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INTERNATIONALIZATION OF NGOS AND COMPETITION ON MARKETS FOR DEVELOPMENT DONATIONS

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ABSTRACT

Internationalization of NGOs and Competition on Markets for Development Donations*

What are the effects of the integration of markets for private donations for development on NGOs' performance? How is the welfare of donors and beneficiaries affected? To answer these questions, we build a model of a market for development donations with horizontally differentiated NGOs competing by fundraising effort. We compare three regimes: autarky, full integration, and the regime of multinational NGOs (in which NGOs have to establish foreign affiliates to raise funds abroad). The welfare impact of market integration depends on the interplay between three factors: returns to scale in the NGO production technology, donors' "taste for variety", and the effectiveness of aggregate fundraising in motivating new donors.

JEL Classification: F12, F23 and L31
Keywords: internationalization, monopolistic competition, NGOs and non-distribution constraint

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1 Introduction

> "Unlike smaller organizations, the transnational NGO can demonstrate quickly and effectively to several constituencies at once that its people are 'on the ground', responding to an emergency. CARE, for example, demonstrated simultaneously to television audiences in Britain, the United States, Canada and Australia that it was operational only days after the 1992 disaster 'broke' in Somalia - simply by changing the face and the accent in front of the camera." (Smillie 1995: 202)

Along with increased international trade and investment flows, another interesting market integration phenomenon has been happening for about half century: the internationalization of the market for donations to charitable causes. While until recently development-oriented non-governmental organizations (NGOs) raised funds in the countries where they had been founded, nowadays they heavily rely on raising funds through their foreign affiliates. This paper presents an economic analysis of this phenomenon that has not been studied by economists so far.

As Smillie (1995) points out in his poignant account of the development NGO sector, most big NGOs started out as a response from some Western country's activists to a particular disaster in a developing country. Initially such an NGO raised funds only in its country of origin; however, soon it established affiliates in other developed countries, becoming an international entity, similar to a multinational firm.

A well-known example is Oxfam. Oxfam UK was established in Great Britain in 1943 to provide relief after the Greek famine of the same year. In 1960, it opened its Canadian affiliate, Oxfam Canada. Within the next two decades, two more foreign affiliates, Community Aid Abroad (the Australian branch) and Oxfam New Zealand, were opened. Then followed the branches in continental Europe and Japan. The return on these investments was impressive. For instance, the initial investment to open the Canadian branch cost 60 000 pounds, and by 1970, this branch raised and sent 1.2 million pounds overseas (Black 1992).

The key reason behind this internationalization is domestic competition for donations. As Dichter (1999) points out, "New markets are aggressively tackled... NGOs have come up against donor saturation in their home countries... By going to [foreign] countries, the costs of recruiting new donors [are] lowered."

However, competition for funds may lead to the "excessive fundraising" problem (Rose-Ackerman 1982): allowing tougher competition between NGOs can be welfare-reducing because this induces NGOs to spend excessive portion of their budgets for fundraising activities. However, this result does not hold always.

Aldashev and Verdier (2007) show that if the size of the donation market depends positively on the total fundraising by NGOs, the competition between NGOs increases the welfare of beneficiaries (as well as the total welfare)[1].

From an economist's point of view, the increasing internationalization of the NGO sector raises several important questions. First, what is the effect of the internationalization on the fundraising and production behavior of NGOs? Second, is internationalization welfare-increasing; in particular, does it help beneficiaries in developing countries? Third, does internationalization via multinational NGOs differ from full integration of donation markets?

The answers to these questions can run counter to the standard economic intuition. Although standard models of international trade with monopolistic competition suggest that welfare in a fully integrated market is generally higher than under autarky because of an increased number of varieties (Krugman 1979), when it comes to non-profit organizations such as NGOs the result is less clear. Gnaerig and MacCormack (1998) note that "the major national fundraising markets have developed into international bazaars where one can find competitors from a range of countries offering everything fund-raisers all over the world could think of. This looks like the beginning of a very tough selection process - at the end of which there will probably be left only a handful of highly professional, global NGOs..." This reduction in the number of NGOs can imply a certain loss of welfare, in particular that of donors, who may find that internationalization reduces the number of NGO varieties present on the market.

In this paper, we build a simple economic model to address these questions. We consider donors and NGOs in two (developed) countries. NGOs have to raise funds to invest into development projects in the less developed part of the world. The crucial modelling choice regards the structure of the NGO industry. Recent empirical research confirms the hypothesis that NGOs strategically try to differentiate themselves from each other (Fruttero and Gauri 2005). Given this evidence, we naturally choose the location model of horizontally differentiated firms (Salop 1979), which we adapt for the non-profit setup in an international context. Given the competition for funds among NGOs and free entry in each donor country, we find the symmetric free-entry equilibrium number of NGOs under three plausible regimes: autarky, full integration, and multinational NGOs. More precisely, we define as autarky the regime in which national NGOs in either country can raise funds only in their countries of origin. The regime of full integration is characterized as

[1] See also Pestieau and Sato (2006) for a normative analysis of competition for donations between not-for-profit institutions.

NGOs in either country that can raise funds in the other country, without having to incur any additional cost. Finally the regime of multinational NGOs depicts the situation in which there exist international networks of NGOs which are attached to one specific mission (project). The network can raise funds in either country, but it has to establish local affiliates (i.e., incur the additional fixed cost and hire a local NGO entrepreneur). In such a regime, each international NGO network (composed of these local affiliates) invests all the funds collected into one project and exploits the potential economies of scale.

We compare the welfare of donors and beneficiaries under the three regimes. Our main results are the following. When the donation market in each (of the two) countries are of fixed size, the fully integrated donation market simply corresponds to doubling of a single autarky market. This induces entry in the NGO sector with doubling of the number (and varieties) of NGOs, each of them supplying a development project of the same impact that the one under autarky. Hence, while it generates the same total (worldwide) impact of NGO projects, the full integration regime dominates autarky because of the increased variety of projects. On the other hand, the regime of multinational NGOs dominates autarky (in terms of the aggregate welfare) if and only if the NGO project technology exhibits increasing returns to scale. Finally, the comparison between full integration and the regime of multinational NGOs depends on the trade-off between the exploitation of returns to scale and the increased variety effect. When the technology of NGO projects exhibits strong enough increasing returns to scale (with funds and time as inputs), the regime of multinational NGOs dominates full integration. On the other hand, when the returns to scale are not too strong, the additional variety effect obtained under the full integration regime outweighs the benefits of project specialization obtained under the regime of multinational NGOs and, therefore, full integration dominates the regime of multinational NGOs in terms of aggregate welfare.

We then extend the model to the case where the donation market size is endogenous and increasing in total fundraising by NGOs. This dimension illustrates the interplay between competition and cooperation between NGOs to attract resources in an international context. In order to focus clearly on this interaction, we consider an NGO technology with constant returns to scale. In such a situation, the regime of multinational NGOs coincides with autarky. The full integration regime dominates both other regimes, not only because of the aforementioned variety effect but also because of its greater capacity to stimulate fundraising and therefore attract new donations.

The plan of the paper is as follows. In Section 2 we present our basic model with a fixed market for donations in two autarky countries. We next present, in Section 3, the two internationalization regimes: full integration of the donation markets and the regime of multinational NGOs. Section 4 discusses the welfare comparisons between the three regimes. Section 5 considers the case with endogenous donation market size. Section 6 concludes.

2 Basic model

2.1 Setup

Consider two countries, each populated by a unit-size community of atomistic donors. Each donor has α units of resource that can be converted into private consumption with utility normalized to zero. The countries are identical in all respect.

In each country, there is a given number of NGOs, $i = 1, ..., n$. Each NGO can run only one project (distinct from any other project) and is endowed with one unit of divisible resource (time). It divides this unit between fundraising activities and the implementation of the project.

An NGO is defined as a non-profit organization, i.e. as facing a non-distribution constraint - in that it cannot retain donations it receives. This constraint writes as:

$$D_i(y_i) = cD_i(y_i) + f + F_i, \tag{1}$$

where y_i is the time spent in fundraising, D_i is the amount of donations i collects, f is the fixed cost of setting up the project, c is the cost of administering a unit of donation, and F_i is the amount the NGO invests in the development project. Thus, the funds invested into the project are

$$F_i(y_i) = D_i(y_i)(1 - c) - f. \tag{2}$$

The objective of an NGO is to maximize the impact of its project, Q_i. This impact is produced with a CES production technology with time and funds as inputs:

$$Q_i = [(F_i(y_i))^\rho + (1 - y_i)^\rho]^{\frac{\gamma}{\rho}}, \tag{3}$$

where $1 - y_i$ is the time devoted to implementing the project. Here, γ measures the returns to scale ($\gamma = 1$ corresponds to the constant-returns-to-scale technology), $\rho = 0$ corresponds to the Cobb-Douglas production function, $\rho = 1$ to linear production function, and $\rho = -\infty$ to Leontief production function. Thus, $\rho \in (-\infty, 1]$.

Donors are located on the circle and decide between giving to one of the 'nearest' NGOs. This distance is defined in the following sense: each donor has her perception of which dimension of development is the most important one (e.g., promoting women's rights, banning child labor, providing education, fighting infectious diseases, etc.), and the less the project of an NGO corresponds to this perception, the "further" the NGO is located on the circle. A donor also enjoys the utility from participating in development, and this utility depends on the total impact of NGOs' projects. The higher is the overall impact of development NGOs, the more the donor enjoys giving for development. Summarizing, a donor giving to NGO i located at distance x, enjoys utility

$$U(x) = u\left(\sum_{j=1}^{n} Q_j\right) - \frac{t}{y_i}x, \tag{4}$$

where $u(\sum_{j=1}^{n} Q_j)$ is the participatory utility of giving, t is the unit 'transport' cost, which measures the degree of conservativeness of donors with respect to their preferred dimensions of development, y_i is the fundraising effort by NGO i, and the function $u(.)$ is an increasing function. Thus, the fundraising effort of an NGO serves to persuade donors that the NGO's project is 'close' to their preferred dimensions of development[2]. We assume, for simplicity, that the fundraising effort of an NGO is bounded from below and the resulting lower bound of the participatory utility of a donor is high enough, so that any donor always prefers to give to some NGO.

Let all NGOs (except i) choose fundraising effort y, and the NGO i choose effort y_i. The donor located at distance x from i is indifferent between giving to i and giving to the other nearest NGO if

$$u(\sum_{j=1}^{n} Q_j) - \frac{t}{y_i}x = u(\sum_{j=1}^{n} Q_j) - \frac{t}{y}(\frac{1}{n} - x), \tag{5}$$

where n is the total number of NGOs entering the donations market.

2.2 Autarky equilibrium

The total donations that NGO i collects are

$$D_i(y_i, y) = 2\alpha x = \frac{2\alpha}{n}\frac{y_i}{y + y_i}. \tag{6}$$

The NGO i's problem is

$$\max_{y_i} Q_i(y_i). \tag{7}$$

[2] These assumptions on donor preferences are similar to those used by Andreoni and Payne (2003). In their paper, donors have latent demands to donate but face informational problems (or procrastinate), and charities reduce the transaction costs of donors by soliciting donations.

The resulting first-order condition is[3]

$$[F_i(y_i)]^{\rho-1}\frac{\partial F_i}{\partial y_i} = (1-y_i)^{\rho-1}. \tag{8}$$

The economic interpretation of this condition is as follows. The left-hand side is the marginal benefit (in terms of the impact of the project) of an extra effort in fundraising (adjusted for the returns to scale): one extra minute spent for fundraising brings in $\frac{\partial F_i}{\partial y_i}$ amount of funds, and a unit of extra funds invested into the project increase its impact by $[F_i(y_i)]^{\rho-1}$. The right-hand side is the (adjusted) marginal cost: one minute more for fundraising is one minute less for implementing the project, which implies $(1-y_i)^{\rho-1}$ less of impact.

In a symmetric Nash equilibrium in fundraising efforts, $y_i = y$. Then,

$$\frac{\partial F_i}{\partial y_i}\,|_{y_i=y} = \frac{(1-c)}{2y}\frac{\alpha}{n}, \quad F_i(y_i)\,|_{y_i=y} = (1-c)\frac{\alpha}{n} - f. \tag{9}$$

Imposing symmetry on the first-order condition, we get

$$\left[(1-c)\frac{\alpha}{n} - f\right]^{\rho-1}\frac{(1-c)}{2y}\frac{\alpha}{n} = (1-y)^{\rho-1}, \tag{10}$$

which implicitly defines the symmetric Nash equilibrium fundraising effort $y^* = y^*(n/\alpha)$ and equilibrium project impact $Q^* = Q^*(n/\alpha) = [(F(y^*))^\rho + (1-y^*)^\rho]^{\frac{\gamma}{\rho}}$[4].

Note that the equilibrium effort depends only on the ratio n/α, that is the number of NGOs over the size of the market. Hence in this model, contemporaneously doubling the market size (doubling α) and the number of NGOs operating in that market does not change the equilibrium level of fund-raising y^*.

How does a higher number of competitors on the donation market affect equilibrium fundraising effort y^* and project impact Q^*? The following proposition provides the answer.

Proposition 1 *We have the following comparative statics with respect to the number of NGOs n and the market size α.*

[3] The second-order condition is always satisfied: its sign is given by

$$(\rho-1)F_i^{\rho-2}\left(\frac{\partial F_i}{\partial y_i}\right)^2 + F_i^{\rho-1}\frac{\partial^2 F_i}{\partial y_i^2} + (\rho-1)(1-y_i)^{\rho-1} \leq 0,$$

as $\rho < 1$ and $\frac{\partial^2 F_i}{\partial y_i^2} = -\frac{4\alpha}{n}(1-c)\frac{y}{(y+y_i)^3} < 0$.

[4] It is immediate to see that (10) defines a unique equilibrium fundraising value $y^*(n/\alpha)$ for an equilibriun with strictly positive project funds (i.e., such that $F^* = F_i(y_i)_{y_i=y} = (1-c)\frac{\alpha}{n} - f > 0$).

i) equilibrium fundraising effort y^*:

$$\frac{dy^*}{dn} \gtreqless 0 \textit{ iff } \frac{n}{\alpha} \gtreqless \rho\frac{(1-c)}{f}, \tag{11}$$

$$\frac{\partial y^*}{\partial \alpha} \lesseqgtr 0 \textit{ iff } \frac{n}{\alpha} \gtreqless \rho\frac{(1-c)}{f}, \tag{12}$$

$$\frac{d(ny^*)}{dn} > 0.$$

ii) equilibrium project impact Q^*:

$$\frac{dQ^*}{dn} < 0, \qquad \frac{dQ^*}{d\alpha} > 0. \tag{13}$$

Proof: See the Appendix.

Consider first the case of equilibrium fundraising efforts. Part i) of the proposition says that an NGO's fundraising effort increases in the number of NGOs on the market if the NGOs/market size ratio ($\frac{n}{\alpha}$) is sufficiently high, i.e., higher than the threshold value $\rho\frac{(1-c)}{f}$. Note that in the case of the Cobb-Douglas production function ($\rho = 0$), this condition is always satisfied.

What is the role of this ratio? It measures the market concentration: increasing n while holding α constant corresponds to increasing the number of competitors in a donation market of a given size. Consider the case of a relatively high elasticity of substitution between time and money in the production function (ρ relatively close to 1). Note, from the first-order condition (8) and from (9) that an increase in market concentration affects the marginal benefit of fundraising in two opposite ways. First, there is a negative *"marginal donor"* effect. A higher number of NGOs increases competition for donations and therefore reduces the effectiveness (in terms of donations) of individual fundraising, by making it more difficult to attract marginal donors. This tends to reduce the incentives to fundraising and the equilibrium fundraising effort y^*. On the other hand, there is a positive *"money value"* effect. More NGOs on the donation market also implies that each individual NGO has a smaller share of the market. This makes the marginal value of money in projects higher, since each NGO now has a smaller amount of funds to finance its projects. This in turn stimulates the effort to raise one additional unit of funds for projects and has a positive effect on y^*. The strength of the *"money value"* effect depends on two factors: the number of NGOs n and the degree of substitutability between money and time in the production function of NGOs. On the one hand, a larger n means a smaller market share of donations for each NGO, a larger marginal value of money for projects, and a stronger *"money value"* effect of NGO competition. On the other hand, the less substitutable are money and time in the technology of NGOs (i.e. the smaller is ρ), again the larger is the marginal value of money relative to time and the stronger the "*money value*" effect.

From this discussion, it follows that when time and money are complementary enough (i.e. $\rho \leq 0$), the "*money value*" effect outweighs the negative *"marginal donor"* effect and an increase in n induces higher equilibrium fundraising y^* (as can be seen by simple inspection of (11)). Conversely, when time and money are substitutable enough (i.e. $\rho > 0$), the "*money value*" effect is weak for low values of n and the negative *"marginal donor"* effect dominates (y^* decreases with n). When n gets larger, the positive "*money value*" effect gets stronger, and eventually outweighs the *"marginal donor"* effect when $n > \alpha\rho\frac{(1-c)}{f}$. In this case, y^* increases with n.

Conversely, given that the equilibrium fundraising effort depends only on the ratio n/α, an increase in the market size reduces equilibrium fundraising when the market concentration ratio $\frac{n}{\alpha}$ is sufficiently high (higher than the threshold value $\rho\frac{(1-c)}{f}$). The economic intuition is the same as above and reflects again the tension between the negative *"marginal donor"* effect and the positive *"money value"* effect.

Finally, note that the total equilibrium fundraising effort $ny^*(n/\alpha)$ unambiguously increases with the number of NGOs on the market. In other words, the elasticity of equilibrium fundraising y^* with respect to the number of NGOs, $\epsilon_y = \frac{dy^*}{dn}\frac{n}{y^*}$, is larger than -1.

Part ii) of Proposition 1 considers the effect of an increase in the number of NGOs on an individual NGO's equilibrium project impact and shows that increased competition on the donation market tends to reduce the individual NGO equilibrium project impact. In other words, NGOs impose a negative externality on the impact of each other's projects. Conversely, given that Q^* depends only on the market concentration ratio n/α, an increase in the donation market size α affects positively the equilibrium project impact of each individual NGO.

2.3 Free entry

Next, let us endogenize the number of NGOs on the market by imposing a free-entry condition. We assume that NGOs are founded by NGO entrepreneurs, whose alternative option is to work in the for-profit private sector. The relevant free-entry condition requires that the equilibrium payoff to an NGO entrepreneur equals her wage in the for-profit sector. Let the latter be w, and let her get the payoff δQ^* from the impact of the project (thus, δ measures the degree of altruism of an NGO entrepreneur).

Then, the equilibrium number of NGOs satisfies

$$\delta Q^*(n/\alpha) = w. \tag{14}$$

Note that a higher degree of altruism (an increase in δ) and a lower outside option (a decrease in w) lead to a higher equilibrium number of NGOs.[5]

Note also that this equilibrium number of NGOs increases linearly with the market size, α. More precisely, denote by $\widehat{n}$ the solution of the following free-entry condition:

$$\delta Q^*(\widehat{n}) = w. \tag{15}$$

Thus, $\widehat{n}$ is the equilibrium number of NGOs when $\alpha = 1$. The autarky equilibrium number of NGOs in a given country is

$$n^A = \widehat{n}\alpha, \tag{16}$$

and is proportional to α (the market size). Note as well that the total number of NGOs in the world is $2n^A = 2\widehat{n}\alpha$.

3 Internationalization of NGOs

3.1 Full integration

Consider now the world where the NGOs of both countries can raise funds in either country, without having to incur any additional cost. Both countries are assumed to be perfectly symmetric in terms of the distribution of their taste for varieties of NGOs. Hence a fully integrated donation market corresponds to a unit circle with a mass of 2 of donors (a mass of 1 from each country), each of those donors having a donation endowment of α. This is therefore equivalent to a unit circle of mass 1 of donors, with each donor having 2α units of resource. Hence our analysis of the autarkic equilibrium with a market size of α can be reproduced with simply doubling of the market size (2α). It follows immediately that the integrated market equilibrium number of NGOs, $\widetilde{n}$, is pinned down by the following free-entry condition:

$$\delta Q^*(\widetilde{n}/2\alpha) = w, \tag{17}$$

which gives

$$\widetilde{n} = 2\widehat{n}\alpha. \tag{18}$$

[5] An equilibrium with positive entry of NGOs will exist (and be unique) when the opportunity cost of NGO entrepreneurship w is not too large compared to the degree of altruism δ. We assume that this is always the case.

Therefore, we get

$$n^A < \widetilde{n} = 2n^A. \tag{19}$$

Note that

$$\frac{\widetilde{n}}{2\alpha} = \frac{n^A}{\alpha} = \widehat{n}. \tag{20}$$

As they depend only on the market concentration ratio n/α (which is the same in the integrated market and under autarky, the equilibrium fundraising effort and project impact are unchanged compared to autarky. These observations are summarized in the following proposition:

Proposition 2 *Under full international integration of the donation markets, the free entry equilibrium number of NGOs (varieties) is twice as large as the one under autarky in each country (i.e., $\widetilde{n} = 2n^A$). The equilibrium fundraising effort and project impact are unchanged compared to autarky.*

The only significant dimension affected by full international integration in this model is the fact that the number of varieties of NGOs has doubled on the location space (i.e. the unit circle). Hence, each donor is more likely to find a project closer to her preferred dimension. This increased variety effect will have consequences on the welfare analysis, as will be seen in Section 4.

3.2 Multinational NGOs

Consider next the regime of multinational NGOs. We assume that a multinational NGO is characterized by two essential features. First, multinational NGOs by definition tap their resources internationally, conducting fundraising in several countries at the same time. Second, their reputation and public image is highly attached to a specific dimension of development on which they tend to consolidate all their actions. Indeed, most international NGOs concentrate, by their statute (at least officially), their projects and actions in one particular domain. In other words, a multinational NGO is an international mission-driven organization. The prominent examples of such organizations are: *Medecins Sans Frontieres* (health and emergency relief), *The International Save the Children Alliance* (children's rights), *Amnesty International* (human-rights advocacy), *World Wildlife Fund for Nature* (conservation and restoration of the natural environment). This attachment to a particular mission, together with the internationalization of activities, allows multinational NGOs to exploit the gains of specialization and economies of scale in terms of project efficiency and fundraising campaigns.[6] Moreover, the multinational status often gives an additional advantage to pursue the NGO's mission during negotiations with governments and supra-national organizations. For instance, UN's ECOSOC explicitly favors multinational NGOs by giving them more opportunities to attend ECOSOC meetings and to submit written advice (Simmons 1998).

In our simple framework with two symmetric countries, we capture these two features in the following way. First, we assume that multinational NGOs can raise funds in both donation markets; however, they need to establish local affiliates. In other words, an NGO that wants to enter the foreign market has to incur an additional fixed cost, f. Moreover, the NGO has to hire an entrepreneur with an endowment of 1 unit of time and an opportunity cost w. Second, all the funds are invested in one development project which corresponds to the specific mission of the NGO. Formally, our setup corresponds to the situation of two separate NGOs (one in each country), but contributing to the same "international" project. Thus, in the symmetric multinational NGO equilibrium the project impact of a multinational NGO is simply given by:

$$Q^M(n,\alpha) = [(2F^*)^\rho + (2(1-y^*))^\rho]^{\frac{\gamma}{\rho}} = 2^\gamma Q^*(n/\alpha). \tag{21}$$

What is the relevant free-entry condition? Since each affiliate requires (employs) one NGO entrepreneur, the free-entry condition becomes

$$\delta Q^M(n^M,\alpha) = 2w, \tag{22}$$

which pins down the free-entry equilibrium number of multinational NGOs, n^M.

Note, though, that the number of projects (or multinational NGOs) now differs from the actual number of NGO affiliates raising money in the donation markets. In particular, the number of projects n^M equals half the number of NGO affiliates $2n^M$(one local affiliate in each country's donation market).

Rewriting (22) and using (21), we get

$$Q^*(n^M/\alpha) = 2^{1-\gamma}\frac{w}{\delta}. \tag{23}$$

It is immediate to see that in the case of constant returns to scale ($\gamma = 1$), the condition (23) coincides with (15). Therefore, in this case, the equilibrium number of NGOs in the multinational regime is the same as the one under autarky in each country $n^A = \widehat{n}\alpha$.

[6] Some international NGOs choose not to specialize on one specific mission (Oxfam, CARE International). They thus tend to be "multiproduct institutions". We leave to future research the investigation of these organizations and their implications for competition on the donation market.

If, instead, the production function (3) exhibits increasing returns to scale ($\gamma > 1$), the equilibrium number of NGOs in the multinational regime is larger than the one under autarky (in each country): $n^M > \widehat{n}\alpha = n^A$.

Note, however, that the number of multinational NGOs can be smaller than the total number of NGOs in the world under the autarky regime. The equilibrium number of multinational NGOs, n^M, is an increasing function $n^M(\gamma)$ of the degree of returns to scale γ. In particular, $n^M(1) = n^A$. Given that $\lim_{n\to\infty} Q^*(n/\alpha) = 0$, and taking into account (23), it follows that there exists a threshold value $\overline{\gamma} > 1$ such that for technologies with returns to scale $\gamma < \overline{\gamma}$, $n^M < 2n^A$, while for technologies with returns to scale $\gamma > \overline{\gamma}$, $n^M > 2n^A$. This discussion can then be summarized in the following proposition:

Proposition 3 *There exists a threshold value $\overline{\gamma} > 1$ in the degree of returns to scale of the NGO technology such that the free-entry equilibrium number of NGOs (varieties) n^M under the multinational NGOs regime has the following properties: i) $n^M \leq n^A$ for $\gamma \leq 1$, ii) $n^A < n^M \leq 2n^A$ for $\gamma \in (1, \overline{\gamma}]$, iii) $n^M > 2n^A$ for $\gamma > \overline{\gamma}$. Correspondingly, in each country the total equilibrium fundraising effort $n^M y^M$ and project impact Q^M are reduced (respectively, unchanged or increased) compared to autarky when $\gamma < 1$ (respectively, $\gamma = 1$ or $\gamma > 1$).*

4 Welfare

We assume that the beneficiaries (as a group) care only about the total impact of NGO projects. Thus, their welfare can be written as

$$W^B \equiv v(\sum_{j=1}^{n} Q_j) = v(nQ), \tag{24}$$

where $v(.)$ is an increasing function.

We write the social welfare as the sum of the welfare of donors, the welfare of beneficiaries, and the welfare of the NGO entrepreneurs:

$$W = W^D + W^B + W^N. \tag{25}$$

1. The welfare of donors,

$$W^D = 2n \int_0^{\frac{1}{2n}} (u(\sum_{j=1}^{n} Q_j) - \frac{t}{y}x)dx = u(nQ) - \underbrace{\frac{t}{4ny^*}}_{T(n)}, \tag{26}$$

is made of two parts: the total participatory utility (increasing in the total impact of NGOs' projects), and the total "transport" cost, $T(n)$. This cost reflects the fact that most donors have to contribute to an NGO that does not correspond to their preferred dimension. Clearly, this cost is smaller the larger is the variety of NGOs, i.e. the larger is n. This cost also decreases with the equilibrium level of fundraising effort y^*;

2. The welfare of beneficiaries,
$$W^B = v(nQ), \tag{27}$$
increasing in the total project impact;

3. The payoffs of the NGOs,
$$W^N = n(\delta Q - \chi_I w), \tag{28}$$
where $\chi_I = 1$ under autarky and full integration and $\chi_I = 2$ under the multinational NGOs regime. In the free-entry equilibrium, this term is always equal to zero.

4.1 Full integration versus autarky

Under the full integration regime, the equilibrium number of NGOs in the world is twice the number of NGOs under autarky in each country.
$$\widetilde{n} = 2\alpha\widehat{n} = 2n^A.$$
From this, it follows immediately that the equilibrium fundraising effort is the same as the one under autarky:
$$\widetilde{y} = y^*(\widetilde{n}/2\alpha) = y^*(\widehat{n}) = y^A.$$
Similarly, for the total project impact we have
$$\widetilde{n}\widetilde{Q} = \widetilde{n}Q^*(\widetilde{n}/2\alpha) = 2\alpha\widehat{n}Q^*(\widehat{n}) = 2n^AQ^A.$$
Therefore, the welfare of beneficiaries under full integration is the same as under autarky.

Donors' welfare, though, is affected by the increased variety effect that reduces the average "transport" cost:
$$T(\widetilde{n}) = \frac{t}{4\widetilde{n}\widetilde{y}} = \frac{t}{8n^Ay^A} < T(n^A).$$
Hence, donors are strictly better off under full integration than under autarky.

Summing up, we have

Proposition 4 *The full integration regime dominates autarky in terms of aggregate welfare. Beneficiaries are indifferent between the two regimes and donors are strictly better off under full integration.*

4.2 Multinational NGOs regime versus autarky

Donors' welfare under autarky is

$$W^{A,D} = 2\left[u(2n^A Q^A) - \frac{t}{4n^A y^A}\right], \tag{29}$$

while under the multinational NGOs regime, it is

$$W^{M,D} = 2\left[u(n^M Q^M) - \frac{t}{4n^M y^M}\right]. \tag{30}$$

The free-entry conditions imply

$$Q^A = \frac{w}{\delta} \text{ and } Q^M = 2\frac{w}{\delta}. \tag{31}$$

Hence,

$$W^{A,D} = 2\left[u(2n^A \frac{w}{\delta}) - \frac{t}{4n^A y^A}\right], \tag{32}$$

$$W^{M,D} = 2\left[u(2n^M \frac{w}{\delta}) - \frac{t}{4n^M y^M}\right]. \tag{33}$$

As total equilibrium fundraising ny in any country is an increasing function of the number of NGOs, the comparison between $W^{A,D}$ and $W^{M,D}$ hinges upon the comparison between n^A and n^M. Hence the following result is true:

- If the project technology exhibits decreasing returns to scale (i.e., $\gamma < 1$), then $W^{A,D} > W^{M,D}$ and donors are worse off under the multinational NGOs regime;

- If the project technology exhibits increasing returns to scale (i.e., $\gamma > 1$), then $W^{A,D} < W^{M,D}$ and donors are better off under the multinational NGOs regime.

In other words, when the technology of projects exhibits increasing returns to scale (resp., decreasing returns to scale), the multinational regime yields a higher (resp., a lower) number of local affiliates operating in each country. Accordingly, total fundraising is higher (resp., lower) under the multinational regime, and thus the transport cost is lower (resp., higher) than under autarky. Similarly, the participatory utility is higher (resp., lower) under the multinational regime. It follows that the welfare of donors is larger under the multinational regime than under autarky if and only if the technology of NGO projects exhibits increasing returns to scale (i.e., $\gamma > 1$).

Consider next the welfare of beneficiaries. It hinges on the comparison between $\nu(2n^A Q^A)$ and $\nu(n^M Q^M)$ and therefore between $\nu(2n^A \frac{w}{\delta})$ and $\nu(2n^M \frac{w}{\delta})$. Thus, we get the same conclusion as for donors:

- If the technology exhibits decreasing returns to scale (i.e., $\gamma < 1$), then $W^{A,B} > W^{M,B}$ and beneficiaries are worse off under the multinational NGOs regime;

- If the technology exhibits increasing returns to scale (i.e., $\gamma > 1$), then $W^{A,B} < W^{M,B}$ and beneficiaries are better off under the multinational NGOs regime.

Summarizing, we have:

Proposition 5 *Both for donors and beneficiaries, the multinational NGOs regime dominates autarky if and only if the technology of NGO projects exhibits increasing returns to scale (i.e., $\gamma > 1$).*

4.3 Full integration versus the multinational NGOs regime

Consider first the total project impact. We need to compare $\widetilde{n}\widetilde{Q} = 2n^A Q^A = 2n^A \frac{w}{\delta}$ to $n^M Q^M = 2n^M \frac{w}{\delta}$. From the previous discussion, it follows that in terms of total project impact, the multinational regime dominates full integration if and only if the technology of NGO projects exhibits increasing returns to scale. Hence the welfare of beneficiaries is larger under the multinational regime than under full integration if and only if the technology of NGO projects exhibits increasing returns to scale (i.e. $\gamma > 1$).

Consider next the number of varieties. We know that there exists a threshold value $\overline{\gamma} > 1$ such that for technologies with returns to scale $\gamma < \overline{\gamma}$, $n^M < 2n^A$, and for technologies with returns to scale $\gamma > \overline{\gamma}$, $n^M > 2n^A$. Hence the multinational NGOs regime will generate more (resp., less) varieties than the full integration regime if the returns to scale are larger (resp., smaller) than the threshold value $\overline{\gamma} > 1$. From the donors' point of view, when $\gamma > \overline{\gamma} > 1$, the multinational regime unambiguously dominates full integration, as it both increases the total project impact, nQ, and reduces the average "transport" cost, $T(n)$. Conversely, when $\gamma < 1$, the full integration regime unambiguously dominates the multinational regime (again, the effects on the total project impact and on the average transport cost go in the same direction). Finally, when the returns to scale are moderately increasing (i.e., $1 < \gamma < \overline{\gamma}$), comparing donors' welfare under the two regimes does not deliver a clear-cut result. The effect on the total project impact and the effect on the number of varieties go in the opposite directions. The multinational regime provides a higher total project impact but generates fewer NGO varieties than full integration. By continuity, there exists a threshold level $\widehat{\gamma}$ such that $1 < \widehat{\gamma} < \overline{\gamma}$ and that has the following property: for $\gamma < \widehat{\gamma}$, donors are better off under full integration, while for $\gamma > \widehat{\gamma}$, the donors are better off under the multinational regime. Thus, the welfare of donors is higher under the multinational regime than under full integration if and only if the technology of NGO projects exhibits large enough increasing returns to scale (i.e. $\gamma > \widehat{\gamma}$).

The preceding discussion can be summarized as follows:

Proposition 6 *i) Beneficiaries are better off under the multinational NGOs regime than under full integration if and only if the technology of NGO projects exhibits increasing returns to scale (i.e., $\gamma > 1$).*

ii) Donors are better off under the multinational NGOs regime than under full integration if and only if the technology of NGO projects exhibits large enough increasing returns to scale (i.e., $\gamma > \widehat{\gamma}$).

iii) In terms of aggregate welfare, the multinational NGOs regime dominates full integration when the technology of NGO projects exhibits large enough increasing returns to scale (i.e., $\gamma > \widehat{\gamma} > 1$). Full integration dominates the multinational regime when the technology of NGO projects exhibit decreasing returns to scale (i.e., $\gamma < 1$). For moderately increasing returns to scale (i.e., $1 < \gamma < \widehat{\gamma}$), the welfare comparison between the two regimes is ambiguous.

To summarize our welfare discussion, the comparison between the multinational regime and full integration reflects a trade-off between the *project impact effect* and the *project variety effect*. The multinational regime makes NGO entrepreneurs from two countries join their forces on the *same* project and allows them to tap on the increasing returns technology. Sufficiently large returns to scale make multinational NGO networks highly productive and thus may induce as well a higher number of projects. The full integration regime increases the thickness of the market for donations and induces a more diverse pattern of NGOs, each contributing to a *distinct* project. The full integration regime provides twice more donors (with the same preferences and each donating α) for each particular niche of projects (i.e. each point on the circle). This, compared to a single-country situation under autarky, pushes up the individual project impact, thus inducing higher entry and variety of NGOs projects. The end result under full integration is a variety circle populated twice more densely by NGOs projects, each of them raising the same amount (and having the same project impact) as under autarky. Under sufficiently large returns to scale, the multinational regime is better (for donors and beneficiaries) than the fully integrated market as the strength of the *project impact effect* increases and eventually outweighs the *project variety effect*.

5 Endogenous market size

5.1 Setup

So far we have considered the size of the donation market in a single country as fixed. Hence, the only effect that fundraising by one NGO has on other NGOs is to reduce their market share. It is perhaps an overly pessimistic view of NGO fundraising, since fundraising can also attract new donors by motivating potential donors to give. Aldashev and Verdier (2007) show that this radically changes the welfare evaluation of the competition between NGOs for donations. In this section we reconsider this issue, extending the previous framework to the case where the market size is endogenous and depends *positively* on the *total* level of fundraising effort by NGOs in each country.

We assume that the potential donors have to be sufficiently motivated to give, but that even before being motivated, they know their ideal position. We can justify this assumption as follows. Donors may be well aware of what particular problem (or a set of problems) of developing countries they feel to be the most important ones. However, they may not want to give donations until they are aware of a solution that they find satisfactory. Thus, in the context of our model, the projects of different NGOs correspond to different solutions.

The potential donors observe the total fundraising effort of the NGOs, $\sum_{j=1}^{n} y_j$. The inverse of the propensity to give of a potential donor is a random variable uniformly distributed on the interval $[0, \Theta]$:

$$\theta \sim U_{[0,\Theta]}. \tag{34}$$

The potential donor decides to give if the total fundraising by NGOs is high enough; i.e., she gives if

$$\theta < \sum_{j=1}^{n} y_j. \tag{35}$$

Formally, all potential donors are uniformly distributed on the circle of unit size. The preferences of a typical donor located at point x on the circle can be written as:

$$\begin{aligned} U(x,\theta) = {} & I(\sum_{j=1}^{n} y_j < \theta) + \\ & +[1 - I(\sum_{j=1}^{n} y_j < \theta)] \left\{ \max_k \left(u(\sum_{j=1}^{n} Q_j) - \frac{t}{y_k} \mid x - x_k \mid \right) \right\}. \end{aligned} \tag{36}$$

When the total fundraising by NGOs, $\sum_{j=1}^{n} y_j$, is below the individual propensity-to-give parameter θ, the donor remains inactive and enjoys the consumption of the unit of endowment. When, instead, the total fundraising $\sum_{j=1}^{n} y_j$ is above the threshold θ, the donor enjoys a different preference structure: the one in which she is altruistic towards beneficiaries and receives the utility $\max_k \left(u(\sum_{j=1}^{n} Q_j) - \frac{t}{y_k} \mid x - x_k \mid \right)$. This term represents the utility she can get by giving her endowment to the NGO "perceived" as being closest to her ideal point x on the circle[7].

The timing is as follows. (1) NGO entrepreneurs decide simultaneously on entry. (2) Entering NGOs simultaneously decide on their fundraising expenditures; this determines the pool of effective donors. (3) Effective donors decide on an NGO to give their donation to, and the resulting donations determine the impact of the project of each NGO.

To simplify our analysis and to control for the effects of increasing returns to scale of the NGO technology discussed in the previous section, we restrict our attention to the Cobb-Douglas technology with constant returns to scale:

$$\textbf{Assumption A. } Q_i = [F_i(y_i)]^{1/2} [(1-y_i)]^{1/2}. \tag{37}$$

5.2 Autarky equilibrium

Given our assumptions on the donor motivation process, the effective pool of donors (denoted by S) is:

$$S(\sum_{j=1}^{n} y_j) = \frac{1}{\Theta}(\sum_{j=1}^{n} y_j). \tag{38}$$

The effective pool of donors depends positively on the total fundraising effort of the NGOs.

NGOs - in each country - find themselves in both competition and cooperation. On one hand, they compete for neighboring donors, given the size of the donation market. On the other hand, they cooperate in motivating the potential donors and increasing the size of the market.

By the same token as in the basic model, an NGO spending fundraising effort y_i will raise (given all other NGOs spend effort y):

$$D_i(y_i, y) = \frac{2\alpha}{n} \frac{y_i}{y + y_i} S(y_i + (n-1)y),$$

where $S(.)$ is the effective pool of donors, as in (38).

The NGO's funds devoted to the project are

$$F_i(y_i) = (1-c)\frac{2\alpha}{n} \frac{y_i}{y + y_i} S(y_i + (n-1)y) - f,$$

[7] We assume that, analogously to the basic model, the lower bound of this value is strictly larger than 1. This guarantees that the entire donation market is covered.

while the marginal returns on fundraising effort (in terms of collected funds) are

$$\frac{\partial F_i(y_i)}{\partial y_i} = \frac{2(1-c)\alpha}{n}\left[\frac{y}{(y+y_i)^2}S(y_i+(n-1)y) + \frac{y_i}{y+y_i}\frac{\partial S}{\partial y_i}\right].$$

Imposing symmetry ($y_i = y$), we get

$$F_i(y_i)|_{y_i=y} = \frac{\alpha(1-c)y}{\Theta} - f,$$

and

$$\left.\frac{\partial F_i(y_i)}{\partial y_i}\right|_{y_i=y} = \frac{\alpha(1-c)}{n}\frac{n+2}{2\Theta}.$$

5.2.1 Equilibrium fundraising

The problem of an NGO is the same as in the basic model. The first-order condition (8) now changes to[8]:

$$\frac{(1-c)\,\alpha}{n}\left[\frac{n+2}{2\Theta}\right](1-y) - (1-c)\,\alpha\frac{y}{\Theta} + f = 0. \tag{39}$$

This implies that the equilibrium fundraising effort, $y^*(n, f, c, \Theta)$, is given by:

$$y^*(n,\alpha,\Theta) = \frac{n+2}{3n+2} + \frac{2n}{3n+2}\frac{f\Theta}{(1-c)\,\alpha}. \tag{40}$$

Using (40), we find the effective pool of donors in equilibrium, S^*:

$$S^*(n,\alpha,\Theta) = \frac{1}{\Theta}(\sum_{j=1}^{n} y_j) = \frac{ny^*(n,\alpha,\Theta)}{\Theta}, \tag{41}$$

and the equilibrium project impact, Q^*:

$$\begin{aligned} Q^*(n,\alpha,\Theta) &= \left[\frac{(1-c)\,\alpha}{\Theta}y^*(n,\alpha,\Theta) - f\right](1-y^*(n,\alpha,\Theta)) \\ &= \frac{2n(n+2)}{(3n+2)^2}\left[\frac{(1-c)\,\alpha}{\Theta} - f\right]^2\frac{\Theta}{(1-c)\,\alpha}. \end{aligned} \tag{42}$$

We next analyze the comparative statics properties of the equilibrium.

A simple inspection shows the following results.

Proposition 7

$$\begin{aligned} \frac{\partial y^*}{\partial n} &< 0, \quad \textit{and} \quad \frac{\partial y^*}{\partial \Theta} > 0; \; \frac{\partial y^*}{\partial \alpha} < 0, \\ \frac{\partial S^*}{\partial n} &> 0 \quad \textit{and} \quad \frac{\partial S^*}{\partial \Theta} < 0; \\ \frac{\partial Q^*}{\partial n} &< 0 \; \textit{for} \; n \geq 2, \quad \frac{\partial Q^*}{\partial \Theta} < 0 \; \textit{and} \; \frac{\partial Q^*}{\partial \alpha} > 0. \end{aligned} \tag{43}$$

[8] The second-order condition is satisfied.

The results concerning the equilibrium fundraising effort y^* differ from those in the basic model. Here, an increase in the number of NGOs increases the total fundraising effort ny^* and therefore the size of the market. Everything else equal, this effect, in turn, increases the impact of individual projects and the opportunity cost of undertaking fundraising for an individual NGO. In equilibrium, this effect overcomes the strategic substitutability effect found in the benchmark model.

Note that the equilibrium fundraising effort y^* is a decreasing function of the market size. Moreover, unlike in the basic model, an increase of both n and α in the same proportion (i.e., n/α remaining constant) would now affect (in particular, decrease) the equilibrium fundraising effort.

Consider now the comparative statics on Θ. An increase in Θ means that the distribution of the propensity-to-give parameter θ becomes wider and flatter - i.e., there now exist some donors with very low propensity to give. Potential donors are more difficult to motivate and are, therefore, less sensitive to total fundraising effort by the NGO sector. In this case, as NGOs find it more difficult to obtain donations, the fundraising competition becomes more intense and y^* increases.

An increase in n affects positively the equilibrium number of actual donors S^*. As discussed above, the equilibrium fundraising effort y^* decreases with n, but this reduction is over-compensated by a higher number of NGOs. Hence, total fundraising effort ny^* increases and the number of actual donors is consequently increased. The impact of an increase in Θ on the donations market size S^* is, however, negative. Though a less "sensitive" donation market induces higher fundraising effort by each individual NGO, this increase is not strong enough to overcome the fact that donors are more difficult to motivate.

An increase in n affects negatively Q^* for $n > 2$. This is the outcome of different effects combining cooperation and competition between NGOs. First, ceteris paribus, more NGOs on the market for donations imply higher total fundraising. This, in turn, leads to a higher amount of donations. Second, a larger number of NGOs induces a smaller equilibrium fundraising effort y^*. Hence, more time is allocated to projects, which, in turn, increases the value of project impact. However, there is also the usual negative "business stealing" effect of an additional NGO on the existing ones. This tends to reduce the impact of individual projects and therefore the opportunity cost of spending time for fundraising rather than for the project. Under Assumption A on the technology, the latter effect dominates the first two effects and an increase in n leads to a reduction in individual project impact.

An increase in Θ leads to a decrease in equilibrium project impact. On the one hand, NGOs spend more time for fundraising (thus less time is left for the project). On the other hand, the donations to an NGO - and thus the available funds for the project - decrease with Θ. The donations to an NGO are $\frac{y^*}{\Theta}$. The denominator grows faster than the numerator, whose slope in Θ is less than one. In other words, as the distribution of donors' propensity to give becomes wider, the fundraising effort increases, but not as fast as the reduction in the size of the potential market.

Finally, an increase in the market size increases the equilibrium project impact. On the one hand, as equilibrium fundraising effort y^* is reduced, this leaves more time to be invested in the project. At the same time, less donors are motivated to give and this reduces the amount of donations that each NGO receives. The first (positive) effect dominates the second (negative) effect and a larger (potential) market for donations induces a higher project impact.

5.2.2 Free entry

Since the schedule $Q^*(n, \alpha, \Theta)$ is downward sloping in $n \geq 2$, the free-entry equilibrium $n^* > 0$ satisfies $\delta Q^*(n, \alpha, \Theta) = w$, or[9]

$$\delta \frac{2n^*(n^*+2)}{(3n^*+2)^2} \left[\frac{(1-c)\,\alpha}{\Theta} - f \right]^2 \frac{\Theta}{(1-c)\,\alpha} = w \tag{44}$$

Next, we analyze how the free-entry equilibrium number of NGOs varies with the market size, α. We again use the implicit function theorem to find

$$\frac{dn^*}{d\alpha} = -\frac{\partial Q^*/\partial \alpha}{\partial Q^*/\partial n} > 0.$$

Moreover, the equilibrium number of NGOs is elastic with respect to the market size:

$$\frac{\alpha}{n^*} \frac{dn^*}{d\alpha} = \frac{(n+2)(3n+2)}{2(n-2)} \frac{\frac{(1-c)\alpha}{\Theta} + f}{\frac{(1-c)\alpha}{\Theta} - f} > 1.$$

This implies that doubling the market size, α, will more than double the number of NGOs on the market.

Finally, one also can show that the total project impact increases with n:

$$\frac{d\left[nQ^*(n)\right]}{dn} > 0, \tag{45}$$

and that the total fundraising effort also increases with n:

$$\frac{d(ny^*)}{dn} = y^* + n\frac{dy^*}{dn} = \frac{3n^2+4n+4}{(3n+2)^2} + \frac{2n(5n+2)}{(3n+2)^2} \frac{\Theta f}{(1-c)\,\alpha} > 0.$$

[9] As before, we assume that w is small enough compared to the altruism parameter δ to ensure the existence of a free-entry equilibrium with a positive number of NGOs (i.e., in our case, $\frac{w}{\delta} < \frac{2}{9}\left[\frac{(1-c)\alpha}{\Theta} - f\right]^2 \frac{\Theta}{(1-c)\alpha}$).

In other words, a higher entry of NGOs induces both a higher total project impact and a higher total fundraising.

5.3 Integrated market

Let now the donation markets in two countries be fully integrated. This formally corresponds to a single market where each donor has 2α units of endowment. As $\frac{\alpha}{n^*}\frac{dn^*}{d\alpha} > 1$, doubling the size of the potential market increases by more than twice the equilibrium number of NGOs. Thus the total number of NGOs under the integrated market n^I is larger than the total number of NGOs in the whole autarchic world (i.e., $n^I > 2n^A$).

At the same time, each NGO is spending less on fundraising, as

$$y^A = y^*(n^A, \alpha) > y^*(2n^A, 2\alpha) > y^*(n^I, 2\alpha) = y^I. \tag{46}$$

However, total equilibrium fundraising n^*y^* increases with the size of the market α (see the Appendix for the proof). Therefore, in the full integration regime the total fundraising effort is larger than that under autarky ($n^I y^I > n^A y^A$) and, consequently, more donors are motivated to give.

Using the free-entry condition with the equilibrium project impact remaining unchanged, it is easy to see that the total project impact increases, since

$$2n^A Q^*(n^A, \alpha) = 2n^A \frac{w}{\delta} < n^I \frac{w}{\delta} = n^I Q^*(n^I, 2\alpha). \tag{47}$$

As before, beneficiaries (as a group) care only about the total impact of NGO projects. Their welfare is

$$W^B \equiv v(\sum_{j=1}^{n} Q_j) = v(nQ), \tag{48}$$

and they gain from full integration, since

$$2n^A Q^*(n^A, \alpha) < n^I Q^*(n^I, 2\alpha). \tag{49}$$

Given that the market size is endogenous, the number of donors is not fixed. Thus, the welfare of donors (both motivated and non-motivated ones) now becomes

$$\widetilde{W}^D = S(ny^*)W^D + (1 - S(ny^*)) = 1 + \frac{ny^*}{\Theta}\left(u(nQ^*) - \frac{t}{4ny^*} - 1\right). \tag{50}$$

Thus, donors gain from full integration, as both the total project impact n^*Q^* and the total fundraising n^*y^* increase compared to the autarky regime. Summing up, we have

Proposition 8 *Under Assumption A and endogenous donation market size, the full integration regime strictly improves the welfare of donors and beneficiaries compared to the autarky regime and, therefore, full integration dominates autarky in terms of aggregate welfare.*

5.4 Multinational NGOs

The case of multinational NGOs can be handled in the same way. As discussed earlier, this corresponds to the situation of two separate NGOs (one in each country) that contribute to the same project. However, given Assumption A on technology (symmetric Cobb-Douglas with constant returns to scale), the multinational NGO equilibrium is identical to the equilibrium under autarky. In the multinational NGO equilibrium the project impact of a multinational NGO is given by:

$$Q^M(n, \alpha, f, c) = (2F^*)^{1/2}(2(1 - y^*))^{1/2} = 2Q^*(n, \alpha, f, c, \Theta). \tag{51}$$

The free-entry condition gives

$$Q^M(n, \alpha, f, c) = 2Q^*(n, \alpha, f, c, \Theta) = 2w, \tag{52}$$

and, thus, $n^M = n^A$.

Proposition 9 *Under Assumption A and endogenous donation market size, the multinationalization NGO equilibrium is identical to the equilibrium under autarky. Hence in this context, full integration dominates the multinational NGOs regime.*

6 Conclusion

Is the internationalization of development NGOs good for welfare of donors and beneficiaries? And which kind of internationalization is better? Our results suggest that the answer crucially depends on three factors: the degree of conservativeness of donors ("taste for variety"), returns to scale in NGO project technology, and the effectiveness of *total* fundraising in attracting *new* donors.

The international integration of the markets for donations has different implications for the welfare of donors and beneficiaries, depending on the regime of internationalization. Under a fixed domestic market size (i.e., if fundraising is relatively ineffective in attracting new donors), moving from autarky to full integration of donation markets does not affect beneficiaries, while it increases the donors' welfare because of increased variety of NGOs on the market. Moving from autarky to the regime of multinational NGOs affects the welfare of donors and beneficiaries in a similar way: the welfare of both groups increases if and only if the NGO project technology exhibits increasing returns to scale.

The social desirability of full integration versus the regime of multinational NGOs depends on the relative importance of the returns to scale and donors' "taste for variety". If NGO project technology exhibits relatively strongly increasing returns to scale, both donors and beneficiaries prefer the multinational regime. However, if the returns to scale are moderately increasing, the preferences of donors and beneficiaries are in conflict: the former prefer the full integration while the latter prefer the regime of multinational NGOs.

If, instead, total fundraising is effective in motivating potential donors, we are closer to the model with endogenous market size. Here, another aspect comes into play: the positive externalities that NGOs impose on each other's projects through fundraising activities. There is an interesting trade-off between the two kinds of internationalization. On the one hand, full integration increases the positive externalities from cooperation between NGOs in motivating new donors. On the other hand, as one sees in the basic model, the regime of multinational NGOs taps on the increasing returns to scale, by inducing NGOs in the two countries to join forces on common projects. Which regime is preferable depends on the relative importance of these two factors

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7 Appendix

- **Proof of Proposition 1.** Part i) Rewriting (10) as

$$\Phi := \left[\frac{(1-c)\,\alpha}{n} - f\right]^{\rho-1} \frac{(1-c)\,\alpha}{2ny} - (1-y_i)^{\rho-1} = 0, \tag{53}$$

and using the implicit function theorem, we get

$$\frac{dy^*}{dn} = -\frac{\Phi_n}{\Phi_y} = -\frac{y}{n}\frac{(1-y)(\rho(1-c)\alpha - fn)}{(1-\rho y)((1-c)\alpha - fn)}. \tag{54}$$

It is easy to see that

$$\frac{dy^*}{dn} \gtrless 0 \quad \text{iff} \quad \frac{n}{\alpha} \gtrless \rho\frac{(1-c)}{f}.$$

Similarly, since $y^*(n/\alpha)$ is only a function of n/α, we immediately find that

$$\frac{dy^*}{d\alpha} = -\frac{n}{\alpha}\frac{dy^*}{dn} = \frac{y(1-y)(\rho(1-c)\alpha - fn)}{\alpha(1-\rho y)((1-c)\alpha - fn)}, \tag{55}$$

and

$$\frac{\partial y^*}{\partial \alpha} \lesseqgtr 0 \text{ iff } \frac{n}{\alpha} \gtreqless \rho \frac{(1-c)}{f}.$$

Note as well that

$$\begin{aligned} \frac{d(ny^*)}{dn} &= y^* + n\frac{dy^*}{dn} = y\left[1 - \frac{(1-y)(\rho(1-c)\alpha - fn)}{(1-\rho y)((1-c)\alpha - fn)}\right] \\ &= y\frac{(1-\rho)\left((1-c)\alpha - fny\right)}{(1-\rho y)((1-c)\alpha - fn)} > 0. \end{aligned} \tag{56}$$

Part ii) Given that

$$Q(n,\alpha) = \left[\left(\frac{\alpha(1-c)}{n} - f\right)^{\rho} + (1-y^*)^{\rho}\right]^{\frac{\gamma}{\rho}}, \tag{57}$$

we can find the effect of a larger number of NGOs on an individual project impact:

$$\frac{dQ^*}{dn} = \frac{\gamma\left[(F_i(y_i))^{\rho} + (1-y_i)^{\rho}\right]^{\frac{\gamma}{\rho}-1}(1-y)^{\rho-1}y}{n(1-\rho y)((1-c)\alpha - fn)} * A, \tag{58}$$

with $A = [((1-c)\alpha - fn)(\rho - 2 + \rho y) + fn(\rho-1)(1-y)]$. Since $\rho - 2 + \rho y = (\rho - 1) + (\rho y - 1)$, and both ρ and y are smaller than 1, it is clear that $A < 0$ and $\frac{dQ^*}{dn} < 0$.

Note as well that $Q^*(n,\alpha)$ depends only on the market concentration ratio, n/α, and therefore an increase in the donation market wealth affects the equilibrium project impact of an NGO in the following way. From (57), we find

$$\frac{dQ^*}{d\alpha} = -\frac{n}{\alpha}\frac{dQ^*}{dn} = \gamma\left[(F_i(y_i))^{\rho} + (1-y_i)^{\rho}\right]^{\frac{\gamma}{\rho}-1}(1-y)^{\rho-1}\frac{y}{\alpha}\left[2 - \frac{(1-y)(\rho(1-c)\alpha - fn)}{(1-\rho y)((1-c)\alpha - fn)}\right],$$

and $\frac{dQ^*}{d\alpha} > 0$. **QED.**

- **Total fundraising increases with the donation market size (in the endogenous market case)**

We need to prove that total fundraising effort increases with α. Deriving total fundraising effort with respect to α, we get

$$\frac{d(n^*y^*)}{d\alpha} = \frac{dn^*}{d\alpha}\left[y^* + n\frac{dy^*}{dn}\right] + n\frac{\partial y^*}{\partial \alpha}$$

$$= \frac{n(n+2)(3n+2)}{2(n-2)\alpha}\frac{\frac{(1-c)\alpha}{\Theta} + f}{\frac{(1-c)\alpha}{\Theta} - f}\left[\frac{3n^2+4n+4}{(3n+2)^2} + \frac{2n(5n+2)}{(3n+2)^2}\frac{\Theta f}{(1-c)\,\alpha}\right] - \frac{2n^2}{3n+2}\frac{\Theta f}{(1-c)\,\alpha^2}, \tag{59}$$

the sign of which is the same as that of

$$\frac{n(n+2)}{2(n-2)\alpha}\frac{\frac{(1-c)\alpha}{\Theta}+f}{\frac{(1-c)\alpha}{\Theta}-f}\left[\left(3n^2+4n+4\right)+2n(5n+2)\frac{\Theta f}{(1-c)\,\alpha}\right]-2n^2\frac{\Theta f}{(1-c)\,\alpha^2}. \tag{60}$$

Consider in that expression only the term:

$$\begin{aligned}&\left[\frac{n(n+2)}{2(n-2)}\frac{\frac{(1-c)\alpha}{\Theta}+f}{\frac{(1-c)\alpha}{\Theta}-f}2n(5n+2)-2n^2\right]\frac{\Theta f}{(1-c)\,\alpha^2}\\ = \quad & 2n^2\left[\frac{(n+2)(5n+2)}{2(n-2)}\frac{\frac{(1-c)\alpha}{\Theta}+f}{\frac{(1-c)\alpha}{\Theta}-f}-1\right]\frac{\Theta f}{(1-c)\,\alpha^2}>0, \end{aligned} \tag{61}$$

as

$$\frac{(n+2)(5n+2)}{2(n-2)}\frac{\frac{(1-c)\alpha}{\Theta}+f}{\frac{(1-c)\alpha}{\Theta}-f}>1. \tag{62}$$

Hence, $\frac{d(n^*y^*)}{d\alpha}>0$. **QED.**