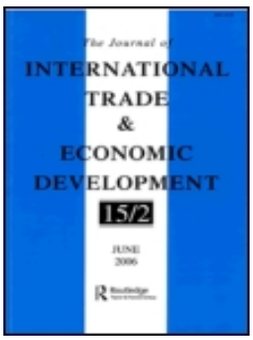

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Financial liberalization and remittances: Recent panel evidence

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We investigate the impact of financial liberalization on remittances to 84 countries over the period 1986–2005. Explicitly accounting for the multidimensionality of financial reform, we find that the various dimensions impact remittances differently: Increased economic freedom in the financial sector, as captured by absence of direct government control over the allocation of credit, has a positive and immediate impact. However, the improved robustness of financial markets, as captured by the development of security markets, improvement in the quality of banking supervision, and removal of stringent restrictions on interest rates and international capital, has a negative and lagged effect. The net combined effect reveals that financial liberalization may have a modest negative impact on remittances in the long run.

Keywords: remittances; financial liberalization; economic freedom; institutions

JEL Classifications: F22, O15, P48

1. Introduction

There is increasing evidence that remittance receipts respond positively to the level of financial development of an economy (Freund and Spatafora 2008; Mookerjee and Roberts 2011; Bettin, Lucchetti, and Zazzaro 2012). Such transfers increase significantly if the domestic financial system is able to ameliorate the adverse impacts of information, enforcement, and transaction costs and thereby increase its ability to perform its basic functions in terms of improving the allocation of capital; the quality of corporate governance; the diversification, trading, and management of risk; the mobilization of savings; and the exchange of goods and services in the economy (Levine 2005).

While the literature is equivocal on the exact determinants of financial development,[1] there is nevertheless a consensus that it does not occur by itself.

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In the decades since the articulation of the *financial repression hypothesis* by McKinnon (1973) and Shaw (1973) that identified state control of financial intermediaries as the key impediment to the efficient operation of the financial sector,[2] international reform agendas influenced by the Washington Consensus have come to uphold the set of policies that are cumulatively called financial liberalization as the primary means of achieving financial development. Yet the literature has almost completely ignored the impact of liberalization on the volume of remittance inflows. The purpose of this inquiry is to fill this void by investigating the impact of financial liberalization on the inflow of formal remittances to a sample of 84 countries considered at five-year intervals over the period 1986–2005.

Our analysis is motivated by the idea that liberalization of the financial sector is a multidimensional phenomenon (Abiad and Mody 2005; Abiad, Detragiache, and Tressel 2010; Mitra, Bang, and Wunnava 2014) and various dimensions of liberalization differ in their consequences for remittances. Further, the impact of the same dimension may differ over time. Indeed, our results indicate that an increase in economic freedom in the financial sphere, as captured by the relaxation of directed credit policies, credit ceilings, and reduction of state presence in the banking sector, has had an immediate positive impact on the remittance share of GDP. By contrast, an improvement in the robustness of the financial sector, as captured by the development of security markets, improvement in the quality of banking supervision, and removal of stringent restrictions on interest rates and capital, has had an insignificant initial impact, but reduced the remittance share of GDP in the long run. The net combined effect of both freedom and robustness aspects reveals that financial liberalization has, in fact, had a negative long run impact on remittances over the period of our study, though the magnitude of the impact is quite small.

In conducting a nuanced analysis of the impact of financial liberalization on the inflow of remittances, our analysis contributes to several areas of inquiry. First, it complements the existing literature on the interplay of finance and remittances which has either investigated the role of financial development as a determinant of the magnitude and growth impact of remittances (Giuliano and Ruiz-Arranz 2009; Mundaca 2009; Lartey 2013) or explored the extent to which remittances stimulate financial sector development in the recipient economy (Aggarwal, Demirgüç-Kunt, and Martinez Peria 2011; Demirgüç-Kunt et al. 2011; Gupta, Pattillo, and Wagh 2009).

Second, it contributes to the literature on the economic impact of financial liberalization by identifying an immediate positive impact on remittances of policies that enhance economic freedom in the financial sector. Since remittances provide an important source of development finance (Ratha 2003), this is an additional mechanism whereby financial liberalization can help to promote development. At the same time, the negative long run impact of both dimensions of liberalization combined cautions against the assumption that remittance inflows would remain a stable long run source of development finance.

Finally, the need for an analysis such as ours arises from the fact that the relationship between financial development and financial liberalization has come to be an increasingly contested topic, especially in the aftermath of the recent financial crisis: the hypothesis of financial repression that provides the theoretical basis for liberalization has been criticized for relying on a set of assumptions, notably perfect competition and the existence of sound political institutions, that are unlikely to be observed in developing societies (Stiglitz 1994; Arestis and Demetriades 1999). It has also been argued, for example, by Mankiw (1986) and Stiglitz (1994) that state intervention in financial markets may actually help to alleviate the adverse impacts of incomplete markets and private information and thereby promote financial development, as in the case of Korea (Demetriades and Luintel 2001).

Due to the theoretical ambiguity or otherwise, empirical evidence on the economic benefits of financial liberalization has been far from robust (Eichengreen 2001; Obstfeld 2009; Rodrik and Subramanian 2009). In fact, there is a concern that the impact of financial integration on economic growth is subject to strong threshold effects with respect to institutional quality (Chinn and Ito 2006), the existing level of financial development (Kose et al. 2009; Eichengreen, Rachita, and Ugo 2011), and even the existing level of growth. Since developing countries are precisely the ones that fail to meet these thresholds, the balance of the evidence indicates that financial liberalization may have increased the volatility of consumption (Kose, Prasad, and Terrones 2003; Levchenko, Rancière, and Thoenig 2009), led to a greater frequency of financial crisis (Demirgüç-Kunt and Detragiache 1998; Kaminsky and Reinhart 1999), and had an adverse impact on poverty and the distribution of income (Arestis and Caner 2009; Ang 2010). This, in conjunction with the emerging evidence that certain facets of liberalization may actually impede financial development as in the case of Malaysia (Ang 2008), urges the recognition of financial liberalization and financial development as conceptually distinct categories.

The paper is structured as follows: the next section summarizes the relevant literature and builds the case for the empirical analysis to follow. Section 3 describes our data and estimation strategy. Section 4 presents our preliminary results using a unidimensional composite measure of financial reform taken from Abiad, Detragiache, and Tressel (2010). Section 5 introduces the multidimensionality of financial liberalization and presents our main results that take this multidimensionality into account. Section 6 concludes the paper by stating the policy implications of our results.

2. Conceptual foundations

Financial liberalization serves to reduce the transactions cost of international financial transfers. Conditional on the same incentives to remit, it will therefore increase the inflow of remittances to an economy. The need for an empirical analysis such as ours arises from the fact that the complex combination of incentives such as altruism, debt repayment, investment, insurance, inheritance,

and payment for services rendered (Rapoport and Docquier 2006) that motivate the decision to remit do not remain constant following financial liberalization in the recipient economy. In particular, liberalization may have conflicting impacts on these incentives. Given the impossibility of assessing the relative importance of these motives in determining aggregate remittances, not the least because they 'may coexist within the same individual' (op. cit., p 1165); the net effect of liberalization on remittances is theoretically ambiguous.

To appreciate the ambiguity, consider the investment motive for remittances. Given sound institutions, financial liberalization is expected to stimulate economic growth by increasing the level and efficiency of capital allocation (Beck, Levine, and Loayza 2000; Bekaert, Harvey, and Lundblad 2011; Henry 2007); by reducing macroeconomic volatility (Bekaert, Harvey, and Lundblad 2006); by improving the distribution of income via increased access to credit for the poor (Clarke, Xu, and Zou 2006; Beck, Demirgüç-Kunt, and Levine 2007); and by yielding *long term collateral benefits* in the form of more disciplined macroeconomic policies, efficiency gains via exposure to international competition, financial development, and improved governance (Kose et al. 2009). Hence, financial reform should increase the *supply* of remittances via the investment motive as the home country becomes a more desirable investment destination.

At the same time, however, financial reform may reduce the *demand* for remittances via the insurance motive. There are two aspects to the argument. First, and as noted previously, liberalization may reduce the volatility of income. Second, by reducing the cost of acquiring information, it may ameliorate the informational asymmetries that lead to the collateralization of lending and restrict access to credit for the poor (Beck, Demirgüç-Kunt, and Levine 2007; Levine 2008). Note that the improved access to credit is particularly salient for developing economies with prominent agricultural sectors where production is dependent on the vagaries of weather. As observed by Rapoport and Docquier (2006), such economies typically experience a high volatility of income that, in the absence of credit markets, fosters a dependence on inter- and intra-familial arrangements for insurance, with remittances being a significant component of the latter.Finally, the ambiguity is compounded by the fact that evidence on the growth impact of liberalization remains inconclusive (Eichengreen 2001; Obstfeld 2009; Rodrik and Subramanian 2009).[3] As previously mentioned, financial integration may have increased macroeconomic volatility (Kose, Prasad, and Terrones 2003; Levchenko, Rancière, and Thoenig 2009) and may have led to a greater frequency of financial crisis (Demirgüç-Kunt and Detragiache 1998; Kaminsky and Reinhart 1999; Stiglitz 2000). Further, there is concern that it has failed to alleviate poverty and worsened the distribution of income (Arestis and Caner 2009), both in societies with weak institutions where special interests have managed to capture financial sector reforms (Ang 2010) and in institutionally sound economies via a rise in the skill premium (Jerzmanowski and Nabar 2013). In direct negation of the argument made above, it is therefore plausible that the insurance motive may increase the incentive to remit and the investment motive may decrease it.

3. Data and methodology

We estimate the following model to measure the impact of financial liberalization on remittances:

$$(\text{Remittances/GDP})_{it} = \alpha + \rho\,(\text{Remittances/GDP})_{it-5} + \beta X_{it} + \delta X_{it-5} + \gamma Z_{it} + \varepsilon_{it}. \quad (1)$$

The dependent variable is the remittance share of GDP for country i averaged over non-overlapping five-year intervals, ending in year t for $t = 1990$, 1995, 2000, and 2005. The controls, which include both an autoregressive term and the variables included in the vectors X_{it} and $X_{it\text{-}1}$, are averaged correspondingly, leaving an initial sample consisting of an unbalanced panel of 278 observations covering 84 countries at various stages of development.

The set of controls in Xconsists of recipient country characteristics commonly used to predict remittance inflows at the macroeconomic level including: (1) the lagged value of log GDP per capita (constant PPP $) to capture the economic incentives to migrate and remit;[4] (2) government expenditure as a percentage of GDP and its lag to capture the ability and willingness of the source country regime to provide needed public goods;[5] (3) the PPP inflation rate of consumption and its lag to control for the effects of price volatility; (4) the total emigration rate in the previous period in order to account for the size of the diaspora;[6] and (5) the Polity IV index of democratization from the Center for Systemic Peace to control for institutional quality in the recipient country.[7]

The vector Z_{it} contains measures of financial liberalization that comprise the focus of our analysis and are derived by performing a factor analysis on the eight dimensions of financial policy compiled by Abiad, Detragiache, and Tressel (2010), namely, (a) the level of privatization in the financial sector; (b) the absence of participatory constraints in banking; (c) the absence of directed credit policies and high reserve requirements; (d) the absence of credit ceilings; (e) the absence of interest rate controls; (f) the absence of restrictions on international capital flows; (g) the quality of banking supervision; and (h) the presence of policies designed to develop security markets. Sources and summary statistics for all variables are presented in Table 1 and the country composition of our sample is listed at the foot of the table.[8]

Estimating equation (1) confronts us with a number of concerns which may invalidate the choice of ordinary least squares (OLS) as the method of estimation. First, there may be serial correlation within panels, particularly with respect to remittances (Ratha 2003). Second, GDP per capita may be endogenous and depend on the level of financial integration. Third, unobserved country-specific heterogeneity may account for some of the observed impact of financial liberalization. Finally, there may be reverse causality between remittances and financial liberalization (Beine, Lodigiani, and Vermeulen 2012).

Table 1. Summary statistics.[a]

Variable	Description	Source	Mean	Std. Dev.	Min	Max
Remittances_t	Total remittances divided by GDP (× 100%).	UN Dev. Program	2.378	3.590	0.002	22.693
Remittances_{t-1}		UN Dev. Program	2.041	3.437	0.002	22.693
$\text{Emigration rate}_{t-1}$	Total number of emigrants as a percentage of the total population.	Defoort (2008)	0.033	0.052	0.001	0.352
$\ln(\text{GDP per Capita})_{t-1}$	Natural log of PPP-adjusted GDP per capita in year 2000 US$.	Penn World Tables	8.559	1.241	5.783	10.665
$\text{Gov. Expenditure}_t$	PPP-adjusted government. expenditure as a percentage of PPP-equivalent GDP.	Penn World Tables	8.959	3.714	1.772	21.923
$\text{Gov. Expenditure}_{t-1}$		Penn World Tables	9.227	3.946	1.669	24.776
Inflation_t	PPP−adjusted inflation rate for consumption goods.	Penn World Tables	0.011	0.057	−0.161	0.228
Inflation_{t-1}		Penn World Tables	0.002	0.105	−0.161	0.854
Polity index	Polity 2 democracy–autocracy index	Polity IV project	4.697	6.064	−8.600	10.000
$\text{Financial reform}_t$	Abiad, Detragiache, and Tressel (2010) index of financial reform (sum of six indicators)	Abiad, Detragiache, and Tressel (2010)	14.081	4.964	0	21
$\text{Financial reform}_{t-1}$		Abiad, Detragiache, and Tressel (2010)	11.661	5.796	0	21
Directed credit_t	Absence of lending requirements to ‘priority’ sectors.	Abiad, Detragiache, and Tressel (2010)	2.097	0.988	0	3
Credit controls_t	Absence of highly restrictive reserve or capital requirements and/or government-imposed credit ceilings.	Abiad, Detragiache, and Tressel (2010)	2.160	0.929	0	3
$\text{Interest rate controls}_t$	Absence of government-set interest rates and/or interest rate ‘ceilings’ or ‘floors.’	Abiad, Detragiache, and Tressel (2010)	2.525	0.886	0	3
Entry barriers_t	Absence of restrictions on entry to the banking sector, such as outright entry restrictions, restrictions on foreign entry, or restrictions on the scope of certain banks’ activities.	Abiad, Detragiache, and Tressel (2010)	2.338	0.954	0	3

(*continued*).

Table 1. (*Continued*)

Variable	Description	Source	Mean	Std. Dev.	Min	Max
Banking supervision$_t$	Prudential banking regulations (e.g. Basle capital standards); supervisory agencies independent of the executive branch; and on- and off-site enforcement.	Abiad, Detragiache, and Tressel (2010)	1.353	1.004	0	3
Privatization$_t$	The extent to which the banking sector is privately held (as opposed to state-owned).	Abiad, Detragiache, and Tressel (2010)	1.590	1.167	0	3
International capital controls$_t$	The absence of government restrictions on the inflow or outflow of foreign capital, or multiple exchange rate regimes.	Abiad, Detragiache, and Tressel (2010)	2.122	0.987	0	3
Security markets policies$_t$	Policies to develop security markets, e.g. T-bill auctions; multiple-term gov. bonds; corp. bonds, equities, and derivatives markets; absence of restrictions on foreign participation.	Abiad, Detragiache, and Tressel (2010)	1.993	0.961	0	3
Freedom factor$_t$	Directed credit (0.966) and credit controls (0.954).	Mitra et al. (2014)	0.410	0.894	−1.839	1.838
Freedom factor$_{t-1}$		Mitra et al. (2014)	0.197	0.934	−1.771	1.838
Robustness factor$_t$	International capital controls (0.729); securities market policies (0.700); banking supervision (0.594); int. rate controls (0.549).	Mitra et al. (2014)	0.400	0.831	−1.927	2.241
Robustness factor$_{t-1}$		Mitra et al. (2014)	0.112	0.853	−1.927	2.241
Number of observations			278			
Number of countries			84			

Note: [a]Countries: Albania, Algeria, Argentina, Australia, Austria, Azerbaijan, Bangladesh, Belarus, Belgium, Bolivia, Brazil, Bulgaria, Burkina Faso, Cameroon, Chile, China, Colombia, Costa Rica, Cote d`Ivoire, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Finland, France, Georgia, Germany, Ghana, Greece, Guatemala, Hungary, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, Republic of, Kyrgyzstan, Latvia, Lithuania, Madagascar, Malaysia, Mexico, Morocco, Mozambique, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Russia, Senegal, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Tanzania, Thailand, Tunisia, Turkey, Uganda, Ukraine, United Kingdom, United States, Venezuela, Vietnam, Zimbabwe.

We address the problem of serial correlation by including the lagged value of the dependent variable as a regressor and by averaging our variables over non-overlapping five-year intervals in order to filter out short-term fluctuations attributable to the recipient country business cycle. The problem of endogeneity is addressed simultaneously with that of unobserved heterogeneity by employing the dynamic panel estimator introduced by Arellano and Bond (1991), which estimates the dynamic model in first differences, instrumenting for current period differences in the endogenous variables with their lagged values.

Note that our choice of methodology is motivated by several constraints. First, it is difficult to find external instruments for all endogenous variables, given the multiple layers of endogeneity. Second, even if we relied on internal instruments, two stage least squares (2SLS) estimation using the Anderson-Hsiao estimator, for example, would not be efficient given our relatively low sample size and given the fact that such estimators do not use all the information in the sample. Moreover, standard panel data methods, such as the OLS and fixed effects estimators have been shown to exhibit substantial short panel bias (Baltagi 2008). As such, dynamic panel estimators based on Generalized Method of Moments (GMM) emerge as a natural choice of estimation technique. While such estimators have their own set of caveats (Bazzi and Clemens 2013), they are best suited for short, dynamic panels with a lack of good external instruments (Baltagi 2008). In addition to these advantages, dynamic panel estimators utilize a far greater number of exclusion restrictions than the canonical 2SLS model. This has made them a staple in contemporary empirical studies on aggregate remittances.[9]

4. Capturing the multidimensionality of financial liberalization

To capture the effects of multiple dimensions of financial liberalization without introducing bias from the omission of the other dimensions, we perform an exploratory factor analysis (EFA) on the financial liberalization variables in the Abiad, Detragiache, and Tressel (2010) database. EFA is based on the assumption that each of a set of potentially correlated variables is generated by a linear combination of a smaller set of latent factors and an individual error term. The hypothesized latent factors include common factors that impact more than one observed variable and specific factors that are unique to each variable. Hence, variation in each of the observed variables can be decomposed into the part caused by variation in the common factors and the part unique to the variable in the form of specific factors and measurement error.[10] The unique portion of the decomposed variance can be seen as a residual, consisting of a random component and measurement error.

The value of EFA lies in its ability to explore a theoretical structure underlying multivariate data, since the common factors identified by the method ideally lend themselves to theoretical interpretation. Further, since the factors emerge from a process of optimization, they are less susceptible to measurement bias than indices constructed on the basis of subjective assignment of weights to the constituent

Table 2. Exploratory factor analysis.

Factor analysis/correlation		Number of observations	278
Method: principal factors		Number of retained factors	4
Rotation: oblique promax (Kaiser off)		Number of parameters	26
Factor	Variance	Proportion	(Rotated factors are correlated)
Freedom	2.284	0.513	
Robustness	2.079	0.467	
Factor3	0.473	0.106	
Factor4	0.046	0.010	
LR: independent vs. saturated:			
$\chi^2(28)$	1469.300		
P-value	0.000		

Rotated factor loadings (pattern matrix) and unique variances

Variable	Freedom	Robustness	Factor3	Factor4	Uniqueness
Directed credit	0.966	0.131	0.088	0.007	0.042
Credit controls	0.954	0.215	0.073	0.007	0.038
Interest rate controls	0.253	0.549	0.225	0.156	0.560
Entry barriers	0.286	0.479	0.340	0.043	0.572
Banking supervision	0.284	0.594	0.305	−0.089	0.466
Privatization	0.296	0.334	0.425	0.023	0.620
International capital controls	0.242	0.729	0.134	0.081	0.385
Security markets policies	0.259	0.700	0.049	−0.067	0.436

Factor rotation matrix

	Freedom	Robustness	Factor3	Factor4
Freedom	0.693	0.664	0.280	0.026
Robustness	−0.719	0.664	0.204	0.025
Factor3	−0.050	−0.345	0.933	0.086
Factor4	0.004	−0.004	−0.093	0.996

variables. In addition, being extracted by identifying common sources of variation in the observed variables, the factors are, by construction, free of high degrees of multicollinearity. This allows the simultaneous inclusion of multiple dimensions of financial reform in our empirical model, thus avoiding the problem of omitted variable bias.

The EFA reported in Table 2 employs the *principle factor* extraction method with a *promax* rotation procedure and yields two common factors underlying the observed variables that account for an overwhelming majority (98%) of the common variance. To understand the interpretation of the factors, note that the first is primarily determined by the absence of directed credit policies and high reserve requirements along with the absence of credit ceilings, which feature

with factor loadings of 0.966 and 0.954, respectively. Since both the dominant variables reflect the absence of policies that curtail the freedom of privately owned financial intermediaries, as does the third major contributor, namely, the degree of privatization of the banking sector (0.296); we interpret the factor as reflecting the degree of economic *freedom* in the financial sector.

It may be asked if the other variables which contribute to the first factor really pertain to the aspect of economic freedom. Our response to this is to clarify that EFA is based on the premise that *each* of the variables being considered reflects the impact of *all* of the underlying latent factors. Hence, the factor loading of 0.284 obtained for the first factor by the quality of banking supervision, for example, is capturing the impact of this variable over and above its impact via the other factors. Indeed, the variable features with a loading of 0.594 in the second factor which has been interpreted as reflecting the degree of robustness of the financial sector. Consistent with intuition, therefore, the quality of banking supervision does contribute to the efficient operation of the financial sector and by *more* than what it contributes to enhancing the degree of financial freedom. Thus, in our interpretation of the EFA, it is important to bear in mind that each variable can contribute to both the freedom and robustness factors to varying degrees.

The second factor is dominated by the absence of international capital controls (0.729), the presence of policies designed to develop security markets (0.700), the quality of banking supervision (0.594), and the absence of interest rate controls (0.549). While the second and the third variables clearly reflect the presence of policies designed to improve the efficiency of the financial sector, note that the same argument could be made about the other variables: government intervention in the determination of interest rates causes a divergence between expected and actual returns on private investment and may hence lead to an adverse selection of investment projects. As such, the absence of interest rate controls should improve the efficiency of the financial sector.

Similarly, restrictions on the international flow of capital isolate the domestic financial sector from the global economy and compel domestic investors to hold portfolios composed primarily of domestic securities. This may expose them to a greater degree of risk from shocks arising within the domestic economy since the domestic securities which dominate the investment portfolio are all subject to the shock. Compensation for greater risk takes the form of higher expected rates of return on investment, which in turn leads to a higher user cost of capital for firms. As such, the absence of isolating capital control policies should contribute to a more efficient financial sector. Clearly, therefore, the second factor can be interpreted as capturing the *robustness* of the financial sector.

Unlike the first two, no variable attains the commonly imposed factor loading threshold of 0.5 in the third factor. Additionally, the relatively salient variables, namely, the degree of privatization in the financial sector (0.425), the absence of entry barriers (0.340), and the quality of banking supervision (0.305), feature with as much or greater prominence in the robustness factor. Since the first two factors further account for about 98% of the common variance, we have therefore followed

Table 3. Unbalanced panel difference GMM results (dependent variable: remittances as a percentage of GDP).

	(1)	(2)
Remittances$_{t-1}$ (% of GDP)	−0.0485	−0.0974
	(0.153)	(0.160)
Emigration rate$_{t-1}$ (% of Pop.)	59.06***	63.31***
	(11.09)	(11.79)
ln(GDP per Capita)$_{t-1}$ ($US2000)	3.416***	5.842***
	(1.184)	(1.811)
Gov. expenditure$_t$ (% of GDP)	−0.0129	−0.0248
	(0.0914)	(0.0975)
Gov. expenditure$_{t-1}$ (% of GDP)	−0.135*	−0.138*
	(0.0784)	(0.0836)
Inflation$_t$ (Consumption)	0.146	−0.0814
	(1.375)	(1.485)
Inflation$_{t-1}$ (Consumption)	−0.707	−0.937
	(0.830)	(0.899)
Polity index	−0.0868***	−0.0833**
	(0.0334)	(0.0359)
Freedom factor$_t$	0.264**	0.413***
	(0.131)	(0.155)
Freedom factor$_{t-1}$		−0.168
		(0.149)
Robustness factor$_t$	0.199	0.259
	(0.217)	(0.238)
Robustness factor$_{t-1}$		−0.583**
		(0.269)
Constant	−27.11***	−47.77***
	(10.35)	(15.67)
Number of observations	278	278
Number of countries	84	84
F-Stat	111.3	99.54
P-value	0.000	0.000
Arellano–Bond AR(1) Test	1.978	2.656
P-value	0.048	0.008
Arellano–Bond AR(2) Test	2.461	2.773
P-Value	0.014	0.006
Sargan Test	2.468	0.829
P-value	0.481	0.842
Number of instruments	14	16

Note: Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

common practice in excluding the third factor from subsequent regressions.[11] However, including this factor yields comparable results those reported in Table 3. The results of this robustness check are available on request.

Finally, the following points bear clarification in the context of the factor analysis reported in this section: First, we have *not* restricted the number of factors retained by the EFA in order to address the concern that there may be an element of

arbitrariness in any prior decision to restrict the number of factors to be retained. Nevertheless, and as mentioned previously, the first three factors account for the entire common variance in the set of variables; and of these, the first two account for as much as 98%.

Second, we have replicated our results using alternative extraction and rotation procedures to address the concern that our interpretation of the various dimensions of financial reform is sensitive to the choice of methodology employed in the factor analysis. To summarize, we first retained the principle factor extraction method and replaced the oblique promax rotation procedure with the orthogonal method of *orthomax*. We subsequently conducted the EFA with alternative methods of factor extraction in the form of *iterated principle factors* and *maximum likelihood*, each being combined with both orthogonal and oblique rotation methods. All of these methods yielded virtually identical results which are available on request.

5. Multidimensional financial liberalization and its impact on remittances

Column 1 of Table 3 reports the results of our analysis when we consider only the contemporaneous impact of financial liberalization on remittances. With respect to the controls, both the size of the diaspora as captured by the lagged emigration rate and the lagged per capita GDP increase the remittance share of GDP at the 1% level, the positive impact of the latter being in line with the hypothesis that remittances are pro-cyclical with respect to conditions in the recipient country (Giuliano and Ruiz-Arranz 2009). We further observe negative impacts of democracy and lagged government expenditure at the 1% level and 10% levels, respectively, the former being consistent with the hypothesis that a country with sound democratic institutions is more capable of protecting vulnerable segments of society from expropriation and economic volatility and hence experience a reduced inflow of remittances via the insurance motive.

Differentiating between the two dimensions of financial reform, we see that there is a strong positive impact of the freedom factor on remittances. On average, a standard deviation improvement in the freedom factor increases remittances' share of GDP by 0.24% points and the impact is significant at the 5% level. By contrast, a comparable improvement in the robustness factor has a smaller and statistically insignificant impact. To appreciate the significant positive impact of the freedom factor, recall that economic freedom in the financial sector is primarily determined by the absence of directed credit policies, high reserve requirements, and credit ceilings. A relaxation of such lending constraints should increase the amount of funds that can be lent out by commercial banks and hence, reduce the domestic cost of credit. Given the importance of the investment motive for remittances, the resultant increase in the expected return to capital should increase the inflow of remittances to the economy. As importantly, a reduction in direct government control of the financial sector is expected to reduce the significant transaction costs of international financial transfers and this, again, should increase the volume of remittances (Freund and Spatafora 2008).

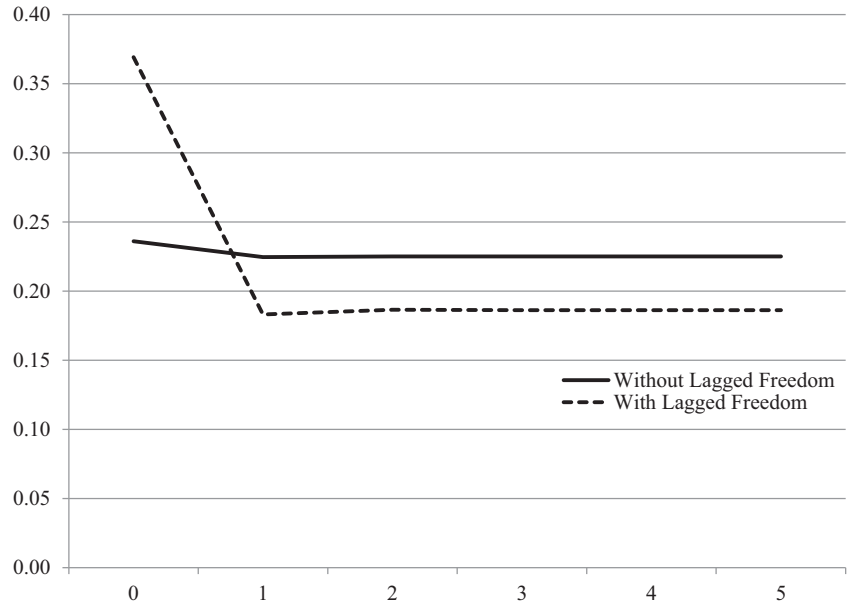

Figure 1. Impulse response functions: cumulative effect of a permanent change in financial freedom factor in period $t = 0$.

However, in contrast to studies such as Ratha (2003), we do not observe a high degree of persistence of remittances. It is plausible that the high degree of persistence observed previously is partially accounted for by the structure of financial institutions in the recipient country. However, since we have modeled financial liberalization to have a contemporaneous effect only, a second implication of this result is that the impact of a one-time financial reform leads to an almost immediate convergence to the new long-run level of remittances. We demonstrate this rapid convergence by calculating the impulse response functions for a permanent one standard deviation change in the composite index of liberalization at $t = 0$. The solid line in Figure 1 illustrates the dynamic impact of the freedom factor on remittance inflows.[12] Note that a standard deviation improvement in financial freedom initially increases the remittance share of GDP by 0.24% points and the impact persists as we project the effect forward to the new long run equilibrium, where the remittance share of GDP is about 0.225% points higher than before the reform. By contrast, the solid line in Figure 2 indicates that a comparable improvement in robustness has a weaker initial impact, increasing the remittance share of GDP by about 0.17% points and converging to a long run equilibrium value approximately 0.16% points higher than the pre-reform period.

As a second step, we introduce the lagged value of the composite liberalization index into our specification.[13] These results, reported in column 2 of Table 3 and

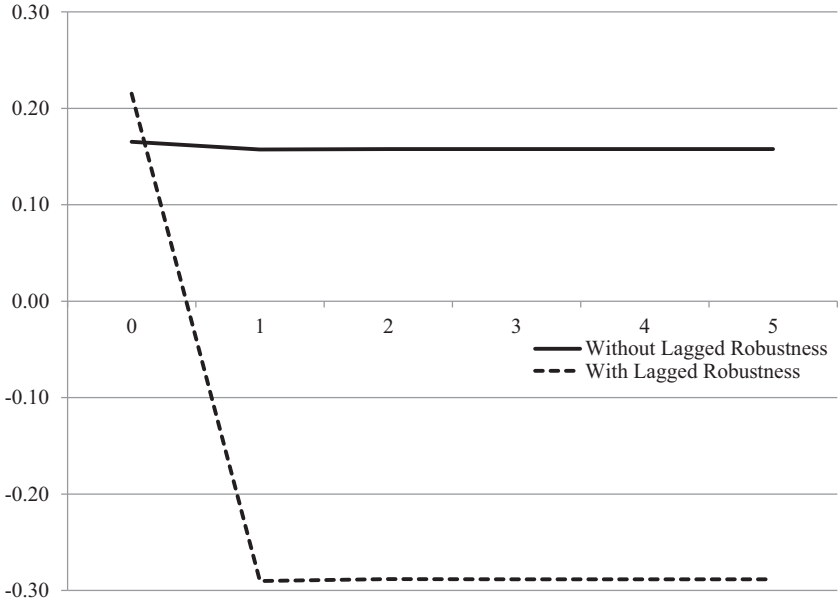

Figure 2. Impulse response functions: cumulative effect of a permanent change in financial robustness factor in period $t = 0$.

illustrated by the dashed lines in Figures 1 and 2, reveal an interesting bifurcation: Policies that enhance economic freedom in the financial sector by reducing the level of direct government intrusion have an immediate, positive, and fairly persistent positive impact on the level of remittance inflows. By contrast, policies that enhance the efficiency of the financial sector by developing security markets, improving the quality of regulatory supervision, and removing stringent restrictions on interest rates and the transnational flow of capital, have a statistically insignificant initial impact on remittances but reduce them significantly in the long run.

To appreciate the negative long run impact of the robustness factor, recall that the insurance motive plays a critical role in the decision to remit. As stated previously, reforms that improve the robustness of the financial sector serve to weaken the insurance demand for remittances, both by reducing macroeconomic volatility and by improving domestically available means of protection: As summarized by Bekaert and Harvey (1998), such reforms provide greater insulation to shocks arising within the economy by allowing the use of international capital markets to diversify investment portfolios. Second, by eliminating government intervention in the determination of interest rates that causes a divergence between expected and actual returns on private investment, they reduce the possibility of adverse selection of investment projects. Third, by improving the quality of bank supervision, they reduce the level of systemic risk of the financial system. Finally,

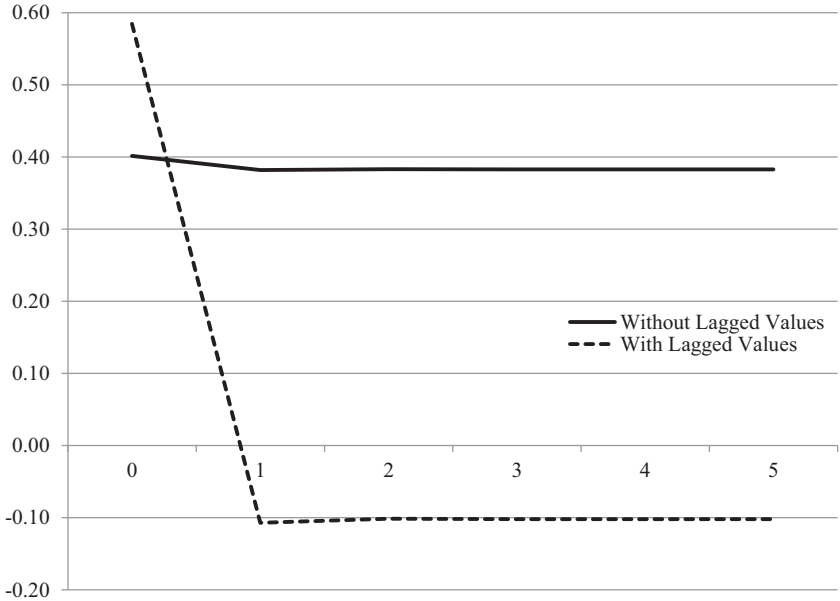

Figure 3. Impulse response functions: cumulative effect of a permanent combined change in financial freedom and robustness factors in period $t = 0$.

by removing entry barriers to the financial sector, they facilitate competition and reduce the risk associated with the abuse of market power.

One last question pertains to the impact of comprehensive liberalization where the government simultaneously reduces its presence in the financial sector *and* introduces policies to increase the robustness of financial markets. The dynamic impact of such a reform is illustrated in Figure 3. For the model without lags, remittances' share of GDP initially increases by 0.40% points and the increase is relatively persistent, converging to a long run equilibrium 0.38% points higher than before the reform. However, this effect fails to achieve statistical significance at even the 10% level.[14] Including lagged effects, the initial impact is stronger and statistically significant,[15] with remittances increasing by about 0.59% of GDP. However, in the first period after the reform, the negative lagged impact of the robustness factor dominates and the remittance share of GDP falls by about 0.69% points from its initially increased level.[16] As can be seen from the dashed line in Figure 3, the long run impact of the reform is to reduce remittances by about 0.10% of GDP.[17]

We have performed a number of checks to verify the robustness of our results.[18] The first of these sensitivity tests involves the re-estimation of our models on the basis of a balanced sample.[19] As seen from Table A1 in the appendix, the exercise largely preserves the qualitative nature of our results. Focusing on the

specification that includes lags for both financial factors, column 4 of Table A1 reveals that a contemporaneous standard deviation increase in the freedom factor increases the remittance share of GDP by about 0.36% points and the impact is significant at the 5% level. By contrast, a comparable increase in the robustness factor increases remittances by about 0.03% of GDP and the effect is statistically insignificant. With respect to the lagged impacts, a standard deviation improvement in freedom reduces the remittance share of GDP by about −0.25% points while a corresponding improvement in robustness reduces it by about 0.62% points, the coefficients being significant at the 10% and 5% levels, respectively.

Second, we have replicated our results using the unidimensional financial liberalization index of Abiad, Detragiache, and Tressel (2010) in place of the freedom and robustness factors derived from the same set of variables. The results, presented in columns 1 and 2 of Table A1 using a balanced panel, mirror the impacts of the comprehensive improvement in both dimensions of financial reform described in the previous section, further validating our results and highlighting the need for a more nuanced perspective on financial liberalization than can be observed by using a single composite index.

Third, there may be a concern that the Polity IV Index may not be the appropriate choice of control for institutional quality. We would like to note, however, that the de facto measures of institutional quality commonly used in the literature tend to be highly correlated in practice (Bang and Mitra 2011). As such, alternative indicators of institutional quality are unlikely to change our results substantially. Nevertheless, we have re-estimated our model by replacing the Polity IV Index by three alternative measures of institutional quality taken from the International Country Risk Guide (ICRG). These include (1) the Investment Profile Index, which measures the security of property rights as captured by the absence of expropriation risk, the enforcement of contracts, and delays in payments receivable; (2) the Corruption Index, which captures the absence of corruption within the political system; and (3) the Index of Bureaucratic Quality, which measures the autonomy of the bureaucracy from political control. While the alternative specifications do lead to a slight reduction in our sample, Table A2 in the appendix reveals that the estimated coefficients and significance levels of virtually all variables of interest remain closely comparable to the original results.

Fourth, to determine whether our results are biased by the over-representation of developed countries in our sample, we have re-estimated our specifications separately for OECD and non-OECD economies. The exercise confirms most of our results for the subsample of non-OECD countries for both unbalanced and balanced panels, the differences being that the contemporaneous impact of freedom loses significance to the 10% level and hitherto insignificant lagged impact now becomes significant at the 5% level in the balanced panel. However, we were unable to validate our results for the OECD subsamples in either case. This is not surprising since leaving out the non-OECD countries reduces our sample size to 78 country-year observations for the unbalanced panel and only 56 for the balanced

panel. We have presented the unbalanced panel versions of this set of results in Table A3 in the appendix, the balanced panel analogues being available on request.

Finally, a number of studies include the real (effective) exchange rate as a determinant of aggregate remittance inflows, though there is increasing evidence that the direction of causality may, in fact, operate in the other direction (Barajas et al. 2011).[20] Despite this caveat and despite the fact that the PPP-adjusted per capita GDP and the rate of change in PPP-adjusted general price level included as controls may already capture part of any potential impact of the exchange rate, we have re-estimated our models including the real exchange rate as a regressor. The addition of the variable makes no substantive difference to the reported results.

6. Conclusion

This paper investigated the impact of financial liberalization on inflows of remittances by emphasizing the multidimensionality of financial reform. An exploratory factor analysis performed on eight indicators allowed us to identify two distinct aspects of financial liberalization, namely, the degree of economic freedom in the financial sector and the robustness of financial markets. Subsequent analysis revealed that the two dimensions of financial reform differ in their consequences on remittances: An improvement in the level of freedom in the financial sector has an immediate positive impact on the remittance share of GDP that tends to persist over time, though not at the level of the immediate increase. A corresponding improvement in the level of robustness, by contrast, has an insignificant immediate impact but significantly reduces the inflow of remittances in the long run.

The results suggest that an economy looking to use remittance income as the source of development finance can increase the inflow of remittances by prioritizing policies that enhance economic freedom in the financial sphere either directly by reducing state presence in the banking sector or indirectly via the removal of directed credit mandates, high reserve requirements, and credit ceilings. By contrast, policies that enhance the robustness of the financial sector such as the creation of security markets, improvement in the quality of regulatory supervision, and removal of stringent restrictions on interest rates and capital will reduce the inflow of remittances in the long run.

Note that this provides a caveat to the claim that an improvement in the quality of financial institutions will enhance the developmental impact of remittances (Mundaca 2009; Catrinescu et al. 2009) by diverting remittance expenditure to more productive investments.[21] While we do not test this hypothesis directly, our analysis suggests that the greater marginal impact of remittance receipts on economic growth may be accompanied by a reduced volume of inflows in the long run if policy intervention is directed at enhancing the robustness of the financial sector. Even if intervention embraces both dimensions of financial reform, the negative combined impact of the freedom and robustness factors makes it questionable as to whether remittance receipts would remain a long run source of development finance, as has been claimed in the literature (Ratha 2003).

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Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. See La Porta et al. (1998), Guiso, Sapienza, and Zingales (2004), Rajan and Zingales (2003), and Chinn and Ito (2006) as influential contributions that respectively assert the salience of legal origin, the level of social capital, interest group activity, and the quality of institutions in determining the level of financial development of an economy.
2. Reinhart, Kirkegaard, and Sbrancia (2011, 22) define financial repression as occurring 'when governments implement policies to channel to themselves funds that in a deregulated market environment would go elsewhere.' They identify the specific policies as including all or a subset of the following: (a) directed lending to the government in the form of pension funds or domestic banks; (b) explicit or implicit ceilings on interest rates; (c) regulation of international capital movements; (d) a closer relationship between the state and the banking sector, either via direct state ownership or via coercion of privately owned banks; (e) relatively high reserve or liquidity requirements; (f) taxes on securities transactions; (g) prohibition of gold purchases; and (h) a high proportion of government debt being nonmarketable.
3. It should be stated that there is an emerging literature that asserts causality from growth to financial development, accounting, of course, for the eventuality that the causality could be bi-directional. On this, see Chow and Fung (2013) and references therein.
4. There is a debate in the literature on the impact of per capita GDP on aggregate remittance receipts: On one hand, the altruism motive for remittances predicts a negative relationship between the two variables since an increase in household income should reduce the reliance on remittance income for the purpose of consumption, insurance, or debt repayment. On the other hand, the investment motive for remittances predicts a positive relationship between the variables since a higher rate of growth will correlate with a higher rate of return on capital and hence, increase the incentive to remit for investment purposes. We refer the reader to Basu and Bang (forthcoming) for more on this debate.
5. The literature is again equivocal on the impact of government expenditure and we refer the reader to Basu and Bang (forthcoming) for more on the topic. To summarize, the demand-side perspective on remittances holds that such transfers substitute for needed social insurance programs such as public health care, unemployment insurance, crop insurance, and public pension schemes, which are typically absent in developing countries. The government expenditure variable, at least partially, captures the existence of such programs and should therefore be correlated

negatively with aggregate remittance receipts, given the altruism motive for remitting. However, the relationship is more ambiguous if we consider the supply-side argument whereby remittances are motivated primarily by investment prospects in the home country. As noted by Basu and Bang (forthcoming), if public expenditure crowds out private investment, then higher state expenditure should reduce the incentive to remit. On the other hand, if public expenditure is directed at creating needed infrastructure and correcting market failures, this should invite higher volumes of remittances.

6. To be specific, we consider the total emigration rates to six major OECD destinations, namely, Canada, Australia, United States, United Kingdom, France, and Germany (Defoort 2008). Focusing on these six destinations is less restrictive than may appear to be the case: These countries accounted for 77% of the OECD skilled immigration stock in the year 2000 (Beine et al. 2011). This is significant considering that 90% of all high skilled international migrants were found to be living in the OECD in that year (Docquier et al., 2007. Further, the United States, Germany, France, Canada, and the United Kingdom were, in descending order, the five largest remittance-sending countries in 2005, together accounting for approximately half of the global remittance flow (Ratha and Shaw 2007). Australia was the ninth largest, being further superseded by Saudi Arabia, Spain, and Hong Kong in descending order. See Beine et al. (2011) and Mitra et al. (forthcoming) for other studies based on this convention.
7. There may be a concern that the Polity IV Index may not be the appropriate choice of control for institutional quality. We address this issue at the end of Section 5, with the corroborating results appearing in Table A2 in the appendix.
8. It should be clarified that what the Abiad, Detragiache, and Tressel (2010) subindices measure is the existence (or absence) of policies designed to further these eight objectives and not the outcomes of these policies. As a case in point, the subindex that captures participatory constraints in the banking sector is based on the absence of barriers to entry by international banks, restrictions on the establishment of branches by both domestic and international banks, and limitations on the range of financial activities performed by both types of banks. It does not, for example, measure the actual number of foreign banks in the economy, the average number of branches per bank, or the average range of permitted financial activities.
9. We acknowledge that this leaves the problem of reverse causality unresolved. One problem with addressing this issue comes with finding suitable instruments for financial liberalization that will pass the tests for strength and validity. While the GMM-style instruments suggested by the Arellano–Bond estimator satisfy the conditions for strong instruments, they are also correlated with remittances, and therefore do not pass the Sargan test for instrument validity. We refer the reader to Bazzi and Clemens (2013) for a more complete discussion of these pitfalls to the Arellano–Bond and related GMM estimators.
10. The unique part of the decomposed variance can be seen as a residual, consisting of a random component and measurement error. Specifically, the uniqueness factor reported in Table 3 consists of the total variability of each variable minus the sum of its squared factor loadings.
11. As can be seen from Table 3, we lose nothing from ignoring the fourth factor retained by the EFA since the first three factors together account for all of the common variance in the data.
12. The magnitudes underlying Figures 2–4 are calculated in the same way as described in footnote 5 of Section 4.
13. Including a lagged value for financial reform does not require us to sacrifice observations because the time series for the financial reform database begins in 1981, whereas the lagged differences for our dependent variable needed to estimate the difference GMM model are only available beginning for the five-year period ending in 1990. Ideally, we would like to be able to test for the optimal lag length in the impact of financial reform. However, given the shortness of our sample ($t = 4$),

including additional lagged values of financial reform would require sacrificing an entire time period of observations, which would call into question the consistency of our estimated coefficients.

14. The estimated combined impact of a standard deviation change in both factors is about 0.4012; the estimated standard error of this linear combination is about 0.2500, resulting in a z-statistic of about 1.60 and a p-value of about 0.109.
15. The point estimate for the linear combination is 0.5850 and the standard error is 0.2850, yielding a test statistic of 2.04 and a p-value of 0.040.
16. The point estimate for the second period impact is $0.894(\beta_{\text{freedom}(t-1)}) + 0.831(\beta_{\text{robustness}(t-1)}) + 0894(\beta_{\text{remit}(t-1)})(\beta_{\text{freedom}(t)}) + 0.831(\beta_{\text{remit}(t-1)})(\beta_{\text{freedom}(t)}) = -0.6916$. Since the model contains nonlinear combinations of the coefficients, a simple z-test is invalid. However, we can perform a Wald test. The value of the Wald statistic for this test is 4.13, and the Bonferroni-adjusted p-value for the test is 0.042. Hence, the nonlinear effect is statistically significant.
17. The cumulative effect on remittances after two periods is -0.1071, but this effect is not statistically significant.
18. To conserve space, we have not reported the full results of these robustness checks in the paper, but will make any or all of them available on request.
19. It is important to note that balancing the panel leads reduces the number of countries considerably (from 84 to 56) and the countries that drop out are not selected at random. In fact, not only do we lose a considerable number of non-OECD countries, but many of the countries that drop out are transition economies. Since these are precisely the societies which have experienced some of the most significant episodes of financial liberalization during this time, omitting these countries may increase the possibility of selection bias.
20. We are grateful to a referee for drawing our attention to this literature.
21. This is, in fact, an ongoing debate in the literature. Giuliano and Ruiz-Arranz (2009), by contrast, maintain that the growth impact of remittances is greater in less financially developed economies, since remittances provide an alternative source of finance for productive investment that would otherwise be inhibited by the credit and liquidity constraints.

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Appendix

Table A1. Balanced panel difference GMM results (dependent variable: remittances as a percentage of GDP).

	(1)	(2)	(3)	(4)
Remittances$_{t-1}$ (% of GDP)	−0.113	−0.207	−0.102	−0.203
	(0.172)	(0.182)	(0.171)	(0.183)
Emigration rate$_{t-1}$ (% of Pop.)	79.62***	88.87***	80.12***	89.15***
	(13.47)	(14.51)	(13.49)	(14.56)
ln(GDP per Capita)$_{t-1}$ ($US2000)	2.291**	4.680***	2.534**	5.276***
	(1.157)	(1.673)	(1.240)	(1.924)
Gov. expenditure$_t$ (% of GDP)	0.000130	0.00852	0.00470	0.00124
	(0.103)	(0.111)	(0.103)	(0.111)
Gov. expenditure$_{t-1}$ (% of GDP)	−0.101	−0.129	−0.0879	−0.0956
	(0.0817)	(0.0881)	(0.0827)	(0.0905)
Inflation$_t$ (Consumption)	0.281	−0.141	0.367	0.0546
	(1.463)	(1.597)	(1.461)	(1.611)
Inflation$_{t-1}$ (Consumption)	−0.108	−0.578	−0.0551	−0.554
	(1.217)	(1.334)	(1.225)	(1.357)
Polity index	−0.0219	−0.00984	−0.0142	−0.00476
	(0.0332)	(0.0357)	(0.0332)	(0.0363)
Financial reform composite$_t$	0.0272	0.0494		
	(0.0314)	(0.0368)		
Financial reform composite$_{t-1}$		−0.0880**		
		(0.0387)		
Freedom factor$_t$			0.206	0.363**
			(0.126)	(0.155)
Freedom factor$_{t-1}$				−0.250*
				(0.151)
Robustness factor$_t$			−0.0226	0.0268
			(0.238)	(0.262)
Robustness factor$_{t-1}$				−0.620**
				(0.279)
Constant	−18.88*	−38.59***	−20.89*	−44.36***
	(9.804)	(14.07)	(10.75)	(16.58)
Number of observations	224	224	224	224
Number of countries	56	56	56	56
F-Stat	138.9	120.1	141.2	119.7
Arellano–Bond AR(1) Test	1.623	2.582	1.554	2.467
P-value	0.105	0.010	0.120	0.0136
Arellano–Bond AR(2) Test	2.375	2.634	2.065	2.368
P-value	0.018	0.008	0.039	0.0179
Sargan test [$\chi^2(3)$]	3.609	2.712	3.318	2.169
P-value	0.307	0.438	0.345	0.538
Number of instruments	13	14	14	16

Note: Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A2. Results with alternate institutional controls (unbalanced panel).

Variables	Investment profile		Corruption		Bureaucratic quality	
Remittances$_{t-1}$ (% of GDP)	−0.0707	−0.106	−0.0535	−0.103	−0.0460	−0.0934
	(0.137)	(0.144)	(0.141)	(0.149)	(0.137)	(0.145)
Emigration rate$_{t-1}$ (% of Pop.)	58.45***	61.67***	57.55***	62.15***	56.81***	61.05***
	(10.08)	(10.64)	(10.52)	(11.20)	(10.14)	(10.91)
ln(GDP per Capita)$_{t-1}$ ($US2000)	2.516**	4.376***	3.348***	5.174***	2.983***	5.040***
	(1.102)	(1.608)	(1.096)	(1.627)	(1.042)	(1.580)
Gov. expenditure$_t$ (% of GDP)	−0.0257	−0.0326	−0.0267	−0.0329	−0.0281	−0.0353
	(0.0810)	(0.0859)	(0.0828)	(0.0885)	(0.0816)	(0.0877)
Gov. expenditure$_{t-1}$ (% of GDP)	−0.148**	−0.157**	−0.146**	−0.157**	−0.142**	−0.152**
	(0.0714)	(0.0755)	(0.0729)	(0.0776)	(0.0712)	(0.0764)
Inflation$_t$ (consumption)	−0.339	−0.567	−0.294	−0.454	−0.274	−0.461
	(1.226)	(1.314)	(1.247)	(1.340)	(1.224)	(1.324)
Inflation$_{t-1}$ (consumption)	0.0238	−0.144	−0.431	−0.583	−0.345	−0.563
	(0.816)	(0.870)	(0.821)	(0.886)	(0.765)	(0.831)
Investment profile	0.124	0.150				
	(0.148)	(0.161)				
Corruption			0.250	0.171		
			(0.311)	(0.331)		
Bureaucratic quality					0.469	0.425
					(0.353)	(0.381)
Freedom factor$_t$	0.170	0.278**	0.196*	0.310**	0.198*	0.321**
	(0.118)	(0.138)	(0.116)	(0.139)	(0.115)	(0.138)
Freedom factor$_{t-1}$		−0.163		−0.147		−0.155
		(0.133)		(0.134)		(0.132)
Robustness factor$_t$	0.0681	0.121	0.0524	0.108	0.0581	0.114
	(0.188)	(0.205)	(0.193)	(0.212)	(0.188)	(0.209)
Robustness factor$_{t-1}$		−0.451*		−0.462*		−0.493**
		(0.237)		(0.245)		(0.237)
Constant	−20.55**	−36.63***	−27.82***	−43.17***	−24.94***	−42.43***
	(9.355)	(13.79)	(10.02)	(14.41)	(8.870)	(13.44)
Number of observations	270	270	270	270	270	270
Number of countries	81	81	81	81	81	81
F−Stat	135.5	121.3	131.4	115.8	145.0	126.7
Sargan test	4.488	3.389	4.398	3.502	4.870	3.752
P-value	0.213	0.335	0.222	0.320	0.182	0.289
Number of instruments	14	16	14	16	14	16

Note: Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.0$

Table A3. Results with OECD and non-OECD subsamples (unbalanced panel).

Variables	Non-OECD		OECD members	
Remittances$_{t-1}$ (% of GDP)	0.193	0.149	1.000**	1.224**
	(0.173)	(0.203)	(0.506)	(0.560)
Emigration rate$_{t-1}$ (% of Pop.)	58.70***	59.76***	0.672	−0.0918
	(18.98)	(22.29)	(5.190)	(5.568)
ln(GDP per Capita)$_{t-1}$ ($US2000)	5.827***	11.42***	0.493	−0.306
	(2.174)	(3.666)	(0.558)	(0.710)
Gov. expenditure$_t$ (% of GDP)	−0.0459	−0.0680	−0.122	−0.0816
	(0.115)	(0.137)	(0.0780)	(0.0855)
Gov. expenditure$_{t-1}$ (% of GDP)	−0.107	−0.110	0.0603	0.123
	(0.100)	(0.118)	(0.0972)	(0.113)
Inflation$_t$ (Consumption)	0.947	1.393	0.916	1.945*
	(2.017)	(2.415)	(0.792)	(1.062)
Inflation$_{t-1}$ (Consumption)	−0.605	−0.886	1.007*	1.285*
	(1.084)	(1.309)	(0.555)	(0.679)
Polity2	−0.0165	0.0105	0.0845	−0.0202
	(0.0922)	(0.110)	(0.0842)	(0.104)
Freedom factor$_t$	0.197	0.436**	−0.0694	−0.0467
	(0.169)	(0.222)	(0.115)	(0.139)
Freedom factor$_{t-1}$		−0.399*		−0.0143
		(0.223)		(0.103)
Robustness factor$_t$	−0.0775	−0.0138	−0.233	−0.109
	(0.282)	(0.337)	(0.183)	(0.227)
Robustness factor$_{t-1}$		−1.005**		0.313*
		(0.404)		(0.184)
Constant	−44.31**	−88.98***	−4.876	2.597
	(17.49)	(29.42)	(6.056)	(7.336)
Observations	200	200	78	78
Number of countries	63	63	23	23
Chi^2 statistic	111.2	81.94	18.70	18.69
$P-$value	0.000	0.000	0.044	0.096
Arellano–Bond AR(1) Test	0.683	2.014	−1.986	−1.940
Arellano–Bond AR(2) Test	0.882	1.341	−0.496	−0.605
Sargan test	4.357	1.160	12.65	10.90
P-value	0.225	0.763	0.005	0.012
Instruments	14	16	14	16

Note: Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.2$