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# Remittances and Taxation in Developing Countries\*

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## Abstract

This paper explores the link between the flow of remittances and fiscal capacity in developing countries. I use panel data on tax collection and remittances covering the last three decades in which the flow of remittances has become an important global economic phenomenon. Spatial proximity to global economic hubs and colonial networks are used as instruments to identify the effects of remittances. The results show that remittances increase the fiscal capacity of nations measured both in terms of the share of tax revenue in GDP and tax effort. The paper provides suggestive evidence that, contrary to theoretical expectation, the positive effect of remittances on tax capacity is limited to non-democratic countries. However, the positive effect disappears in countries with less-than-average government quality suggesting that state capacity is important to harness remittances.

## 1 Introduction

Remittances have become a major source of household income and foreign exchange earnings in many developing countries. There is strong evidence regarding the positive effect of remittances on household welfare (see, for example, Taylor 1999 and Adams 2006 for review of the evidence). However, there is little agreement with regard to the impact of remittances on aggregate economic outcomes. Moreover, it is not clear how remittances can be harnessed to improve public goods since the flow of remittances is often hard to tax. Given the increasing importance of remittances for a number of countries and the fact that many developing nations struggle to collect enough tax revenue to finance badly needed public goods, it is important to understand the effect of remittances on fiscal capacity and tax structure. Accordingly, this paper explores the impact

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of remittances on the capacity of states in developing nations to collect taxes. But fiscal capacity is not just about the availability of taxable resources. It is also useful to look at how different institutions could play a role in helping government tap remittances through taxation. Therefore, the paper looks briefly into heterogeneities among countries vis-a-vis political institutions.

On a theoretical level, the analysis begins with the broad assumption that remittances increase private consumption relative to domestically generated income. This entails a shift in the makeup of the tax base towards consumption and trade, and away from income. Considering that consumption is easier to tax than income, particularly at low levels of economic development, the potential share of tax revenue in GDP is likely to increase with remittances in the short-run. However, the marginal increase in tax revenue might depend on the legitimacy and capacity of the state to extract resources from society. The main objective of this paper is to empirically examine the impact of remittances on the share of tax revenue in GDP as well as on the mix of direct and indirect taxes for a large sample of developing countries. In measuring fiscal capacity, I distinguish between actual tax revenue, which is largely dependent on economic structure, and tax effort, which is mainly a function of policy and government capacity.

Historically, the intensification of economic activity, including the cross-border movement of labor and capital, has long contributed to the rise of taxation as a means of financing government. For instance, in sixteenth and seventeenth century Europe, “the development of a more complex and commercial economy created new opportunities for extracting financial resources” which has led to the replacement of the ‘domain state’ by the ‘tax state’ (Daunton 2007: 2). Although most contemporary industrialized countries collect a bulk of their revenues in the form of direct taxes, the evolution of tax structure is contingent on structural and political conditions (Alt 1983, Morgan and Prasad 2009). The increasing role of remittances in the economies of several contemporary developing countries might shape the tax structure in a way that can eventually influence political mobilization. For instance, if remittances contribute to the dominance of indirect taxation, this could mean less common platform created due to direct taxation to enable collective action for political representation.

Technically, the net effect of remittances on taxation depends on a series of decisions taken by households, businesses and government in a general equilibrium setting. For the sake of parsimony, the current analysis does not explore the microfoundations of the relationship between remittances and taxation. Thus, the empirical exercise in this paper is limited to estimating the average net effect of remittances on total taxation and the share of direct taxes under different institutional settings.

I employ panel data covering the three decades between 1980 and 2012 to examine the impact of remittances on fiscal capacity in over a hundred developing countries. I use spatial proximity to global economic hubs and colonial networks as instrumental variables to draw causal inferences from observational data on tax revenue, remittances and an array of control variables. The main results are the following. First, remittances have a positive impact on the share

of tax revenue in GDP as well as aggregate tax effort. Second, remittances bear no significant effect on the share of direct taxes. Third, the effect of remittances on tax capacity is heterogeneous with respect to the degree of selectivity of emigrants. Fourth, the positive effect of remittances on taxation holds only for non-democratic countries whereas the effect disappears in the case of countries with less-than-average government quality.

With the rising prominence of remittances in the global economy, there has been increasing attention in the literature on the link between remittances and governance (Abdih et al. 2011, Ahmed 2013, Escriba-Folch et al. 2015). As far as the narrower theme of fiscal outcomes is concerned, the focus has been on the impact of remittances on public goods (Ahmed 2012, Ebeke 2012). The current paper is related to this vein of literature in the sense that it elaborates on the causal chain between remittances and public goods by shedding light on the intermediate link with taxes. The only other paper, to my knowledge, that deals with the impact of remittances on taxation is Ebeke (2014). The current paper is expected to bring new insights on top of the ones established by Ebeke (2014) because it focuses exclusively on developing countries, distinguishes between tax ratio and tax effort as well as examines the role of democracy.

The rest of the paper is organized as follows. Section two furnishes a brief conceptual framework. Section three describes the measurement of fiscal capacity adopted in the current paper. Section four lays out the estimation strategy and summary of the data. Section five presents the results of the empirical analysis. Section six concludes.

## 2 Conceptual framework

International remittances are unearned foreign income that can be utilized to finance consumption or investment by households. Government can potentially have three options for taxing remittances. These are: levying a direct tax on remittance income, taxing consumption financed through remittances, and taxing returns on investment financed through remittances. Taxing remittances directly is not feasible in most cases since remittances accrue to households, giving government limited or no room for monitoring transfers. Thus, remittances are usually taxed indirectly in the form of consumption spending or investment income.

For an increase in remittances to lead to a rise in the share of taxes in GDP, it needs to do one or both of two things. One, it needs to raise the average effective tax rate. Two, it needs to expand the tax base relative to GDP. If remittances represent simple cash infusions with no effect on other aspects of household resource allocation, absolute tax revenue may increase but share of taxes does not change. However, remittances are generally expected to encourage the substitution of labor with leisure by raising reservation wages. This, in turn, reduces the relative share of labor income in the overall tax base in comparison to that of consumption. Assuming that consumption is easier to tax than income, we can expect remittances to have a positive impact on the

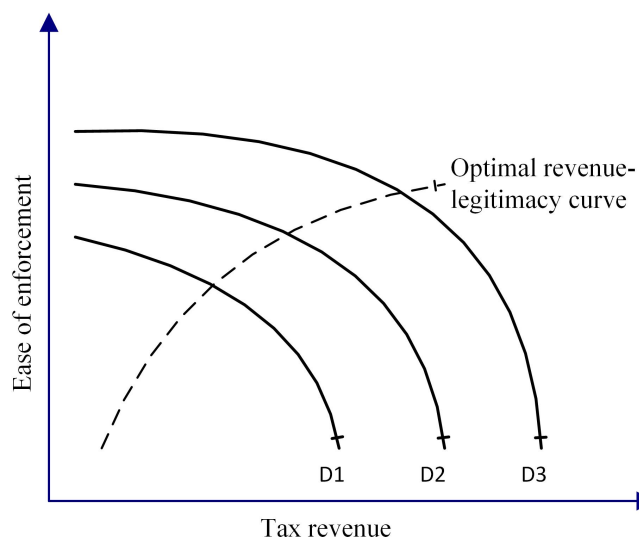


Figure 1: Revenue-enforcement trade-off and democratic legitimacy

share of taxes in GDP in the short-run.

With regard to tax structure, the effect of remittances in shifting the tax base towards consumption reduces the share of direct taxes in the short-run. Such effect might intensify in the medium-run due to its implications for the type investment government makes in tax capacity building. Suppose that future tax revenue is a function of current investment in tax collection institutions which in turn depends on the distribution of current tax revenue. Then we may expect that remittances contribute to a declining share of direct taxes in the medium run by drawing investment away from institutional capacity tailored to direct taxation in favor of institutions of indirect taxation. The political economy implications of such effect would include weakening the link between taxation and political representation as well as worsening inequality due to the regressive nature of indirect taxation.

On top of technical feasibility, a potential increase in the share of taxes due to remittances may also need to meet certain conditions of political feasibility. There is often a trade-off between tax revenue and the ease of enforcement of taxation. As Figure 1 shows, as government attempts to increase the rate of tax collection, the cost of enforcement rises due to social resistance against taxation. But the revenue-enforcement nexus also depends on the level of democratic legitimacy a government enjoys. As the level of legitimacy increases, from D1 to D3 as in Figure 1, a government can raise more tax revenue for a given level of cost of enforcement. Moreover, the revenue-enforcement curve becomes steeper as the level of legitimacy declines. This means the cost of enforcement increases more rapidly for less legitimate governments as they push for more tax revenue.

There are at least three observable implications that follow from the above

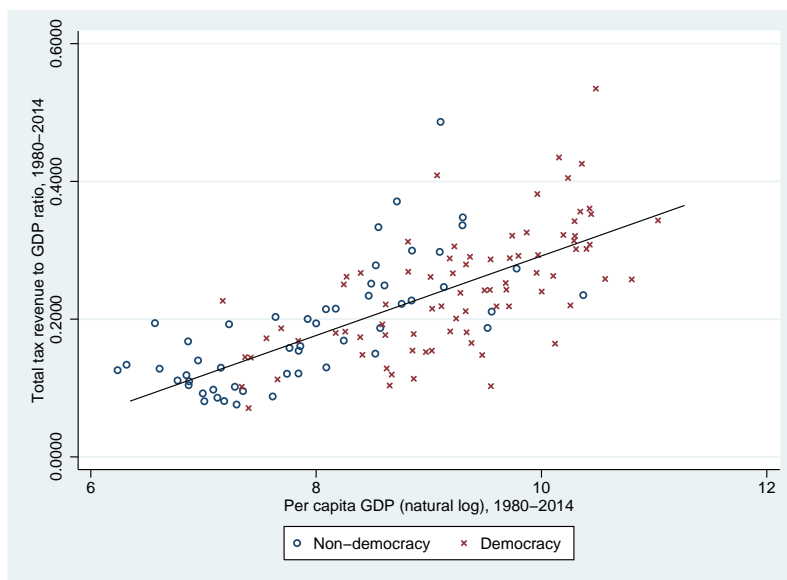


Figure 2: Income, democracy and taxation

theoretical discussion. First, remittances contribute to higher fiscal capacity in the short-run. Second, remittances reduce the share of direct taxes both in the short-run and the medium-run. Third, democratic legitimacy augments the positive effect of remittances on tax revenue.

### 3 Measuring fiscal capacity

Fiscal capacity is often understood as the ability of the state to extract resources from society to fund public goods. In most empirical research, such capacity is measured by the share of tax revenue in GDP. Although war has played a significant role in sharpening the instruments of taxation in history, the depth and breadth of taxation generally evolves with economic development. Development increases both the demand for and the supply of taxable resources. As Figure 2 shows, rich nations collect more of their national outputs in the form of taxes than poor nations. This relationship is undergirded by a number of economic, social and political factors that are also correlated with economic development. Economically, countries that have a bulk of their population in agriculture or the urban informal sector find taxation harder to execute. On the political front, democracies tend to collect more in taxes as percentage of GDP than autocracies. This is demonstrated by the clustering of democracies in the upper right corner of Figure 2 as opposed to autocracies in the lower left corner.

The share of tax revenue in GDP is a simple, accessible indicator of fiscal

capacity. Nevertheless, it conflates conscious policy effort with structural differences in the tax base across countries at various levels of development. Hence, as far as the measurement of fiscal capacity is concerned, tax-GDP ratio fails to distinguish between predetermined tax potential and autonomous state capacity to collect taxes. For this reason, a number of scholars have proposed alternative or complementary indicators of fiscal capacity such as tax effort. Accordingly, tax effort is often measured as the ratio of actual tax revenue to predicted tax revenue. Tax effort (or in the terminology of some authors, relative political capacity) accounts for differentials in productivity and the ease of access to tax revenue that may arise due to the nature of economic structure (Organski and Kugler 1980; Snider 1988).

In an attempt to gain a more complete picture of fiscal capacity, I estimate tax effort using data for a universe of 126 countries over the period between 1980 and 2014. I run a fixed-effect model of tax to GDP ratio over an array of structural, demographic and ideological factors that have been documented in the literature as potential determinants of tax revenue. I also run the same model for share of direct taxes in total tax revenue. The models explain 35 and 41 percent of the variation in tax-GDP ratio and the share of direct taxes, respectively. Full results of the two regressions are provided in the appendix. Tax effort for each country-year observation is calculated as a ratio of actual tax revenue to potential tax revenue predicted using the estimated models. A larger ratio of actual to predicted tax revenue signifies a higher level of effort or capacity to extract tax revenue than comparable countries. Figure 3 illustrates that tax effort is positively correlated with overall quality of government after controlling for per capita income.

## 4 Estimation strategy and data

The objective of the empirical exploration in this paper is documenting the nature of the overall relationship between remittances and fiscal capacity. Thus, remittance is treated as one of the determinants of tax revenue without imposing restrictive assumptions about specific channels. At a later stage, I explore the same relationship in the case of different groups of countries scoring differently on the democracy scale to provide suggestive evidence on the role of legitimacy.

The empirical specification for estimating fiscal capacity is adopted from the longstanding literature on the subject. When fiscal capacity is measured by tax to GDP ratio, it is specified as a function of economic development, sectoral structure, population growth and distribution and political ideology of the ruling party. When fiscal capacity is measured by tax effort which is supposed to represent autonomous policy and implementation capacity, it is specified as a function of economic development, democracy and institutional capacity. In both cases, remittance is included as an additional determinant of fiscal capacity in the following reduced-form specification;

$$y_{it} = \beta r_{it} + X_{it}\gamma + \alpha_i + u_{it} \quad (1)$$

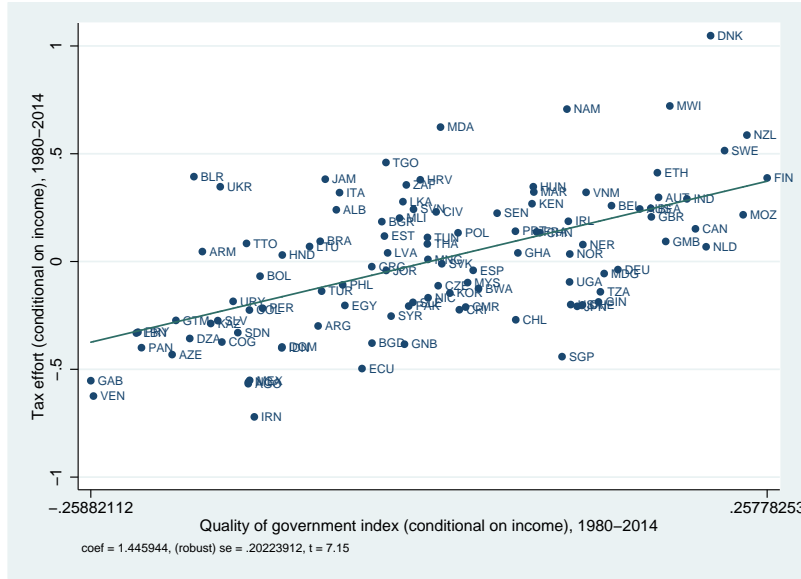


Figure 3: Tax effort and government quality

where  $y_{it}$  is fiscal capacity measured as either tax to GDP ratio or tax effort,  $r_{it}$  is remittances and  $X_{it}$  is a vector of control variables for country  $i$  in year  $t$ .  $\alpha_i$  represents time-invariant country-level effect whereas  $u_{it}$  is a disturbance term.

Estimating equation 1 using fixed effects technique helps remove many of the unobserved time-invariant factors that shape the fiscal capacity of a nation. This includes historical factors such as wartime mobilization and colonial origin the effects of which may persist due to path-dependence. However, the relationship between remittances and fiscal capacity, as represented by  $\beta$  in equation 1, cannot be estimated accurately unless the source of variation of remittances is exogenous. In other words, due to the possibility that both fiscal capacity and remittances are determined by a common unobserved factor, one cannot establish causal inference with respect to  $\beta$  unless the exogenous part of the variation in remittances is identified. I use instrumental variable estimation with fixed effects to identify the causal effect of remittances on fiscal capacity.

The economic conditions of migrant receiving countries could serve as potentially exogenous instruments to identify the effect of remittances. A necessary condition for such instrument to be valid is that it should not influence fiscal capacity through any other way than remittances. Trade relationships might potentially create a secondary channel between economic conditions in migrant receiving countries and fiscal capacity in remittance receiving countries. This effect can be minimized by directly controlling for trade volume in equation 1.

In order to use economic conditions in migrant-receiving countries as an instrument for remittances to a migrant-sending country, I need to identify the



destination countries for migrants from that particular country. Using the actual stock of migrants to identify destination countries could introduce endogeneity into the instrument because out-migration might be correlated with the quality of public goods which is a function of fiscal capacity. Moreover, bilateral migration data is sparsely available and ridden with measurement problems particularly for non-OECD destinations. Therefore, I employ physical proximity to international economic hubs and average income of colonially-networked nations as proxies for destination countries. Physical proximity to international economic hubs is computed as follows;

$$q_{it} = \frac{\sum_{j=1}^{n-1} (1/d_{ij})y_{jt}}{n-1}$$

where  $d_{ij}$  is physical distance between the capitals of country  $i$  and country  $j$ ,  $y_{jt}$  is the GDP per capita of country  $j$  in year  $t$ , and  $n$  is the total number of countries in the sample. Average income of colonial network for country  $i$  is measured as natural logarithm of the average GDP per capita of former colonizer(s) of country  $i$  and all other countries with the same colonizer as country  $i$ . In short, the variation in the incomes of physically proximate and colonially networked countries is used to instrument for remittances. Within the inherent limits of observational data, I attempt to draw causal inferences depending on the empirical validity of the instruments.

Measuring tax to GDP ratio for a cross-section of nations across a reasonably long period of time requires measuring both tax revenue and GDP as accurately and consistently as possible. I use the recently constructed Government Revenue Database by the International Center for Tax and Development. The dataset compiles “data from all available international data sources, along with IMF country reports, developing a standard system for classifying that data, and combining data from mutually compatible sources into a single research dataset” (Prichard 2016: 49). More importantly, the database flags incomplete and inconsistent observations or data points allowing the individual researcher to make the decision to include or omit them. Accordingly, I have excluded all observations and data points flagged as suspicious.

To measure remittances, I use panel data from the migration and remittances database maintained by the World Bank. The data comprises personal transfers and compensation of employees. Remittances data is known to be fraught with measurement problems. For instance, official data recorded as part of balance of payments undercount remittance flows (Ghosh 2006). I expect the use of fixed effects and instrumental variable techniques to minimize bias arising from measurement errors in the remittances data. Data for the rest of the control variables employed in the analysis are drawn from publicly available databases such as World Development Indicators, Penn World Tables and Quality of Government datasets. Data to compute the instrumental variables used for this analysis come from Mayer and Zignago (2011). Descriptive statistics of variables used for analysis are provided in Table 1.

In selecting the final sample for analysis, I exclude resource rich countries that are clear outliers in terms of tax to GDP ratio conditional on income. The

Table 1: Descriptive statistics

Variable	Obs.	Mean	SD
Share of total tax in GDP	2,799	.1329	.0604
Tax effort, Total tax	1,930	.9318	.3526
Share of direct taxes in total tax	2,298	.3088	.1267
Tax effort, Direct taxes	1,655	.8869	.3194
Share of remittances in GDP	3,021	.0464	.0672
GDP per capita (natural log)	3,067	8.250	.9875
Share of Agriculture in GDP	3,432	..2217	.1417
Share of natural resource rent in GDP	3,614	.0097	.0399
Import plus export as percentage of GDP	3,652	.7447	.4053
Employment ratio	3,032	.3606	.0867
Rate of population growth	4,795	.0180	.0154
Rate of urbanization	4,778	.4708	.2292
Dummy for right wing ruling party	3,726	.1894	.3919
Democracy index	3,978	4.683	3.068
Quality of government index	2,803	.4617	.1641
Proportion of emigrants with tertiary education	907	.2013	.2193
Physical proximity to economic hubs	2,063	3.745	1.768
Average income of colonial network (natural log)	2,063	4.913	1.359

sample also excludes small countries with less than 1 million population. More importantly, I exclude all countries classified by the World Bank as high-income as of 1980 because the domain of analysis of this paper is developing countries. Tax and remittances data for most developing countries became available on regular basis in the 1990s. Moreover, there are fewer structural breaks in the tax series after the mid-1990s. However, I have chosen to include all years since 1980 for which data is available to capture important developments in global remittance flows and country-level fiscal adjustments in the 1980s.

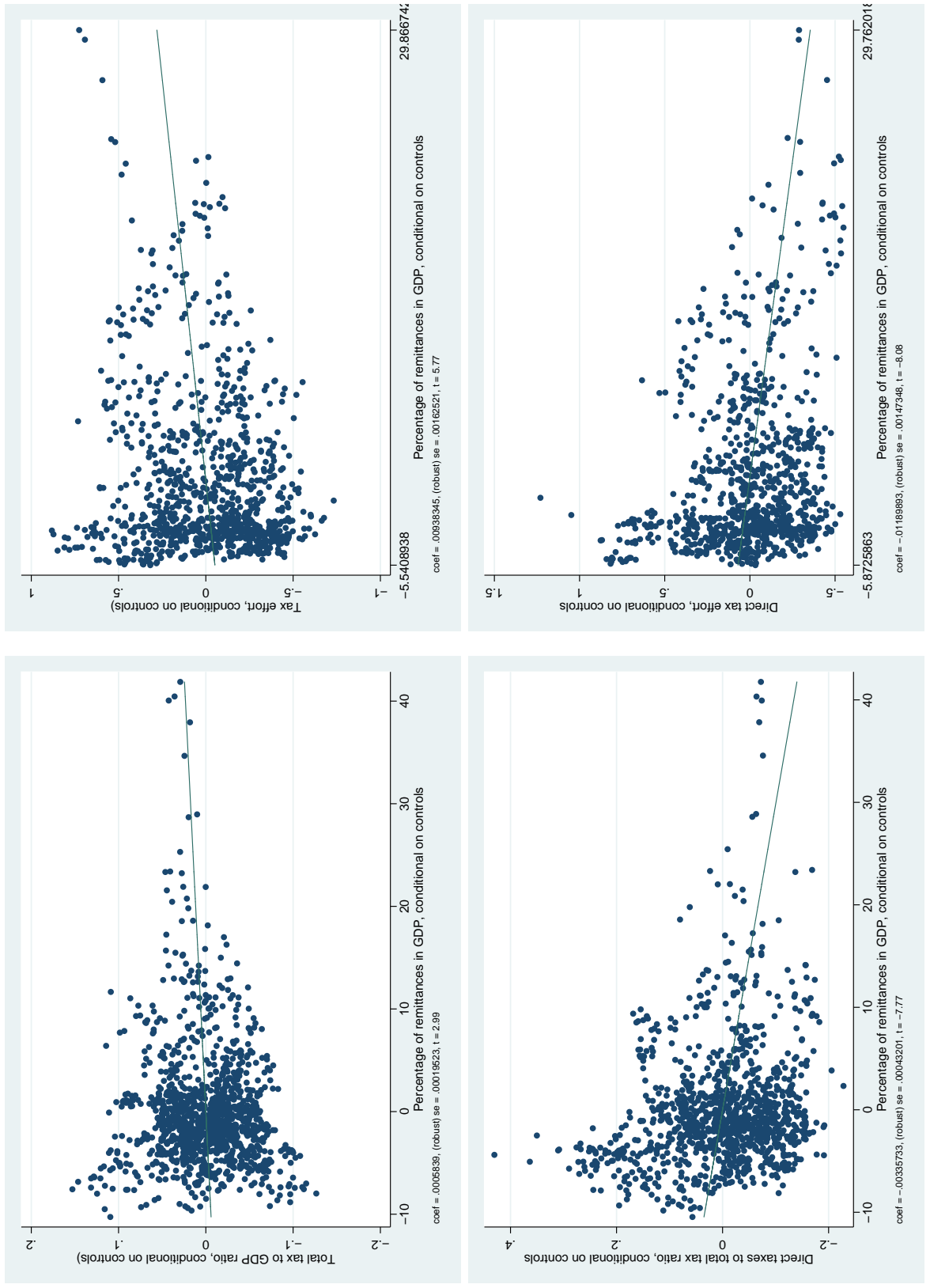


Figure 4: Remittances and taxation: Ordinary Least Squares estimates, 1995-2014

## 5 Empirical results

I begin with estimating the Ordinary Least Squares coefficients of the determinants of taxation equation on pooled panel data to get an overview of the relationship between fiscal capacity and remittances. Figure 4 shows that remittances are positively associated with the proportion of total tax revenue in GDP. Not only that, remittances are positively correlated with tax effort as measured by the ratio of actual to predicted total tax revenue as percentage of GDP. The relationship is reversed when direct taxes are considered. Both the ratio of direct taxes and tax effort for direct taxes are negatively associated with remittances. These patterns are generally in line with the broad propositions that remittances increase total tax revenue in spite of reducing the share of direct taxes in the short-run. The next step is to explore the causal link between remittances and fiscal capacity.

The second stage results of the instrumental variable estimation of the baseline model specified in equation 1 are provided in Table 2. First stage results are presented in the appendix. All specifications are estimated using the two instruments described above: physical proximity to international economic hubs and average income of colonial network. Column 1 displays the estimates of the determinants of tax revenue equation for the share of total tax revenue in GDP. Remittances are shown to exert a positive and statistically significant effect on the share of total tax revenue in GDP. A 10 percent increase in the share of remittances brings about a 3.5 percent increase in the share of total tax revenue in GDP. Based on the F statistics reported in Table 2, the specification passes the Stock-Yogo weak identification test at conventional critical values. This means, as it is also shown in the first stage results in the appendix, the instruments are sufficiently correlated with the share of remittances in GDP. Moreover, the Sargan-Hansen statistics demonstrate that the two instruments fulfill the exclusion restriction requiring there be no direct correlation between the instruments and the respective dependent variable.

Column 3 presents the results with respect to the share of direct taxes in total tax revenue. Remittances have the expected negative sign as the theoretical framework and the baseline correlation in Figure 1 suggest. However, the coefficient is not statistically significantly different from zero. Considering that the average of direct taxes across developing countries has been subject to substantially more fluctuation over the 1990s than that of total tax revenue, it is possible that the much of the variation in the dependent variable is absorbed by the time dummies. This is partly supported by the high level of statistical significance of the time effects in the 1990s. This means, while changes in tax structure have been dominated by unobserved global shocks, the share of total tax revenue responded to remittances regardless of time fixed effects. Column 3 also shows that either or both of the instruments are not exogenous to the share of direct taxes.

The measure of tax effort I adopted for the present analysis already accounts for economic development, sectoral structure, demographic variables and ideology. However, I assume economic development still has a second-order effect

Table 2: Estimates of the determinants of fiscal capacity: instrumental variable with fixed effects estimation

	(1)	(2)	(3)	(4)
Dependent variable	Tax-GDP ratio	Tax effort	Direct tax ratio	Direct tax effort
Share of remittances in GDP	0.350*** (.089)	3.91*** (.981)	-0.045 (.244)	-1.47 (1.02)
GDP per capita	0.018*** (.004)	-0.015*** (.041)	-0.005 (.011)	-0.131*** (.041)
Share of agriculture in GDP	-0.031 (.029)		0.180*** (.046)	
Share of resource rent in GDP	0.034 (.029)		-0.025 (.066)	
<i>Import + export</i> in GDP	0.012*** (.004)		0.057*** (.011)	
Employment ratio	0.011 (.027)		0.363*** (.072)	
Population growth	.458*** (.085)		-0.397* (.206)	
Urbanization	0.101*** (.026)		-0.144** (.069)	
Right wing ruling party	-0.004** (.002)		0.002 (.004)	
Democracy index		0.012*** (.004)		-0.004 (.004)
Quality of government index		-0.092 (.071)		0.387*** (.066)
Year dummies	Yes	Yes	Yes	Yes
First stage F statistic	41.68	30.02	29.24	27.07
Sargan-Hansen P-value	0.895	0.539	0.000	0.000
Observations	1726	1375	1498	1191

Standard errors are given parenthesis. \*, \*\*, \*\*\* denote statistical significance at 10%, 5%, 1% level.

on tax effort through its impact on factors such as bureaucratic wages. Additionally, democracy and overall institutional quality are deemed important in determining tax effort. Column 2 in Table 2 shows that remittances have a strong positive impact on aggregate tax effort. In other words, remittances enable governments to collect more tax revenue than what would be expected based on the size and structure of the economy. Strictly speaking, the increase in the ratio of actual to predicted tax revenue might not be caused by conscious policy effort. Nevertheless, it shows the government has somehow been able to extract more resources than comparable governments have. Column 4 shows that remittances do not exert as significant impact on tax effort for direct taxes as aggregate tax effort. Moreover, the instrumental variables do not perform well in identifying the causal effect on tax effort for direct taxes.

So far the reduced form estimates in Table 2 have demonstrated that there is a sizable causal effect of remittances on the intensity of total tax revenue. However, governments could vary significantly in their motivations to intensify taxation due to remittances. Assuming that one of the objectives of the state is reducing after-tax inequality, governments may intensify taxation if remittances have the effect of increasing inequality. One proxy to measure the possible impact of remittances on inequality is the degree of selectivity of emigration from a certain country. If a country has a large proportion of emigrants with higher education, assuming that wealth and education are positively correlated, it is likely that remittances contribute to increase inequality in that particular country. Therefore, on average, countries with a bigger proportion of highly educated emigrants may wish to tax more to offset the effect of remittances on inequality.

In an attempt to gain some insight into the potential role of migration selectivity in motivating governments intensify taxation due to remittances, I split the sample with respect to the proportion of emigrants from a given country to OECD countries with tertiary education. A country falls in a low selectivity sample if the average proportion of emigrants with tertiary education from 1980 to 2013 is below the overall mean for developing countries in the same time period. The converse is true in the case of a high selectivity sample. Columns 1 and 2 in Table 3 show that remittances do not have a statistically significant effect on either measure of tax capacity in low selectivity countries. On the contrary, in a group of high selectivity countries where remittances are expected to increase inequality, they are strongly positively associated with higher tax capacity. There may be other factors, correlated with selectivity, that are driving the difference in correlation of remittances and tax capacity between the two groups. In that sense, no causal inference can be made regarding the effect of selectivity, and by implication, inequality, on the motivation of governments to tap remittances through taxation. However, the current evidence is interesting enough to inspire a more fully developed theoretical framework and empirical investigation.

The foregoing analysis focused on which might have motivated governments to intensify taxation in relation to increasing remittances. Another issue is whether governments have the legitimacy and capacity to intensify tax collection as remittances increase. Therefore, Table 4 explores the role of democracy and government quality on the ability of countries to increase tax revenue with remittances. Considering that democratic governments can draw on their legitimacy to extract more resources before facing enforcement problems, I expect remittances to have more positive impact on taxation in democratic countries. Accordingly, I split the sample of developing countries based on their average democracy score in the polity index over the sample period. Democracies are defined as having above average score on the scale of 1 to 10.

The first column in Table 4 shows that the positive impact of remittances on the share of tax revenue in GDP holds for non-democratic countries, albeit with a slightly diminished magnitude. Column 2 shows that remittances are rather strongly associated with tax effort in non-democracies. On the con-

trary, the relationship vanishes when the sample is restricted to countries with above average democracy score. As columns 3 and 4 show, this is when tax capacity is measured both as the share of tax revenue in GDP and tax effort. These results go against the theoretical proposition that democratic legitimacy enhances a government's ability to tap remittances through taxation. One possible explanation for this seemingly counter intuitive finding may be found in the fact that remittances are mainly tapped through indirect taxes. Indirect taxes might not require as much legitimacy to enforce as direct taxes. Another possible explanation is that, to the extent that non-democratic governments have the administrative capacity to collect taxes, they care little about popular repercussions of taxing 'too much'.

The distinction between democratic institutions on the one hand and state capacity on the other hand in terms of their role for tax collection becomes clear when one contrasts the first and second halves of Table 4. Columns 7 and 8 confirm that state capacity is indeed important when it comes enabling government to tap remittances through taxation. The sample of countries with above average scores on the quality of government index (averaged over the sample period) displays a strong and significant association between remittances and tax capacity measured in both metrics. There is no such effect for countries with below average government quality. Note also that the effect of remittances on tax effort for countries with high state capacity is sufficiently identified despite the reduced sample size.

Table 3: Estimates of the determinants of fiscal capacity: high and low selectivity subsamples

	(1)	(2)	(3)	(4)
	Low emigrant selectivity		High emigrant selectivity	
Dependent variable	Tax-GDP ratio	Tax effort	Tax-GDP ratio	Tax effort
Share of remittances in GDP	-0.126 (.096)	0.633 (.778)	0.874*** (.244)	8.95*** (3.03)
GDP per capita	0.022*** (.006)	0.056 (.051)	-0.024** (.009)	-0.222*** (.061)
Share of agriculture in GDP	-0.083*** (.022)		-0.041 (.038)	
Share of resource rent in GDP	-0.051* (.007)		0.087 (.175)	
<i>Import + export</i> in GDP	0.012* (.004)		0.058*** (.013)	
Employment ratio	0.117*** (.006)		-0.188*** (.062)	
Population growth	0.632*** (.180)		0.356*** (.129)	
Urbanization	-0.042 (.032)		0.286*** (.058)	
Right wing ruling party	-0.004** (.002)		-0.007* (.004)	
Democracy index		-0.001 (.004)		0.025** (.011)
Quality of government index		0.294*** (.071)		-0.542*** (.160)
Year dummies	Yes	Yes	Yes	Yes
First stage F statistic	31.17	28.19	9.77	7.71
Sargan-Hansen P-value	0.000	0.000	0.000	0.000
Observations	996	834	728	541

Standard errors are given parenthesis. \*, \*\*, \*\*\* denote statistical significance at 10%, 5%, 1% level.



Table 4: Estimates of the determinants of fiscal capacity: non-democracy and democracy subsamples

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Non-democracy		Democracy		Democracy		Democracy		Low government quality		High government quality		High government quality		High government quality	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Share of remittances in GDP	0.212** (.096)	5.45*** (1.66)	0.0016 (.289)	2.14 (1.40)	0.069 (.120)	0.042 (.737)	0.975*** (.242)	5.65*** (1.99)	0.069 (.120)	0.042 (.737)	0.975*** (.242)	5.65*** (1.99)	0.069 (.120)	0.042 (.737)	0.975*** (.242)	5.65*** (1.99)
GDP per capita	0.024*** (.005)	0.011 (.069)	-0.024 (.015)	-0.214*** (.056)	0.013*** (.005)	-0.070** (.029)	0.027* (.016)	-0.008 (.082)	0.013*** (.005)	-0.070** (.029)	0.027* (.016)	-0.008 (.082)	0.013*** (.005)	-0.070** (.029)	0.027* (.016)	-0.008 (.082)
Share of agriculture in GDP	-0.035* (.020)		-0.158* (.089)		-0.055*** (.018)		0.086 (.077)		-0.055*** (.018)		0.086 (.077)		-0.055*** (.018)		0.086 (.077)	
Share of resource rent in GDP	-0.067** (.031)		0.120 (.061)		-0.135*** (.043)		0.020 (.068)		-0.135*** (.043)		0.020 (.068)		-0.135*** (.043)		0.020 (.068)	
<i>Import + export</i> in GDP	0.016*** (.005)		0.015 (.016)		0.024*** (.006)		0.020 (.016)		0.024*** (.006)		0.020 (.016)		0.024*** (.006)		0.020 (.016)	
Employment ratio	-0.159*** (.046)		-0.026 (.045)		0.043 (.031)		-0.123 (.095)		0.043 (.031)		-0.123 (.095)		0.043 (.031)		-0.123 (.095)	
Population growth	0.405*** (.087)		0.780*** (.212)		0.705*** (.148)		0.377** (.193)		0.705*** (.148)		0.377** (.193)		0.705*** (.148)		0.377** (.193)	
Urbanization	-0.037*** (.035)		0.153*** (.035)		0.127*** (.035)		0.097 (.081)		0.127*** (.035)		0.097 (.081)		0.127*** (.035)		0.097 (.081)	
Right wing ruling party	0.003 (.005)		-0.005*** (.002)		-0.003* (.002)		-0.010 (.007)		-0.003* (.002)		-0.010 (.007)		-0.003* (.002)		-0.010 (.007)	
Democracy index																
Quality of government index																
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First stage F statistic	25.56	18.74	4.10	7.61	30.57	34.57	11.03	5.62	30.57	34.57	11.03	5.62	30.57	34.57	11.03	5.62
Sargan-Hansen P-value	0.138	0.003	0.030	0.08	0.003	0.020	0.030	0.64	0.003	0.020	0.030	0.64	0.003	0.020	0.030	0.64
Observations	905	688	819	687	1175	1157	549	497	1175	1157	549	497	1175	1157	549	497

Dependent variables: (a) Tax-GDP ratio, (2) Tax effort

Standard errors are given parenthesis. \*, \*\*, \*\*\* denote statistical significance at 10%, 5%, 1% level.

## 6 Conclusion

In light of the growing importance of remittances on the one hand and the fiscal challenges of many developing countries on the other, this paper makes a sweeping attempt to explore the link between remittances and fiscal capacity. The paper has shown that remittances are more or less a boon to tax revenue. There is suggestive indirect evidence that governments might be motivated to intensify taxation as remittances increase in order to neutralize the inequality-increasing aspect of selective emigration. However, the positive effect of remittances on fiscal capacity might not hold for just any developing country. Surprisingly, democracy seems to play a negative role in enabling countries to exploit the fiscal potential of remittances. However, state capacity appears an important factor in helping developing countries tap remittances through taxation.

Despite the partly robust results presented above, this study remains a tentative effort to shed a broad light on the link between remittances and fiscal capacity in developing countries. Much remains to be done in terms of understanding the theoretical relationship between the flow of remittances, domestic economic interactions and their fiscal implications. Empirically, it will be worthwhile to test various potential channels through which remittances could influence fiscal capacity in developing countries. The accumulation of such evidence will surely bolster the efforts of developing countries to harness the flow of remittances for economic and social development.

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**Appendix: Determinants of tax capacity: fixed effects estimates**

Dependent variable	Tax to GDP ratio	Ratio of direct taxes
GDP per capita	0.012*** (.004)	0.021*** (.007)
Share of agriculture in GDP	-0.104*** (.012)	-0.003 (.035)
Share of natural resource rent in GDP	-0.002 (.002)	0.051 (.057)
Import plus export as percentage of GDP	-0.002 (.022)	0.015* (.008)
Employment ratio	0.007 (.019)	0.262*** (.052)
Population growth	0.004*** (.001)	-0.003* (.002)
Urbanization	0.072*** (.013)	0.053 (.038)
Right wing ruling party	-0.004*** (.001)	-0.001 (.003)
R-squared	0.35	0.41
Observations	2788	2510