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Remittances and the Voter Turnout in Sub-Saharan Africa: Evidence from Macro and Micro Level Data

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Abstract

Using both cross-country and individual level African data, this paper demonstrates that remittance inflows significantly lower the propensity to vote during national elections in Sub-Saharan Africa. This effect is robust to empirical specifications aimed at dealing with the endogeneity of remittance inflows at both country and household level data. This result adds to the literature highlighting the potential damaging effects of remittances on long term development.

Keywords: Remittances, Voter turnout, Sub-Saharan Africa

1. Introduction

For many developing countries including in Sub-Saharan Africa, international remittance flows represent a large and stable source of external finance. According to a recent World Bank report (Mohapatra and Ratha, 2011, *Remittance Market in Africa*) remittances sent by 31 million international African migrants reached nearly $40 billion in 2010, equivalent to 2.6 percent of Africa's gross domestic product (GDP). Recent empirical studies using Sub-Saharan African data have demonstrated the positive contribution of remittances to poverty reduction and financial development (Gupta et al., 2009). Empirical evidences also point out the key role played by remittance, as an insurance mechanism against exogenous shocks (Gubert, 2002, Yang and Choi, 2007; Yang, 2008; Combes and Ebeke, 2011) and their induced effect on welfare.[3]

A recent wave of the remittance literature has made an attempt to investigate the potential damaging effects that these flows can exert on sustainable development. It is now recognized that remittance flows can impede external competitiveness of receiving countries by fueling inflation and appreciating the real exchange rate (Amuedo-Dorantes and Pozo, 2004; Barajas et al., 2011). They are also related to more corruption (Abdih et al., 2012), lower labor force participation (Cox-Edwards and Rodriguez-Oreggia, 2009), and lower supply of public goods in education and health (Ebeke, 2012).[4]

This paper contributes to the burgeoning literature about the political consequences of remittance inflows and focuses on their effects on the political participation of receiving households. There are a couple of interesting papers in this area. O'Mahony (2011) using panel data for a large sample 81developing countries found that remittances tend to significantly increase during election years and showed that the effect is stronger in the case of competitive elections. This result can be explained by the political engagement of migrants and their family at home or by the insurance motive provided to the family during election times which are often surrounded by major risks. Pfutze (2012) shows that that the non-taxability of remittances reduces an incumbent government's ability to maintain political patronage systems and, as a result, elections will become more competitive and opposition parties are more likely to win municipal elections in Mexico. This result suggests a sizeable effect of remittances on political engagement in favor of opposition party. Pérez-Armendáriz and Crow (2010) showed that migration experiences of individuals abroad and the migration intensity in the region increase the proclivity toward democratic participation in Mexico. Goodman and Hiskey (2008) found that individuals in high migration areas in Mexico report lower voter turnout rates, and participate less in politics.

[3] There is a large empirical literature on the effects of remittances without a specific focus on Sub-Saharan Africa which have shown the positive contribution of remittances to poverty and inequality reduction (Adams and Page, 2005; Acosta et al., 2008), human capital formation (Cox-Edwards and Ureta, 2003), financial development (Aggarwal et al., 2011), insurance against shocks (Yang, Yang and Choi, 2007, Yang, 2008; Combes and Ebeke, 2011).

[4] These negative effects happen due to moral hazard effects induced by remittances on recipient households. The money sent back by the migrant constitutes an insurance mechanism for households who respond by reducing labor supply, and by exerting a lower accountability on the governments (Chami et al., 2005; Grabel, 2009; Abdih et al., 2012).

The present study takes advantage of this recent literature and investigates the effects of remittances on political participation in Sub-Saharan Africa. The study is interesting for number of reasons. First, to our best knowledge, there is no empirical evidence of the role of remittances on voter turnout rates and political participation in this region. Second, this study complements recent works aimed at better understanding the determinants of political participation in Sub-Saharan Africa. In this vein, the microeconometric investigations carried out here follow the recent work by Kuenzi and Lambright (2011) who used Afrobarometer survey data of about 10 African countries to investigate the determinants of individuals' electoral participation. Although their study did not look at the effects of remittances or migration, it constitutes a solid starting point. The authors found that media exposure, affiliating with a political party, age, education and, the level of country's democracy are positively associated with voting. Our paper therefore extends the analysis to remittances as one additional predictor of voting behavior in Sub-Saharan Africa.

Empirical investigations are carried out using two samples. First, the analysis is performed using cross-country macro data for 27 Sub-Saharan African countries for which it's possible to mobilize both voter turnout and remittance annual data. Econometric specifications controlling for some of key determinants of voter turnout, country fixed-effects, and using an instrumental variable strategy, do not reject the hypothesis that remittances inflows are significantly associated with a lower voter turnout in Sub-Saharan Africa. Second, a microeconometric approach is performed using AfroBarometer data. To deal with the non-random nature of remittances in the sample, the paper follows the recent contribution of Esquivel and Huerta- Pineda (2007) and Cox-Edwards and Rodriguez-Oreggia (2009) and resort to propensity score matching techniques to identify the effect of remittances on individuals' propensity to vote. Estimation results confirm the macro-level evidence and highlight that remittance-receiving individuals are less likely to vote during national elections. These results are robust to various diagnostic tests tailored for the propensity score matching framework.

The paper is organized as follows. Section 2 is devoted to the literature review while section 3 is about the macro-level analysis. Section 4 presents the micro-level analysis using AfroBarometer data. Section 5 concludes.

2. Literature review

Recent studies document the role of international migration in the propagation of political values including voting behaviour (Bravo, 2007; Goodman and Hiskey, 2008; Armendariz and Crow, 2010; Pfutze, 2013).

According to this literature, international migration can shape the voting behavior in the home country through two main channels. (1) The transfer of political norms from the hosting country to the home country. (2) The direct influence through vote guidance during election time.

The transfer of political norms and ideas has been tested at both the macro level and the micro level.

At the macro level, these studies suggest that there is an impact of migration on the quality of political institutions in the home country (Docquier et al, 2011; Beine and Sekkat, 2013). Besides, the studies show that this impact is determined by the political characteristics of the hosting country and the level of education of the migrants. The emigration increases the home country population's exposure to democratic values and norms (Docquier et al, 2011). This can happen directly through contacts with return migrants and relatives abroad or indirectly through the broad scope of migration network. In the same vein, using a sample of developing countries over the period 1994-2009, Beine and Sekkat (2013) show that international emigration leads to the transfer of norms from the host country to the home country. This effect is stronger when skilled emigration is considered.

At the micro level, studies suggest that emigration change the civic and democratic values of those left behind. In fact, migrants learn the political values of the host country and transmit them back to their community (Pfutze, 2013). This happens through permanent phone call or physical contact. As most host countries are advanced democracies, it is more likely that emigration will have a positive effect in the functioning of democracy including the voting behavior (Rother, 2009). For instance, using survey data, Perez-Armendariz and Crow (2010) find that Mexican citizens who have personal ties to a migrant abroad or simply live in a high migration community show higher levels of political engagement. This point of view has been contested by Goodman and Hiskey (2008) as well as Bravo (2007). Goodman and Hiskey (2008) argued that as international migration become entrenched in a community; transnational social network will start to replace local polities as the main provider of safety nets and public goods. Thus the extra income from remittances may lower electoral participation (Bravo, 2007). This view is supported by survey data carried out in the city of Mexico respectively in 2000 and 2006. Goodman and Hiskey (2000) find that voter turnout in the year 2000 federal elections is lower in high migration municipalities and that their inhabitants are less likely to participate in political events. Bravo (2007) in the similar way shows that individuals who are highly exposed to international migration (either through close relatives or because they have lived in the US themselves or plan to do so in the future) are less likely to have voted in the year 2006 elections.
The migrant's remittance could also affect the voting behaviour through vote guidance (Dedieu et al, 2012). They conducted a survey of Senegalese migrants in US and France voting to the presidential and legislative Senegalese election in 2012. They find that 66% of the surveyed encouraged their family back home to register on the electoral list and over 40% give voting guidance. Another strand of the literature suggests that remittances make voters less dependent on patronage and decline the electoral support for incumbents (Ahmed, 2011).

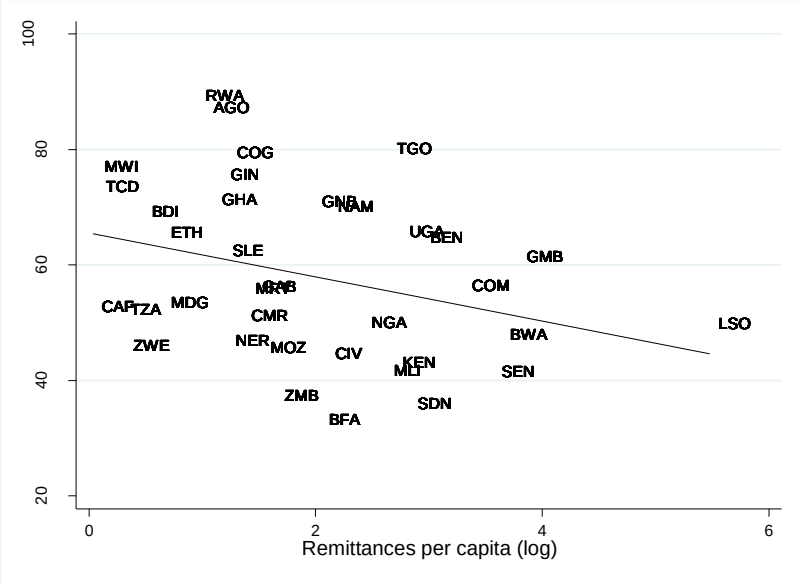
3. Remittance inflows and voter turnout in Sub-Saharan Africa: Evidence from macro data

The macroeconometric approach used in this paper is based on cross-country data gathered from the Institute for Democratic and Electoral Assistance (IDEA). We focus on presidential election data in presidential systems and parliamentary elections in parliamentary ones. The

voter turnout at the country level is defined by IDEA as the total number of votes cast (valid or invalid) divided by the number of registered voters, expressed as a percentage. As a robustness check, we also use the voter turnout measured as total number of votes cast (valid or invalid) divided by the voting age population, expressed as a percentage. Remittance inflows data which have been normalized by countries' population are drawn from the World Development Indicators.

We begin by constructing a simple scatter plot depicting the association between the average remittance inflows per capita (in log) and voter turnout rate across countries during the period 1990-2010. During this period, IDEA has recorded 130 national elections (of which 113 are presidential and 17 are parliamentary ones for presidential and parliamentarian regimes, respectively) occurred in 41 Sub-Saharan African countries.[5] Figure 1 shows that there is a strong negative correlation between remittance inflows and the turnout in the sample of Sub-Saharan Africa. High remittance-dependency tends to be associated with a lower voter turnout.

Figure 1. Correlation between remittances and voter turnout in Sub-Saharan Africa: 1990-2010



Source: Institute for Democratic and Electoral Assistance (IDEA), and World Development Indicators.

We then turn to the econometric test of the relationship between remittance inflows and the voter turnout rates. The econometric model follows the recent empirical literature (Blais, 2006; Fumagalli and Narciso, 2012) but augments traditional models by including remittance inflows. The specification takes the following form:

$$V_{i,t} = \theta R_{i,t} + X'_{i,t}\mathbf{\Phi} + \epsilon_{i,t} \quad [1] ,$$

[5] This period has been chosen as the wave of the democratic process in Sub-Saharan Africa has started in early 1990s for the vast majority of countries.

where V is the voter turnout rate and, R denotes the remittance per capita variable (in log). The model controls for a basic set of explanatory variables such as the level of economic development (log of real GDP per capita), cyclical conditions through the real per capita GDP growth rate, the cost of voter registration (measured as the ratio of registered voters to the voting age population), the extent of political competition amongst political parties and, a variable capturing the structure of the economy (level of diversification) through the natural resource rents-to-GDP ratio.

The coefficient of interest is θ which measures the effect of remittance inflows on the voter turnout rate. From the stylized fact depicted by Figure 1, one could expect this coefficient to be significantly negative in Equation [1]. However, estimating this equation solely through OLS would provide naïve and biased estimates in the case of endogeneity of remittance flows. This can happen for several reasons. First, remittance flows are not properly recorded with a large share not transiting through official channels. The bias is exacerbated when the measurement error in the remittance variable is correlated with some unobservables affecting the voter turnout. Second, some omitted variables such as macroeconomic or political shocks (or expected political tensions) during and after elections can be directly correlated with both remittance inflows and the electoral participation of individuals.

To tackle the endogeneity of remittance inflows, the paper proceeds in two ways. First, time-invariant unobservables are controlled for through the inclusion of country fixed-effects.[6] Second, the paper develops an identification strategy based on instrumental variables for remittances (two-year lagged remittances per capita and contemporaneous real GDP growth in migrant host countries).[7] Diagnostic tests will help gauge the strength and the orthogonality of these two exclusion restrictions.

Results are reported in Table 1. The first four columns report the estimations results for the two measures of the voter turnout. Regardless the specifications (with or without country fixed-effects) the effect of remittances is negative and statistically significant. In columns 3 and 6, the instrumental variable estimates are reported along with the the associated first-stage results. The instrumental variables appear significantly correlated with remittances (as evidenced by the high values of F-stat and the Shea-R^2 of the first-stage regression) and statistically uncorrelated with voter turnout residuals (given the high p-value associated with the Hansen overidentification test). Second stage estimates do not reject the hypothesis that remittance inflows are significantly and negatively associated with voter turnout rates in Sub-Saharan Africa. The coefficients obtained through the 2SLS are in absolute value higher than the OLS ones. This implies that there was an upward bias in the naïve estimates obtained from

[6] It's worth pointing out that the country-fixed effects in such a small sample (the unit of observation is the election-year what leads to an average of 3 observations per country) may absorb a significant portion of the variability of the variables.

[7] These instruments seem good candidates. First, there is no clear reason to why growth in the migrant destination countries will directly affect the voter turnout in the remittance-recipient countries after controlling for some of the determinants discussed in Equation [1]. Second, two-year lagged remittances can be seen as sufficiently exogenous to the voter turnout rate in year *t*. For each country in the sample, the growth in migrant host countries has been computed as the weighted sum of GDP growth rates in all the countries in the world with weights being the bilateral migrant shares from the World Bank Global Bilateral Migration database.

OLS results. One tentative explanation could be that remittances tend to increase during competitive elections also characterized by higher voter turnout rates. Thus, not correcting for this reverse causality will induce a downward bias in the estimation of the effect of remittances on the voter turnout rate. [8]

[Table 1 about here]

Perhaps a better sense of the quantification of the results can be obtained from the following calculation using 2SLS estimates of the impact of remittances (Table 1, column 3). A country for which, the level of remittance per capita moves from the median value (US$ 6) to the 75th percentile (US$ 24) of the distribution would observe a decrease in the voter turnout rate by about 14 percentage points.

4. Remittance inflows and electoral participation in Sub-Saharan Africa: Evidence from micro-level data

The empirical analysis presented in this section follows the bulk of the literature having used the propensity score matching techniques to overcome the selection bias in models focusing on the impacts of remittances using survey data (see Esquivel and Huerta- Pineda, 2007, and Cox-Edward and Rodriguez-Oreggia, 2009). We start by presenting the data we used. Then, we turn to the identification of the effect of remittances on individuals' propensity to vote.

4.1. Afrobarometer data on electoral participation and remittances

The individual-level data are from the fourth wave of the Afro barometer survey. This wave is related to the year 2008 and covers twenty countries (the list of countries is in Appendix B, Table B3). This survey is intended to assess the quality of democracy and governance on selected African countries. The survey records the usual demographic characteristics such as age, sex and education. It also records valuable information about remittances and voting behavior. Although it does not provide information about the amount of remittances received by each household, the respondents are asked to say whether they often receive remittances or not.[9] Following Kuenzi and Lambright (2011), our measure of voting is based on a single question about whether the respondent voted in the most recent round of national elections. We recoded responses to create a dichotomous measure of who voted among the voting age population: 1 = yes, voted; 0 = no, did not vote. The response categories for the original voting are: I did not vote; I decided not to vote; I was unable to vote; I voted; no election in my area; can't remember; and missing data. To create a dichotomous measure we combined as in Kuenzi and Lambright (2011), the following four categories into a single category for those respondents who reported that they did not participate in the election: I did not vote; I decided not to vote; I was unable to vote; and no election in my area. We excluded those respondents who said they were unable to vote or there was no election in their area.

[8] For recent evidence on the positive effects of elections on remittance inflows to developing countries, see O'Mahony (2011).

[9] The question related to the variable of remittances is the following: "How often do you receive remittances?"

4.2. Baseline estimates of the effects of remittances

Our baseline estimating equation is:

$$V_{i,c} = \beta R_{i,c} + X'_{i,c}\mathbf{\Gamma} + \epsilon_{i,c} \quad [2],$$

where i indexes individuals, and c countries. V is dichotomous variable taking 1 if the individual responded that he/she voted during the most recent national election and 0, otherwise. R is the dummy taking 1 if the individual is a remittance-recipient and 0, otherwise. X is the matrix of other control variables at the individual level that are meant to capture differences in individual, geographical, politic and social characteristics. These include age, sex, education, urban dummy, use of media (radio, television, newspapers), living conditions, social engagement (member to politic, religious or voluntary associations), perception of the electoral process (free and fair election) and the perception of how important is the corruption of elites. Country-fixed effects are included in the linear specifications (linear probability model) but not when the model is estimated using probit estimator to avoid the incidental parameter bias (see Chamberlain, 1980). Descriptive statistics of the aforementioned variables are presented in Tables B1.

Estimates of equation [2] are reported in Table 2. The table displays the results of both the estimation of a linear probability model without and with country-fixed effects and, probit model (columns 1-3).[10] In all specifications, the relationship between remittances and electoral participation is negative and statistically significant. These results appear consistent with those obtained from macro-level data. Results suggest that remittance-receiving individuals are less likely to vote at national elections compared to others. In terms of magnitude, remittance-receiving individuals have two percent less chance to vote during elections than non remittance-receiving individuals.

[Table 2 about here]

4.3. Identifying robust relationships

Matching analysis

The negative correlation between remittances and the electoral participation documented in the previous sub-section is consistent with the macroeconometric evidence. However, this correlation could be driven by omitted variables that are both correlated with selection into the status of being a remittance-receiver and with subsequent vote participation. For example, some remittance-recipient individuals could exhibit some specific unobservables characteristics (such as degree of motivation) that are also correlated with their willingness to vote in national elections.

The endogeneity of remittances is addressed using the propensity score matching techniques (PSM). In this way, we follow Esquivel and Huerta- Pineda (2007), and Cox-Edward and

[10] Marginal effects are directly reported in the probit specification.

Rodriguez-Oreggia (2009). The main purpose here is to quantify the average effect related to remittances by matching remittance-receiving individuals with individuals with similar characteristics but who do not receive remittances.

Let's $R_{i,c}$ be a dummy variable equal to one if the individual i receives remittances and zero, otherwise. We are interested in comparing the electoral participation of individual i in presence of remittances (V_{i1}) with that of the same individual i in the case he/she is not receiving remittances (V_{i0}). Since only one of these two outcomes is observed for each type of individual, the average treatment on the treated (ATT), that is, the difference in the probability of voting during national elections between those treated (those receiving remittances) and those with the same probability of being treated is estimated.[11] Following Rosenbaum and Rubin (1983), the propensity score, or the individual's probability of receiving the treatment (here receiving remittances from abroad) given the observed covariates is estimated. The baseline specification is as follows:

$$R_{i,c} = W'_{i,c}\mathbf{\Omega} + \varepsilon_{i,c} \quad [3]$$

where R is the binary variable identifying whether the individual i living in country c receives remittances or not. W is the matrix of various control variables aimed at explaining the likelihood of being remittance-recipient individual augmented with other variables also affecting the participation to national elections *via* the vote. Basically, the matrix W is composed of the full set of control variables used in equation [2] (excluding the remittance dummy) with an additional control that is related to the use of a mobile phone by the individual surveyed. This later variable is included in the remittance selection equation to capture the idea that individuals who own mobile phones are more likely to receive remittances since they are easily connected with the migrants abroad and can easily submit their financial requests. Furthermore, there is a growing effort to take advantage of the large mobile phone diffusion in Sub-Saharan Africa as a way to ease remittance transactions through mobile phone network technologies (see M-PESA in Kenya and other examples such as in Botswana, Burundi, Cameroon, Congo, Cote d'Ivoire, Ethiopia, Ghana, Madagascar, Mali, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Uganda, Zambia).[12] Table B2 reports the results of the probit estimation related to the determinants of remittances using Afrobarometer individual-level data.

Once propensity scores (the predicted probabilities of receiving remittances) are estimated, a matching estimator that describes how comparison units relate to treated units needs to be selected.[13] Four matching methods are used in this paper: the neighbor matching, the radius and caliper matching, the Kernel based matching and the local linear matching. Table 2

[11] Thorough the paper, we will mean by "treated" and "untreated", the individual who receives and who does not receive remittances, respectively.
[12] For a recent review of the penetration of the mobile remittances in Sub-Saharan Africa, see Siegel and Fransen (2012).
[13] According to Dehejia and Wahba (2002), matching on the propensity score is essentially a weighting scheme, which determines what weights are placed on comparison units when computing the estimated treatment effect.

displays the results.[14] Regardless the matching procedures, results indicate a significant and negative effect of electoral participation of individuals (columns 4-7). The probability of voting decreases by a magnitude ranging between [2.5% and 4.3%], depending on the matching procedures.

Sensitivity of the matching analyses

We carried out a sensitivity analysis of the propensity score matching technique to determine whether the average treatment effect may be modified by unobserved variables, thus creating a *hidden bias*. The basic question is whether unobserved factors can alter inference about treatment effects. One wants to determine how strongly an unmeasured variable must influence the selection process to undermine the implications of the matching analysis. The problem is generally addressed with the bounding approach proposed by Rosenbaum (2002), where the test lets the researcher determine how strongly an unmeasured variable must influence the matching analysis. For binary outcomes, Aakvik (2001) suggests using the Mantel and Haenszel (1959) test statistic.

Results of sensitivity tests related to the propensity score matching approach used in the paper suggest that the unobserved characteristics would have to increase the odds ratio that an individual receives remittances by more than 30 percent before it would bias the estimated impact of remittances on voting behavior.[15] These critical values seem reasonable based on findings from other studies (Aakvik, 2001) and suggest that our results are not fully attributable to a *hidden bias*.

5. Conclusion

This article adds to a new and growing literature that seeks to better understand the role that remittance flows play in developing countries. Generally, the empirical literature has focused on either showing that remittances matter for poverty reduction and for insurance against exogenous shocks. This paper goes beyond the traditional analyses by focusing on the potential consequences of remittances on households' behavior vis-à-vis the democracy. The paper investigates the association between the dependency upon remittances and attitudes towards voting in national elections. Based on both cross-country and individual-level data, we show that remittance inflows are associated with a reduction in the probability to vote in national elections in Sub-Saharan Africa.

To determine whether this relationship is robust and causal, we pursued two different strategies according to the sample (macro or micro-level data) which is used. An instrumental variable approach in which remittance inflows are instrumented by economic conditions in

[14] As a robustness check, we checked the distribution of the covariates using the common support sample between the group of treated (remittance-receiving individuals) and the control group identified using the matching. Results highlight that for almost all the covariates, there is no statistical difference between the control group and the treated inside the common support. Results for each control variable and matching procedure are available upon request.

[15] Consistent results are obtained for the various matching techniques (nearest neighbor, kernel). These results are available upon request.

migrant host countries has been retained in the case of macro-level data. When resorting to micro-level data, the paper used the propensity score matching with several sensitivity analyses to overcome the lack of strong exogenous source of variations for remittances in the micro-data. Results that remittances significantly decrease the probability that people vote in national elections is not statistically rejected by the data.

Overall, the findings provide evidence that one "bad news" related to the dependency upon remittances is the implied drop in electoral participation of remittance-receiving individuals. By reducing individuals' interest in elections, remittances are then altering the accountability on governments and strongly impede the benefits of having democratic systems in Sub-Saharan Africa.

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Table 1: Effect of remittances on voter turnout rate in Sub-Saharan Africa

	(1)	(2)	(3)	(4)	(5)	(6)
	Vote 1			Vote 2		
	OLS	OLS-FE	2SLS-FE	OLS	OLS-FE	2SLS-FE
Remittances per capita (log)	-3.082***	-3.964*	-5.131**	-2.816***	-3.718*	-4.613*
	(2.99)	(1.72)	(2.03)	(2.67)	(1.69)	(1.85)
	First-stage results:					
	Dependent variable is: log of Remittances per capita					
Growth in migrant host countries			3.141***			3.140***
			(2.80)			(2.81)
Remittances per capita (in t-2)			0.851***			0.824***
			(7.86)			(7.73)
Observations	93	93	80	92	92	79
Number of countries	34	34	27	34	34	27
Country fixed effects	No	Yes	Yes	No	Yes	Yes
Shea R^2			0.548			0.552
Fisher stat. in the first-stage			35.288			35.531
Hansen OID p-value			0.330			0.435

Notes: Robust t statistics in parentheses. Vote 1 denotes the voter turnout rate proxied by the number of voters as a percentage of registered voters. Vote 2 denotes the number of voters as a percentage of voting age population. The instrumental variable Growth in migrant host countries is computed as the weighted sum of real per capita GDP growth rates in all destinations with weights being bilateral migration shares drawn from The World Bank Global Bilateral Migration Database. All the specifications (including the first-stage regressions) include a full set of the following control variables: log of real GDP per capita as a proxy of the level of economic development, real GDP growth rate, an index of electoral competition, the size of natural resources rents, and the cost of voter registration. The unit of analysis is the country and the unit of observations is the election year.

* p<0.1, ** p<0.05, *** p<0.01

Table 2: Matching estimates of treatment effect on the propensity to vote

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS-FE	Probit	10-Nearest neighbor matching	Radius matching	Kernel matching	Local linear regression matching
ATT	-0.0204*	-0.0174*	-0.0211**	-0.0201*	-0.0185*	-0.0205**	-0.0172*
	(0.0105)	(0.0105)	(0.0103)	(0.0116)	(0.0102)	(0.00987)	(0.0101)
No of treated				1751	1751	1750	1751
No of controls				7230	7230	7230	7230
No of obs used [a]	8981	8981	8981	8981	8981	8981	8981

Notes: ATT refers to the average treatment effect on the treated of remittances on individuals' voting behavior. [a] The total number of observations corresponds to the size of the *common support*. A 0.06 fixed bandwidth and a biweight kernel are used for kernel and local linear regression matching. Bootstrapped standard errors for ATT are reported in parenthesis. They are based on 100 replications of the data. *, **, and *** indicate the significance level of 10%, 5%, and 1%, respectively.

Table 3: sensitivity analysis, nearest neighbor matching

Gamma	Q_mh+	Q_mh-	p_mh+	p_mh-
1	3.20991	3.20991	.000664	.000664
1.1	4.61514	1.81013	2.0e-06	.035138
1.2	5.90426	.534504	1.8e-09	.296497
1.3	7.09728	.570503	6.4e-13	.284168
1.4	8.20936	1.65759	1.1e-16	.0487
1.5	9.25237	2.67088	0	.003783
1.6	10.2357	3.62047	0	.000147
1.7	11.1671	4.51448	0	3.2e-06
1.8	12.0527	5.35956	0	4.2e-08
1.9	12.8977	6.1612	0	3.6e-10
2	13.7065	6.92401	0	2.2e-12

Table 4: sensitivity analysis,radius & caliper matching

Gamma	Q_mh+	Q_mh-	p_mh+	p_mh-
1	3.93607	3.93607	.000041	.000041
1.1	5.37234	2.50677	3.9e-08	.006092
1.2	6.69127	1.2053	1.1e-11	.114043
1.3	7.91311	.009506	1.2e-15	.496208
1.4	9.05317	1.0314	0	.151177
1.5	10.1234	2.0636	0	.019528
1.6	11.1334	3.03057	0	.00122
1.7	12.0908	3.94068	0	.000041
1.8	13.002	4.80078	0	7.9e-07
1.9	13.8721	5.61652	0	9.7e-09
2	14.7055	6.39263	0	8.2e-11

Table 5: sensitivity analysis, kernel matching

Gamma	Q_mh+	Q_mh-	p_mh+	p_mh-
1	3.91425	3.91425	.000045	.000045
1.1	5.35063	2.4848	4.4e-08	.006481
1.2	6.66962	1.18317	1.3e-11	.11837
1.3	7.89149	-.012797	1.4e-15	.505105
1.4	9.03155	1.05391	0	.145962
1.5	10.1018	2.0863	0	.018476
1.6	11.1117	3.05346	0	.001131
1.7	12.0691	3.96377	0	.000037
1.8	12.9802	4.82406	0	7.0e-07
1.9	13.8502	5.63999	0	8.5e-09
2	14.6836	6.4163	0	7.0e-11

Table 6: sensitivity analysis, local linear matching

Gamma	Q_mh+	Q_mh-	p_mh+	p_mh-
1	3.91425	3.91425	.000045	.000045
1.1	5.35063	2.4848	4.4e-08	.006481
1.2	6.66962	1.18317	1.3e-11	.11837
1.3	7.89149	-.012797	1.4e-15	.505105
1.4	9.03155	1.05391	0	.145962
1.5	10.1018	2.0863	0	.018476
1.6	11.1117	3.05346	0	.001131
1.7	12.0691	3.96377	0	.000037
1.8	12.9802	4.82406	0	7.0e-07
1.9	13.8502	5.63999	0	8.5e-09
2	14.6836	6.4163	0	7.0e-11

Gamma : odds of differential assignment due to unobserved factors
Q_mh+ : Mantel-Haenszel statistic (assumption: over-estimation of treatment effect)
Q_mh- : Mantel-Haenszel statistic (assumption: under-estimation of treatment effect)
p_mh+ : significance level (assumption: over-estimation of treatment effect)
p_mh- : significance level (assumption: under-estimation of treatment effect)

Appendix A. Descriptive statistics and list of countries used in the cross-country analysis

Table A1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Voter turnout [a]	130	67.0	14.9	28.4	97.5
Voter turnout [b]	129	58.9	17.8	23.0	116.0
Remittance per capita (log)	102	2.3	1.5	0.0	5.7
Real GDP per capita growth in host countries	129	0.0	0.1	-0.1	0.2
Real GDP per capita (log)	130	6.1	0.9	4.7	8.6
Real GDP per capita growth	130	1.3	4.7	-17.5	21.8
Cost of voter registration [c]	130	88.9	21.7	40.2	161.4
Natural rents-to-GDP	120	8.5	13.0	0.0	61.5
Electoral competition	130	5.5	2.0	1	7

Notes: Note: [a] and [b] denote the voter turnout rate measured as the number of voters as percentage of registered voters or voting age population, respectively. [c] The cost of voter registration is proxied by the ratio of registered voters as percentage of voting age population.

Table A2: List of countries

Benin	Mali
Botswana	Madagascar
Burkina Faso	Malawi
Cameroon	Mauritania
Cape Verde	Mauritius
Central African Republic	Mozambique
Comoros	Namibia
Congo, Rep.	Niger
Côte d'Ivoire	Nigeria
Ethiopia	Rwanda
Gabon	Senegal
Gambia	Sierra Leone
Ghana	Sudan
Guinea	Tanzania
Guinea-Bissau	Togo
Kenya	Uganda
Lesotho	Zambia

Appendix B. Descriptive statistics and list of countries (AfroBarometer data)

Table B1: Descriptive statistics from AfroBarometer survey

Variables	Description	Observation	Min	Max
Vote	1 if the individual voted last election and 0 otherwise	8119	0	1
Remittances	1 if the individual receives remittances and 0 otherwise	8119	0	1
Urban dummy	1 if the respondent is living in urban area and 0 otherwise	8119	0	1
Age	Respondent age	8119	18	63
Age squared	Squared of Age of the respondent	8119	324	3969
Sex	1 for male and 0 otherwise	8119	0	1
Primary education	1 for primary school and some primary schooling and 0 otherwise	8119	0	1
Secondary education	1 for secondary school and some secondary schooling and 0 otherwise	8119	0	1
Postsecondary education	1 for post secondary school not university and 0 otherwise	8119	0	1
University	1 univerisity completed and some university and 0 otherwise	8119	0	1
Listen radio news	1 listen radio news and 0 otherwise	8119	0	1
Watch television news	1 watch television news and 0 otherwise	8119	0	1
Read news papers	1 read newspapers and 0 otherwise	8119	0	1
Discuss politics	1 discuss politics and 0 otherwise	8119	0	1
Economic condition dummy1	1 Compared to 12 months ago economic condition are much worst, 0 otherwise	8081	0	1
Member of religious group	1 Member of religious association and 0 otherwise	8119	0	1
Member of volontary association	1 Member of voluntary association and 0 otherwise	8119	0	1
Freedom to say what you think	1 freedom to say what you think and 0 otherwise	8119	0	1
Free to join political organization	1 free to join a political organization and 0 otherwise	8119	0	1
Free to choose who to vote	1 free to choose who to vote and 0 otherwise	8119	0	1
The presidency is corrupted	1 if the respondent think that the presidency is corrupted and 0 otherwise	8119	0	1
The parliament is corrupted	1 parliament corrupted and 0 otherwise	8119	0	1
The local government is corrupted	1 local government corrupted and 0 otherwise	8119	0	1
Government official are corrupted	1 government official corrupted and 0 otherwise	8119	0	1
Police is corrupted	1 police corrupted and 0 otherwise	8119	0	1
Official are rarely or never punished	1 official are rarely or never punished and 0 otherwise	8119	0	1
Free and fair election	1 not free and fair election and 0 otherwise	8119	0	1
Mobile phone	1 often use Mobile phone and 0 otherwise	8112	0	1

Table B2: Binary Probit results of the regression used to compute propensity score

	(1)	(2)
Dependent variable: Remittance dummy	Coefficients	Marginal effects
Urban dummy	0.191***	0.0515***
	(0.0326)	(0.00892)
Age	-0.0267***	-0.00706***
	(0.00823)	(0.00218)
Age squared	0.000305***	8.06e-05***
	(0.000108)	(2.86e-05)
Sex	-0.0653**	-0.0173**
	(0.0298)	(0.00794)
Primary education	-0.100**	-0.0260**
	(0.0486)	(0.0124)
Secondary education	-0.0395	-0.0104
	(0.0502)	(0.0132)
Post-secondary education	0.0913	0.0250
	(0.0714)	(0.0202)
University	0.434***	0.134***
	(0.0748)	(0.0261)
Listen radio news	0.0660	0.0170
	(0.0551)	(0.0139)
Watch television news	0.108***	0.0284***
	(0.0381)	(0.00996)
Read news papers	0.0938**	0.0249**
	(0.0378)	(0.0101)
Discuss politics	0.0101	0.00267
	(0.0357)	(0.00940)
Economic condition dummy	-0.0772**	-0.0202**
	(0.0311)	(0.00807)
Member of religious group	-0.0269	-0.00716
	(0.0358)	(0.00958)
Member of volontary association	0.116***	0.0309***
	(0.0313)	(0.00839)
Freedom to say what you think	-0.0364	-0.00975
	(0.0571)	(0.0155)
Free to join political organization	-0.106**	-0.0291*
	(0.0534)	(0.0150)
Free to choose who to vote	0.0202	0.00531
	(0.0601)	(0.0157)
The presidency is corrupted	0.125**	0.0319**
	(0.0511)	(0.0126)
The parliament is corrupted	-0.00774	-0.00205
	(0.0648)	(0.0172)
The local government is corrupted	-0.0210	-0.00559
	(0.0626)	(0.0168)
Government official are corrupted	-0.118	-0.0324
	(0.0733)	(0.0210)
Police is corrupted	-0.0287	-0.00768
	(0.0663)	(0.0179)
Official are rarely or never punished	0.0576*	0.0153*
	(0.0306)	(0.00812)
Free and fair election	-0.0107	-0.00283
	(0.0413)	(0.0108)
Often use celphone	0.349***	0.0867***
	(0.0407)	(0.00938)
Constant	-0.689***	
	(0.169)	
Percentage of correct prediction	80.45%	
Observations	10,043	10,043

Notes: Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1. The reference variable for education dummies is "no education or no formal education".

Table B3: List of countries covered in AfroBarometer

Benin	Mali
Botsawana	Mozambique
Burkina-Faso	Namibia
Cape Verde	Nigeria
Ghana	Senegal
Kenya	South Africa
Lesotho	Tanzania
Liberia	Uganda
Madagascar	Zambia
Malawi	Zimbabwe

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