

RESEARCH ARTICLE

Corruption, remittances, and public goods: A unified framework

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Abstract

Remittances are an important source of income for the very countries afflicted by high levels of corruption. However, corruption undermines the development potential of remittances. With this in mind, we propose policy reforms that harness the potential of remittances while mitigating corruption. Unlike previous studies, we point to two channels: (1) the corrupt government's trade-off between its financial interests (corruption), the provision of a public good, and the gains from a higher inflow of remittances; and (2) the household's consumption of the public good relative to that of the privately obtained substitute of the public good.

KEYWORDS

corruption, remittances, public good provision

JEL CLASSIFICATION

D73, F22, F24, H2, I28

1 | INTRODUCTION

Corruption afflicts many low-and-middle-income countries supplying large numbers of international migrants (Ugur & Dasgupta, 2011). It is common for these migrants to remit money back to those they leave behind. And remittances, in turn, can exacerbate corruption (Ahmed, 2013; Berdiev et al., 2013; Majeed, 2016; World Bank, 2019), or help reduce it (e.g., Tyburski, 2014);

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overall, how remittances affect corruption is unclear. Nevertheless, there is a consensus regarding the developmental potential of remittances. The question is, is it possible to design policies that harness the development potential of remittances and, at the same time, mitigate corruption? Studying migration policy in the context of remittances and corruption, we show that this is indeed possible and point to two unexplored but related channels: (1) the trade-off faced by the corrupt government that seeks to balance its financial interests (i.e., corruption), the provision of a public good, and the gains from a higher inflow of remittances; and (2) the relative consumption of a privately obtained substitute for the public good by the household receiving the remittances.

Our analysis is relevant to commonplace scenarios where national governments have devised policies to harness the potential of remittances to foster development (Yang, 2011). For example, the Philippine Overseas Employment Administration, a government agency that monitors the overseas employment program of the Philippines, and several other national governments, such as that of El Salvador, have established agencies with the objective of promoting emigration to increase remittances (Yang, 2011). Historically, there have been examples of governments promoting emigration (e.g., Italy and Puerto Rico) to address domestic poverty and unemployment (Dietz, 1986, 2003; Hoerder, 2002) with implications for the flow of remittances. Our analysis also touches on the importance of reducing remittances and recruitment costs (e.g., Sjaastad, 1962), which are recognized in the United Nations Sustainable Development Goals.

2 | THE MODELING FRAMEWORK

Our modeling strategy relies on Abdih et al. (2012), who investigated the effects of remittances on governance quality. Their model comprised a government providing a public good while setting aside resources for its consumption and a household taking the provision of the public good as given and deriving utility from consuming a private good, the aforesaid public good, and a privately obtained substitute of the public good; the household also received remittances. They showed a negative association between remittances and governance quality.

We consider a source country (from which labor migrates) and a host country (to which labor migrates). There is a representative household and a corrupt government in the source country; a firm operates in the host country. The household in the source country derives utility from the consumption of a private good, a privately obtained substitute for the public good, and the provision of a public good (e.g., education and health care). The source country's government is responsible for providing the public good; however, it also seeks to enhance its private consumption (i.e., corruption). Furthermore, it is interested in increasing the inflow of remittances. Remittances raise household income, freeing up resources for the government. We model the government's interest in raising the inflow of remittances by incorporating a remittances-promoting subsidy payment. These subsidy payments lower the costs associated with remittances and, in turn, increase remittances flowing back to the source country. In the host country, there is one firm hiring all migrant labor.

Events unfold as follows. The government in the source country first determines its private consumption, followed by subsidy payments to increase the inflow of remittances. The government in the source country then determines the provision of the public good. This order captures the notion of a corrupt government since the choice of corruption is ascertained first. Next, given the source country's government's choices, labor migrates from the source to the host country. The firm operating in the host country hires all migrant labor and maximizes profits by taking subsidy payments as given. In the final stage, the household in the source country receives remittances

from the labor that migrated to the host country and maximizes utility by choosing its consumption, taking the source country's government's provision of the public good, subsidy payments, and corruption as given. The model is solved via backward induction.

2.1 | Preferences

Consider the following problem for the household in the source country:

$$\max_{c,g} U = U(c, g, \bar{g}) \text{ s.t. } R + (1 - t)y = c + g; (\omega - \gamma)q + \bar{r} = R, \quad (1)$$

where R and $(1 - t)y$ denote, respectively, remittances coming from the labor hired by the host-country firm and an exogenous level of after-tax income. Next, c and g denote, respectively, household consumption of a private good and household consumption of a privately obtained perfect substitute for the public good. \bar{g} is the provision of the public good in the source country. In this setup, there are two goods: the household must purchase a private good, and the other can be either provided by the government or purchased by the household. We assume that the quality of the two goods is the same. The function $U(\cdot)$ satisfies $U_i > 0$, $U_{ii} < 0$, $i = 1, 2, 3$ (subscripts denote partial derivatives).

The second constraint captures the idea that remittances, R , depend on: (1) subsidy payments net of costs of remittances, $q(\omega - \gamma)$, where q denotes the output of the firm operating in the host country, ω is the per-output subsidy, which is determined by the source country's (corrupt) government, who in effect is subsidizing the host firm's production, and an exogenous cost associated with sending remittances to the source country, γ ; and (2) an exogenous positive level of remittances, \bar{r} , which is independent of (1). The subsidy ω captures how the corrupt government can increase the inflow of remittances, and since migrant labor is the only input, all output, q , produced in the host country belongs to the migrants, which is sent back to the source country as remittances. Regarding γ , we assume it to be exogenous because it captures a myriad of direct and indirect remittances costs (i.e., costs of remitting money to the source country) that are not controlled by the government and household in the source country or the firm in the host country (e.g., transactions costs associated with obtaining work permits and reallocation costs). Our assumptions are in line with Abdih et al. (2012). We characterize the solution of (1) with $U_1 = U_2$ (subscripts denote partial derivatives) and the household's resource constraint.

2.2 | Host-country welfare

A single firm operates in the host country, which hires all source-country migrant labor. Additionally, the firm sells its output to a third market. These assumptions allow us to focus on the role of remittances flowing back to the household in the source country by assuming away issues associated with competition for the hiring of migrant labor, unemployment, or any role source-country household consumption may influence the firm's decision. The firm's profit maximization problem is thus given by

$$\max_q \pi = (p - \delta + \omega - \gamma)q, \quad (2)$$

where $p = p(q)$ and $\delta - \omega + \gamma$ denote, respectively, demand satisfying $p' < 0$, $p' + qp'' < 0$, and constant marginal costs net of subsidy payments.¹ The reason ω and γ are in Equation (2) is because the subsidy captures the source country's ability to facilitate emigration and the costs of remittances associated with transaction costs the host firm incurs to hire migrant workers.

Differentiation of (2) gives $\partial\pi/\partial q = p + qp' - \delta + \omega - \gamma = 0$, whence q is a function of ω, γ . From the household and firm's problem, we obtain $c(\omega, \gamma, \bar{g}), g(\omega, \gamma, \bar{g}), q(\omega, \gamma)$.

2.3 | Source-country welfare

The government in the source country maximizes welfare by first choosing its private consumption (i.e., corruption), s , followed by the level of subsidy payments, ω , and then the provision of the public good, \bar{g} . As in Abdih et al. (2012), the government maximizes the sum of household utility and its private consumption subject to the resource constraint:

$$\max_{\omega, s, \bar{g}} W = H(s) + U(c, g, \bar{g}) \quad s.t. \quad ty - q\omega = \bar{g} + s, \quad (3)$$

where $H(s)$ is a function denoting the gains from private consumption enjoyed by the government satisfying $H' > 0, H'' < 0$.

Differentiation of W with respect to ω and using $c(\omega, \gamma, \bar{g}), g(\omega, \gamma, \bar{g}), q(\omega, \gamma)$ from the firm and household maximization problem, and the constraint $ty - q\omega = \bar{g} + s$ gives

$$\frac{\partial W}{\partial \omega} = U_1 c_\omega + U_2 g_\omega + U_3 \bar{g}_\omega = 0, \quad (4)$$

from which we obtain the subsidy as a function of the government's private consumption, $\omega(s)$. Equation (4) points to the government's balancing act between subsidy payments and the provision of the public good. Offering the subsidy raises household income and therefore consumption (which raises utility, $U_1 c_\omega + U_2 g_\omega$) but, at the same time, reduces the provision of the public good (which lowers utility, $U_3 \bar{g}_\omega$). With this in mind and the sequential choice of ω and s , differentiation of W with respect to s gives

$$\frac{\partial W}{\partial s} = H' + w'(U_1 c_\omega + U_2 g_\omega + U_3 \bar{g}_\omega) - U_3 = H' - U_3 = 0, \quad (5)$$

where $w' \equiv \partial\omega/\partial s$. The government balances the gains from increasing corruption, H' , with losses from lower utility as there are fewer resources for the provision of the public good, U_3 .

Proposition 1. *There is a welfare-maximizing (i) subsidy payment $\omega^* > \gamma > 0$; and (ii) positive corruption level, $s^* > 0$.*

Proof. See [Supporting Information Appendix A](#) □

¹There are potentially some inefficiencies associated with the subsidy in the sense that a share of it is likely lost to the host firm, thereby reducing net amount of remittances sent back to the source country.

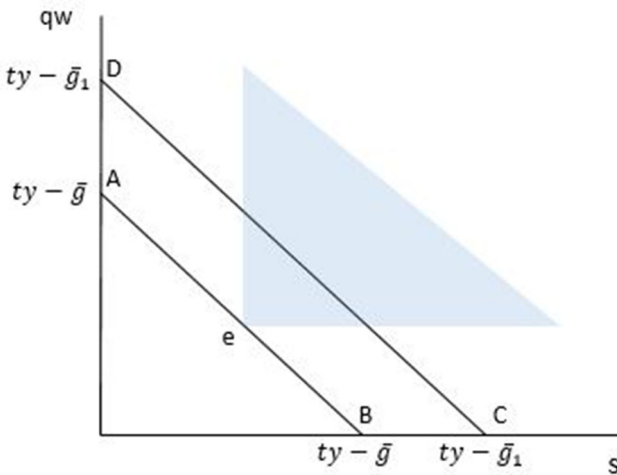


FIGURE 1 Corrupt Government's Tradeoff. [Colour figure can be viewed at wileyonlinelibrary.com]

3 | POLICY REFORM

We show that the more (fewer) resources allocated to subsidy payments, the fewer (more) resources are available for corruption.

Figure 1 illustrates the possible combinations of subsidy payments and corruption consistent with the equilibrium. Point e on the government's resource constraint AB represents an initial equilibrium. Starting at e , we study the effects of changes in remittance costs, γ . In particular, a reduction in the cost to remit money benefits households since it implies higher remittances, translating into higher household income. Households can use this higher income to increase the consumption of the private good, c , and the privately obtained public good, g . This higher household consumption frees up resources available to the corrupt government. This is captured by shifting the government's resource constraint outward to DC .

With more resources at its disposal, the government can increase subsidy payments, corruption, or both. We illustrate these possibilities through the shaded triangle in Figure 1. Specifically, within the shaded area on DC , both corruption and subsidy payments rise (or at least one of the two rises), while along the portion of DC below the shaded triangle, corruption increases and subsidy payments fall. In the area to the left of the shaded triangle, subsidy payments rise while corruption falls. We argue that these scenarios depend on relative household consumption. We formally develop our argument by considering the cases where the consumption of g is relatively high or low.

3.1 | Relative consumption of privately obtained public good, g

To formally characterize the relative consumption of g by the household, consider a pair (\hat{c}, \hat{g}) in the household consumption set such that changes in remittance costs do not affect the welfare-maximizing subsidy $\omega_\gamma(\hat{c}, \hat{g}) = 0$, where this term comes from (4), that is, $W_{\omega_\gamma} = 0$. Differentiation of $\omega_\gamma(\hat{c}, \hat{g}) = 0$, and using the household's first-order condition $U_1(\hat{c}, \hat{g}) = U_2(\hat{c}, \hat{g})$ gives

(see Supporting Information Appendix B for a derivation):

$$\frac{U_{22}}{U_{11}} = \frac{-\omega_{\gamma g}}{\omega_{\gamma c}}. \quad (6)$$

Equation (6) defines a household consumption set where changes in remittance costs do not prompt changes in subsidy payments. We use this consumption set as our benchmark to define relatively high or low consumption levels of g . Consider the case where the marginal utility of the privately obtained public good, g , is relatively small (i.e., $U_{22}/U_{11} < -\omega_{\gamma g}/\omega_{\gamma c}$), meaning its consumption is relatively high, say, $g > \hat{g}$. In this case, the consumption of g is relatively high, which points to the government's ability to lower subsidy payments (for a given level of corruption and provision of public good), that is, $\omega_{\gamma} > 0$. This is because the consumption of g is high enough, so the need to raise subsidy payments to compensate for the low consumption of g is negligible. By the same token, if the consumption of g is relatively low, $g < \hat{g}$, then the government compensates the household for its low consumption of g by raising subsidy payments, $\omega_{\gamma} < 0$. (See Supporting Information Appendix C for a derivation of ω_{γ} .)

Proposition 2. *Let the consumption of the privately obtained public good, g , be relatively high (low), that is, $g > (<)\hat{g}$. There is a utility-maximizing consumption set such that a reduction in remittance costs lowers (raises) welfare-maximizing subsidy payments by the corrupt government in the source country for a given corruption and the provision of the public good.*

Furthermore, we find that (for a given subsidy payment and the provision of the public good) corruption falls as a result of lower remittance costs. If $g > \hat{g}$ (the consumption of the privately obtained public good is relatively high), then the government enjoys more resources for its private consumption. (See Supporting Information Appendix D for a derivation of s_{γ} .)

Lemma 1. *A decrease in remittance costs raises (lowers) corruption if the consumption of the privately obtained public good, g , is relatively high (low), that is, $g > (<)\hat{g}$.*

We are now in a position to analyze the effects of remittance costs, γ , on subsidy payments and corruption. Differentiation of the first-order conditions $W_{\omega}(\omega, s, \gamma) = 0$ and $W_s(\omega, s, \gamma) = 0$, and the resource constraint $s + \omega q - \gamma t = \bar{g}$ gives

$$\eta d\omega = [-W_{\omega\gamma}(W_{ss} - W_{s\bar{g}}) + W_{s\gamma}(W_{\omega s} - W_{\omega\bar{g}})]d\gamma, \quad (7)$$

$$\eta ds = [-W_{s\gamma}(W_{\omega\omega} - qW_{\omega\bar{g}}) + W_{\omega\gamma}(W_{s\omega} - qW_{s\bar{g}})]d\gamma, \quad (8)$$

where $\eta > 0$ and the signs of $W_{\omega\gamma}$, $W_{s\gamma}$ come from Proposition 2 and Lemma 1, respectively. Equations (7) and (8) capture, respectively, changes in subsidy payments and corruption arising from changes in γ both via changes in the resource constraint of the government (shift effect) but also the trade-off between corruption and subsidy payments (substitutability effect). The sign of these depends on the relative household consumption of the privately obtained public good, g .

Consider the case where g is relatively low, that is, $g < \hat{g}$ (i.e., the consumption of the privately obtained good is low enough as stated in Proposition 2). In this case, a reduction in migration costs

prompts the government to raise its provision of the public good due to the low level of household consumption of g . This lowers the resources available to the government (shift effect) and increases remittances and thus the consumption of c and g . But since $g < \hat{g}$ (i.e., the consumption of the privately obtained good is low enough), then subsidy payments rise. This is because the government compensates the household for a low enough level of g via a higher subsidy and provision of the public good.

Furthermore, changes in corruption exhibit two opposing effects. First, a decrease in γ raises remittances, where subsidy payments rise (since $g < \hat{g}$) and, as a result, there are fewer resources available for corruption so corruption falls (substitutability effect). Second, the increase in remittances raises household consumption, which frees resources for the government to be corrupt. Overall, corruption decreases if the need to compensate the household via higher subsidy payments and a higher provision of public good is large enough. However, it is noteworthy that welfare falls despite a reduction in corruption because in this case $g < \hat{g}$; there are fewer resources available to the government (shift effect) due to the need to compensate the household.

Proposition 3. *Let the consumption of the privately obtained good be relatively low, that is, $g < \hat{g}$. A decrease in remittance costs, γ , raises welfare-maximizing subsidy payments and lowers corruption if the need to compensate the household for its low consumption of g is large enough.*

This proposition suggests that even when the corrupt government could increase corruption, it may not. This is because consumption of g is low enough, prompting the government to compensate the household by increasing the provision of the public good and subsidy payments. This forces a reduction in corruption; if the government were to increase corruption at the expense of household welfare, the government would be worse off. The reduction in household utility would completely offset the increase in corruption and the associated increase in government welfare. But this also suggests that the corrupt government, through its resource constraint, is forced to maintain a certain level of household utility, which keeps corruption under control.

4 | CONCLUSION

Although remittances can drive economic growth, raise living standards, and alleviate poverty, they may also exacerbate corruption. The inflow of remittances increases the resources available to recipient countries; should these countries exhibit relatively high demand for, but not necessarily provision of, public goods, the resources may be reallocated to increase welfare. Welfare increases because (i) corruption and remittance costs decline and (ii) remittances and profits increase. Our analysis offers a rubric for policymakers to understand the effects of policy reforms based on household consumption of public goods relative to that of the privately obtained substitute for the public good; it is especially relevant to scenarios where national governments have devised policies to harness the potential of remittances to foster development but are struggling to temper corruption.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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