

REMITTANCES DETERIORATE GOVERNANCE

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Abstract—I use a natural experiment of oil-price-driven remittance flows to poor, non-oil-producing Muslim countries to demonstrate that remittances deteriorate the quality of governance, especially in countries with weak democratic institutions. The results indicate that a 1 standard deviation increase in remittances raises corruption by 1.5 index points (on a 6-point scale), which is equivalent to a \$600 decrease in per capita GDP. Concomitantly, remittances may enable governments to reduce their delivery of public services (for example, health care, school enrollment). The results suggest that political institutions may mediate the potentially beneficial socioeconomic effects of remittance inflows.

I. Introduction

EXCESSIVE patronage coupled with poor delivery of government services are tactics governments in many developing countries frequently employ to remain in power. In these countries, this “misuse of government office for private gain” often paves the way for rampant government corruption (Bardhan, 1997), lower economic performance (Mauro, 1995; World Bank, 2004), and worse social and health conditions (Gupta, Davoodi, & Tiongson, 2002).¹ In light of this, existing studies frequently find that rising household income (Treisman, 2000, 2007), achieved in part through the tremendous growth of remittances, may serve as a conduit for mitigating government excess and improving the quality of governance (G8 Center, 2004; Obama, 2009).² The underlying logic is that additional household income can empower individuals politically (Dube & Vargas, forthcoming).

This sentiment is misguided. Anecdotal evidence suggests that remittances may diminish the quality of governance. Migrant workers’ advocacy groups in the Philippines, for example, claim that government officials skim revenues from

a documentary stamp tax (for example, associated with private cash transfers through Western Union) for their own private use (GMA News TV, 2008). In India, remittances are often laundered to bribe officials. The money can be paid overseas to a relative and then sent back to the corrupt official (Kapur, 2011). Recent trends in Jordan show that higher aggregate remittances are correlated with higher public sector employment, salaries, and overall corruption (Ahmed, 2012). While suggestive, these accounts do not constitute robust evidence of a causal link between remittances and poor governance.

This paper uses a natural experiment to demonstrate that remittances deteriorate the quality of governance in poor countries with weak democratic institutions. The natural experiment uses plausibly exogenous variation in the price of oil interacted with a Muslim country’s distance to Mecca as an instrument for remittances received in poor, non-oil-producing Muslim countries. This instrument allays major worries about endogeneity bias arising from reverse causality and nonrandom measurement error. Using corruption as the primary indicator of governance, the instrumental variables results demonstrate that a 1 standard deviation increase in remittances corresponds to a more than 1 standard deviation increase in government corruption.³ More precisely, a 1 standard deviation increase in remittances raises corruption by 1.5 index points on a 6-point scale (which amounts to a \$600 decrease in per capita GDP).

The mechanism through which remittances can foster misgovernance is not obvious. While scholars have long recognized that direct financial transfers to governments, such as foreign aid, can generate rent-seeking behavior and fund corruption (Friedman, 1958; Bauer, 1972; Alesina & Weder, 2002), the relationship between financial transfers to households (e.g., remittances) and governance is not so direct. Governments do not directly “observe” these transfers since a large share of remittances is sent through back channels and via technologies, such as automated teller machines, that bypass their tracking by international development agencies and predominantly poor governments. Given these problems, remittances are largely untaxed by governments (de Luna Martinez, 2005; Chami et al., 2008) and thus cannot directly finance corruption. Instead, this paper provides highly suggestive evidence that remittances may allow governments to finance corruption by easing the pressure to deliver government services, such as government transfers, public health care, and school enrollment (Abdih et al., 2012). This finding supports existing theories and empirical evidence that governments in less democratic settings divert expenditures

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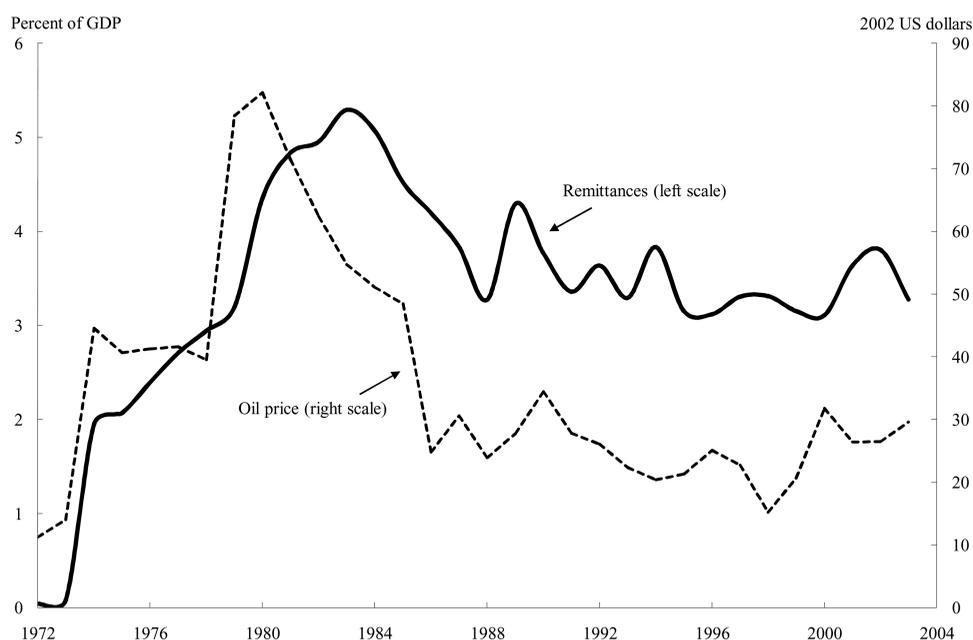
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¹ According, to the World Bank (2004), every year corruption costs at least \$1 trillion worldwide. This figure is an estimate of actual bribes paid worldwide in both rich and developing countries. It not does include the embezzlement of public funds or theft of public assets. According to World Bank officials, it is extremely difficult to assess the extent of worldwide embezzlement of public funds, “but we do know it is a very serious issue in many settings.” For example, Transparency International estimates that former Indonesian leader Suharto embezzled anywhere from \$15 to \$35 billion from his country, and Ferdinand Marcos in the Philippines, Mobutu in Zaire, and Abacha in Nigeria may have embezzled up to \$5 billion each.

² In his survey of the cross-national causes of corruption, Treisman (2000, 2007) finds that higher per capita income is consistently a robust attribute of lower measures of corruption. With respect to remittances, they represent transfers in household income from foreign economies to the migrant’s home country. These financial flows arise from the temporary or permanent movement of people to those foreign countries. According to the IMF, remittances receipts more than doubled to \$336 billion from 2001 to 2007. Official recorded remittances sent home by migrant workers represent the second most important source of external funding in developing countries and are about twice as large as the level of aid-related inflows to these countries (Chami et al., 2008).

³ A number of studies have argued for and used measures of corruption to capture cross-national variation in the quality of governance and development (Mauro, 1995; Bardhan, 1997; Gupta et al., 2002; Tanzi & Davoodi, 2002; Treisman, 2000, 2007).

FIGURE 1.—PRICE OF OIL AND REMITTANCES (% GDP) IN POOR, NON-OIL-PRODUCING MUSLIM COUNTRIES



Total remittances (% GDP) to poor, non-oil-producing Muslim countries. Based on author's calculations.

to engage in corruption to reward key supporters and stay in power (Bueno de Mesquita et al., 2003; Acemoglu & Robinson, 2006).

Gauging the effects of remittances on governance (as well as economic outcomes), however, suffers from endogeneity bias related to both reverse causality (countries with more corrupt governments and inferior socioeconomic conditions tend to attract higher remittances) and measurement error (officially recorded flows of remittances tend to underreport actual flows). To combat these concerns, I use a natural experiment of oil price–driven remittance flows from the Persian Gulf to construct an innovative cross-country and time-varying instrument for remittances.

For largely cultural and religious reasons, Gulf oil producers have tended to import a large share of their workforce from other Muslim countries (Choucri, 1986). As figure 1 shows, remittances to these poor, non-oil-producing Muslim countries have tracked the price of oil. The price of oil provides plausibly exogenous variation in remittances that is uncorrelated with the internal economic and political conditions in poor, remittance-receiving countries. Moreover, Muslim countries closest to oil producers in the Persian Gulf tended to receive more remittances. The inclusion of distance is key in generating a statistically strong instrument for remittances and differentiates this study from Werker, Ahmed, and Cohen's (2009) examination of oil-price-driven foreign aid flows.⁴ These two facts underlie the instrument.

⁴This instrumentation strategy is similar to that employed by Werker et al. (2009) to gauge the macroeconomic impact of foreign aid. Werker et al. use the price of oil interacted with a whether a country is Muslim to gauge the impact of foreign aid sent from the Persian Gulf on short-run macroeconomic behavior in poor, non-oil-producing Muslim countries.

Specifically, I use exogenous variation in the price of oil interacted with a non-oil-producing Muslim country's distance from Mecca as a time-varying instrument for remittances. The instrument therefore identifies the average treatment effect for poor, non-oil-producing Muslim countries with predominantly nondemocratic politics.

For a sample of 57 poor, non-oil-producing countries between 1984 and 2004, the IV results show that remittances foster government corruption and lower the government's delivery of various public services. The results imply that a 1 standard deviation increase in remittances is equivalent to moving from a low-corruption country like Costa Rica (with corruption on par with that of Germany and the United States) to a moderately corrupt nation, such as Niger or Sri Lanka. These findings are robust to alternate specifications, a variety of specification checks, differential trends, and potential violations of the exclusion restriction. There are three plausible channels through which oil prices could affect corruption independent of remittance inflows: foreign aid, prices (inflation, exchange rate), and trade flows. The findings are robust to specifications that take these other channels into account. Finally, I provide suggestive evidence that remittances raise corruption by plausibly reducing a government's delivery of public services, such as on health care and social spending, rather than through direct rent extraction (such as bribes) or by affecting internal political discontent. Thus, the combination of higher government corruption and reduced provision of government services induced by

They do not investigate how oil price–driven flows of foreign money (aid, remittances) affect political behavior in recipient countries.

higher remittances implies that remittances can deteriorate the effectiveness of government.

This finding counters conventional wisdom that higher household income can empower individuals politically and improve the quality of governance (Przeworski et al., 2000; Treisman, 2000, 2007; Dube & Vargas, forthcoming). In line with this notion, remittance income is envisioned to engender political liberalization and democratization. Evidence from Latin American democracies suggests this. For instance, Mexican migrants in the United States have had a sizable impact on the domestic Mexican political process through home town associations that provide financial assistance to their home communities. These associations are often involved in financing public infrastructure activities, such as the construction of roads, schools, and health facilities (Orozco & Lapointe, 2003) as well as in political mobilization (dela Garza & Hazan 2003).

This favorable view that remittances can raise socioeconomic welfare has surfaced at the upper echelons of public policy. Leaders of the G8 countries, for instance, have officially acknowledged that remittances promote development and committed resources to policy initiatives to attract remittance inflows (G8 Centre, 2004). More recently, in a speech promoting human rights and democracy in Cuba, President Obama (2009) declared, "Measures that decrease dependency of the Cuban people on the Castro regime and that promote contacts between Cuban-Americans and their relatives in Cuba are means to encourage positive change in Cuba. The United States can pursue these goals by facilitating greater contact between separated family members in the United States and Cuba and increasing the flow of remittances and information to the Cuban people." These studies and views of policymakers, however, frequently ignore the political incentives faced by public officials in countries with weak democratic institutions to strategically engage in patronage and corruption as households get richer from largely untaxed remittance income.

The findings from this paper also introduce a new explanation for cross-national variation in corruption. These studies consistently find that countries with Protestant traditions, histories of British rule, more developed economies, and (probably) higher imports are less corrupt (for an overview, see Treisman, 2000, 2007). Scholars have also associated cross-national differences in corruption to international capital flows such as foreign direct investment (Wei, 2000) and foreign aid (Alesina & Weder, 2002), as well as firms engaged in international trade (Lambsdorff, 1998; Ales & Di Tella, 1999). This paper contributes to that literature.

The rest of the paper is structured as follows. Section II provides the conceptual framework linking remittances and regime type to patronage and corruption. Section III discusses the empirical strategy, data, and trends. Section IV presents the results. Section V evaluates various mechanisms linking remittances to corruption. Section VI concludes.

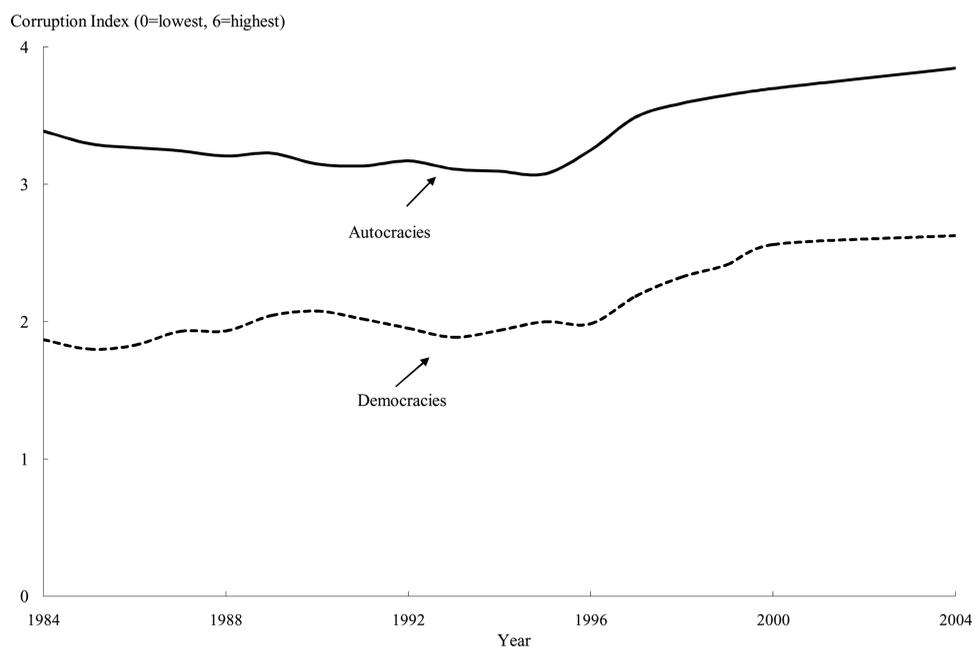
II. Corruption as Political Survival

To stay in office, all governments supply welfare goods to the masses and targeted transfers in the form of patronage (Acemoglu & Robinson 2006; Bueno de Mesquita et al., 2003). However, the relative distribution of welfare goods to patronage goods supplied by the government tends to differ by regime type. For instance, in their theory of democratization, Acemoglu and Robinson (2006) argue that a country democratizes as a credible commitment to future redistribution. By design, governments in democracies therefore spend a larger fraction of their revenue on the provision of welfare goods. Similarly, Bueno de Mesquita et al.'s (2003) selectorate theory demonstrates that given their political institutional constraints, democratic governments tend to provide a greater share of welfare goods than their authoritarian counterparts do. Doing so better ensures the political survival of democratic governments. This trade-off between patronage goods and welfare goods will enter the government's utility function. Specifically, governments in autocracies will place greater weight on expenditures to patronage (compared to democracies) in their utility functions. Since governments in autocratic polities derive greater utility from the provision of patronage, they have a greater incentive to engage in practices conducive to patronage. For instance, governments in autocracies may optimally choose to reduce their provision of welfare goods as households receive remittance inflows and divert those expenditures on patronage (Ahmed, 2012). This patronage in turn is highly correlated with measures of corruption and poor delivery of government services.

Empirically corruption is higher in autocracies. Figure 2 plots the average corruption scores by regime type. Corruption is measured on a 6-point scale where higher values correspond to greater corruption. As figure 2 shows, democracies on average tend to engage in less corruption than do autocracies. On average, democracies receive a low corruption score of around 2, whereas autocracies are at least a full point higher. Moreover, for the sample of poor remittance-receiving countries examined in this paper, more corrupt governments tend to last longer in office. For instance, governments in the most corrupt countries (with the maximal value of 6) stay in power for almost 15 years. In contrast, governments in the least corrupt polities (with corruption scores equal to 0 or 1) last around 3.6 years.

According to the selectorate model of political survival (Bueno de Mesquita et al., 2003), governments in autocracies are likely to foster corruption for at least three reasons. First, eliminating corruption and encouraging institutions that promote the rule of law are public goods. Leaders in autocracies have few incentives to find and eliminate corruption. Second, leaders can provide benefits by granting the supporters the right to expropriate resources from themselves. Thus, autocratic leaders might encourage corrupt practices as a reward mechanism. Third, the prevalence of kleptocracy in autocracies frequently allows leaders to siphon off resources for pet projects. "Ruling to steal" constitutes a form of corruption.

FIGURE 2.—CORRUPTION BY REGIME TYPE



Average corruption score for autocratic and democratic countries. Autocracies are countries with polity scores less than +6. Democracies are countries with polity scores more than or equal to +6. The polity index ranges from -10 to +10, where higher values correspond to greater democratic governance.

III. Empirical Strategy

A. Endogeneity

Attempts to gauge the causal impact of remittances on governance will suffer from endogeneity bias. The direction and magnitude of this bias, however, are likely to be influenced by the relative and potentially offsetting effects of reverse causality and measurement error.

On the former, the decision to migrate and remit earnings is often driven by a dearth of economic opportunities in the home country, which tends to be correlated with the country's quality of governance.⁵ If a country's underlying quality of poor governance is positively correlated with its receipts of remittances, this will tend to bias upward the effect of remittances on government corruption. On the latter, officially recorded inflows of remittances tend to underreport actual flows. Moreover, the mismeasurement of remittances does not seem to be random: poorer countries, presumably with governments that have lower tracking capacities, are more prone to mismeasure remittances inflows (de Luna Martinez, 2005). This fact is well acknowledged by practitioners and policymakers. For example, improving the measurement of remittances is a major concern and stated goal of development agencies and governments in remittance-receiving and

⁵ For the estimating sample of poor non-oil-producing countries, there is a positive correlation between corruption and remittance inflows. For instance, countries with a low corruption score (0 to 2) receive remittances equal to 2% of GDP compared to remittances equal to 2.5% of GDP for countries with a moderate corruption score of 3 or 4. High-corruption countries with a corruption index score of 5 and 6, on average, receive remittances equal to 4.9% of GDP.

as well as remittance-sending countries (G8 Centre, 2004). From an econometric standpoint, the prevalence of underreporting and the existence of systematic measurement error tend to attenuate the coefficient estimate of remittances on economic and political outcomes. Thus, the existence of non-random measurement error will tend to downward-bias the coefficient estimates.

B. Natural Experiment

One strategy to mitigate this endogeneity problem is to identify an instrument for remittances. I use a natural experiment linking plausibly exogenous variation in the world price of oil and a Muslim country's distance to Mecca to construct an instrument for remittances sent from Gulf oil-producing countries to poor, Muslim non-oil-producing countries. In the aftermath of the 1973 oil crisis, labor from different countries in North Africa, South Asia, and Middle East migrated in great numbers to the oil-exporting countries in the Middle East. The first wave of workers (totaling about 500,000) migrated from non-oil-producing Gulf states, such as Jordan, Palestine, and Yemen.⁶ Later in the decade, Gulf states began to recruit a large number of South Asian workers from India, Pakistan, and Bangladesh. For example, it is estimated that the number of Pakistani workers jumped from roughly 500,000 in 1975 to over 1.25 million in 1979. By the early

⁶ As Choucri (1986) observes, the trends indicate that the magnitude of migration was much greater than indicated by reports based on data collected in 1975 by the World Bank and the International Labor Office.

TABLE 1.—REMITTANCES AND DISTANCE FROM MECCA

Distance from Mecca	Countries	Remittances (% GDP)	Polity
Under 1,000 miles	Djibouti, Jordan, Lebanon, Sudan	12.1	-4.3
1,000–2,000 miles	Afghanistan, Morocco, Somalia, Turkey	3.8	-2.2
2,000–3,000 miles	Comoros, Niger, Pakistan	3.2	-1.7
More than 3,000 miles	Bangladesh, Guinea, Mali, Mauritania, Senegal	2.1	-3.9

Sample of sixteen poor, non-oil-producing Muslim countries between 1972 and 2004.

1980s, there may have been some 3.5 million to 4.65 million migrants, in a combined labor force of 9 million to 10.2 million workers (Choucri, 1986). This large movement of labor generated large capital flows in the form of worker remittances from Gulf oil producers to a variety of non-oil-producing, labor-exporting countries in the Middle East (such as Jordan), Africa (such as Mali), and Asia (such as Pakistan).

Two stylized facts make this an interesting natural experiment. First, the amount of aggregate remittances received by poor, non-oil-producing Muslim countries tracks the world price of oil. As figure 1 shows, as the price of oil began to rise in 1974, remittance inflows to poor non-oil-producing Muslim countries rose sharply. This level of remittance remained high through the early 1980s and then began to fall as the price of oil tanked. Since the 1990s, remittance flows have tended to be less volatile but still tend to co-move with the price of oil. Because the world price of oil is largely determined by supply decisions in oil producers and demand conditions in large (industrialized and rich) economies, it provides a plausibly exogenous source of variation in remittance flows that is unrelated to the economic, political, and social conditions in remittance-receiving countries.

The second stylized fact is that remittance inflows to non-oil-producing Muslim countries is inversely related to each country's distance from the Persian Gulf. Countries closer to oil-producing Gulf economies experienced greater outward migration and subsequently higher remittance inflows. Table 1 shows that non-oil-producing Muslim countries closer to Mecca tended to receive higher remittances (as a share of GDP).⁷ For instance, over the sample period, Jordan (765 miles from Mecca) on average received remittances equal to 17.7% of GDP. In contrast, Bangladesh (3,212 miles from Mecca) on average received remittances equal to 3% of GDP.

These two stylized facts underlie the construction of the instrument. Specifically, I interact the price of oil with a Muslim country's distance (measured in logarithmic units) from Mecca as an instrument for remittances. This instrument varies across both time (annual fluctuations in oil prices) and countries (for example, the distance to Mecca differs across countries).⁸ Thus, in the 2SLS setup, the instrument will

identify within- and across-country variation in corruption. This instrument improves on existing ones that are predominantly time invariant and limited to explaining cross-sectional variation in corruption, such as colonial settler mortality rates (Treisman, 2000).⁹

This identification strategy is similar to that employed by Werker et al. (2009) to gauge the impact of oil price-driven foreign aid flows on macroeconomic outcomes such as growth, consumption, investment, and inflation. This paper's instrument differs from that of Werker et al. on two key dimensions. First, it explains remittance flows rather than foreign aid flows. Second, the instrument requires a country's distance from the Persian to precisely measure remittance flows. As the results will show, variations in oil price alone are insufficient to explain remittance inflows to poor non-oil Muslim countries (the instrument is extremely weak).

Armed with this instrument, the reduced-form two-stage regression setup is

First stage: $REMIT_{it} =$

$$\alpha + \beta DIST_i \times p(oil)_t + \gamma X_{it} + \delta Y_t + \kappa D_i + \epsilon_{it},$$

Second stage: $CORRUPTION_{it} =$

$$a + b \times REMIT_{it} + c \times X_{it} + d \times Y_t + f \times D_i + u_{it},$$

where the dependent variable measures government corruption for each country i in year t . This variable ranges on a scale from 0 to 6, where higher values correspond to greater corruption. $REMIT_{it}$ is each country's officially recorded inflows of remittances (% GDP). $DIST_i$ is the log distance of a poor, non-oil-producing Muslim country from Mecca (measured in 1,000 miles). A country is defined as Muslim if at least 70% of its population identifies with the Islamic faith. X_{it} is a set of time-varying (for example, log GDP per capita, log population, autocracy) and time-invariant (for example, legal origin) variables, Y_t is a year trend, and D_i are dummies for each country.¹⁰ The inclusion of country fixed effects will account for observable and unobservable time-invariant

⁷The table also provides evidence that these countries tended to be autocratic leaning since their polity scores are well below +6.

⁸The findings in the paper also hold if distance is measured in miles from Mecca (as opposed to log miles). Log distance generates a stronger first-stage instrument and more precise estimates in the second stage.

⁹For instance, per capita income and corruption tend to be endogenous. To tackle this, Treisman (2000) uses settler mortality at the time of first colonization to instrument for income. This instrument can help explain the effect of income on corruption at one point in time but is limited in its ability to explain within-country changes in corruption.

¹⁰In models that include country dummies, the time-invariant measures of legal origin, colonial heritage, and religious tradition are omitted to avoid multicollinearity.

country-specific characteristics that may explain corruption. These observable characteristics include legal origin, colonial heritage, religious tradition, ethnic composition, geography (for example, proximity, whether the country is a natural resource exporter). Consistent with existing cross-national studies of corruption (Alesina & Weder, 2002), both stages are estimated by OLS, and the standard errors are conservatively clustered by government.

In the second-stage regression, the coefficient on remittances will measure the average treatment effect for a group of poor, non-oil-producing Muslim countries that tend to have autocratic-leaning politics. The average polity score for the treatment group over the sample period is -2.7 , which falls far below the standard $+6$ threshold of democratic governance. Within the treatment group, these countries exhibit variation in the quality of governance. For instance, Jordan is a monarchy with an average polity score of -4 over the sample period.¹¹ In contrast, Bangladesh and Turkey have fluctuated between episodes of autocracy and weak democracy. Bangladesh swings from a polity score of -7 from 1975 to 1985 (roughly) to 6 since 1991, while Turkey moves between a low polity score of -5 to a high of 9 .

C. Data

Measuring governance: Corruption. A number of studies argue for and use measures of corruption to capture within- and cross-country variation in the quality of governance and development (Mauro, 1995; Bardhan, 1997; Gupta et al., 2002; Tanzi & Davoodi, 2002; Treisman, 2000, 2007). Thus, I use corruption as the primary measure of poor governance. In the literature, *corruption* is usually understood to mean the “misuse of public office for private gain,” where the private gain may accrue to either the individual public official or groups or parties to which he belongs, such as his political party or governing coalition (Bardhan, 1997). This definition is quite broad and can capture various forms of corruption, such as payments from private citizens to public officials (bribery) and transfers from the government to key groups (patronage). The conjecture that remittances ease the pressure of governments to deliver public services in order to finance patronage requires a measure of patronage corruption. Thus, to measure government corruption in the form of patronage, I use the International Country Risk Guide (ICRG) corruption index (Political Risk Services, 2005).

While it is extremely difficult to directly observe and assess the extent of worldwide embezzlement and misuse of public funds, officials at the World Bank (2004) “do know that it is a very serious issue in many settings.” Unlike other measures of corruption that focus primarily on bribery, the ICRG

corruption index explicitly takes into account government patronage. Its official documentation makes clear that its corruption measure “is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, ‘favor-for-favors’, secret party funding, and suspiciously close ties between politics and business.”¹² To the extent that government patronage cannot be reliably quantified for a wide set of developing countries, the ICRG corruption index captures the trade-off between government patronage and the delivery of government services. For instance, the corruption index is negatively correlated with government expenditures on public health care, education, and social contributions and positively correlated with the size of the public sector.¹³

The published ICRG corruption index ranges from a score of 0 (high corruption) to 6 (low corruption) and has been released on a monthly basis since 1984 for up to 140 countries. In comparison to other measures of corruption, the ICRG reaches the furthest back in time (from 1984) and is the most prevalent measure of corruption in cross-national panel analysis (Alesina & Weder, 2002; Fisman & Gatti, 2002; Treisman, 2007). I calculate annual averages of these corruption scores and rescale the index such that higher values correspond to higher corruption (a score of 6 implies highest corruption and 0 implies lowest corruption).

Independent variables. The key independent variable, workers’ remittances (% GDP), is from the World Bank’s World Development Indicators (WDI). It measures officially recorded flows of remittances and tends to understate actual remittances since a large share of these capital flows goes through back channels or is difficult for poor governments to monitor (de Luna Martinez, 2005). Variables measuring economic, demographic, country-specific characteristics (for example, colonial heritage), and the quality of political institutions are also likely to affect government corruption. The economic (real GDP per capita, real GDP per capita growth) and demographic (log population) variables are from the WDI (World Bank, 2005). Measures of legal origin, colonial heritage, and religious tradition are drawn from Treisman (2000). To gauge a country’s underlying type and quality of

¹² The assessments of corruption are conducted by a team of ICRG country experts based on available information. The ability of these experts to form their assessments does not depend on changing economic and political conditions in the country under review. For instance, there is no evidence to suggest that periods of domestic unrest (due to higher commodity prices for instance) garner heightened analysis.

¹³ Across all countries (as well as the 57 poor, non-oil-producing countries in this study) the ICRG corruption index exhibits negative correlations with public health expenditures (%GDP), total public spending on education (%GDP), and social contributions (% government revenue) of -0.53 , -0.32 , and -0.34 , respectively. Other scholars (Treisman, 2000; Alesina & Weder, 2002) have documented that the ICRG corruption measure is highly correlated with corruption measures from alternate sources, such as Transparency International, and is correlated with factors indicative of misgovernance such as public health expenditures.

¹¹ Prior to 1988, Jordan’s polity score was -9 . From 1988 to 1992 it increased to -4 . Since 1992, the polity score has been -2 .

governance, I use various measures (and submeasures) from the polity data set (Marshall & Jaggers, 2006).¹⁴

Tables 2 and 3 summarize these variables for the estimating sample. Table 2 describes the variation in average corruption, quality of democratic governance, and remittance inflows for each country over the sample period. Table 3 provides additional summary statistics for all the variables.

D. Trends

Government corruption exhibits wide cross-national and temporal variation. Table 4 shows that countries may become more or less corrupt around 14% of the time from the previous year. Most of the time, corruption increases or decreases by 1 index point from the previous year, although some countries do undergo a 2-point annual change in corruption. This pattern is similar across both the control and treatment groups of countries (columns 2 and 3), implying that neither Muslim nor non-Muslim countries systematically differ in their propensities to undergo changes in corruption.

There is additional evidence that annual movements in corruption do not systematically differ across Muslim and non-Muslim countries. Figure 3 plots the percentage of Muslim and non-Muslim countries that undergo change in corruption from the previous year. In some years, very few countries experience a change in their corruption index (for example, in 1995), while in other years, a larger share of countries experiences changes (for example, in 1992 and 1997). In any given year, however, around 15% of Muslim and non-Muslim countries undergo a change in corruption.¹⁵ For both groups of countries, the vast majority (around 85%) of these annual positive and negative movements in corruption are 1-point changes. In general, the two series co-move in the same direction with a correlation of 0.60. To the extent this captures global patterns in governance (for example, the end of the Cold War, the Washington Consensus emphasizing good

¹⁴ I use the main polity autocracy score as a control in all the specifications. This variable ranges on a 0 to 10 scale where higher values correspond to more autocratic governance. Highly democratic countries such as the United States and Norway receive an autocracy score of 0. In models with interactive effects, I invert the conventional polity score of democratic governance to create a continuous and time-varying measure of a country's level of institutionalized autocracy. Doing so increases the variation in the quality of political institutions, thus generating more precise estimates on the interactive effects (institutionalized autocracy \times remittances on corruption). The conventional polity score measures the manner in which a country's chief executive is "recruited," the "constraints" to her power as well as the nature in which individuals can participate in the process of choosing a leader. Empirically, the polity score is frequently used as a measure of both formal institutions (such as a constitution) and political behavior institutions. On a 21-point index (-10 to +10), conventional polity scores closer to +10 correspond to a higher quality of democratic governance. In empirical settings, the standard practice is to categorize country's with scores greater than +6 as democratic and those with scores below that threshold as non-democratic. I add 11 to the index so that it lies on a scale of 1 to 21, where values closer to +21 imply a higher quality of democratic governance. I invert this transformed index so that it lies on a [0,1], where scores closer to 1 correspond to more authoritarian governance.

¹⁵ The sample means for the Muslim and non-Muslim series in figure 2 are 15.2% and 15.9%, respectively.

TABLE 2.—SAMPLE OF COUNTRIES

Country	Remittances (% GDP)	Corruption	Polity	Muslim
Albania	9.2	2.8	0.4	
Armenia	0.5	4.0	5.0	
Bangladesh	3.5	4.9	2.0	X
Belarus	0.1	3.0	-7.0	
Bolivia	0.4	3.8	8.9	
Botswana	0.0	2.4	8.2	
Bulgaria	0.0	2.1	-1.0	
Burkina Faso	4.7	2.8	-4.6	
Chile	0.0	3.0	2.1	
Costa Rica	0.5	1.2	10.0	
Cote d'Ivoire	0.0	2.9	-6.6	
Dominican Republic	6.4	2.9	6.7	
El Salvador	9.2	3.2	6.7	
Estonia	0.0	2.0	6.0	
Ethiopia	0.2	3.6	-2.0	
Gambia	0.0	3.0	5.9	
Ghana	0.3	3.3	-1.5	
Guatemala	2.1	3.5	4.4	
Guinea	0.3	2.6	-3.4	X
Guinea-Bissau	1.7	4.0	-1.9	
Guyana	3.2	3.4	3.4	
Haiti	7.5	4.9	-3.1	
Honduras	3.5	4.0	6.1	
Hungary	0.0	1.6	5.7	
Jamaica	6.7	3.6	9.5	
Jordan	18.2	2.7	-4.1	X
Kenya	0.0	3.3	-4.6	
Latvia	0.0	3.4	8.0	
Lebanon	20.1	4.3	0.0	X
Liberia	4.6	3.8	0.0	
Madagascar	0.2	2.0	1.4	
Malawi	0.0	2.7	-1.2	
Mali	3.8	4.0	1.4	X
Moldova	3.8	4.0	7.6	
Mongolia	1.4	2.6	9.7	
Morocco	7.0	3.2	-7.1	X
Mozambique	0.1	2.4	-0.1	
Nicaragua	3.2	1.6	4.8	
Niger	0.5	2.5	-0.8	X
Pakistan	4.1	3.9	2.0	X
Panama	0.3	4.0	4.8	
Paraguay	0.8	4.7	2.5	
Philippines	0.6	3.8	6.3	
Poland	0.4	1.8	8.8	
Senegal	2.6	3.0	0.8	X
Serbia and Montenegro	9.5	4.1	-0.6	
Sierra Leone	1.0	3.9	-3.2	
South Africa	0.0	0.5	4.0	
Sri Lanka	6.0	2.7	5.2	
Sudan	3.1	4.4	-4.5	X
Tanzania	0.0	2.0	-7.0	
Togo	1.8	4.0	-4.0	
Turkey	2.1	3.3	7.6	X
Uganda	1.2	3.7	-4.5	
Ukraine	0.3	4.7	7.0	
Uruguay	0.0	3.0	8.8	
Zambia	0.0	4.1	-7.1	
Zimbabwe	0.0	2.7	-4.1	

Average remittances inflows, corruption, and polity score for poor, non-oil-producing countries. "Muslim" indicates whether the country is in the treatment group.

governance), these trends tend to affect government corruption in poor Muslim and non-Muslim countries in similar ways.

The composition (trends) of annual changes in corruption across Muslim and non-Muslim countries does, however,

TABLE 3.—SUMMARY STATISTICS

Variable	Observations	Mean	SD	Minimum	Maximum
Corruption index	878	3.23	1.10	0	6
Remittances (% GDP)	878	3.05	5.57	0	64.03
Remittances per capita (2000 US\$)	878	42.56	118.37	0	1,459.56
Log remittances (2000 US\$)	878	16.19	10.77	0.00	27.00
Log remittances per capita (2000 US\$)	878	1.95	1.91	0	7.29
Dummy for British legal origin	878	0.30	0.46	0	1
Dummy for former British colony	878	0.31	0.46	0	1
Protestant (% of population in 1980)	878	7.68	12.43	0	66
Growth in GDP per capita, annual %	878	1.22	5.41	-43.65	35.73
Log GDP per capita (1995 US\$)	878	6.62	1.09	4.31	8.72
Log population	878	15.99	1.14	13.52	18.82
POLITY autocracy score	863	2.62	3.14	0	9
POLITY score	863	1.79	6.63	-9	10
Autocracy score	863	0.13	0.11	0.05	0.5
Autocracy score \times Remittances (% GDP)	863	0.34	0.88	0.00	12.00

Summary statistics for poor, non-oil-producing countries from the estimating baseline model sample.

TABLE 4.—ANNUAL CHANGE IN GOVERNMENT CORRUPTION

Point Change in Corruption Index	Percentage change		
	All Countries	Non-Muslim Countries	Muslim Countries
-2	1.1	1.1	1.0
-1	5.1	4.4	7.2
0	86.1	86.6	84.5
+1	6.6	6.9	5.7
+2	1.1	1.0	1.6

Sample of poor, non-oil-producing countries. Excludes the initial year of 1984.

suggest a correlation with remittances and oil prices. Around 80% of improvements in governance (that is, a decline in corruption) in Muslim countries occurred from the mid-1980s through 1994 (when the price of oil was depressed and remittances lower). Governance in Muslim countries deteriorated significantly thereafter: nearly 66% of all increases in corruption occurred from 1995 onward (as the price of oil increased and remittances rose). In non-Muslim countries, a similar pattern is present, but the differences across the pre- and post-1995 periods are not as stark.

IV. Results

A. Baseline Results

Table 5 presents results from OLS regressions. While these results are biased (due to endogeneity), they represent a baseline comparison to the preferred 2SLS estimates. The model in column 1 regresses corruption on annual receipts of remittances (% GDP), and a standard set of covariates existing studies identifies to explain cross-national variation in corruption. Remittances exhibit a positive and highly statistically significant effect on corruption. A 2 standard deviation increase in remittances will raise the corruption index by over 0.30 points. The effect of the control variables on corruption tends to corroborate existing studies (coefficients not reported). Former British colonies, countries with

larger Protestant populations, and wealthier countries (measured with log GDP per capita) exhibit a negative (and often statistically significant) effect on corruption.

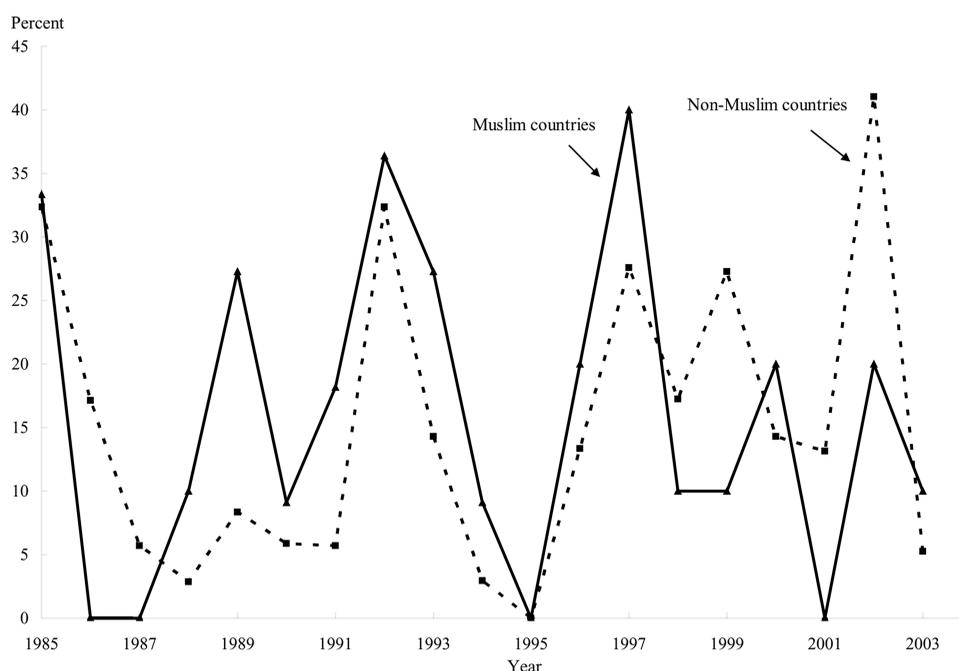
Many of these control variables (e.g., colonial legacy) are time invariant and can be subsumed with country fixed-effects. In a fixed-effects model that regresses corruption on remittances and a set of time-varying covariates (column 2), remittances exhibit no effect on corruption. However, in a model that introduces the interaction of remittances and a country's level of institutionalized autocracy (column 3), the interaction term exhibits a positive (coefficient = 0.14) and statistically significant effect on corruption. This positive interaction effect implies that remittances received in more autocratic countries have a greater effect in raising corruption.

B. Instrumental Variable Results

First stage. Table 6 reports the results of the first-stage regression describing the interactive effect of oil prices with a Muslim country's log distance from Mecca on remittances inflows. The first specification, which includes observable time-invariant country characteristics, explains about 35% of the variation in remittances inflows. In this specification, the coefficient on the instrument is 0.09, implying that a \$10 increase in the price of oil raises remittances inflows in non-oil-producing Muslim countries by nearly 1 percentage point. The coefficient on log distance is negative (-1.55), which is consistent with the trend in table 1 that non-oil-producing Muslim countries that are farther from the Persian Gulf receive lower remittances. The instrument is strong as its *F*-statistic (12.5) exceeds the conservative threshold of weak instruments of 9.6 suggested by Stock, Wright, and Yogo (2002).

The inclusion of country fixed effects in column 2 yields a statistically stronger instrument (*F*-statistic = 13.7) and explains more of the variation in remittances inflows (80% compared to 35%). The coefficient on the instrument is 0.06 and is statistically significant at the 1% level. This coefficient implies that a \$10 increase in the world price of oil

FIGURE 3.—PERCENTAGE OF COUNTRIES THAT UNDERGO CHANGE IN CORRUPTION FROM THE PREVIOUS YEAR



Sample of 57 poor, non-oil-producing countries from 1985 to 2004.

TABLE 5.—DETERMINANTS OF CORRUPTION

Dependent Variable	Corruption Index		
	OLS (1)	OLS (2)	OLS (3)
Method of estimation:			
Remittances (% GDP)	0.034 (0.010)***	0.019 (0.018)	-0.001 (0.020)
Autocracy score			-3.636 (1.548)**
Autocracy × Remittances (% GDP)			0.144 (0.065)**
Time-varying controls variables	Y	Y	Y
Time-invariant control variables	Y		
Year trend	Y	Y	Y
Country fixed effects		Y	Y
Number of observations	878	863	863
R ²	0.11	0.66	0.67

Robust standard errors, clustered by government reported in parentheses. Significant at *10%, **5%, and ***1%. In column 3, autocracy is the inverse of the polity score (which ranges on a 1 to 21 scale). Thus autocracy lies on a [0, 1] scale, where a higher value implies a more autocratic form of governance. Time-varying controls include growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, polity autocracy score, and a year trend. Time-invariant controls include dummies for former British colony, British legal origin, and Protestant (% of population in 1980). These coefficients and a constant are not reported.

raises inflows of remittances equal to 0.6% of GDP. Between 1984 and 2004, oil prices ranged from \$15 to \$49 per barrel. Such a movement in oil prices represents a shock to remittances equal to about 1.9% of GDP. The control variables have the expected signs. More autocratic countries attract a higher share of remittances. Richer and more populated countries tend to receive lower remittances. Growth exhibits a positive and statistical effect on remittances, which is surprising since remittances tend to be countercyclical.

Figure 1 suggests that remittances lag oil prices (by about a year). The effect of a one-year lag in oil prices interacted

with a Muslim's country distance from Mecca generates an identical impact on remittances (column 3). The interaction of oil price and whether a country is Muslim is not a strong predictor of remittances (column 4), as the F -statistic on this particular instrument is extremely low. This indicates that a country's distance to the Persian Gulf is required to improve the precision of the instrument. Finally, the instrument is also a strong predictor of remittances per capita (column 5).

Remittances and corruption. With this strong instrument, I evaluate the impact of instrumented remittances on government corruption (table 7). Column 1 reports the effect of remittances on corruption from an OLS regression restricted to the countries in the treatment group. This serves as a benchmark to compare the instrumental variables result. In this OLS model, the coefficient on remittances is small (around 0.04). For the same restricted sample, the coefficient on the interaction of remittances with a country's institutionalized autocracy score is around 0.06 (column 2). The estimated effects are more pronounced with instrumented remittances. Column 3 reports a much larger coefficient (0.29) and statistically significant effect (p -value = 0.02) of instrumented remittances on government corruption. This specification accounts for various observable time-invariant characteristics (such as a colonial legacy) and the standard vector of time-varying covariates (for example, growth, average income). The inclusion of country fixed effects yields a similar effect of remittances on corruption in both magnitude and statistical significance (column 4). The estimated effect on corruption is similar with remittance inflows from the previous year (column 5).

TABLE 6.—FIRST-STAGE REGRESSION

Dependent Variable	Remittances (% GDP)				Remittances per Capita (2000 US\$)
	(1)	(2)	(3)	(4)	(5)
Log Distance to Mecca × Oil Price in t	0.087 (0.024)***	0.060 (0.016)***			0.608 (0.198)***
Log Distance to Mecca × Oil Price in $t - 1$			0.061 (0.017)***		
Muslim × Oil Price				0.033 (0.030)	
Log distance to Mecca	-1.547 (.902)*				
Polity autocracy score	0.067 (0.096)	0.143 (0.062)**	0.147 (0.061)**	0.15 (0.061)**	3.197 (1.142)***
Growth in GDP per capita, annual %	0.053 (0.046)	0.088 (0.033)**	0.085 (0.033)***	0.089 (0.033)***	0.667 (0.347)*
Log GDP per capita (1995 US\$)	0.313 (0.298)	-6.526 (2.215)***	-6.481 (2.204)**	-6.638 (2.244)***	-24.19 (21.732)
Log population	-0.319 (0.247)	-10.197 (4.305)**	-9.968 (4.317)**	-10.603 (4.491)**	-208.456 (73.467)***
Constant	-439.157 (100.858)***	-818.273 (175.946)***	-826.324 (175.597)***	-784.764 (164.026)***	-12940.69 (3363.858)***
Year trend	Yes	Yes	Yes	Yes	Yes
Time-invariant controls	Yes				
Country fixed effects		Yes	Yes	Yes	Yes
F -statistic on instrument	12.53	13.7	13.07	1.21	9.39
Number of observations	837	863	863	863	863
R^2	0.35	0.78	0.78	0.78	0.85

OLS regression. Sample restricted to poor, non-oil-producing countries. Robust standard errors, clustered by government reported in parentheses. Significant at *10%, **5%, and ***1%. Time invariant controls include dummies for former British colony, British legal origin, and Protestant (% population in 1980). Distance measures the number of miles in logarithmic units between the capital city of a poor, non-oil-producing Muslim country to Mecca. A country is defined as Muslim if at least 70% of the population identifies with Islam.

TABLE 7.—REMITTANCES RAISE GOVERNMENT CORRUPTION

Dependent Variable	Corruption Index									
	OLS (1)	OLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)	2SLS (7)	2SLS (8)	2SLS (9)	2SLS (10)
<i>Instrumented variables</i>										
Remittances (% GDP)	0.044 (0.038)	0.026 (0.040)	0.293 (0.122)**	0.323 (0.151)**						
Autoc. × Remit. (% GDP)		0.056 (0.105)				1.091 (0.472)**	1.361 (0.618)**			
Remit. (% GDP), $t - 1$					0.299 (0.147)**					
Log remittances								0.141 (0.055)**		
Remit. per capita									0.032 (0.016)**	
Log remit. per capita										0.939 (0.459)**
<i>Controls</i>										
Log dist. to Mecca			-0.122 (0.182)							
Remittances (% GDP)								-0.143 (0.066)**		
Autocracy								-11.798 (0.178)*		
Time-invariant controls			Yes							
Country fixed effects	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	185	189	837	863	866	863	863	863	863	863

OLS and 2SLS regressions. In columns 1 and 2, the sample is restricted to observations from the treatment group of poor, non-oil-producing Muslim countries. In columns 3 to 10, the sample is expanded to include all (Muslim and non-Muslim) poor non-oil-producing countries. Robust standard errors, clustered by government, reported in parentheses. Significant at *10%, **5%, and ***1%. Remittances are measured as a share of GDP. Log remittances, remittances per capita, and log remittances per capita are measured in 2000 US\$. All the specifications include a vector of time-varying controls and a year trend. Time-varying controls include growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, and polity autocracy score. In columns 3 and 5 to 9, the various measures of remittances are instrumented with log distance to Mecca × Oil Price. Remittances (% GDP), $t - 1$ is instrumented with log distance to Mecca × Oil Price in year $t - 1$.

These IV estimates imply that a 3 percentage point increase in remittances raises government corruption by almost 1 full index point. For the treatment group with average remittance inflows equal 6 percent of GDP, this implies that remittances

raise government corruption by around 1.8 index points. This coefficient estimate is substantive: a 1 standard deviation increase in remittances raises corruption by more than 1 standard deviation (equivalent to 1.5 index points). In

TABLE 8.—REMITTANCES INCREASE GOVERNMENT PATRONAGE

Dependent Variable	Compensation of Employees (% government expenditures)			Executive Constraints (1 = low, 7 = high)		
	(1)	(2)	(3)	(4)	(5)	(6)
Remittances (% GDP)	3.390 (0.876)***			-0.261 (0.147)*		
Remittance (% GDP), previous year		3.879 (1.034)***			-0.310 (0.187)*	
Remittances per capita (2000 US\$)			0.249 (0.087)***			-0.021 (0.013)*
Continent fixed effects	Yes	Yes	Yes			
Country fixed effects				Yes	Yes	Yes
Number of observations	315	313	315	1553	1505	1553

2SLS regression. Robust standard errors, clustered by government reported in brackets. Significant at *10%, **5%, and ***1%. In columns 1 to 3, the dependent variable is government compensation to employees (% government expenditures). In columns 4 to 6, the dependent variable is the executive constraints index. All specifications include a vector of time-varying controls and a year trend. Time-varying controls include growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, and the polity autocracy score.

the estimating sample, this is equivalent to moving from a low-corruption country like Costa Rica (which has average corruption on par with Germany and the United States) to a moderately corrupt country like Niger or Sri Lanka.¹⁶ This increase in corruption represents a substantial welfare loss. According to estimates by Dreher and Herzfeld (2008), who estimate the impact of corruption on growth, a 1.5 index point increase in the ICRG corruption index translates to around a \$600 decrease in per capita GDP.

The IV coefficient estimates are larger than the OLS estimates, suggesting that they are correct for the attenuation bias (attributable to measurement error) in the OLS models. This implies that the baseline OLS results are downward biased and should be viewed as a lower bound for the effect of remittances on corruption in autocracies (table 5, column 3). Finally, since the IV estimates represent the average treatment effect for a group of largely autocratic-leaning countries, these results provide additional evidence that remittances foster government corruption in countries with weak democratic institutions.

Existing theories positing that corruption is a strategic government policy in autocracies predict large effects for the interaction of remittances with autocratic governance. Instrumenting directly for this interaction term (and controlling for its constitutive parts) generates a large positive and highly significant effect (columns 5 and 6). This coefficient estimate captures the heterogeneous effect of remittances in autocracies on government corruption and corroborates the interactive effect (of remittances and autocracy) identified in the baseline OLS specification (table 5, column 3).

Finally, instrumenting for alternative measures of remittances raises corruption. For instance, instrumenting for log remittances (column 8) raises government corruption. The coefficient estimate (0.14) implies that a 1 standard deviation increase in log remittances (equal to 10.8) raises government corruption by 1.5 index points. Remittances measured in terms of per capita and log per capita also raise government

corruption (columns 9 and 10). The estimated effect in column 9 implies that a modest \$30 increase in remittances per capita raises corruption by 1 index point.

Remittances and objective measures of government patronage. While the ICRG corruption index explicitly attempts to capture government patronage corruption, a limitation of the index is that it is a perceived measure of government patronage.¹⁷ In part, this reflects the difficulty of objectively observing and measuring government patronage across developing countries. Nevertheless, in developing countries, excessive government patronage tends to be highly correlated with government expenditures devoted to public sector employment, as it frequently reflects the government's incentives to channel spending to targeted constituencies (Keefer, 2007). Moreover, in autocratic regimes, a large portion of these workers are likely to be within the government's inner circle (Bueno de Mesquita et al., 2003). Thus, higher public sector compensation (total employment or higher wages) provides an objective and observable measure of government patronage across countries with weak democratic political institutions.

In the treatment group of poor, non-oil Muslim countries, aggregate remittances and public sector employment are strongly positively correlated ($\rho = 0.77$). More rigorously, the effects of instrumented remittances on public sector employment and compensation are reported in table 8, columns 1 to 3.¹⁸ Contemporaneous and one-year lagged aggregate remittance inflows increase public sector wages and employment (columns 1 and 2). These estimates are highly statistically significant (p -values less than 0.01) and imply that a 1 percentage point increase in remittances (% GDP) shifts government expenditures towards public sector employment by about 3.5 percentage points. On a per capita

¹⁷ This criticism is not unique to the ICRG measure, as it applies equally to the perception-based measures of corruption or governance from Freedom House, Transparency International, and the World Bank.

¹⁸ These specifications control for population, per capita GDP growth, average per capita income, and region fixed effects. The sample size is smaller because data on government compensation are available for a smaller subset of countries from 1990 onwards.

¹⁶ Costa Rica, Germany, and the United States have an average corruption score around 1 over the sample period. Niger and Sri Lanka have an average corruption score around 2.5.

basis (column 3), a modest \$17 increase in remittances would generate such a shift in government expenditures. Since the dependent variable is measured as a share of total expenditures, the positive effect associated with remittances on public sector employment implies a reduction in other government outlays. And as the results will show in section 5.1, this reduction occurs in the government's provision of welfare goods.

A government's decision to allocate more resources toward corruption (excessive patronage) in response to higher remittance income is rational if it helps the government politically. One such metric is the government's capacity to maintain political authority (and ultimately stay in power longer). To gauge the effect of remittances on a government's political authority, I use the executive constraints index from the polity data set. The executive constraints index measures the extent of institutionalized constraints on the decision-making powers of the chief executives, whether they are individuals or collectives. This index has been used to unbundle cross-country differences in the quality of governance and property rights (Acemoglu & Johnson, 2005) and, according to Gleditsch and Ward (1997), is the most important feature differentiating autocracies from democracies.¹⁹ The executive constraints index lies on a 7-point scale, where a lower value corresponds to greater executive control.²⁰

The results in table 8, columns 4 to 6 provide evidence that remittances expand a government's political authority. In these specifications, remittances exhibit a robust negative effect on the government's political constraints. A 1 standard deviation increase in remittances (% GDP) lowers the executive constraints index by around 1.5 points. This downward movement in the constraints faced by an executive implies a transition to a more autocratic form of governance (for example, expanded power held by the chief executive and fewer held by the general population) and corresponds to less secure property rights and an environment conducive to lower long-run economic growth, investment, and financial development (Acemoglu & Johnson, 2005).

C. Sensitivity Analysis

Alternate specifications. The finding that remittances raise corruption may depend on a country's initial level of corruption or the quality of its institutions in general. Moreover, the finding that remittances received in more autocratic polities contribute to higher corruption (table 7, columns 5 and 6) suggests that a country's initial quality of governance matters. In specifications that control for a country's

¹⁹ Gleditsch and Ward claim that "although the degree of executive constraints accounts for only 4 of the possible 10 democracy scale points, all our analyses point strongly to the conclusion that this variable virtually determines the democracy and autocracy scale values" (p. 380).

²⁰ The executive constraints index takes 7 values: 1 = unlimited authority, 2 = intermediate category between 1 and 3, 3 = slight to moderate limitations, 4 = intermediate category between 3 and 5, 5 = substantial limitations, 6 = intermediate category between 5 and 7, and 7 = executive parity of subordination.

initial corruption and level of autocracy (both interacted with annual inflows of aggregate remittances), the main effect of instrumented remittances on corruption remains positive and significant (table 9, columns 1 and 2). The statistical significance declines slightly due to the smaller sample size.²¹ Moreover, accounting for the interaction of initial institutions with the cross-sectional variation of distance from Mecca does not diminish the impact of remittances on corruption (columns 3 and 4).²² The main finding is robust to the inclusion of additional interactive controls, such as the interaction of per capita income with distance to Mecca (column 5). In this specification, a 3 percentage point increase in remittances (% GDP) raises corruption by about 1 index point.

The inclusion of country fixed effects in the main (preferred) specifications identifies the within-country variation in corruption. Yet the trends in table 4 suggest that corruption does not vary much over time. One approach to address this concern is to estimate the effect of remittances on corruption by exploiting the cross-sectional variation in the data. In such a specification (table 7, column 4), the estimated effect of remittances on corruption is almost identical to the preferred IV estimates. A second approach is to use a repeated cross-section at a lower frequency of data (say, four-year averaged data). For instance, with four-year average data, a 1 percentage point increase in aggregate remittances raises corruption by 0.17 index points (column 6). The inclusion of country fixed effects in this cross-sectional specification (column 7) raises the estimated effect to 0.35, which is similar to the earlier findings. Moreover, four-year average remittances measured on a per capita and log per capita basis also raise government corruption (results not reported).

Specification checks. The core findings are robust to a number of additional specification checks (results not reported). The results are robust to the exclusion of countries with high and potentially influential remittance inflows (i.e., remittances exceeding 15% of GDP).²³ Another concern is the potential endogeneity of the time-varying control variables, such as capita income, with remittance inflows, which could introduce a form of selection bias in the baseline specification.²⁴ The main findings remain unchanged in a specification that omits these time-varying controls. An additional worry relates to the linear specification of the ordinal measure of corruption index. To check that the underlying

²¹ Since these regressions include country fixed effects, the main effect of these initial political conditions (which are time invariant) is not included in the specification.

²² Since both distance from Mecca and initial institutions are time invariant, country fixed effects are not included in specifications 3 and 4. Rather, the constitutive (main) effects are included.

²³ Residual plots for the IV estimates do exhibit a weak correlation between high-remittance inflows (more than 15% of GDP) and the regression residuals.

²⁴ For instance, remittances represent additional income to households, which will raise per capita GDP and per capita GDP growth. Higher average income independently tends to lower corruption (Treisman, 2000, 2007). Controlling for these variables may therefore bias the estimated effect of remittances on corruption.

TABLE 9.—REMITTANCES RAISE GOVERNMENT CORRUPTION, ALTERNATE SPECIFICATIONS

Dependent Variable	Corruption Index						
	Initial Conditions					Four Year Average	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Remittances (% GDP)	1.287 (0.725)*	0.691 (0.400)*	0.201 (0.081)**	0.269 (0.139)*	0.294 (0.147)**		
Remittances (% GDP), 4-year average						0.171 (0.070)**	0.348 (0.193)*
Corruption in 1984 × Remit. (% GDP)	-0.274 (0.174)						
Autocracy in 1984 × Remit. (% GDP)		-0.072 (0.045)					
Corruption in 1984 × Log Distance to Mecca			-0.021 (0.111)				
Autocracy in 1984 × Log Distance to Mecca				-0.176 (0.132)			
Log GDP per Capita × Log Distance to Mecca					-0.819 (1.234)		
Corruption in 1984			0.578 (0.095)***				
Autocracy in 1984				0.055 (0.057)			
Log distance to Mecca			-0.152 (0.609)	0.754 (0.631)			
Country fixed effects	Yes	Yes			Yes		Yes
Number of observations	671	799	671	799	863	226	226

2SLS regression. In columns 1–5, robust standard errors, clustered by government, are reported in parentheses. In columns 6 and 7, robust standard errors are reported in parentheses. Significant at *10%, **5%, and ***1%. In columns 1–5, remittances (% GDP) are instrumented with log distance to Mecca × Oil Price. In columns 6 and 7, four-year averaged remittances (% GDP) are instrumented with the four-year average of log distance to Mecca × Oil Price. All specifications include a vector of time-varying controls and a year trend. The time-varying controls include growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, and polity autocracy score. These coefficients, a constant, and country fixed effects (columns 1–3, 5 only) are not reported. In columns 6 and 7, all observations are four-year averages. Column 6 also includes region fixed effects.

choice of estimation is not driving the results, I estimate a two-stage probit model. The first stage is estimated using OLS, and the second stage uses probit.²⁵ Instead of using the 6-point measure of government corruption as the dependent variable, I construct a “high corruption” indicator variable that is equal to 1 if a country receives a corruption score of 5 or 6 and 0 otherwise. In this model, instrumented remittances exhibit a strong, positive, and highly significant (p -value < 0.01) effect on the high corruption indicator.

Accounting for differential trends. The main findings are also robust to various trends that differ across Muslim and non-Muslim countries. Over the sample period, for example, Muslim countries tend to be more autocratic than non-Muslim nations. Geopolitical considerations over the sample period may have also affected the quality of governance across Muslim and non-Muslim countries. For instance, the United States actively aided many authoritarian and corrupt regimes during the Cold War (1946–1990) in its geopolitical contest with the Soviet Union (and vice versa). Failure to account for these differential effects across countries in the treatment and control groups may bias the findings. The robust positive effect of remittances on corruption holds in specifications that introduce these differential trends as additional controls (Muslim × Autocracy, Muslim × Cold War Period).

²⁵ It is notoriously difficult to estimate two-stage nonlinear models, such as a two-stage ordered probit or ordered probit. Instead, I use a two-stage probit estimator. This particular nonlinear probability model is appropriate since the endogenous regressor (remittances) is continuous.

Country-specific trends may also affect corruption, independent of remittance incomes. The inclusion of country fixed effects will not account for these differential trends. For instance, a number of studies find that rising incomes over time can improve the quality of governance across developing countries (Przeworski et al., 2000; Treisman, 2000, 2007). Moreover, a variety of within-country and regional trends could account for cross-national changes in corruption. For instance, demographic changes since the 1970s across Muslim and non-Muslim countries have not been identical due to high fertility rates and lower income growth, for example. To address these concerns, I reestimate the baseline specification with Average Income × Year, Region × Year, and Country × Year interactions. Since most of the Muslim countries in the treatment group are geographically located in North Africa, the non-oil-producing Middle East, and South Asia, the Region × Year interaction controls for changes over time in each region that could affect governance, such as the greater potential Islamization of these regions. Country × Year measures country-specific trends, such as changes in demographics and educational attainment, which could affect the quality of governance. The positive impact of remittances on corruption is robust to the inclusion of these various trends.

Potential violations of the exclusion restriction. Perhaps the most troublesome concern is whether the exclusion principle is satisfied: higher oil prices affect corruption through remittances only. Other capital flows from Gulf states that co-move with the price of oil may potentially contaminate

TABLE 10.—TESTS OF THE EXCLUSION RESTRICTION

Dependent Variable	Corruption Index					
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Instrumented variables</i>						
Remittances (% GDP)	0.318 (0.149)**	0.339 (0.172)**	0.323 (0.152)**	0.380 (0.176)**		0.321 (0.156)**
Trade and remittances (% GDP)					0.054 (0.026)**	
<i>Additional controls</i>						
Foreign aid (% GDP)	0.010 (0.010)					
Exchange rate, % annual		0.001 (0.001)				
Inflation, % annual			0 (0.000)			
Trade (% GDP)				-0.010 (0.006)*		
Media freedom						0.097 (0.112)
Number of observations	837	843	862	845	845	844

2SLS regression. Robust standard errors, clustered by government reported in parentheses. Significant at *10%, **5%, and ***1%. All regressions control for a vector time-varying covariate, a year trend, and country fixed effects. Time-varying controls include growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, and polity autocracy score. These coefficients and a constant are not reported.

the instrumentation strategy. One such financial flow is foreign aid originating in the Persian Gulf. Between 1974 and 2004, the countries of the Organization of Petroleum Exporting Countries doled out foreign aid equal to about 1.5% of their GDP. Moreover, the annual disbursements of Gulf foreign aid tended to vary with the price of oil and were directed at poor, non-oil-producing Muslim countries (Werker et al., 2009). To the extent that foreign aid can encourage rent seeking and corruption (Alesina & Weder, 2002), failure to control for aid may constitute omitted variable bias. This worry is mitigated as controlling for foreign aid (% GDP) does not change the substantive effect of remittances on government corruption (table 10, column 1). In this specification, aid tends to have no effect on corruption.

Another manner in which changes in oil prices, an internationally traded commodity, could affect corruption is through the exchange rate (Hefeker, 2009) and domestic prices (Chami et al., 2008). Directly controlling for exchange rate movements and inflation does not affect the robust positive relationship between remittances and government corruption (columns 2 and 3). In these regressions, neither movements in the exchange rate nor domestic prices seem to have any effect on corruption.

Another potential channel is the co-movement of oil prices and trade flows. A number of studies posit that greater trade intensity fosters improved governance (Ades & Di Tella, 1999; Wei, 2000).²⁶ Failure to control for trade openness therefore may potentially bias the impact of remittances on corruption. In column 4, I control for trade openness with the sum of imports and exports (% GDP) in the baseline specification. Consistent with existing findings, greater trade openness

lowers corruption. The effect of remittances on corruption remains positive and significant. From this specification, it is unclear, however, whether the net effect of remittances on corruption is positive, since a country's total trade tends to be larger than its remittances inflows and therefore may wipe out the effect of remittances on corruption. To address this concern, I instrument for remittances and trade flows (column 5). The net effect of remittances and trade is positive and significant. The coefficient estimate (0.054) is smaller than the effect of remittances only. This smaller estimated effect reflects the offsetting effect of trade on corruption. This implies that despite larger flows of trade (which tends to lower corruption), the effect of remittances dominates trade's impact, so that the net effect is an increase in corruption.

Finally, it is plausible that remittances affect corruption (perceived) not directly but through changes in the reporting of corruption, which may be correlated with oil prices. For instance, higher oil price-induced remittances may lead to more plentiful funding of surveys and polls, which increase the reporting of corruption cases. Or alternatively, a government may be more willing to tolerate press freedom when remittances inflows are plentiful. In both cases, ICRG's perceived measure of corruption may inaccurately give a country a worse corruption rating even though the underlying extent of corruption is not affected by remittances. Such a scenario seems unlikely, however. First, the ICRG corruption rating is not based solely on media reports but relies on the analysis of country experts that use a wide range of additional information. Second, there is no evidence to suggest that movements in oil prices (and the global economic conditions more broadly) affect the ability of ICRG experts to analyze political-economic conditions in countries. Third, accounting for each country's degree of media freedom (as classified by Freedom House, 2009) does not affect the results (column 6). In this regression, media freedom is a 3-point index where values of 1, 2, and 3 correspond to media environments

²⁶ For instance, Ades and Di Tella (1999) claim that competition from foreign firms will reduce rents enjoyed by domestic firms, thus reducing the rewards from corruption by government officials. Similarly, Wei (2000) posits that countries engaged in greater international trade will "find it optimal to devote resources to building stronger institutions" that constrain corrupt behavior.

TABLE 11.—REMITTANCES REDUCE PUBLIC GOODS PROVISION

Dependent Variable	Immunization to Measles Institutions		Health care Expenditures (% GDP)		Secondary School Enrollment	Government Transfers (% Government Expenditure)	
	(1)	(2a)	(2b)	(3)	(4)	(5)	(6)
<i>Panel A</i>							
Remittances (% GDP)	-5.476 (1.792)***	-25.949 (10.543)**		-0.341 (0.239)	0.025 (0.205)	-4.700 (1.359)***	-3.248 (1.258)**
Autoc. × Remit. (% GDP)			-43.785 (20.837)**				
<i>Panel B</i>							
Remittances per capita	-0.491 (0.230)**	-1.805 (0.847)**		-0.031 (0.026)	0.002 (0.018)	-0.574 (0.239)**	-0.222 (0.099)**
Autoc. × Remitpc.			-2.506 (1.392)*				

2SLS regression. Each panel reports coefficient estimates from separate regressions. Robust standard errors, clustered by government, reported in parentheses. Significant at *10%, **5%, and ***1%. In panel B, remittances per capita are measured in 2000 US\$. Number of observations in each column: 1,231 (1), 1,145 (2a), 1,231 (2b), 275 (3 and 4), 262 (5), and 305 (6). In columns 1, 2a, and 2b, the dependent variable measures the annual percentage of children (aged 12 to 23 months) immunized against measles. In column 3, the dependent variable is government expenditures on health care (% GDP). In column 4, the dependent variable is household expenditures on health care (% GDP). In column 5, the dependent variable measures the share of children enrolled in secondary school. In column 6, "government transfers" refers to government expenditures on subsidies and transfers. All regressions control for growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, polity autocracy score, and continent (region) fixed effects. These coefficients and a constant are not reported. The specification in column 2a also controls for polity autocracy in 1984 × Remittances and polity autocracy in 1984. The specification in column 2b also controls for remittances and autocracy. These coefficients are not reported.

classified by Freedom House as being free, partially free, and not free, respectively. The estimated effect on instrumented remittances on corruption remains unchanged (0.32), while an increasingly less free media environment is positively correlated with corruption. Moreover, instrumented remittances is not a robust determinant of changes in media freedom.²⁷

V. Mechanisms

A. Remittances Reduce Public Goods Provision

In the underlying data, small increases in remittances can shift the allocation of government expenditures on public services to patronage. For instance, in countries that receive remittances less than 2% of GDP, governments on average allocate 27% and 38% of their budget to employee compensation and government transfers, respectively. As remittance inflows rise, governments tend to allocate a greater share of their budget to employee compensation. In countries that receive moderate inflows of remittances—between 2% and 4% of GDP, for instance—governments allocate 30% of their expenditures on employee compensation and 26% to government transfers. In countries that receive inflows of remittances exceeding 4% of GDP, around 33% of government expenditures is spent on patronage and 31% is transferred to the population.

This reallocation of government resources from public goods expenditure to patronage as remittance inflows rise has tangible negative effects on the population. Table 11 provides evidence from 2SLS specifications that remittances lower government delivery of a variety of public services. Panels A and B present the effect of instrumented aggregate remittances and remittances per capita (from separate regressions) on these nontargeted government goods. For example,

²⁷In a 2SLS specification, which regresses media freedom on instrumented remittances (and the standard set of control variables), the effect on remittances is 0.04 with a standard error of 0.065. The corresponding *p*-value is 0.52. This positive effect implies that instrumented remittances worsen media freedom.

remittances reduce childhood immunizations to measles in the population (column 1). This type of health service represents a welfare good that a government provides on a regular basis. The point estimate implies that a 1 percentage point increase in remittances (% GDP) reduces the percentage of infants immunized against measles by 5.5 percentage points. This negative effect is quite robust as remittances also have a negative effect on immunizations in a specification that controls for the interaction of initial institutions and remittances (column 2a). Instrumenting for the interaction of remittances and autocracy also exhibits a robust negative effect on immunizations (column 2b). More broadly, remittances tends to shift expenditures on health care between households and the government (columns 3 and 4). Remittances are negatively associated with public health care expenditures and are positively correlated with additional health care spending by private citizens. While not statistically significant at conventional thresholds, the direction of the effects is informative and provides additional evidence that remittances may reorient a government's willingness to spend funds on welfare goods.

Turning to a different type of government service, remittances also reduce gross secondary school enrollment (column 5), as well as net enrollment (not reported). School enrollment is a better measure of the quality of education available to all children than education spending itself, which can be targeted to favored constituencies (Keefer, 2007).²⁸ Returning to a broader measure of government spending

²⁸Keefer (2007) argues that education spending can be aimed at raising achievements for all children (through curriculum reforms, testing, high-quality teachers), or it can be targeted (by building new schools in some areas but not in others). Enrollment, however, is less likely to be targeted. Specifically, if politicians care relatively more about political targeting than they do about providing quality education to all children, the overall quality of schooling should suffer. As quality falls, families should demonstrate increasing reluctance to incur the financial and opportunity costs of sending their children to secondary school (remittance income may not be sufficiently high to cover these additional costs); secondary school enrollment should then fall.

on public goods, a 1 percentage point increase in aggregate remittances reduces the share of budgetary expenditures on government subsidies and transfer payments by 3.2 percentage points (column 6). This is consistent with the earlier finding that remittances raise government expenditures on employee compensation (patronage).

B. Discounting Other Mechanisms

Rather than diverting expenditures from the provision of public services to patronage, governments in autocracies may choose to directly extract rents from rising household income (stemming from remittances). This alternate mechanism is not borne out in the data. For instance, suppose a government could directly “observe” inflows of remittances and extract (tax) some of this additional income from households. This would imply that remittances exhibit a positive effect on government tax revenue. Such an effect is not empirically identified because remittances exhibit a negative relationship with government revenue collected from income taxes and consumption taxes on goods and services (results not reported).

Alternatively, remittances could also foster corruption by affecting internal political discontent. There are two plausible channels through which this could happen. The first is that remittance inflows necessarily require outward migration of citizens, some of whom may be dissatisfied with the incumbent government. Remittances may therefore lower internal political dissent and permit the government to engage in greater corruption. The second channel is that remittances inflows raise household income, which might lower the opportunity cost to rebel (Collier & Hoeffler, 2004; Dube & Vargas, forthcoming). If remittances foster political discontent (gauged by the number of antigovernment demonstrations from Banks, 2004), a government may quell this discontent by increasing its provision of patronage (corruption) in order to keep its governing coalition intact. There is weak evidence in support of this mechanism (results not reported). First, remittances exhibit a weak negative effect on the number of antigovernment demonstrations. Second, controlling for the number of antigovernment demonstrations does not diminish the effect of remittances on corruption. Consistent with the main IV estimates, a 3 percentage point increase in remittances raises government corruption by 1 index point.

VI. Conclusion

The prevalence of government corruption and low delivery of government services in many developing countries may reflect the decision of these governments to engage in these practices in order to remain in power. Building off this logic, I use a natural experiment of oil-price-driven remittances inflows to provide robust cross-national evidence that remittances foster government patronage-based corruption by easing the pressure for governments to deliver public services. This finding linking remittances to corruption counters

some existing case studies and the views of many prominent policymakers in developed countries that remittances can engender good governance. Rather, this paper shows that governments in countries with weak democratic political institutions may act strategically to counteract the potentially beneficial political effects associated with higher household income (derived from remittances). As such, this finding ties to the literature linking other forms of international capital flows, such as foreign aid receipts and income derived through the sale of natural resource in international markets, to corruption and broader political institutional decay in non-democratic countries. Interestingly, the natural experiment employed in this paper can also explain oil price-induced foreign aid inflows (as well as aid and remittance inflows) to the poor, non-oil-producing Muslim countries. And reassuringly, both instrumented aid and instrumented aid and remittance inflows also foster government corruption.²⁹ This corroborative evidence supports the general conjecture that international capital inflows can raise corruption in countries with weak public governance.

²⁹ The coefficient on foreign aid is 0.27 with a standard error of 0.156 (p -value = 0.08). The coefficient on aid and remittances is 0.167 with a standard error of 0.074 (p -value = 0.03). Along these lines, Ahmed (2012) provides cross-national evidence that aid and remittances extends the tenure of governments in autocracies.

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