, prudential regulation and bank lending. *Finance Research Letters*, 29:373–378.

Junttila, J. and Vataja, J. (2018). Economic policy uncertainty effects for forecasting future real economic activity. *Economic Systems*, 42(4):569–583.

Kakhkharov, J. (2019). Migrant remittances as a source of financing for entrepreneurship. *International Migration*, 57(5):37–55.

Lucas, R. E. and Stark, O. (1985). Motivations to remit: Evidence from botswana. *Journal of political Economy*, 93(5):901–918.

Luk, P., Cheng, M., Ng, P., and Wong, K. (2020). Economic policy uncertainty spillovers in small open economies: The case of hong kong. *Pacific Economic Review*, 25(1):21–46.

Nguyen, C. P., Le, T.-H., and Su, T. D. (2020). Economic policy uncertainty and credit growth: Evidence from a global sample. *Research in International Business and Finance*, 51:101118.

Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica: Journal of the econometric society*, pages 1417–1426.

Phan, D. H. B., Iyke, B. N., Sharma, S. S., and Affandi, Y. (2021). Economic policy uncertainty and financial stability–is there a relation? *Economic Modelling*, 94:1018–1029.

Plaza, S., Ratha, D., De, S., Kim, E., Seshan, G., and Yameogo, N. (2019). Migration and remittances: Recent developments and outlook. *Migration and Development Brief*, 31.

Ren, Y., Guo, Q., Zhu, H., and Ying, W. (2020). The effects of economic policy uncertainty on china's economy: evidence from time-varying parameter favar. *Applied Economics*, 52(29):3167–3185.

Roodman, D. (2009a). How to do xtabond2: An introduction to difference and system gmm in stata. *The stata journal*, 9(1):86–136.

Roodman, D. (2009b). A note on the theme of too many instruments. *Oxford Bulletin of Economics and statistics*, 71(1):135–158.

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step gmm estimators. *Journal of econometrics*, 126(1):25–51.

Yang, D. and Choi, H. (2007). Are remittances insurance? evidence from rainfall shocks in the philippines. *The World Bank Economic Review*, 21(2):219–248.

Appendix

Table 4: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	1.000								
(2)	0.055	1.000							
(3)	-0.073	-0.031	1.000						
(4)	-0.061	-0.044	0.077	1.000					
(5)	-0.061	-0.076	-0.116	-0.161	1.000				
(6)	-0.180	-0.031	0.078	0.167	0.098	1.000			
(7)	0.041	0.004	-0.068	-0.290	-0.083	-0.168	1.000		
(8)	0.285	-0.078	0.027	-0.099	-0.083	-0.137	0.339	1.000	
(9)	0.128	-0.006	0.119	-0.038	-0.019	-0.049	0.158	0.294	1.000

Number of observations: 811. Variables are listed in the following order: (1) Rem; (2) Log(EU); (3) GDPPGRW; (4) Inflation; (5) Interest rate; (6) log(Exchange Rate) (7); FINDEV; (8) Trade Openness ; (9) Investment

Table 5: Developing countries and islands used in regression

Aruba	Colombia	Lao PDR
Afghanistan	Comoros	Lebanon
Algeria	Cabo Verde	Liberia
Angola	Costa Rica	Lesotho
Antigua and Barbuda	Dominica	Moldova
Azerbaijan	Micronesia, Fed. Sts.	Madagascar
Burundi	The Gambia	Maldives
Benin	Guinea-Bissau	Mali
Burkina Faso	Grenada	Myanmar
Bangladesh	Guatemala	Montenegro
Bolivia	Guyana	Mongolia
Brazil	Honduras	Mozambique
Barbados	Haiti	Mauritius
Bhutan	Iraq	Malawi
Botswana	Jamaica	Namibia
Chile	Jordan	Niger
Cote d'Ivoire	Kenya	Nigeria
Congo, Dem. Rep.	Kyrgyz Republic	