Strategic Delegation in Nongovernmental Organizations

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Abstract

Nongovernmental organizations typically raise funds for their projects in competition with other organizations. In this paper we investigate whether is advisable for them to have multiple decision layers, namely rationally delegate some of their tasks to agents with different preferences, with the additional possibility to manipulate their objective functions through appropriate incentive schemes. We show that for mission-driven social entrepreneurs there is always an incentive to delegate decision-making process over fundraising and project activity to a social manager. It is also shown that this turns out to be advantageous only under high competition in the fundraising market and low spillovers generated by fundraising activities. The reason is that in these cases, through a bonus scheme NGOs can induce managers to refrain from excessive fundraising, ultimately increasing the resources allocated to the project. We extend such framework to asymmetric NGOs and competition between non-governmental and governmental organizations.

Keywords: Nongovernmental organizations, Fundraising Competition, Strategic Delegation, Incentive Schemes, Philantropic Ventures.


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1 Introduction

Since ’70s the nonprofit sector has shown a constant expansion in the number of members as well as the amount of money it receives. For the U.S., the National Center for Charitable Statistics (2016), reports a number of nonprofits of approximately 1,41 million in 2013, a 2.8 percent increase from 2003. In 2017 Americans’ donations amounted to $410.02 billion, with an increase of 5.2 percent from 2016 (Giving USA, 2018).

In 2017 the total amount of philanthropic contributions in Europe was estimated at 87.5 billion of Euro annually (ERNOP, 2017). The few existing studies on market structure show that the NGO sector exhibits a relatively high concentration of donations for a small number of big NGOs. McCleary and Barro (2008), looking at US data, claim that after 1941, NGO revenues concentrated in an ever smaller number of organizations. Atkinson et al. (2012), using the data from the UK, report that around 50 per cent of all donations arrives to the four biggest NGOs (although the market concentration had declined since the 1980s, when the same share was around 70 per cent).

On the other hand competition for funds has become more and more intensive in the nonprofit market: for instance, using data from Kiva micro-lending platform, Ly and Mason (2012) find that higher competition increases the time required to complete funding, with a stronger negative impact for projects that are closer substitutes. NGOs are aware of harmful effects of excessive competition for funds (Edwards and Hulme 1996, Ebrahim 2003, Murdie and Davis 2012), although attempts to self-regulate and coordinate fundraising in the NGO sector are in general problematic (Prakash and Gugerty 2010, Aldashev et al. 2014, Similon 2015).

The amount of money that the largest nonprofit organizations paid in bonuses to their top executives more than doubled from 2005 to 2006 according to a recently released survey of executive compensation in 298 charities and foundations (Chronicle of Philanthropy). The average bonus payments to top executives grew from $69,477 in 2005 to $142,700 in 2006. Although the Association of Fundraising Professionals - as part of its professional code of ethics - prohibits members from tying their compensation directly to fundraising performance, these practises are nonetheless very common and contribution-based incentive plans continue to proliferate in fundraising and related fields.

Since 1991, the World Bank and USAID introduced performance based contracts e.g. in Haiti, Kenya and Pakistan, with apparently substantial improvement on performances. The World Bank performance-based partnership agreements offer the prospect of winning a bonus worth 10 percent (amounting to more than $800,000 in some cases) of the contract value, as an incentive to reach or exceed specified targets. World Bank managers emphasize that this type of contract decentralizes authority to field managers and encourages innovation, because providers are motivated to reach performance targets by the autonomy and associated flexibility to use funds effectively and
efficiently as well as by the opportunity to earn performance bonuses (Sondorp et al. 2009).

There was a recent growth of venture philanthropy in US, a phenomenon also spreading in Europe and Asia.

According to the European Venture Philanthropy Association (EVPA, 2016), the aggregate annual financial spending by venture philanthropist organizations increased by 66 per cent in 2013. Average annual financial support increased by 28 per cent per organization and non-financial support by 60 per cent from 2012 to 2013 (Hehenberger et al., 2014). In Belgium, 18 organizations practice venture philanthropy and 36 organizations were active in this field in the United Kingdom in early 2016. Asian Venture Philanthropy Network (AVPN, 2016), launched in Asia in 2012, already has over 297 members in mid-2016 (e.g., Similon 2017).

Usually venture philanthropists (as e. g. Bill and Melinda Gates, Morino, King Badouin Foundation) assign seed funds to a NGO conditional on a specific use of funds with a commitment to a given output.

Thus, (i) incentive schemes for NGOs’ managers, (ii) conditional grants to NGOs and (iii) seed money donated by venture philanthropists can all be viewed as different ways to put in place strategic delegation mechanisms, aimed to strategically condition manager/NGO decisions.

In this paper we apply a classical strategic delegation model à la Vickers, (1985), Fershtman & Judd (1989), Sklivas (1989) to a stylized NGOs’ fundraising markets, in order to look at its main consequences.

In particular we are interested to see whether the choice to delegate arises endogenously in NGOs, and whether this is advantageous for NGOs. Our main finding is that NGOs benefit from delegation when there is a: (i) very high competition (projects close substitutes); (ii) highly targeted fundraising activity (low fundraising spillovers); (iii) harmful fundraising (negative fundraising externalities) for NGOs competing on the market for donations.

Under these conditions, strategic delegation may work as a coordination device to reduce excessive and harmful fundraising activities of NGOs.

When instead competition is low and fundraising technology not targeted (high spillovers), fundraising activity is beneficial to all NGOs, and they are better off by not delegating. The mechanics of this results seems rather general, whenever NGOs entrepreneurs and executives allocate their time in different tasks, as to the core project and to fundraising activity.

We also obtain the following additional results: (i) under mixed competition (Governamental vs. Nongovernmental Organizations) delegation can be detrimental even under high market competition and harmful fundraising; (ii) Less efficient NGOs are generally less prone to delegation.

Besley and Ghatak (2005): link between workers’ motivation to a mission and the design of different optimal incentives schemes, depending on the principal’s own mission motivation.
Auriol and Brilon (2014 and 2018) extend the model including bad and regular workers and the possibility of peer-monitoring within NGOs.

Heyes and Oestreich (2017): market with one public regulator and one advocacy NGO that can delegate a manager to manipulate the weight assigned to environmental versus business outcomes. The NGO funder will typically want to delegate to an NGO executive with very different preferences from his own.

Nongovernmental organizations have, among their tasks, that of raising funds for their projects. Thus, they have to allocate their time/effort in at least two basic tasks, raising funds and realize their specific projects. In this paper we investigate whether in such environment is advisable for them to have multiple decision layers, namely rationally delegate some of the organizations tasks to agents with different preferences, with the additional possibility to manipulate their objective functions through appropriate incentive schemes. There exists a broad literature on strategic delegation for profit maximizing (oligopolistic) firms (Vickers, Fershtman and Judd, Sklivas, etc.), but none has yet applied this framework to NGOs.

By introducing endogenous delegation in a simple model of charity markets where NGOs compete for funds (Aldahev et al. 2010, 2014 and 2017), we show that for social entrepreneurs or philanthropic ventures (i.e. active donors willing to maximize project output), there is always an interest to delegate decision-making process over fundraising and project activity to a social manager although this turns out to be advantageous only when there is high competition in the fundraising market (namely NGOs’ projects are perceived as substitutes by donors) and when the spillovers generated by fundraising activities are not too high. Conversely, when NGOs projects are seen as complements by donors NGOs or when fundraising spillovers are too high, NGOs are better off by not delegating. This result seems robust to generalization and shows that delegation becomes convenient only when too much fundraising competition is harmful for NGOs projects and social entrepreneurs or venture philanthropists (e.g. financing external projects through seed money) find advantageous to delegate someone else to complete the project. The reason is that in this way, through a bonus scheme they can induce the manager to refrain from excessive fundraising, thus ultimately increasing the resources allocated to the project.

2 Model Setup

In what follows, let us introduce the main ingredients of the model. To make results easily interpretable, we adapt the model by Aldashev et al. (2014, 2017). We show later to what extent the model can be generalized.
2.1 Social entrepreneur (or venture donor)

A social entrepreneur (or alternatively a venture philanthropist) can allocate her time to maximize the volume of the project she is directly sponsoring, say for project $i$:

$$Q_i = Q_i(F_i, \tau_i)$$

where $Q_i : F_i \times \tau_i \rightarrow \mathcal{R}_+$ denotes the output function transforming funds and time into project units. Since funds are raised by donations and these depends on the fundraising activity of all organizations, hereafter we denote $D_i(y_i, y_{-i})$ the amount of donation raised by organization $i$ through its fundraising activity $y_i$ in competition with those of rival charitable organizations. Therefore,

$$F_i(y_i, y_{-i}) = D_i(y_i, y_{-i}).$$

where $y_{-i}$ denotes the fundraising activity of NGOs different from $i$. As in Aldahev et al. (2010, 2014 and 2017) we can assume that the time allocated to fundraising by the social entrepreneur is subtracted to the time directly spent for the project, as

$$\tau_i(y_i) = (T - y_i)$$

where $T_i$ is the time available to every agent. Without loss of generality, let us normalise $T$ to 1. Let us also assume for simplicity a constant returns Cobb-Douglas output function for every NGO, in such a way that, by (2)-(3), (1) simply writes as

$$Q_i(y_i, y_{-i}) = D_i(y_i, y_{-i})(1 - y_i)$$

2.2 Donors

Every atomistic donor $h \in I$ is assumed to enjoy a warm glow utility for the consumption of a numeraire good $x$ and for a series of donations $d^h$ to competing projects, where the willingness to donate is affected by the fundraising activities of existing organizations:

$$U^h = U^h(x^h, d^h (y_i, y_{-i})).$$

To present in simple closed form the outcome of the delegation game, let us initially assume for donors simple quadratic preferences à la Singh and Vives (1984) and only two competing NGOs (and projects) $i = 1, 2$:

$$U(x, d) = x + \sum_{i=1}^{2} \omega_i(y_i, y_{-i}) d_i - \frac{1}{2} \sum_{i=1}^{2} d_i^2 - b \sum_{j \neq i} d_i d_j$$

where $x = m - \sum_{i=1}^{2} d_i$ is the amount spent on $x$ and $m$ the income of representative donor (for simplicity, the pedice of every identical donor $h$ is suppressed). As in Aldashev et al. (2014
and 2017) the parameter \( b \in (-1, 1) \) measures the degree of substitution between projects: for \( b > 0 \) (\( b < 0 \)) the two projects are perceived by donora as substitutes (complements), i.e. giving to a project decreases (increases) the marginal utility obtained donating to the other project. Moreover, every donor’s willingness to donate to project \( i \) is affected by the fundraising activity of the organisation in charge of a given project as

\[
\omega_i(y_i, y_{-i}) = 1 + y_i + \sigma y_j.
\]

where \( 1 \) is the baseline willingness to donate and \( \sigma \in [0, 1] \) a fundraising spillover flowing from every NGO’s fundraising activity toward rival projects. A high spillover rate indicates that the fundraising technology is not highly sophisticated and donors are hardly targeted by NGOs through their fundraising activity.

By the first order condition of the utility maximization of every representative consumer (and assuming a unitary mass of donors), we obtain that the donation available to every NGO \( i = 1, 2 \) and \( j \neq i \) is

\[
D_i(y_i, y_j) = \frac{1 - b\sigma}{1 - b^2} y_i + \frac{\sigma - b}{1 - b^2} y_j
\]

and, therefore, the output of every NGOs can be simply written as

\[
Q_i(y_i, y_j) = \left(\frac{1 - b\sigma}{1 - b^2} y_i + \frac{\sigma - b}{1 - b^2} y_j\right) (1 - y_i).
\]

Note that the effect of rivals’ fundraising activity on NGO’s output can either be positive or negative as a function of the intensity of projects’ competition (expressed by \( b \)) and spillover rate \( \sigma \):

\[
\frac{\partial Q_i}{\partial y_j} = \frac{\sigma - b}{1 - b^2} (1 - y_i)
\]

which either for \( b < 0 \) or \( \sigma > b \) is positive, whereas for \( b > 0 \) and \( \sigma < b \) is negative: fundraising effort exerts a positive externality on the rival when either projects are seen as complements or, when substitutes spillovers are very high; conversely, fundraising activity exerts a negative externality on the rival when projects are substitutes and spillovers not too high.

At the same time, since

\[
\frac{\partial^2 Q_i}{\partial y_i \partial y_j} = \frac{(b - \sigma)}{(1 - b) (b + 1)}.
\]

NGOs’ fundraising efforts are strategic substitutes when either \( b < 0 \) or \( b > 0 \) and \( \sigma > b \) and, conversely, strategic complements for \( b > 0 \) and \( \sigma < b \): When projects are perceived as complements by donors or even when spillovers are very high, an increase in the rival’s fundraising activity sparks a reduction in every NGO activity, just to save costly fundraising activity; conversely, when projects are substitutes and spillovers not too high, if the rival increases its fundraising activity there is an incentive not to be surpassed in the competition for donations causing a
tendency to jointly boost fundraising efforts. These mechanisms are at the heart of the model results: delegation turns out to be Pareto-enhancing only in this second case, when NGOs can use delegation as a coordination device to reduce harmful fundraising competition.

2.3 Delegation in Nongovernamental Organizations

A social entrepreneur (or a venture philanthropist) decides her fundraising activity $y_i$ (and, implicitly, the time $\tau_i$ spent for the project) to maximize the output of her project $Q_i$. Alternatively, she can delegate this choice to a social manager. In this case, following the logic of a standard delegation model (e.g., Fershtman and Judd 1987, Sklivas 1987, Vickers 1985), we can assume that the manager is compensated on the basis of output $Q_i$ and donations $D_i$. As is common in the strategic incentives literature, we assume that an organization offers a linear compensation scheme of the form

$$U_i = A_i + B_i[\delta_i Q_i + (1 - \delta_i)D_i]$$

with $B_i \geq 0$, $i = 1, 2$. The incentive parameter $\delta_i$ can be chosen endogenously by each organization as part of the contract design. Here for $\delta_i = 1$, the contract is output-based and for $\delta_i = 0$ the contract is donations-based. The fixed wage of the manager’s compensation is denoted by $A_i$ and $B_i$ is the weight which is put on the manager’s variable compensation component. Note that the manager’s incentive for performance stems only from $\delta_i$, whereas the compensation parameters $A_i$ and $B_i$ are only chosen here to fulfill the manager’s reservation constraint $U_i \geq \bar{U}$ (the reservation utility $\bar{U}$ is obtained if the manager accepts a job outside the organization). For simplicity, the reservation utility will be normalized to zero, $\bar{U} = 0$. A manager will accept the contract if the reservation constraint is fulfilled and, being hired, the manager will select the fundraising effort such that compensation is maximized.

The timing of the game is as follows. At the first stage, both Non-profits decide whether to keep the decision rights for fundraising effort (ND) or to delegate (D) the decision rights for fundraising activity to an externally recruited manager with preferences captured by (5). At the second stage, in case an external manager is selected, each firm determines the specific contract design offered to the manager, i.e. the optimal values of $\delta_i$ to maximize its own output $Q_i$. At the third and final stage, the organizations’ managers will set the level of fundraising effort (time spent on the project is then fixed as well) in such a way to maximize their own utility $U_i$. The main question which we will study with this model is if in equilibrium the social entrepreneur (or venture charity) have a strategic reason to delegate the firm’s decision rights for choosing fundraising effort to an external manager and use an explicit incentive contract. All differences in

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1 The rationale for using observable and verifiable indicators is that it may be difficult to base compensation schemes on fundraising effort $y_i$. However, it is easy to show that the results are exactly the same when assuming a contract based on output and fundraising effort.
the choice to delegate and in the compensation structure, will emerge endogenously as a result of the different governance modes and the strategic interaction of the two NGOs.

3 Results of the Delegation Game

The full game of delegation can be solved by analyzing two symmetric subgames, call them $NN$ (for no delegation) and $DD$ (for delegation), and one asymmetric subgame, e.g. $DN$.

3.1 Subgame $NN$

The subgame $NN$ where the NGO owners keep the right to choose fundraising activity has been already solved by Aldashev et al. (2017). The outcome is

$$y_{NN} = \frac{1 - b\sigma}{2 - b + \sigma(1 - 2b)},$$

$$Q_{NN} = \frac{(1 + \sigma)^2(1 - b)(1 - b\sigma)}{(1 + b)(2 - b + \sigma(1 - 2b))^2}.$$  

Note that $\partial y_{NN}/\partial \sigma < 0$ as expected. Free-riding leads to less individual efforts as the other NGO benefits from the fundraising effort of the focal NGO. The impact of $\sigma$ on output is ambiguous, i.e. $\partial Q_{NN}/\partial \sigma < 0$ only if $b$ is sufficiently large and $\partial Q_{NN}/\partial \sigma > 0$ otherwise (exact conditions can be derived).

3.2 Subgame $DD$

At the subgame where both NGO social entrepreneur delegate, the manager i’s reaction function at the fundraising stage is

$$y_i(y_j) = \frac{1}{2\delta_i} + \frac{b - \sigma}{2(1 - b\sigma)}y_j.$$  

Hence, the slope of the reaction functions $y_i(y_j)$ is $\frac{b - \sigma}{2(1 - b\sigma)}$; the intercept is decreasing in $\delta_i$ and independent of $\delta_j$. The following first-stage optimal bonus rate

$$\delta = 1 + \frac{(1 - b)(b - \sigma)^2(1 + \sigma)}{(2 - b + \sigma(1 - 2b))(2 - b^2 - \sigma(2b + \sigma(1 - 2b^2)))}.  \tag{6}$$

Since the second term on the RHS is always nonegative, we have $\delta \geq 1$ for all values of $b$ and $\sigma$. Consequently, the manager is “punished” in terms of compensation for increasing donations. Given the equilibrium incentive rate, equilibrium fundraising activity of the manager and output
is

\[ y^{DD} = y^{NN} - \frac{(1 - b)(b - \sigma)^2(1 + \sigma)}{(2 - b + \sigma(1 - 2b))B}, \]

\[ Q^{DD} = Q^{NN} + \frac{(1 - b)(b - \sigma)^3(1 + \sigma)^2(1 - b\sigma)(4 - 3b + \sigma(3 - 4b))}{(1 + b)(2 - b + \sigma(1 - 2b))^2B^2}, \]

where \( B = 4 + (2 - \sigma)\sigma - b^2(1 - 2\sigma - 4\sigma^2) - 2b(1 + \sigma(3 + \sigma)) > 0 \). Since the second term on the RHS of the first line is nonnegative, we observe that \( y^{DD} < y^{NN} \) independent of \( b, \sigma \). Obviously, delegating the decision rights for fundraising activity leads to lower equilibrium fundraising effort. This is, on the one hand, achieved by the NGO owners by "punishing" the manager for high donations (note that the weight on donations in each manager’s contract becomes negative in equilibrium). On the other hand, additionally, \( \partial y^{DD}/\partial \sigma < 0 \). Jointly, this provides incentives for the manager to reduce fundraising effort (compared to the NGO owners outcome). In turn, this raises the question if the resulting equilibrium output levels increase or decrease w.r.t. the social entrepreneur-managed NGO. The answer depends on the spillovers and on \( b \). If \( b < 0 \), then for all levels of spillovers we have \( Q^{DD} < Q^{NN} \). If \( b > 0 \), then \( Q^{DD} \geq Q^{NN} \) if spillovers are sufficiently small compared to \( b \), i.e. \( b > \sigma \) (since the second term on the RHS is nonnegative). If, however, spillovers are large (\( b < \sigma \)), then \( Q^{DD} < Q^{NN} \).

A first conclusion drawn here is that delegating the rights to choose the level of fundraising to the manager is used as a sort of coordination device which can lead to a Pareto-improvement for both NGOs if projects are considered as substitutes and fundraising spillovers are sufficiently small. Hence, if NGOs are able to conduct fundraising activities sufficiently targeted, both NGOs benefit from delegation. If fundraising efforts are not proprietary to projects and spillover to NGO rivals, delegation is harmful in terms of NGO outputs. The question is: how does this finding match with anecdotal/empirical evidence?

The considerations in this subsection and the comparison with the owner-managed NGO case naturally raises the question under which delegation emerges endogenously. That is, under which conditions would delegation of decision rights for selecting fundraising activity emerge in equilibrium in an extended game where the NGO owner could decide to delegate decisions or not.

### 3.3 Subgame \( DN \)

In this case, only NGO 1 hires a manager and delegates the decision rights for fundraising. The optimal bonus rate in this case is (SOC is fulfilled at the maximum) is again \( \delta_1 \geq 1 \). [Note: Expression complicated].
The equilibrium fundraising levels of the two NGOs are

\[
y_{1}^{DN} = y_{NN} - \frac{(1 - b)(b - \sigma)^2(1 + \sigma)}{2(2 - b + \sigma(1 - 2b))(2 - b^2 - \sigma(2b + \sigma(1 - 2b)))},
\]

\[
y_{2}^{DN} = y_{NN} - \frac{(1 - b)(b - \sigma)^3(1 + \sigma)}{4(1 - b\sigma)(2 - b + \sigma(1 - 2b))(2 - b^2 - \sigma(2b + \sigma(1 - 2b)))}.
\]

In comparison with the case where both NGOs delegate, we have \(y_{1}^{DN} < y_{NN}\) always, but \(y_{2}^{DN} < y_{NN}\) only if \(b > 0\) (projects are substitutes) and spillovers are sufficiently small, i.e. \(b > \sigma\).

The equilibrium output levels of the two NGOs are

\[
Q_{1}^{DN} = Q_{NN} + \frac{(1 - b)(b - \sigma)^4(1 + \sigma)^2}{8(1 + b)(2 - b + \sigma(1 - 2b))^2(1 - b\sigma)(2 - b^2 - \sigma(2b + \sigma(1 - 2b)))},
\]

\[
Q_{2}^{DN} = Q_{NN} + \frac{(1 - b)(b - \sigma)^3(1 + \sigma)^2C}{16(1 + b)(2 - b + \sigma(1 - 2b))^2(1 - b\sigma)(2 - b^2 - \sigma(2b + \sigma(1 - 2b)))^2},
\]

where \(C = 16 - 8b^2 + b^3 - 32b\sigma - 3b^2\sigma + 8b^3\sigma - 8\sigma^2 + 3b\sigma^2 + 32b^2\sigma^2 - \sigma^3 + 8\sigma^3 - 16b^3\sigma^3\).

This yields that \(Q_{1}^{DN} > Q_{NN}\), but that \(Q_{2}^{DN} > Q_{NN}\) only if \(b > 0\) (projects are substitutes) and spillovers are sufficiently small, i.e. \(b > \sigma\).

### 3.4 Endogenous choice of delegation

We can now solve for the overall equilibrium of the game by comparing the following for outputs obtained in the previous section: \(Q^{NN}, Q^{DD}, Q_{1}^{DN}, Q_{2}^{DN} = Q_{1}^{ND}\).

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<tr>
<td>(N)</td>
<td>(Q_{i}^{NN}, Q_{j}^{NN})</td>
<td>(Q_{i}^{ND}, Q_{j}^{ND})</td>
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<td>(D)</td>
<td>(Q_{i}^{DD*}, Q_{j}^{DD*})</td>
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**NGO Delegation Game**

It can be easily shown that \(Q_{1}^{DN} > Q_{NN}\) and that \(Q^{DD} > Q_{1}^{ND}\). In other words, independent of the choice of the other NGO, it is always beneficial in terms of output for the NGO to delegate decision rights to a manager. Delegation is a dominant strategy. Because of symmetry, we can conclude that the overall equilibrium is that both NGOs delegate decision rights. Under which circumstances is this beneficial? This follows from the remarks in the subsection where we study the \(DD\)-subgame. There we concluded: If \(b < 0\), then for all levels of spillovers we have \(Q^{DD} < Q^{NN}\). Hence, delegation leaves the NGOs with a lower output. If \(b > 0\), then \(Q^{DD} \geq Q^{NN}\) if spillovers are sufficiently small compared to \(b\), i.e. \(b > \sigma\) (since the second term on the RHS is nonnegative). In this case, delegation is beneficial in terms of output. If, however, spillovers are large \((b < \sigma)\), then \(Q^{DD} < Q^{NN}\).
3.5 Ranking of equilibrium fundraising levels

\[ y^{NN} > y^{DN} > y^{ND} > y^{DD} \]

for \( b > 0 \) and

\[ y^{ND} > y^{NN} > y^{DD} > y^{DN} \]

for \( b < 0 \).

3.6 Ranking of equilibrium output levels

\[ Q^{NN} < Q^{DN} < Q^{ND} < Q^{DD} \]

for \( b > 0 \) and, similarly,

\[ Q^{NN} < Q^{DN} < Q^{ND} < Q^{DD} \]

for \( b < 0 \).

**Proposition 1** Under symmetric NGOs, DD is the unique equilibrium of the endogenous delegation game.

Under which circumstances delegation is beneficial for NGOs?

**Proposition 2** (i) If \( b > \sigma \), delegation is beneficial for NGOs in terms of output: \( Q^{DD} > Q^{NN} \). (ii) If, conversely, \( b < \sigma \), then \( Q^{DD} < Q^{NN} \) and, delegation leaves the NGOs with a lower output.

**Graphical Representation:** (NN) with fundraising strategic complements

![Diagram](image-url)
Graphical Representation: (NN) with fundraising strategic complements

Graphical Representation: (DN) with fundraising strategic complements

Graphical Representation: (ND) with fundraising strategic complements
Graphical Representation: (DD) with fundraising strategic complements

![Graphical Representation: (DD)](image_url)

Figure 1d - Fundraising stage with $b > 0$ and $\sigma < b$. Fundraising efforts are strategic complements and yield negative externalities. Red = NGO 1’s iso-output contours; Green = NGO 2’s iso-output contours.

Graphical Representation: (NN) with fundraising strategic substitutes

![Graphical Representation: (NN)](image_url)

Figure 2a - Fundraising stage with $b < 0$ or $b > 0$ and $\sigma > b$. Fundraising efforts are strategic substitutes and yield positive externalities. Red = NGO 1’s iso-output contours; Green = NGO 2’s iso-output contours.

Graphical Representation: (DN) with fundraising strategic substitutes

![Graphical Representation: (DN)](image_url)

Figure 2b - Fundraising stage with $b < 0$ or $b > 0$ and $\sigma > b$. Fundraising efforts are strategic substitutes and yield positive externalities. Red = NGO 1’s iso-output contours; Green = NGO 2’s iso-output contours.
4 General Analysis

Since a manager’s contract can be made conditional to project output and donations,

\[ U_i = A_i + B_i[\delta_i Q_i + (1 - \delta_i)D_i] \]

for \( Q_i(D_i(y_i, y_j), \tau(y_i)) \), we easily obtain that

\[ \frac{\partial U_i}{\partial y_i} = B_i \delta_i \frac{\partial D_i}{\partial y_i} \tau(y_i) + \delta_i D_i \tau'(y_i) + (1 - \delta_i) \frac{\partial D_i}{\partial y_i} \]

and

\[ \frac{\partial^2 U_i}{\partial y_i \partial y_j} = B_i \delta_i \frac{\partial^2 D_i}{\partial y_i \partial y_j} \tau(y_i) + \delta_i \frac{\partial D_i}{\partial y_j} \tau'(y_i) + (1 - \delta_i) \frac{\partial^2 D_i}{\partial y_j \partial y_j} \]

implying that, since \( \tau'(y_i) < 0 \), delegated (or non delegated) non governmental organizations’ best-responses are always positively sloped for both \( \partial^2 D_i/\partial y_i \partial y_j > 0 \) and \( \partial D_i/\partial y_j < 0 \) and, in contrast,
negatively sloped for under both \( \partial^2 D_i / \partial y_i \partial y_j < 0 \) and \( \partial D_i / \partial y_j > 0 \). This implies, in turn, that the effect of an output maximizer delegation will always cause the reduction of the fundraising activity of the organization for the sake to strategically reduce that of the rival under strategic fundraising complementarity (which in this case is associated to fundraising negative externalities) and, again, which to reduce the fundraising activity when they are strategic substitutes, so to increase that of the rival, since in this case this type of activity yields positive externalities. The final effect of such cross effects is that delegation is always Pareto-improving for both NGOs whatever the strategic nature of competition. This, in stark contrast with the usual results of profit-maximizing firms literature.

Note that, in order to prove that delegating is always convenient for output maximization, we can totally differentiating \( Q_i \) with respect to \( \delta_i \), obtaining
\[
\frac{dQ_i(y_i(\delta_i, \delta_j), y_j(\delta_i, \delta_j), \delta_i)}{d\delta_i} = \frac{\partial Q_i}{\partial y_i} \frac{\partial y_i}{\partial \delta_i} + \frac{\partial Q_i}{\partial y_j} \frac{\partial y_j}{\partial \delta_i} + \frac{\partial Q_i}{\partial \delta_i} \equiv 0.
\]
Moreover, by totally differentiating the two managers’ first-order conditions we obtain that
\[
\frac{\partial U_i}{\partial y_i} = B_i \left[ \delta_i \frac{\partial D_i}{\partial y_i} \tau(y_i) + \delta_i D_i \tau'(y_i) + (1 - \delta_i) \frac{\partial D_i}{\partial y_i} \right]
\]
and, therefore,
\[
\text{sign} \frac{\partial y_i}{\partial \delta_i} = \text{sign} \frac{\partial^2 U_i}{\partial y_i \partial \delta_i} = \text{sign} B_i \left[ \frac{\partial D_i}{\partial y_i} (\tau(y_i) - 1) + D_i \tau'(y_i) \right] < 0
\]
given that \( \tau(y_i) < 1 \) and \( \tau'(y_i) < 0 \), whereas \( \frac{\partial D_i}{\partial y_i} > 0 \) and \( D_i > 0 \).

This effect extends to any generic output function, as long as \( \frac{\partial Q_i}{\partial D_i} < 1 \), since
\[
\frac{\partial U_i^m}{\partial y_i} = B_i \left[ \delta_i \frac{\partial Q_i}{\partial D_i} \frac{\partial D_i}{\partial y_i} + \delta_i \frac{\partial Q_i}{\partial \tau_i} \frac{\partial \tau_i}{\partial y_i} + (1 - \delta_i) \frac{\partial D_i}{\partial y_i} \right]
\]
and, therefore,
\[
\text{sign} \frac{\partial y_i}{\partial \delta_i} = \text{sign} \frac{\partial^2 U_i^m}{\partial y_i \partial \delta_i} = \text{sign} B_i \left[ \frac{\partial D_i}{\partial y_i} \left( \frac{\partial Q_i}{\partial D_i} - 1 \right) + \frac{\partial Q_i}{\partial \tau_i} \frac{\partial \tau_i}{\partial y_i} \right] < 0,
\]
as long as \( \frac{\partial Q_i}{\partial D_i} < 1 \).

Moreover, given that
\[
\frac{\partial U_j^m}{\partial y_j} = B_j \left[ \delta_j \frac{\partial Q_j}{\partial D_j} \frac{\partial D_j}{\partial y_j} + \delta_j \frac{\partial Q_j}{\partial \tau_j} \frac{\partial \tau_j}{\partial y_j} + (1 - \delta_j) \frac{\partial D_j}{\partial y_j} \right]
\]
that, in the case without spillovers, implies that
\[
\text{sign} \frac{\partial y_j}{\partial \delta_i} = \text{sign} \frac{\partial^2 U_j^m}{\partial y_j \partial \delta_i} = 0.
\]
Thus, we can conclude that
\[
\text{sign} \frac{dQ_i(y_i(\delta_i, \delta_j), y_j(\delta_i, \delta_j), \delta_i)}{d\delta_i} = \frac{\partial Q_i}{\partial y_i} \frac{\partial y_i}{\partial \delta_i} + \frac{\partial Q_i}{\partial y_j} \frac{\partial y_j}{\partial \delta_i} + \frac{\partial Q_i}{\partial \delta_i}
\]
that, using the above results and the envelope theorem yields:
\[
\text{sign} \frac{dQ_i(y_i(\delta_i, \delta_j), y_j(\delta_i, \delta_j), \delta_i)}{d\delta_i} = \frac{\partial Q_i}{\partial y_i} \frac{\partial y_i}{\partial \delta_i} = \frac{\partial Q_i}{\partial y_j} \frac{\partial y_j}{\partial \delta_i} + \frac{\partial Q_i}{\partial \delta_i} = \frac{\partial Q_i}{\partial \tau_i} \frac{\partial \tau_i}{\partial y_i}
\]

It can be shown that the results holds for more general model specifications. Since
\[
U^m_i = A_i + B_i[\delta_i Q_i + (1 - \delta_i) D_i],
\]
at (DD) the FOC of every manager \(i = 1, 2\) solving \(\max U^m_i\) implies
\[
\frac{\partial U^m_i}{\partial y_i} = \delta_i \frac{\partial Q_i}{\partial y_i} + (1 - \delta_i) \frac{\partial D_i}{\partial y_i} = 0.
\]

Hence,
\[
\frac{\partial Q_i}{\partial y_i} = -\frac{(1 - \delta_i)}{\delta_i} \frac{\partial D_i}{\partial y_i}, \quad (7)
\]
and, solving for the two managers, we obtain \(y^*_i(\delta_i, \delta_j)\).

At the first stage after substitution of \(y^*_i\), every NGO \(i = 1, 2\) solves
\[
\max_{\delta_i} Q_i(y^*_i(\delta_i, \delta_j), y^*_j(\delta_i, \delta_j))
\]
which, using (7), leads to
\[
\frac{dQ_i}{d\delta_i} = \frac{\partial Q_i}{\partial y_i} \frac{\partial y^*_i}{\partial \delta_i} + \frac{\partial Q_i}{\partial y_j} \frac{\partial y^*_j}{\partial \delta_i} = -\frac{(1 - \delta_i)}{\delta_i} \frac{\partial D_i}{\partial y_i} \frac{\partial y^*_i}{\partial \delta_i} + \frac{\partial Q_i}{\partial \delta_i} \frac{\partial y^*_j}{\partial \delta_i}.
\]

If we show that the RHS is positive, every NGO will have an incentive to set \(\delta > 1\). The first term vanishes for \(\delta_i = 1\) (i.e. if the manager is an output maximizer). Thus, whenever
\[
\frac{\partial Q_i}{\partial y_j} < 0 \text{ and } \frac{\partial y^*_j}{\partial \delta_i} < 0, \text{ or } \frac{\partial Q_i}{\partial y_j} > 0 \text{ and } \frac{\partial y^*_j}{\partial \delta_i} > 0
\]
namely under fundraising positive externalities + strategic substitutes or negative externalities + strategic complements, we have a bonus rate \(\delta_i > 1\) and positive incentive to delegate, although delegation is not necessarily optimal.
5 Model Extension 1: Asymmetric NGOs

If one NGO (say NGO 1) is more efficient than the rival in transforming time and funds into project units, it may have a lower incentive to delegate: asymmetric delegation equilibrium \( (ND) \). Suppose for instance as in Aldashev & Verdier (2010), that

\[
\tau_1 = (1 - v_1y_1)
\]

whereas

\[
\tau_2 = (1 - y_2)
\]

with \( 1 = v_2 > v_1 > 0 \). This yields \( y_1^{NN} > y_2^{NN} \). It can be easily proved that, for a sufficiently low \( v_1 \) (high efficiency gap between NGO 1 and 2) and \( \sigma \) not very high, \( ND \) is the unique equilibrium of the delegation game: the efficient NGO (NGO 1) always prefers not to delegate and the less efficient one (NGO 2) instead, to delegate.

5.1 Asymmetric NGOs when Fundrasing are Strategic Complements

5.2 Asymmetric NGOs when Fundrasing are Strategic Complements
5.3 Asymmetric NGOs when Fundraising are Strategic Complements

The efficient NGO prefers $DN$ to $NN$ as well as $ND$ to $DD$, being even better off when only the rival NGO reduces its fundraising activity. Therefore, if small and medium NGOs are more efficient than large NGOs, we should expect larger NGOs to delegate more. The same asymmetric delegation equilibrium occurs, for a sufficiently high efficiency gap, when fundraising are strategic substitutes.

6 Extension 2: Governamental vs. Nongovernamental Organizations

We can extend the model to see what happens when one of the organizations is governamental, e.g. aimed to maximize social welfare, while the other is a usual NGO. In this case, assuming $\sigma = 0$, it can be shown that $DD$ remains the unique equilibrium of the delegation game, although the output of the governamental organization turns out to be smaller than under non delegation and the NGO’s output smaller than under no delegation for $b < 0.72$ and bigger for $b > 0.72$. So, in presence of a mixed GO-NGO market, there is a lower chance that delegation can increase humanitarian organizations’ outputs.

7 Concluding Remarks

In several cases nongovernamental organizations are observed to delegate their decisions to external agents, also using incentive compensation packages. In a model with strategic delegation we have investigated whether and when delegation arises endogenously and when it is actually advantageous for these organizations.

Our main finding was that when the fundraising competition is intense (i.e. NGOs projects close substitutes) and fundraising activities highly targeted (low spillovers), delegation may be an effective tool to dissuade managers from excessive fundraising, hence reducing their harmful effect on project output.

Moreover, less efficient organizations may have a higher incentive to delegate than efficient ones, since they suffer more from an excess in fundraising activities.

Finally, the presence of mixed (governamental vs. nongovernamental organizations) competition makes delegation, *coeteris paribus*, less advantageous to projects outputs.
References


