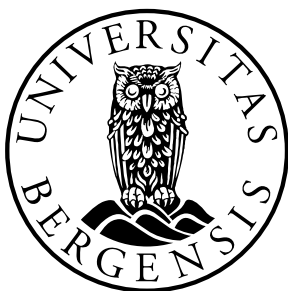# WORKING PAPERS IN ECONOMICS

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# HELP NOT NEEDED? OPTIMAL HOST COUNTRY REGULATION OF EXPATRIATE NGO WORKERS

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# Help Not Needed? Optimal Host Country Regulation of Expatriate NGO Workers[*]

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## Abstract

Motivated by recent interventions in poor countries to increase the use of local labor in foreign NGOs, we address the behavior of these organizations under host government regulation. We extend existing NGO models by distinguishing between local workers and expatriates. The model covers both NGO monopoly and competition in the market for donations. Assuming that NGOs maximize output, we show that regulations in the form of a quota on the number of expatriates or a work permit fee for foreigners reduces NGO output, but increases employment of locals. The optimal quota is more likely to bind in the market structure generating the highest total fundraising surplus. An optimal work permit fee is equivalent to an optimal quota in both the monopoly and duopoly cases. For both instruments, the optimal tightness of regulation is decreasing in the weight the government attaches to the public good relative to domestic incomes and in the importance of NGO output to the supply of the public good. Aggregate NGO output and the level of the public good produced could be higher with a monopoly NGO.

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# 1   Introduction

Non-governmental organizations (NGOs) based in the North are active in foreign aid. They typically run their own offices in aid-receiving countries in the South led by foreigners, and they bring in foreigners in management and services. The use of expatriates (expats) by such organizations is increasingly controversial. Historically, Northern-based NGOs received work permits for their personnel as a formality. They have been allowed to run their organizations as they see best. In practice, they have worked as autonomous foreign-driven operations with large turnover in management and limited connection to local societies. More recently NGOs have come under criticism and many countries now control the entry of expatriates in the NGO sector.

This study is motivated by such restrictions to the use of foreign workers in NGOs in Southern countries. We address the host government's choices taking into account the NGO's decisions on hiring foreign and local workers. Expats are expensive compared to their host country counterparts, typically earning rich-country wages and enjoying generous allowances. Still, NGOs employ them to the extent that governments in the South intervene to change their labor mix. Given that wage contagion and internal brain drain are frequently mentioned problems generated by foreign NGOs, the regulations seem puzzling. Forcing Northern charities to hire more local personnel can only serve to reduce the number of workers available for the public sector of the host countries, thus compelling governments there to inflate wages and benefits if they want to remain competitive in the labor market.

We examine the effects of regulations on the number of expats, both quotas and work permit fees, taking into account the tradeoff between the output of the public good the NGOs help produce and the hiring of local workers. Our contribution is the development of theoretical models of NGO behavior distinguishing between domestic and foreign workers and the analysis of the effects of regulations for employment and public goods production. The starting point is a monopoly NGO model showing how the demand for foreign and local labor depends on economic conditions. The framework is developed to evaluate how the choices of duopolist NGOs differs from those of a monopoly. The behavior of the NGOs is integrated into a model of government policy to study the determination of the optimal quota and work permit fee. The analysis concentrates on the competition between the government and the NGO sector for local workers and the implications for the public good NGOs help produce.

A binding quota on foreign workers is shown to be an efficient instrument for expanding NGO employment of local

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workers. The optimal quota is stricter when the host government cares less about the public good and NGO output does not contribute much to its supply. The optimal quota is more likely to bind in the market structure generating the highest total fundraising surplus for NGOs. We show that this might well be the monopoly. This means that total NGO output as well as the level of host country public good could be higher with fewer NGOs. This holds even in the case where a monopolist is constrained by the optimal quota due to its higher demand for expatriates whereas duopolists are not. However, when quotas regulate NGO hiring regardless of market structure, aggregate outcomes are independent of the number of NGOs in the host country, demonstrating the forcefulness of such regulations in our model.

The case of an optimal work permit fee is equivalent to an optimal quota in both the monopoly and duopoly case and the comparative statics are qualitatively identical. The optimal work permit fee is decreasing in the weight the government attaches to the public good relative to the incomes of local workers and in the importance of NGO output in the public good. The main difference from the quota analysis is that the optimal income tax rate is lower.

It should be noticed that we study NGOs operating in a particular host country. A more general analysis could investigate multinational NGOs that allocate their activities across countries based on country-specific preferences and costs. Higher costs of hiring foreign workers in a host country will motivate NGOs to scale down their activity there and scale up in other countries. The mobility of NGOs across potential hosts will have consequences for policy making. Government regulation of NGOs must take into account the reactions of NGOs as well as governments in other countries. The analysis of this case is interesting, but the game between governments, between NGOs, and between governments and NGOs will be highly complex and is beyond the scope of the present paper.

We start with a discussion of the motivation for the analysis of host government regulation of NGO employment policies and the background literature on the behavior of NGOs in section 2. The basic monopoly model of a NGO and NGO competition under duopoly are outlined in section 3. Section 4 studies the case of quota on expatriate workers extending the NGO model to include the host government's goals and policy instruments and the working of the labor market. Section 5 introduces a fee for the use of expatriates and compares the results with quota. Our conclusions follow in section 6.

# 2    Motivation and Related Literature

The role of expatriate staff in Northern NGOs has been debated in the literature in relation to topics such as employment, cost, skill-transfer, inequality, management, and control/ power structures. The influential studies by Dichter (1986) and Fowler (1997) discuss the capacity-building effect of the NGOs, and especially the transfer of skills. Expatriates may provide training to domestic workers. The broad understanding is that NGOs have transmitted little knowledge. A case study of NGOs in Vietnam by Zhu and Purnell (2006) shows that expatriates are weakly linked to local cultures and institutions, being more a part of an international market for NGO expertise, accountable to NGO headquarters in the North. An evaluation of Dutch support to capacity building by Lange (2013) confirms the donor dependency resulting from expatriate-led operations in the South.

Mukasa (1999) addresses the expatriate issue most explicitly under the title 'Are expatriate staff necessary in international development NGOs'? She summarizes the literature and offers a case study of a Northern NGO working to alleviate the socio-economic consequences of HIV/ AIDS in Uganda. Typically expatriate staff hold senior management positions and include professionals such as teachers and nurses, while local staff occupy posts such as administration, technical staff, transport, and domestic workers. Expatriates stay for a short period, often a year, while the domestic workforce is more permanent. The main problems she discusses are the high turnover of foreigners, undervaluation of local staff knowledge, the separation of the two types of workers, and the costs of remuneration packages. She acknowledges advantages of having expatriates, notably their independence and position to challenge existing thinking and customs locally as well as their linkages to and knowledge about the international scene. The case study ends up with recommendations that organizations clarify their policies towards expatriates and asks for more analysis of conditions and circumstances when expatriates are beneficial.

The experiences and concerns with expatriate staff have led to a revision of Southern government policies toward Northern-based NGOs. A recent heading in Quartz Africa reads 'Kenya is pressuring thousands of expat NGO workers and volunteers to go home.'[1] The government of Kenya states that they will 'only issue work permits to expatriates in instances where Kenyans lack the requisite skills and qualifications to undertake such jobs'. The reaction in Kenya reflects a broad concern with historical links back to colonial relations. The government of Uganda announced a new initiative in 2012, where NGOs were banned from taking on expatriates unless they can show that no one from Uganda with the same skills can fill the post. The government indicated that "international organizations, particularly those dealing with health, agriculture and community development, bring in unqualified staff from outside

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[1]See http://qz.com/716518/kenya-is-pressuring-thousands-of-expat-ngo-workers-and-volunteers-to-go-home/

the country, pay them more and install them as supervisors over better qualified Ugandan employees."[2] Many low-income countries in Africa and Asia have adopted regulations working in the same direction. Examples include regulations in Ethiopia, requiring that NGOs "shall be responsible for replacing, within a limited period, such expatriate personnel by Ethiopians by arranging the necessary training thereof" (Dupuy et al. 2015). In a guide to the Cambodian labor law for NGOs, the starting point is simple: "Preference must be given to Cambodian nationals when hiring" (BNG Legal 2010). As documented by Akol (2016), the government of South Sudan has introduced a NGO act requiring "any NGO operating in South Sudan to employ at least 80 % of South Sudanese nationals in all managerial, middle and junior levels". The control of the use of foreign workers by NGOs is related to a broader concern with the inflow of skilled immigrants around the world. A World Bank study presented by De Smet (2013) shows that 40 of 93 countries surveyed have introduced immigration quotas affecting foreign direct investment.

Quantitative restrictions on the use of foreign workers are observed in most countries and affect NGOs. Governments also influence the hiring of expatriates by other instruments, in particular the issuance and pricing of work permits. The development in South-Sudan illustrates the complexities of the relationship between host governments and NGOs. The South-Sudanese government has been hostile to the presence of international NGOs. Control of expatriate staff includes the recent announcement of a 100-fold increase in the work permit fee in South Sudan to USD 10,000, over strong protests from the NGO community.[3] Work permit fees for blue-collar workers were raised to USD 2,000 and for casual workers to USD 1,000. The motivation presumably is to reduce the use of international staff, to generate government revenue, and more broadly to control the NGO activities. Other countries in the region have raised their price for a work permit too, and the cost is reported to be USD 1,500 in Uganda and USD 1,900 in Kenya. Taxation of this kind is of course an alternative instrument to influence the mix of foreign and local workers.

We have been looking for empirical evidence regarding the effects of these types of regulations of NGOs, but have not found anything beyond the more general discussion of experiences referred to above. The NGOs do not supply much data about their activities, and in official statistics we have not found a separation between foreign and domestic staff. The existence of host government regulations motivates our theoretical model of NGO behavior. The analysis below looks at the effects of both a quota and a work permit fee designed to reduce the use of foreign workers.

We consider NGOs which finance their operations abroad with contributions by home country donors motivated by the "warm glow" of giving (Andreoni 1998). This assumption of course simplifies the analysis. However, it also seems defensible from a substantive point of view. It is very hard for donors to verify directly the effect of their contribution

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[2] See http://www.iexpats.com/uganda-curbs-ngo-jobs-for-expats/

[3] See https://www.theguardian.com/global-development/2017/mar/09/famine-south-sudan-move-raise-fees-aid-workers

in some faraway land and equally difficult for beneficiaries to report back (Hansmann 1980, Martens 2005). Since we do observe private giving for development in other countries, it seems reasonable to suppose that warm-glow is an important part of the motivation of potential contributors. Moreover, poverty and underdevelopment remain problems of such proportions that we find it defensible to abstract from the problem of crowding-out that arises when potential donors care about the level of the public good provided by NGOs.

A general lesson in fundraising is that people are more likely to donate if they are explicitly asked to do so. This empirical regularity has been dubbed "the power of asking" by Andreoni (2006). Empirically, donation requests increase the propensity to give by about nineteen percentage points for those who are asked to give (Yörük (2009); see also DellaVigna et al. 2012). Costly fundraising with donors learning about a charity only once they receive a solicitation is modeled by Rose-Ackerman (1982) as well as Andreoni and Payne (2003).

In Aldashev and Verdier (2010), each NGO is run by an entrepreneur allocating her time between production and fund-raising. While this is likely to be an important trade-off for one-woman NGOs, most development NGOs have multiple employees. Usually only some of these do fundraising, and professional marketing bureaus are also frequently used. We therefore feel the more standard approach adopted here is well-suited for our purposes, as well as empirically relevant. Moreover, Aldashev and Verdier (2009) use a formulation that is essentially the same as ours, albeit when studying a completely different question, namely when development NGOs will compete in several markets for donations (become "multinational").

Krasteva and Yildrim (2016) and Scharf (2014) study competition between NGOs, but they focus on the implications for the quality of the organizations active in the sector, whereas we abstract from heterogeneity. Aldashev and Verdier (2009, 2010) model fundraising by competing development NGOs, as we do. However, they too look at differentiated organizations and do so in order to answer different questions than the ones highlighted here. In particular, host country regulations on the use of expatriate workers are not part of their analyses. To our knowledge, ours is the first paper dealing with this issue.

We consider the policy problem of the government of a poor host country that value services provided to its citizens as well as the incomes of its nationals, but not the incomes of foreign workers. To us, this formulation captures the essence of the cases noted in the introduction: Southern governments want greater local employment in foreign NGOs, but not to shut down their activities, which in many countries contribute importantly to sectors such as health and education.

To analyze optimal restrictions on the number of Northern workers from the perspective of the government, we

endogenize the market for Southern labor. In this way, we capture effects on the wage rate of local workers. To simplify the formulation of this market, we consider an equilibrium where Southern workers are paid the same wage in all sectors of the economy. A positive relationship between government policies to restrict the use of expatriates and the wage level for these workers is likely also in other specifications where the demand for labor influences the wage, so the assumption seems innocuous. It is also clear that the policies we study will raise NGO demand for host country labor even more if it is underutilized due to nominal wage rigidities. Hence, our results should generalize to this case.

When analyzing optimal quotas, we assume that the government finances its wage payments through a proportional tax on total domestic wage income. Workers in the formal sector, particularly government employees, tend to be the only source of income tax revenues in developing countries. Other taxes, particularly trade taxes, are generally more important for government revenues. Optimal taxation in a developing country is orthogonal to the issues motivating this paper. However, we do consider a quite specific trade tax, namely a fee on work permits for expatriates, which is an import tax on foreign workers.[4] In this way, we cover both direct and indirect regulation of the use of such labor by foreign NGOs.

# 3 Behavior of NGOs

## 3.1 Fundraising

Consider a Northern NGO producing a single output, which finances its operations in a developing country through private donations from contributors in its home country. The utility function of the representative donor is assumed to be

$$U(x, c) = u(y - c) + \gamma c,$$

where $c$ is the contribution to the NGO. Private consumption $x$ is income $y$ minus $c$. Assuming that the utility of private consumption is a strictly concave function, the solution to the donor's problem, which we label $c^*$, is unique.[5]

These contributions are not necessarily free gifts, however. As mentioned above, evidence suggest many potential contributors are only triggered by "the power of asking". In other words, the NGO has to expend resources soliciting donations. We thus suppose that the number of people who donate to the NGO, $M$, increases with fundraising effort $e$:

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[4] We thank a referee for suggesting the extension of the analysis to such taxes.

[5] The value of $c^*$ is determined by the first-order condition $u'(y - c^*) = \gamma$.

$$M(e) = m + \mu e. \tag{1}$$

Here $m$ and $\mu$ are positive constants. As $m = M(0)$, this parameter can be thought of as the number of individuals contributing even when they are not exposed to fundraising.[6]

When contributors are motivated only by warm glow, the exact timing of the game is unimportant. For simplicity, we assume that the NGO and its donors make their decisions simultaneously. Hence, total contributions to the NGO are

$$C(e) = M(e)c^*. \tag{2}$$

Using (1), we see that $C'(e) = \mu c^* > 0$. $C(e)$ is the NGO's only source of funds. We could allow for other revenues without changing the results that follow, but it is important that the NGO's output is not sold in a market or provided at a fee. It does not matter whether this output is a private good distributed for free, or a public good provided in the host country. Also note that we allow for multiple producers of a good; all that we require is that the NGO be a monopoly in the sense of having no competitors in the market for contributions. Many NGOs can operate in the developing country in question as long as they draw their private contributions from separate pools. We consider a duopoly in the market for donations in subsection 3.3.

The cost of fundraising is $K(e) = \frac{1}{2}e^2$. The optimal value of $e$ is then determined by the first-order condition

$$C'(e^*) = K'(e^*) \Leftrightarrow e^* = \mu c^*. \tag{3}$$

Total contributions are $C^* \equiv C(e^*)$ and total fundraising costs $K^* \equiv K(e^*)$. In the appendix, we show that the resulting surplus $C^* - K^*$ is positive as long as individual donations $c^*$ are positive. As noted above, the NGO finances its operations in the host country with this surplus.

## 3.2 Maximizing output

Output is produced using both Northern ($N$) and Southern ($S$) labor. Each employee works a fixed number of hours, normalised to one. For concreteness, we assume that the production function is Cobb-Douglas with constant returns to scale:

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[6]Their donative behavior is thus the same as that of the purely mission-oriented donors in Krasteva and Yildrim (2016). The other donors here could be viewed as needing a nudge in the form of persuasive advertising, face-to-face solicitation, etc., "asking" them to contribute.

$$Q(N, S) = N^{\alpha} S^{1-\alpha}. \tag{4}$$

The wage (or salary) of a Northern worker is exogenously set at $w_N$. A Southern worker's wage is $w_S$; it is endogenised in section 4.

Suppose that the NGO wants to do "as much good as possible," i.e., maximize its output. Its decision problem is then

$$Max_{N,S} \ Q(N, S) \ \ s.t. \ C(e^*) - K(e^*) \geq w_N N + w_S S.$$

The constraint holds as an equality at the optimum, as not spending all funds reduces input levels and so lowers output. For the Cobb-Douglas production function we use, the factor demand functions are

$$N^* = \frac{\alpha}{w_N} (C^* - K^*); \tag{5}$$

$$S^* = \frac{(1 - \alpha)}{w_S} (C^* - K^*). \tag{6}$$

It follows that the NGO's output is a linearly increasing function of the fundraising surplus because more workers of both types can be hired when solicitation is more "profitable." This will turn out to have important implications for our analysis of optimal host country policies and outcomes in different policy regimes in sections 4 and 5.

Having established the benchmark case of monopoly, we proceed to analyse the more interesting case where two Northern NGOs compete for the contributions of their home-country donors. We shall call the NGOs duopolists, but would like to reiterate the term refers to competition for donations only; the NGOs do not sell their outputs, and so do not compete in an output market.

## 3.3   Competition between NGOs

Consider two NGOs, 1 and 2, which are identical in all respects. Most importantly, they operate in the same Southern country and draw their funding from the same pool of contributors in the North. The common donor pool implies that the market is enlarged by the combined fund-raising efforts of the two organizations, $e = e_1 + e_2$:

$$C(e) = M(e_1 + e_2) c^*. \tag{7}$$

This formulation, which is similar in spirit to the case of endogenous market size in Aldashev and Verdier (2010), is reasonable in many cases as for example advertising by one development NGO might not only induce more people to donate to its projects, but could also alert them to the importance of the problems of poor countries more generally, eventually causing them to contribute to another organization. In this sense, the fundraising effort of one NGO provides a positive externality for the other.[7]

Let each NGO's share of total contributions equal its share of total fund-raising effort. Funding for NGO $i$ is thus

$$C_i(e_i, e_j) = \left(\frac{e_i}{e_1 + e_2}\right) C(e_1 + e_2) \equiv \sigma_i C(e_1 + e_2). \tag{8}$$

Using (7), it follows that

$$\frac{\partial C_i(e_i, e_j)}{\partial e_i} = \frac{\partial \sigma_i}{\partial e_i} C(e) + \sigma_i \frac{\partial C(e)}{\partial e_i} = (1 - \sigma_i) \frac{mc^*}{e} + \mu c^*. \tag{9}$$

An NGO that spends more on fundrasing affects its contributions in two ways. First, the NGO captures market share ($\sigma_i$ increases). The business stealing effect is absent when the NGO has a monopoly in the market for contributions. Second, it raises the number of donors, though it does not get contributions from all of them. Because the market is shared here ($\sigma_i < 1$), this effect is weaker than for a monopoly. In general, the total marginal effect could thus be either larger or smaller in a duopoly; but with our specification of how total donations depend on total fundraising effort it turns out to be larger. As may be seen, if $\sigma_i = 1$ the first term vanishes and the whole expression reduces to the one for monopoly. For $\sigma_i < 1$, it is above the marginal effect in the latter, $\mu c^*$.

Assuming the two NGOs have the same cost-of-fundraising functions as the monopolist, optimal fundraising effort is given by

$$\frac{\partial C_i(e_i^{**}, e_j)}{\partial e_i} - \frac{\partial K(e_i^{**})}{\partial e_i} = 0 \Leftrightarrow (1 - \sigma_i) \frac{mc^*}{e} + \mu c^* - e_i^{**} = 0. \tag{10}$$

In the appendix, we show that the slopes of the reaction functions generated by differentiating the first-order conditions change sign at the 45-degree line, i.e., where the two NGOs have the same market share. They are increasing when the other NGO has a market share less than 50% and decreasing in the opposite case. Figure 1 illustrates them.

[Figure 1 about here]

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[7]Aldashev et al. (2014) study how these externalities can be internalized by coordination among NGOs in a situation where they can be both positive and negative.

Let $e^{**} = 2e_i^{**}$ be aggregate fundraising effort in the symmetric Nash-equilibrium, with corresponding aggregate contributions and fundraising costs $C^{**} \equiv 2C_i(e_i^{**})$ and $K^{**} \equiv 2K(e_i^{**})$. Comparing the results just derived with those for the monopoly case, we have[8]

**Proposition 1** *Compared to outcomes under monopoly, under duopoly (a) aggregate fundraising effort is larger ($e^{**} > e^*$); (b) aggregate donations are larger ($C^{**} > C^*$); (c) aggregate fundraising costs are higher ($K^{**} > K^*$).*

The surplus each NGO can spend on hiring labor is $C_i(e_i^{**}) - K(e_i^{**})$. Comparing two times this difference to the monopoly surplus, we find that it is not clear whether the aggregate surplus is higher in a duopoly. While total donations are higher, so are total fundraising expenditures. However, we can prove the following:[9]

**Lemma 1** *There exists a critical value of $c^*$, $\widehat{c}^* > 0$, such that for $c^* = \widehat{c}^*$, the aggregate fundraising surplus is the same under the two market forms. For $c^* > \widehat{c}^*$, $C^{**} - K^{**} > C^* - K^*$ and for $0 < c^* < \widehat{c}^*$, $C^{**} - K^{**} < C^* - K^*$.*

Intuitively, when there is little to gain from fundraising ($c^*$ is small), the monopolist has a larger surplus as it does not have to fight over the revenues from the contributors who give without being solicited ($mc^*$). For sufficiently strong gains from fundraising (large $c^*$), the added incentive to fundraise in a duopoly shown in (9) implies that the duopolists in combination overcome this disadvantage and record a higher aggregate surplus.

If we assume that each duopolist also has the same production technology as the monopolist, their demands for labor are of the same form as those in (5) and (6). As will become apparent, it is useful to write these demand functions in terms of the total surplus using $C_i(e_i^{**}) - K(e_i^{**}) = 0.5(C^{**} - K^{**})$.

$$N_i^{**} = \frac{\alpha}{w_N}\left(\frac{C^{**} - K^{**}}{2}\right); \tag{11}$$

$$S_i^{**} = \frac{(1-\alpha)}{w_S}\left(\frac{C^{**} - K^{**}}{2}\right). \tag{12}$$

The equilibrium output of a duopolist is linear in the surplus in this case too, and so is the total output of the NGOs. Hence, in a duopoly production might be lower than in a monopoly other things being equal. This result is unconventional, as profit-maximizing duopolists will in combination always produce more than a monopoly

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[8] In her seminal contribution, Rose-Ackerman (1982) also finds that an increase in the number of competing NGOs can raise spending on fundraising. Castaneda et al. (2008) arrive at the same result in a quite different setting where the strength of the increase depends on the degree of contractability of donations. In a model with horizontally differentiated NGOs, Aldashev and Verdier (2010) show that the effect of stronger competition depends on whether the size of the market for donations is fixed. When it is endogenous as we assume here, they find that the total effect is less fundraising.

[9] The proof is sketched in the appendix.

firm. However, here other things might not be equal, as we need to take into account how the Southern wage $w_S$ is determined. This is our next task.

# 4  Quotas on expatriate workers

## 4.1  The labor market and the host government

To analyze optimal restrictions on the number of $N$-workers from the perspective of the host country government, we endogenize the market for $S$-labor. To simplify the formulation of this market, consider an equilibrium where $S$-workers are paid the same wage in all sectors of the economy. Let the total number of local workers available be $\overline{S}$; and assume that the NGOs and the government are the only employers of such labor. Distinguishing between the number hired by NGOs ($S_n$) and the government ($S_g$), we thus have

$$S_n + S_g = \overline{S}. \tag{13}$$

The wage $w_S$ will be determined by labor demand. $S_g$ will be a function of government policy, whereas $S_n$ depends on both the structure of the market for donations and the government's regulatory policy.

Now suppose that the output of the NGOs and the government can both be seen as inputs into an aggregate public good $G$. For example, they both produce health services that contribute to public health. Let the production function for $G$ be

$$G = Q^\beta X^{1-\beta}, \tag{14}$$

where

$$X = S_g^\gamma \tag{15}$$

is public sector output.

Suppose further that the government finances its wage payments through a proportional tax $\tau$ on total wage income. Then the government's budget constraint is

$$\tau w_S \overline{S} = w_S S_g. \tag{16}$$

It follows that the tax rate equals the government's share of total Southern labor: $\tau = S_g/\overline{S}$. The share left for the NGOs is therefore $1 - \tau$.

The government's objective function is defined over the quantity of the public good and the after-tax income of Southern workers. Specifically, we assume it maximizes

$$\Omega = \omega \ln G + (1 - \tau) w_S \overline{S} \tag{17}$$

The government's policy problem is to choose $\tau$ optimally and, additionally, to consider whether to impose a quota on the use of expatriates by NGOs. The following subsections demonstrate that there are in general three possibilities. Firstly, it could be that the optimal quotas for expatriates never bind. Secondly, either the monopolist or the duopolists are affected by quotas, but not both. Thirdly, optimal quotas constrain NGOs under both market structures.

## 4.2 A non-binding quota on expatriates

When there is a single foreign NGO not subject to a quota $S_n = S^*$. Substituting for $S^*$ in (13), using (6), and recalling that in the previous subsection we found that $S_g = \tau \overline{S}$, the equilibrium in the labor market is given by

$$\frac{(1 - \alpha)(C^* - K^*)}{w_S} = (1 - \tau) \overline{S} \Leftrightarrow w_S^M = \frac{(1 - \alpha)(C^* - K^*)}{(1 - \tau) \overline{S}}. \tag{18}$$

Note that the greater is the government's demand for labor, the smaller is the effective supply available for the NGO. This increases the wage of Southern workers, reducing the NGO's demand to a level consistent with the availability of such workers. On the other hand, a higher fundraising surplus raises $w_S^M$ as the NGO would like to hire more $S$-labor. Also note that this relation implies that the after-tax income of Southern workers is fixed: $(1 - \tau) w_S \overline{S} = (1 - \alpha)(C^* - K^*)$.

Next, insert (15) and (4) into (14) and apply the result in (17). Given what we just found, the government chooses $\tau$ to maximize

$$\Omega = \omega \left( \nu \ln N + \xi \ln (1 - \tau) \overline{S} + \pi \ln \tau \overline{S} \right) + (1 - \alpha)(C^* - K^*),$$

where $\nu \equiv \beta \alpha$, $\xi \equiv \beta (1 - \alpha)$, and $\pi \equiv (1 - \beta) \gamma$.

The first-order condition for the tax rate is thus

$$\frac{\partial \Omega}{\partial \tau} = \omega \left[ -\xi \frac{\overline{S}}{(1-\tau)\,\overline{S}} + \pi \frac{\overline{S}}{\tau \overline{S}} \right] = 0 \iff \tau^* = \frac{\pi}{\xi + \pi}. \tag{19}$$

Recall that $\pi = (1-\beta)\,\gamma$. Intuitively, the optimal tax rate increases with $1-\beta$, which captures the importance of public sector output for producing $G$. Also, the less concave is the production function for $X$ (a higher $\gamma$), the larger the share of Southern labor that is optimally employed by the government. On the other hand, as $\xi = \beta\,(1-\alpha)$, $\tau^*$ is smaller the more important local workers are for NGO production (lower $\alpha$) and the greater the contribution of the NGO to the public good (higher $\beta$).

In this case, government policy solely affects the distribution of Southern workers between the public sector and the NGO. This distribution in turn determines the output of these sectors and hence production of the public good. The value of $\tau^*$ simply equates the marginal product of Southern labor employed in the two sectors in the production of $G$, wage "inflation" being the mechanism whereby it makes sure $S$-workers are transferred from the NGO to the public sector until the optimum is reached. There, the number of Southern workers employed by the single NGO will be $S^* = (1-\tau^*)\,\overline{S} = \left(\frac{\xi}{\xi+\pi}\right)\overline{S}$.

The NGO's output is consequently

$$Q^* = \left(\frac{\alpha\,(C^* - K^*)}{w_N}\right)^\alpha \left[\left(\frac{\xi}{\xi + \pi}\right)\overline{S}\right]^{1-\alpha} \tag{20}$$

In a duopoly, aggregate NGO demand for Southern workers is

$$S_n = 2S_i^{**} = \frac{(1-\alpha)\,(C^{**} - K^{**})}{w_S},$$

c.f. (12). As this has to equal the residual supply after the government has hired $\tau \overline{S}$ of them, this means that their wage is now

$$w_S^D = \frac{(1-\alpha)\,(C^{**} - K^{**})}{(1-\tau)\,\overline{S}}, \tag{21}$$

The effects of the tax rate and the fundraising surplus on the Southern wage are qualitatively identical to the monopoly case, c.f. (18). Moreover, the aggregate after-tax income of Southern workers is fixed at $(1-\alpha)\,(C^{**} - K^{**})$. Proceeding as above, it is seen that the government's problem is essentially the same, as it can only influence the sectoral distribution of $S$-labor. Thus, efficiency requires that $\tau^{**} = \tau^*$.

As each NGO uses half of the total number of Southern workers available for their sector, taking into account (11) the equilibrium output of a duopolist NGO is

$$Q_i^{**} = \frac{1}{2} \left[ \frac{\alpha \left( C^{**} - K^{**} \right)}{w_N} \right]^\alpha \left[ \left( \frac{\xi}{\xi + \pi} \right) \overline{S} \right]^{1-\alpha} \tag{22}$$

## 4.3 Binding quotas on the use of expatriates

What happens if the host government imposes a binding quota $\overline{N} < N^*$ on the number of expatriates a monopoly NGO can hire, beyond the direct effect of reducing $N$? The number of Southern workers employed by it is then determined residually by the budget constraint, i.e.,

$$S_n = S = \frac{C^* - K^* - w_N \overline{N}}{w_S}. \tag{23}$$

We see that $S$ declines with $\overline{N}$, as each additional expatriate makes a claim on the fundraising surplus $C^* - K^*$. Hence, starting at $N^*$, reducing the number of Northern workers automatically creates more space for Southerners. A quota therefore increases both the absolute and the relative number of Southern NGO workers. Moreover, for an NGO that maximizes output, a binding quota on $N$ necessarily reduces output.

Given $S_g = \tau \overline{S}$, this means that now

$$S_n = (1 - \tau) \overline{S} \Leftrightarrow \overline{w}_S^M = \frac{C^* - K^* - w_N \overline{N}}{(1 - \tau) \overline{S}}. \tag{24}$$

Hence, a binding quota $\overline{N}$ will affect the after-tax income of Southern workers: $(1 - \tau) w_S \overline{S} = C^* - K^* - w_N \overline{N}$, showing that they gain from stricter quotas. The objective function of the government is in this case

$$\Omega = \omega \left( \nu \ln \overline{N} + \xi \ln (1 - \tau) \overline{S} + \pi \ln \tau \overline{S} \right) + C^* - K^* - w_N \overline{N}.$$

Observe that as the tax rate does not affect after-tax income in equilibrium, the optimal rate remains $\tau^*$. The optimal quota is given by

$$\frac{\partial \Omega}{\partial \overline{N}} = \omega \nu \frac{1}{\overline{N}} - w_N = 0 \Leftrightarrow \overline{N}^* = \frac{\omega \nu}{w_N}. \tag{25}$$

Since $\nu = \alpha \beta$, $\overline{N}^*$ is laxer the more important is $G$ for the government (a larger $\omega$) and the more important NGO output in producing this good (a larger $\beta$). It is also less strict the easier it is to raise $Q$ by hiring more expats (a

larger $\alpha$). A higher wage for expats makes a stricter quota optimal, as each foreign worker then leaves less funds for the NGO to hire locals.

How does $\overline{N}^*$ compare with the optimal use of expats for a monopoly NGO? Contrasting (5) and (25), the following inequality shows when the quota binds:

$$\overline{N}^* \leq N^* \Leftrightarrow \omega\beta \leq C^* - K^*. \tag{26}$$

Thus, the government is more likely to impose a binding quota on the use of expats by a monopoly foreign NGO if the public good that it helps produce is not that valuable ($\omega$ is small) or NGO output is not that important for production of the public good ($\beta$ is small). In such cases, it is optimal for the government to restrict the use of expats: the gain in incomes for local workers outweighs the lower level of $G$ that results from the reduced output of the NGO. Viewed from the other side, a higher fundraising surplus for the NGO raises its demand for $N$-labor, making it more likely that the quota binds for given host country parameters.

In the duopoly case, we will suppose that any quota applies symmetrically to the NGOs. If the quota is to be binding, it must imply fewer expatriates than in the Nash-equilibrium. Assuming $N_1 = N_2 = \overline{N} < N_i^{**}$, the budget constraint implies that the number of Southerners each NGO will hire is

$$S_i = \frac{0.5\left(C^{**} - K^{**}\right) - w_N\overline{N}}{w_S}. \tag{27}$$

Examining this expression shows that the response of $S_i$ (and thus the total number $2S_i$) to changes in $\overline{N}$ is the same as under monopoly (c.f. 23). That is, the number of local workers declines with the number of expatriates at the rate of the relative wage $w_N/w_S$. Hence, a quota on foreign workers increases the number of local workers. The intuition is the same: each expatriate makes a financial claim on the resources available to the NGO, reducing the funds available to hire local workers. It also follows that the effect of binding expatriate quotas on the relative number of local workers is positive. Moreover, as both NGOs are output-maximizers, binding quotas on the use of expatriates will reduce their output.

Note that allowing for asymmetric quotas does not change these conclusions. Under asymmetric quotas, $S_i = \left[0.5\left(C^{**} - K^{**}\right) - w_N\overline{N}_i\right]/w_S$. Hence, the marginal effect on $S_i$ from a change in $\overline{N}_i$ is the same as the one implied by the symmetric quota in (27). In addition, in the aggregate $S_i + S_j = \left[C^{**} - K^{**} - w_N\left(\overline{N}_1 + \overline{N}_2\right)\right]/w_S$ and total output must be lower as long as the quota is binding for at least one NGO. Thus, analyzing symmetric quotas is without loss of generality.

With symmetric quotas total NGO demand for local workers changes to $S_n = 2S_i = \frac{(C^{**}-K^{**})-2w_N\overline{N}}{w_S}$. The equilibrium wage is thus

$$\overline{w}_S^D = \frac{(C^{**} - K^{**}) - 2w_N\overline{N}}{(1-\tau)\,\overline{S}}. \tag{28}$$

We see that other things being equal a quota more strongly affects a duopoly. The wage of Southern workers increases twice as fast as in the monopoly case when the quota is tightened by one worker. Also note that the labor market equilibrium still implies that the after-tax incomes of Southern workers is only a function of the quota and not of the tax rate. Accordingly, it continues to be the case that $\tau^{**} = \tau^*$. For future reference, we highlight the cumulative results on the tax rate:

**Lemma 2** The optimal host country tax rate and the allocation of Southern workers between the NGO sector and the public sector do not depend on the structure of the market for donations. Moreover, it is independent of whether binding quotas on expatriates are imposed.

Deriving the optimal quota in the same way as in the monopoly case now yields

$$\overline{N}^{**} = \frac{\omega\nu}{2w_N}. \tag{29}$$

We see that $\overline{N}^{**}$ is only 50% of $\overline{N}^*$. However, as this is a per NGO quota, the total number of expats that the foreign NGOs is allowed to hire is the same as the quota for the monopoly: $2\overline{N}^{**} = \overline{N}^*$. Though surprising at first, it follows from the assumption of constant returns to scale in NGO production. The government's trade-off is therefore essentially the same in the two cases. Though the marginal gain is twice as high in duopoly, so is the marginal cost in terms of lost welfare from a smaller NGO contribution to $G$.

What might be different in the two cases is whether the quota is binding. From (11) and (29) it follows that

$$\overline{N}^{**} \leq N_i^{**} \Leftrightarrow \omega\beta \leq C^{**} - K^{**}. \tag{30}$$

Using Lemma 1 to compare (26) and (30), we arrive at the following conclusions:

**Proposition 2** *a) In the monopoly case, the optimal quota on expatriates binds for $\omega\beta < C^* - K^*$ and is not binding for $\omega\beta \geq C^* - K^*$. b) In the duopoly case, the optimal quota binds for $\omega\beta < C^{**} - K^{**}$ and is not binding for $\omega\beta \geq C^{**} - K^{**}$. c) NGOs are most likely to be constrained in their hiring of expatriates in the market structure generating the higher fundraising surplus.*

Intuitively, the demand for expatriates is an increasing function of the fundraising surplus, so the market structure that generates the largest surplus is where the optimal quota is most likely to be a material restriction. We know from Lemma 1 that the ranking of fundraising surpluses is determined by the size of an individual donation $c^*$. Accordingly, viewed from the demand side this variable is the ultimate determinant of whether host country regulations have bite. Conversely, if the government is not that concerned with $G$ and/or NGOs do not contribute much to its supply, it is inclined to impose a binding quota on NGOs regardless of market form, while the government will not restrict their operations if they are important contributors to a public good it values highly.

## 4.4   Outcomes in different quota regimes

Our last investigation is to check what happens in the different regimes outlined in Proposition 2. As is easily seen from (20) and (22), when $c^* = \widehat{c}^*$ aggregate outcomes do not depend on the structure of the market for donations. If the expat quotas are not binding, $2Q_i^{**} = Q^*$ as total factor demands are identical. When they are,

$$
\begin{aligned}
2Q^{**} &= 2\left(\overline{N}^{**}\right)^{\alpha}(S_i^{**})^{1-\alpha} = 2\left(0.5\overline{N}^*\right)^{\alpha}\left(0.5\left(1-\tau^*\right)\overline{S}\right)^{1-\alpha} \\
&= \left(\overline{N}^*\right)^{\alpha}\left(\left(1-\tau^*\right)\overline{S}\right)^{1-\alpha} = Q^*.
\end{aligned}
$$

This of course holds generally as the tax rate is independent of whether the number of NGOs is one or two (Lemma 2) and $2\overline{N}^{**} = \overline{N}^*$. When the host country government optimally chooses its tax rate and the quotas it optimally imposes are binding under both monopoly and duopoly, all outcomes in NGO sector are in the aggregate identical. Thus, these policy instruments are indeed powerful, provided that the optimal levels can be enforced.

**Proposition 3** *Under the optimal tax rate and binding optimal quotas on expats, outcomes in the NGO sector do not depend on the structure of the market for donations. Moreover, the equilibrium level of the host country public good is the same in both cases.*

From (20) and (22), as well as Proposition 2, it follows that duopolists hire more expatriates in total and have higher aggregate production when $\omega\beta > C^{**} - K^{**} > C^* - K^*$, i.e., when $c^* > \widehat{c}^*$ and quotas do not bind. A higher $Q$ in turn implies more $G$, as the government's input is fixed by the optimal tax rate, which is invariant to the structure of the market for contributions. On the other hand, in the case of $c^* < \widehat{c}^*$ and non-binding quotas the monopolist uses its larger surplus to employ more Northerners than the duopolists do combined. The result is that both $Q$ and $G$

are higher with a single NGO. In other words, the result that monopoly could generate more output when NGOs are fundraising to maximize production continues to apply when the Southern wage is endogenous.

This leaves two cases. In the first, quotas affect only the duopolist as they have the higher demand for expatriates. The second is the mirror image where only a monopoly is regulated. It turns out that even though binding quotas lower the output of the NGO sector, the effect is not strong enough to reverse the consequences of different levels of fundraising surpluses across the two market structures. Proving this claim is straightforward. When $C^* - K^* < \omega\beta \leq C^{**} - K^{**}$, we have

$$2Q^{**} = \left(\overline{N}^*\right)^\alpha \left((1 - \tau^*)\overline{S}\right)^{1-\alpha} > (N^*)^\alpha \left((1 - \tau^*)\overline{S}\right)^{1-\alpha} = Q^*.$$

The inequality follows from the fact that here the quota does not bind under monopoly, i.e., $N^* < \overline{N}^*$. The second case yields

$$2Q^{**} = 2\left(N^{**}\right)^\alpha \left(0.5\left(1 - \tau^*\right)\overline{S}\right)^{1-\alpha} < \left(2\overline{N}^{**}\right)^\alpha \left((1 - \tau^*)\overline{S}\right)^{1-\alpha} = Q^*.$$

Rearranging slightly shows that a non-binding duopoly quota $\left(N^{**} < \overline{N}^{**}\right)$ implies the inequality. In both situations, the outcomes stem from the assumption of constant returns to scale in NGO production in combination with the result that the maximum total number of expatriates allowed is the same under monopoly and duopoly NGOs.

**Proposition 4** *If the optimal quota regime only regulates the NGO sector under one market form, the employment of expatriates, aggregate NGO production, and the level of the public good in the host country are higher in that case than in the situation where the regulations do not apply.*

Whenever optimal quotas are imposed the market structure with the highest fundraising surplus will definitely be regulated. From the results derived so far, we may therefore draw one further conclusion:

**Corollary** NGO output and aggregate production of the public good are both higher in a monopoly than in a duopoly when the monopolist NGO generates a higher fundraising surplus.

Thus, the host country government could in principle benefit from regulating the structure of the market for donations. As these markets are in the home countries of the NGOs, this seems a tall order, though. It could in theory be done by licensing the optimal number of NGOs from each separate market for contributions. However, the informational requirements seem daunting, particular in the light of the trend noted by Aldashev and Verdier (2009), namely, that some NGOs become '"multinationals" by soliciting donations internationally. In practice, then, it would

seem that host governments will have to make do with regulating NGO conduct inside their own countries. We have shown that the expat quotas that several governments seemingly apply could be interpreted as an optimal response to the trade-off between raising the incomes of local workers and sustaining high levels of output of the public goods that NGOs help produce.

# 5   Work permit fees for expatriates

Our analysis so far is inspired by the many examples of host government efforts at restricting the use of expatriates by Northern NGOs. We have interpreted the restrictions as quotas, i.e., direct quantitative restrictions. As discussed in section 2, governments may also influence the employment decisions of the NGOs using economic instruments, notable work permit fees. Often the work permit fees are paid annually and then work as taxation of foreign workers. Such a tax raies several interesting questions: Will this fiscal instrument enable the government to capture a larger share of the local workforce? Will the government choose to do so it it can? In this section we redo our analysis assuming that the host government can levy a fee of $\theta$ per expatriate on NGOs as well as income tax on local workers.

The fee increases the effective wage of expatriates to $w_N + \theta$, thus directly reducing NGO demand. The government's budget constraint in the monopoly case is now

$$\theta N_\theta^* + \tau w_S \overline{S} = w_S S_g, \tag{31}$$

where $N_\theta^* = \alpha \left( C^* - K^* \right) / \left( w_N + \theta \right)$. Rearranging this expression, demand for local workers by the public sector can be seen to be

$$S_g = \frac{\theta N_\theta^*}{w_S} + \tau \overline{S}. \tag{32}$$

As may be seen, for a positive value of $\theta$, the government will now employ a share of Southern workers exceeding $\tau$. Of course, this does not mean it will necessarily hire more such workers than in the absence of a fee as the optimal income tax rate could be different.

The NGO's demand for local labour is qualitatively unchanged by the introduction of the fee. Accordingly, labor market clearing requires

$$\frac{(1 - \alpha) \left( C^* - K^* \right)}{w_S} + \frac{\theta N_\theta^*}{w_S} = (1 - \tau) \overline{S} \Leftrightarrow w_S^M = \frac{(1 - \alpha) \left( C^* - K^* \right) + \theta N_\theta^*}{(1 - \tau) \overline{S}}. \tag{33}$$

Thus, the after-tax income of Southern workers is $(1-\alpha)\left(C^{*}-K^{*}\right)+\theta N_{\theta}^{*}$, which rises in $\theta$, giving the government a redistributive motivation for using this instrument.

The equilibrium demand for Southern workers by the NGO is

$$S_{\theta}^{*} = \frac{(1-\alpha)\left(C^{*}-K^{*}\right)}{w_{S}^{M}} = \left[\frac{(1-\alpha)\left(C^{*}-K^{*}\right)}{(1-\alpha)\left(C^{*}-K^{*}\right)+\theta N_{\theta}^{*}}\right](1-\tau)\,\overline{S},$$

which can be simplified to

$$S_{\theta}^{*} = \left[\frac{(1-\alpha)}{(1-\alpha)+\alpha\left(\frac{\theta}{w_{N}+\theta}\right)}\right](1-\tau)\,\overline{S} \equiv [1-\psi\left(\tau,\theta\right)]\,\overline{S}. \tag{34}$$

Consequently, $S_{g}=\psi\left(\tau,\theta\right)\overline{S}$. This number can be seen to be increasing in both tax rates. But what are their optimal values? Inserting the results just derived into the government's objective function, the two first-order conditions for an interior optimum is found to be

$$\frac{\partial\Omega}{\partial\tau} = \left(\frac{\pi}{\psi}-\frac{\xi}{1-\psi}\right)\frac{\partial\psi}{\partial\tau} = 0; \tag{35}$$

$$\frac{\partial\Omega}{\partial\theta} = -\frac{\omega\nu}{w_{N}+\theta}+\left(\frac{\pi}{\psi}-\frac{\xi}{1-\psi}\right)\frac{\partial\psi}{\partial\tau}+N_{\theta}^{*}+\theta\frac{\partial N_{\theta}^{*}}{\partial\theta} = 0. \tag{36}$$

From (35) it follows that $\psi=\frac{\pi}{\pi+\xi}$. Hence, the government's optimal share of the local labor force is the same as before, which is not surprising as this value balances the marginal benefit from having one additional worker add to the government's unput to the public good against the marginal cost in terms of a smaller NGO contribution to the same purpose. Using this result to simplify (35), we find that

$$\theta^{*} = \left(\frac{C^{*}-K^{*}}{\omega\beta}-1\right)w_{N}. \tag{37}$$

If we make the reasonable assumption that the government would never subsidise the wages of highly paid expatriates, the question reduces to when the optimal fee is strictly positive. This requires $C^{*}-K^{*}>\omega\beta$. This is exactly the same condition as the one determining when the optimal quota constrains a monopoly NGO, c.f. (26). Equivalently, we have $N_{\theta}^{*}=\frac{\omega\alpha\beta}{w_{N}}$ at the optimum, which is the same number of expatriates as the optimal quota in the monopoly case allows.

Furthermore, the comparative statics are qualitatively identical, with the signs reversed. $\theta^{*}$ is decreasing in the weight the government attaches to the public good relative to the incomes of local workers $(\omega)$ and in the importance of NGO output in producing that good $(\beta)$. It is increasing in the surplus $w_{N}$ and $C^{*}-K^{*}$. The former is a composite

result as foreign workers earning more both changes the marginal fee revenues and implies that the distortive impact on public goods production (the first term in the first-order condition) is smaller. The net effect is to make a higher fee optimal. The latter comparative statics result is simply due to the NGO hiring more expatriates when it has more funds, increasing the marginal revenues from the fee ($N_\theta^* + \theta \frac{\partial N_\theta^*}{\partial \theta}$).

Note that the optimal quota is not a function of the fundraising surplus, but this difference between the two instruments is intuitive. The quota is a direct quantitative restriction, whereas here the number of expatriates is controlled indirectly by influencing the cost of employing such workers. How strongly an increase in the fee reduces the demand for expatriates depends on the amount of financing the NGO has available for hiring employees.

Another difference from the quota analysis is hence that the optimal income tax rate $\tau^*$ is lower. However, this is also an intuitive change. Lowering the income tax rate is necessary to keep the share of local workers employed by the public sector at the efficient level $\frac{\pi}{\pi+\xi}$ when the government has additional revenues from fees.

If $C^* - K^* \leq \omega\beta$, the optimal fee is zero and it is clear from (34) that $\psi(\tau, \theta) = \tau$. This corresponds to the case of a non-binding quota.

In results available upon request, we show that the conclusions are the same in an NGO duopoly. Hence, we have demonstrated that quotas and fees on expatriates are equivalent in our setting:

**Proposition 5** *Quotas and fees on expatriates are equivalent in both the monopoly and the duopoly case.*

Because the optimal fee depends on the fundraising surplus, the spirit of Proposition 2 survives as well. Whether the optimal fee is positive in both cases, monopoly or duopoly only, or none, depends on $c^*$, which determines the size of the surpluses and thus which market structure generates the highest level of financing of NGO production.

# 6    Conclusion

The paper addresses the behavior of NGOs operating in a poor country that are financed by donors in a rich country and how the host government regulates their hiring of expatriates through quotas and work permit fees. Recent government interventions to control the number of foreign NGO workers in poor countries motivate the analysis. Our starting point is the demand for foreign and local labor in a monopolist NGO model further developed to study duopolist NGOs. The behavior of the NGOs is integrated in a model of government allocation to study the determination of a quota and a work permit fee affecting the number of workers the NGO hires, Northern as well as Southern. The analysis concentrates on the competition between the government and the NGO sector for local workers and the implications

for the public good produced by NGOs.

A binding quota on foreign workers is shown to be an efficient instrument of expanding NGO employment of local workers. The optimal quota is stricter when the host government cares less about the public good the NGOs help produce and NGO output does not contribute much. The optimal quota is more likely to bind in the market structure generating the highest total fundraising surplus for NGOs. Even though aggregate private contributions are higher in an NGO duopoly due to the stronger competition for funds, the added fundraising costs imply that the surplus might be lower. In turn, this means that total NGO output as well as the level of host country public good could be higher with fewer NGOs. This holds even in the case where a monopolist is constrained by the optimal quota due to its higher demand for expatriates whereas duopolists are not. However, when quotas regulate NGO hiring regardless of market structure, aggregate outcomes are independent of the number of NGOs in the host country. The case of optimal work permit fee is equivalent to optimal quota in both the monopoly and duopoly case and comparative statics are qualitatively identical. The optimal work permit fee is decreasing in the weight the government attaches to the public good relative to the incomes of local workers and in the importance of NGO output in the public good. The main difference from the quota analysis is that the optimal income tax rate is lower.

The model is kept simple to derive basic results in the determination of optimal policies and their economic consequences. Future research can develop a richer framework of government decision-making and involvement in the labor market. Furthermore, we have studied NGOs operating in a single host country. A more general analysis may assume multinational NGOs that allocate their activities across countries based on country-specific preferences and costs. Empirical analyses of the effects of government regulations of NGOs are certainly of interest as well.

# 7    Appendix

In this appendix, we provide the details of some of the results in the main text. We first prove that the monopoly NGO's surplus is positive. The contributions it receives when it fundraises optimally are found by inserting (3) into (2):

$$C^* \equiv C(e^*) = mc^* + (\mu c^*)^2. \tag{38}$$

Letting $K^* \equiv K(e^*)$, the resulting surplus is

$$C^* - K^* = mc^* + \frac{(\mu c^*)^2}{2}, \tag{39}$$

which is obviously positive as long as $c^* > 0$.

The reaction functions for fundraising in the duopoly case have the shapes illustrated in Figure 1. Differentiating (10), we get

$$\frac{mc^*}{e^2} de_j - 2\left(\frac{mc^* e_j}{e^3}\right)(de_i^{**} + de_j) - de_i^{**} = 0.$$

Collecting terms and applying the definition $\sigma_j = e_j/e$, we find that

$$\frac{de_i^{**}}{de_j} = \left(\frac{1 - 2\sigma_j}{1 + \frac{2\sigma_j}{e^2}}\right)\frac{mc^*}{e^2}.$$

Thus, $sign \frac{de_i^{**}}{de_j} = sign(1 - 2\sigma_j)$, and the reaction function for $i$ is positively (negatively) sloped for $\sigma_j$ smaller (larger) than 0.5.

In a symmetric equilibrium, $\sigma_i = 0.5$. Using this fact and $e^{**} = e_i^{**} + e_j^{**} = 2e_i^{**}$ in (10), we derive a quadratic function with only one positive solution, which is

$$e_i^{**} = \frac{\mu c^* + \sqrt{(\mu c^*)^2 + mc^*}}{2}. \tag{40}$$

As $C_i(e_i, e_j)$ is strictly concave and $K(e_i)$ strictly convex in $e_i$, the second-order conditions hold, demonstrating that $e_i^{**}$ is indeed the unique global optimal level of fundraising for NGO $i$.

Total fundraising effort is thus in equilibrium $e^{**} = \mu c^* + \sqrt{(\mu c^*)^2 + mc^*}$. Applying this result, we find that aggregate contributions when there are two NGOs is

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$$C^{**} \equiv C\left(e^{**}\right) = M\left(2e_i^{**}\right)c^* = mc^* + \left(\mu c^*\right)^2 + \mu c^* \sqrt{\left(\mu c^*\right)^2 + mc^*}, \tag{41}$$

whereas total fundraising costs in equilibrium are $K^{**} \equiv 2K\left(e_i^{**}\right)$. Proposition 1 follows as simple inspection shows that $e^{**} > e^*$ and thus $C^{**} > C^*$; while $2K\left(e_i^{**}\right) = \frac{1}{2}\left[\left(\mu c^*\right)^2 + 2\mu c^*\sqrt{\left(\mu c^*\right)^2 + mc^*} + \left(\mu c^*\right)^2 + mc^*\right] > \frac{1}{2}\left(\mu c^*\right)^2 = K^*$.

The resulting surplus for each duopolist is

$$C_i\left(e_i^{**}\right) - K\left(e_i^{**}\right) = \frac{1}{2}\left\{\frac{3}{4}mc^* + \frac{1}{2}\left[\left(\mu c^*\right)^2 + \mu c^*\sqrt{\left(\mu c^*\right)^2 + mc^*}\right]\right\}. \tag{42}$$

We next sketch the proof of Lemma 1. The question is when $C^{**} - K^{**} \gtreqqless C^* - K^*$. The two are obviously equal for $c^* = 0$, as there is then nothing to gain from fundraising in either case. But does there also exist a critical value $\widehat{c}^* > 0$ such that $C^{**} - K^{**} \equiv C^* - K^*$? After substituting for $C^* - K^*$ from (39) and $C^{**} - K^{**} = 2\left[C_i\left(e_i^{**}\right) - K\left(e_i^{**}\right)\right]$ using (42), we simplify and square the remainder, resulting in the quadratic function

$$4\mu^4\left(c^*\right)^2 + 4\mu^2 mc^* - m^2 = 0.$$

The positive solution is

$$c^* = \frac{\left(\sqrt{2}-1\right)m}{2\mu^2} \equiv \widehat{c}^* > 0.$$

One can then readily demonstrate that for $0 < c^* < \widehat{c}^*$, $C^{**} - K^{**} < C^* - K^*$, and for $c^* > \widehat{c}^*$, $C^{**} - K^{**} > C^* - K^*$.

# References

[1] Akol, Z. D. (2016), The enactment of the NGO act and its implications on humanitarian operations. Weekly Review, The Sudd Institute.

[2] Aldashev, G., M. Marini, and T. Verdier (2014), Brothers in alms? Coordination between nonprofits on markets for donations, *Journal of Public Economics*, 117, 182–200.

[3] Aldashev A. and T. Verdier (2009), When NGOs go global: Competition on international Markets for development Donations, *Journal of International Economics*, 79, 198–210.

[4] Aldashev A. and T. Verdier (2010), Goodwill bazaar: NGO competition and giving to development, *Journal of Development Economics*, 91, 48-63.

[5] Andreoni, J. (1998), Toward a theory of charitable fund-raising, *Journal of Political Economy*, 106, 1186-1213.

[6] Andreoni, J. (2006), Philanthropy, in Kolm, S.-C., Ythier, J.M. (Eds.), *Handbook of Giving, Reciprocity and Altruism*, North Holland, Amsterdam, pp. 1201-1269.

[7] Andreoni, J. and A. Payne (2003), Do government grants to private charities crowd out giving or fund-raising? *American Economic Review*, 93, 792-812.

[8] BNG Legal (2010), Guide to the Cambodian Labor Law for NGOs, Phnom Penh: BNG Legal.

[9] Castaneda, M.A., Garen, J., and Thornton, J. (2008), Competition, contractibility, and the market for donors to nonprofits, *Journal of Law, Economics, and Organization*, 24(1), 215–246.

[10] DellaVigna, S., J.A. List, and U. Malmendier (2012), Testing for altruism and social pressure in charitable giving, *Quarterly Journal of Economics*, 127, 1-56.

[11] De Smet, D. (2013), *Employing skilled expatriates: benchmarking skilled immigration regimes across countires*, World Bank Policy Research Working Paper No. 6708.

[12] Dichter, T. (1986), *Who runs the show? Staffing patterns overseas*, Connecticut, US: Technoserve Inc.

[13] Dupuy, , K., J. Ron and A. Prakash (2015), Who survived? Ethiopia's crackdown on foreign-funded NGOs, *Review of International Political Economy*, 22, 2, 1-38

[14] Fowler, A. (1997), *Striking a balance: A guide to enhancing the effectiveness of non-government organizations in international development*, London: Earthscan.

[15] Hansmann, H.B. (1980), The Role of Nonprofit Enterprise, *Yale Law Review*, 89, 835-901.

[16] Krasteva, S. and H. Yildirim (2016), Information, Competition, and the Quality of Charities, *Journal of Public Economics*, 144, 64-77.

[17] Lange, P. de (2013), Evaluation of Dutch support to capacity development, *Development in Practice*, 23, 33-45.

[18] Martens, B. (2005), Why Do Aid Agencies Exist? *Development Policy Review*, 23(6):,643-663.

[19] Mukasa, S. (1999), *Are expatriate staff necessary in international development NGOs? A case study of an international NGO in Uganda*, Center for Civil Society, LSE, International working paper 4.

[20] Rose-Ackerman, S. (1982), Charitable giving and 'excessive' fundraising. *Quarterly Journal of Economics*, 97, 193-212.

[21] Scharf, K. (2014), Impure prosocial motivation in charity provision: Warm-glow charities and implications for public funding, *Journal of Public Economics*, 114, 50–57.

[22] Yörük, B.K. (2009), How responsive are charitable donors to requests to give? *Journal of Public Economics*, 93, 1111-1117.

[23] Zhu, Y. and D. Purnell (2006), Multinational NGOs and expatriation: A case study of a NGO in Vietnam, *Asia Pacific Business Review*, 12, 529-546.
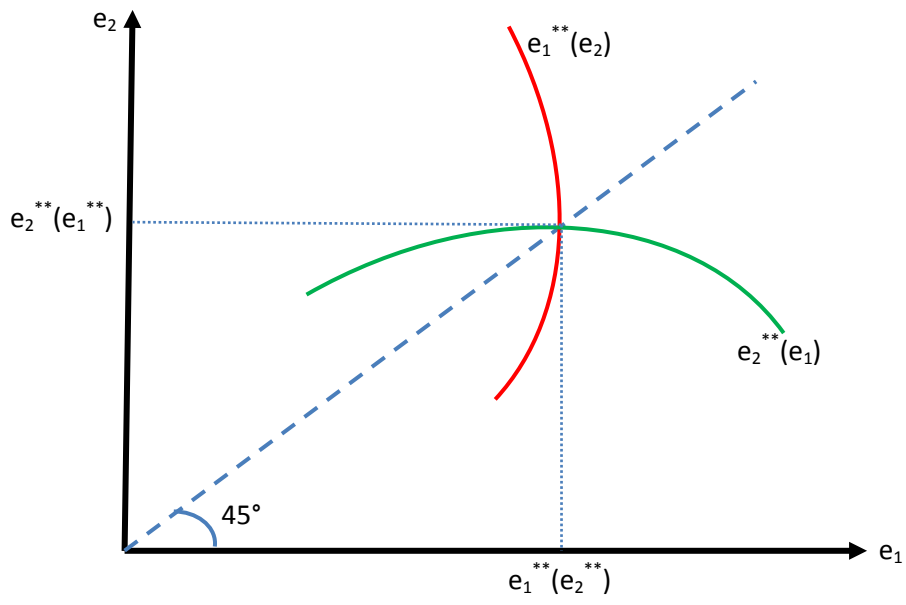
Figure 1: Reaction functions for optimal fundraising