ISSN 1822-7996
TAIKOMOJI EKONOMIKA:
SISTEMINIAI TYRIMAI: 2010.4/1

Cláudio D. SHIKIDA
Marina G. MELO
Ari Francisco de ARAUJO Jr.

Efficiency of environmental NGOs in Brazil: do incentives matter?

The paper identifies some of the factors that influence the efficiency of NGOs in Brazil using stochastic frontier analysis. The paper provides evidences about the importance of agency problems in NGOs.
Keywords: NGO, agency theory, stochastic frontier, rent-seeking.

Straipsnyje, naudojant stochastinių ribų analizę, nustatomi veiksniai, kurie įtakoja nevyriausybinių organizacijų veiksmingumą Brazilijoje. Pateikiami įrodymai apie tarpininkavimo problemų svarbą NVO.
Raktiniai žodžiai: NVO, atstovavimo teorija, stochastinės ribos, rentos siekimas.

JEL Classifications: D23/Q50.

Introduction

Throughout the 20th century, a growth was observed in the role of nonprofit civil society organizations in the social, political and/or economic scenario of the various nations. At the end of World War II, the United Nations (UN) named them 'non-governmental organizations' (NGOs) and, since then, they have gained even more visibility in the world stage.

In Brazil, following the international trend, these organizations grew significantly, both in number and in participation in the provision of public goods. This has been calling the attention of critics, scholars, and the public, who raise questions as to the legitimacy of NGO activity in the country. In spite of being called 'non-governmental', what is observed in Brazil is that most part of the organizations is strongly connected to the government and to members of the State apparatus, either financially or by means of direct participation in or influence on its administrative structure.

Cláudio Djissey SHIKIDA – Professor and researcher (Phd) at Ibmec Minas Gerais. Address: Centro de Economia Aplicada e Economia Empresarial - IBMEC-Minas Gerais. Rua Paraíba, 330, 4o andar. Belo Horizonte, MG – ZIP Code 30130-140, Brazil. Phone: 00 55 31 3247-5757. E-mail: claudiods@ibmecmg.br.

Marina Guedes MELO – Economist at SAFM Mineração Ltda. Address: SAFM Mineração Ltda. Av. Afonso Pena, 3130, sala 903. Belo Horizonte, MG - ZIP Code 30130-009, Brazil. Phone: 00 55 31 3281-8777. E-mail: marinagmelo@gmail.com.

Ari Francisco de ARAUJO JUNIOR – Professor and researcher (Msc) at Ibmec Minas Gerais. Address: Centro de Economia Aplicada e Economia Empresarial – IBMEC Minas Gerais. Rua Paraíba, 330, 4o andar. Belo Horizonte, MG – ZIP Code 30130-140, Brazil. Phone: 00 55 31 3247-5757. E-mail: arifaj@ibmecmg.br.

The Brazilian media has reported, in recent years, various suspicions of corruption and fraud involving NGOs in the country. It is important to call attention to the fiscal benefits and governmental incentives that these organizations are granted as a consequence of presenting themselves as nonprofits. Notwithstanding the supposed altruistic character of the activities carried out by NGOs, there is the possibility that their directors are corrupted, given the incentives offered by the State (legal incentives, we may say in passing) for the functioning of such organizations.

Since the reporting of those suspicions by the Brazilian media, an interest has arisen in investigating the incentives of NGOs in Brazil, as well as the factors that influence their efficiency. The scientific literature that studies NGOs and other nonprofit organizations is relatively recent, and has developed very much in recent years, given the increasing role of NGOs in the provision of public goods, often making up for market and state failures and inefficiencies in performing such task. The nongovernmental sector therefore ended up gaining major importance in the social realm in Brazil and throughout the world, bringing the necessity to understand the dynamics of this private sector segment which does not have the objective of obtaining profits with its activities, and which engages in supplying social needs, a function that, in principle, should be taken on by the State (directly or even by private sector contracting).

The literature presents NGOs as competitors in the market for donations. The sources of funding for the activities and projects carried out by those entities are organizations for international cooperation, partnerships with government bodies, contributions from members, donations from individuals and business firms, activities carried out by the NGOs themselves, among others (Associação, 2005). In that sense, this is a sector that moves a great volume of funds around the world, making it necessary to understand how its participants react to incentives and control mechanisms established either by the organizations themselves or by impositions stemming from the external relations that they maintain.

NGOs and other nonprofits, just like profit-maximizing organizations, face agency problems, which are typical of contractual relations in which the parties interact in an asymmetric information environment. According to the literature, one important control mechanism that can minimize agency costs and improve the organizations' performance is the administrative council. Other relations and conditions of NGOs, such as their scope of activity, may influence their efficiency.

The aim of this paper is to study the impact of agency problems over the NGOs efficiency. **Our main task** is to test if there is a difference among the efficiency of the NGOs due to the geographical scope and also due to the size of the board of the NGO.

The methodological approach is the stochastic production frontier applied in a unique sample of Brazilian environmental NGOs. The data used in the empirical analysis is related to their performance in 2006.

The next section presents a discussion about the incentives by which NGOs operate (principal-agent relationship) from a theoretical standpoint. Thereafter, we present the estimated model, the data, and the results. Finally, the last section presents conclusions.

The political economy of NGOs

The relationship established between donors of funds and NGOs can lead to a principal-agent problem.[1] NGOs, like income-maximizing firms, establish contractual relations with those who contribute to their functioning. The actors are, therefore, the donor of funds, called 'principal', and those who act directly in the execution of the activities that NGOs intend to carry out, called 'agents'.

L. Puttermann (1993) and E. Brody (1996) mistakenly argue that there is no principal in the case of nonprofit organizations, since they are not privately owned and are not allowed to distribute revenue. It can be argued, however, that those who donate funds to third sector organizations are the true sponsors of their activities, and wish, obviously, to have some control as to how those funds are used and as to whether they are used for the purposes to which they were initially made available. Therefore, the donors of funds play the role of the principal, since they have a true interest in the organizations' output, that is, in the results of the projects they execute.

Principal-agent problems arise due to the existence of divergent preferences between those actors (Chauvet et al., 2006). If their preferences were identical, the relationship between them would be called 'partnership'. However, this situation does not seem to be realistic. Another factor that aggravates the principal-agent problem is the existence of certain limitations in the oversight of the real effort spent by the agent in a particular project, that is, the principal does not have all the information that he would like to have on the agent's performance in the project funded by the principal, and the access to more information represents an additional cost to the principal.

According to E. F. Fama and M. C. Jensen[2] (1983), agency problems occur because there is a cost to establish and monitor contracts between principal and agent. Thus, the principal needs to decide how much he is willing to spend with each agent, considering that the degree of oversight that he will have over the agent is not a given, but a value chosen by the principal. In their work, L. Chauvet et al. (2006) used a control variable by which they measured the precision of the information obtained by the donor on the effort spent by the agent at a certain cost. In other words, that variable makes it possible to measure the level of oversight by the principal of the agent's actions, given that their interests generally differ. The results suggest that the more divergent the principal's and the agent's preferences are, the more significant will be the effects of oversight on the improvement of the agent's performance.

NGOs tend to have a greater connection with entities and donors with whom they share principles and purposes. Donors choose the organizations to which they want to donate their funds according to the closeness of their principles to the services offered by the organization (Andreoni; Payne, 2003). Still, it is assumed that these donating individuals and entities require tools through which they can have control over the organizations' activity.

There are many studies on the mechanisms of control of nonprofit organizations, such as NGOs, and on the role of such mechanisms in the mitigation of agency problems. In many of those studies, the existence of a board is mentioned as an important strategy to address these problems. M. Auteri and R. E. Wagner (2007) affirm that, in nonprofit organizations, the board is the main internal control mechanism aiming at the solution of agency problems.

Some works empirically tested the hypothesis indicated by M. Auteri and R. E. Wagner (2007). The results found by R. K. Aggarwal et al. (2007) suggest a positive relationship between the size of the board, measured by the number of its members, and the number of programs administered by the organization, as well as a negative relationship between board size and the incentives of the organization's managers to act only in function of how much money they earn. In addition, in a study on fraud in nonprofit organizations, J. Greenlee et al. (2007) point to the importance of board members in the prevention of fraud and losses to which organizations are subject. According to their work, the more qualified is the board, the greater its chances will be to improve accountability and to reduce the occurrence of fraud.

For the big donors, such as international institutions and agencies, it might be easier to demand from NGOs internal controls that can yield adequate accountability, allowing those international entities to safely track how NGOs allocate their resources. However, it is assumed that this necessity is not so easily addressed in the case of small donors who make donations individually.

In empirical tests carried out by P. Andrés-Alonso et al. (2006) with a sample of Spanish Nongovernmental Development Organizations (NGDOs), the results indicate that, in some cases, donors do not have the power to control NGDOs. The authors tested the hypothesis that the presence of donors, especially public institutions, would be positively related to the efficiency of organizations. However, the results suggest that, depending on how the public agency supervises the organizations it subsidizes, the impact on the organizations' efficiency can vary. The more subject to supervision the organizations are, the more efficient they tend to be. In the case of European Union bodies, which make short-term donations and generally do not renew their contracts with the organizations, it is more difficult to supervise the allocation of resources. So, even though they are public entities, which would supposedly have more control over the organizations' activities, they do not supervise them accurately and, therefore, end up not contributing to an increase in their efficiency.

NGOs operate in function of the contracts that they can establish with donors. NGOs' preference is for long-term contracts (with the possibility of renewal, if possible). Therefore, it can be expected that NGOs respond to the type of contract that they establish with their donors. This is strongly influenced by the type of donor and the duration/possibility of renewal of contracts. Donors who establish long-term relationships and who put a huge volume of resources into NGOs will likely demand more from them mechanisms through which they can control the allocation of resources. This requirement makes it more difficult to corruption to appear, making the NGOs more efficient.

A. Cooley (2004) affirms that, in the case of NGOs, the agent can more easily hide from the principal any negative information on the progress of their projects, when the principal has little ability to supervise the agent's actions. According to the author, this is even more likely to occur when such negative information can affect potential contract renewals.

In addition to the control mechanisms that are internal to nonprofit organizations, other external ones can strongly influence their operation and efficiency. D. L. Brown and A. Kalegaonkar (2002) maintain that the context in which civil organizations operate

has a great influence on their performance, and indicate four external challenges to be addressed by those organizations: (a) public legitimacy and accounting transparency, (b) relations with the government, (c) relations with market institutions, and (d) relations with international organizations, such as agencies that provide resources for the functioning of developing NGOs. The role of the international funding could be viewed as distortive or not, in the point of view of the domestic society. However, as C. Meyers (2000) argue, the output of the NGOs is generally international public goods. A better environment is a good example of this.

J. Andreoni and A. A. Payne (2003) state that third sector organizations compete in a market for donations. Usually, in donating to an organization, an individual decides not to donate to other organizations, that is, individuals give their resources to only one entity. Hence the necessity arises that nonprofit organization play an active role in fund-raising. J. Thornton (2006), for example, affirms that NGOs' expenses on fund-raising are strategic decisions of the organizations, considering that there is a scarcity of donations.

In a study on International Nongovernmental Organizations (INGOs) and the international aid market, A. Cooley and J. Ron (2002) argue that part of INGOs' behavior can be explained through an analysis of the incentives and constraints created by the institutional environment of the international arena. Often, typically short-term contracts, which are renewable and based on the organizations' performance, create counterproductive incentives, since INGOs respond to contractual incentives and organizational pressures, just like firms operating in the market.

The authors call attention to the existence of a market for international aid funding. This international market inserts the organizations in a much more competitive environment, and they tend to mirror profit-maximizing organizations of the private sector so as to structurally reorganize themselves. In order to become able to compete in this market, NGOs receive an incentive to professionalize themselves, to be accountable for their expenditures, and to demonstrate concrete results of their projects, that is, they need to put in place tools to guarantee the contractual relations at which they aim, and to avoid the appearance of agency problems. In case there is not an adequate monitoring of the activities of the organizations, the agents can divert resources aiming at opportunistic gains.

Based on the literature reviewed above, this paper proposes to test the effect of the organizations' board size, scope of activity, and age on the efficiency of environmental NGOs in Brazil.

NGOs: do incentives matter?

Methodology: Stochastic Production Frontier. In order to estimate the efficiency of environmental NGOs, we used the model of Stochastic Production Frontier Function suggested by G. E. Battese and T. J. Coelli (1995)[3]. The model incorporates the random errors related to the production function as well as the effects of the technical inefficiency of the firms responsible for deviations of the observed output in relation to their potential output. This model can be expressed as:

$$Y_i = x_i\beta + (V_i - U_i) \qquad (1)$$

where Y_i is the production (in log form) of the firm i (i=1,...,N);

x_i is a vector (k x 1) of variables (in log form[4] unless the

variable is binary) which explain or affect the production of firms;

β is a vector (k x 1) of parameters to be estimated;

V_i represents the random errors and, as per hypothesis, have a distribution $N(0,\sigma_v^2)$ independent from U_i;

U_i are non-negative random variables associated with technical inefficiency in the production, as per hypothesis independently distributed in a zero-truncated normal distribution in which $\sim N(z_i\delta,\sigma_U^2)$.

It is expected that the technical inefficiency U_i is associated with the deviations of production in relation to the stochastic frontier $(X_i\beta + V_i)$. The firm/organization which operates on this frontier is maximizing its production, which is, allocating its factors of production in the most efficient way. The term U_i is a function of z_i explanatory variables, modeled according to equation (2):

$$U_i = z_i\delta + \omega_i \qquad (2)$$

in which z_i is a vector (p x 1) of explanatory variables concerning the inefficiency of the firms and δ is a vector (1 x p) of parameters to be estimated. The error term, ω_i, as per hypothesis, is a white noise with distribution $N(0,\sigma_\omega^2)$.

The model proposed by G. E. Battese and T. J. Coelli (1995) entail allocative efficiency, requiring the removal of the first-order conditions of profit maximization. Therefore, it becomes possible to analyze the technical efficiency involved in the stochastic production function, in which the frontier parameters and those concerning the inefficiency of the firms are simultaneously estimated.

Starting from the estimates of the δ parameters, inferences can be made on the z_i variables. The variables that present positive (negative) estimated coefficients contribute to the inefficiency (efficiency) of the firms.

G. E. Battese and G. S. Cora (1977) further introduced the γ parameter, which allows comparisons between the variables U_i and V_i. In this case, since $\gamma = [(\sigma_U^2/(+\sigma_U^2 + \sigma_V^2)] \in [0,1]$, it can be said that values of γ closer to one mean that the observed deviations in relation to the frontier are characterized by the inefficiency of the firms, taking into account the explicative variables of U_i.

Data and Sources. This work investigates the impact of internal control mechanisms on the efficiency of environmental NGOs. The choice of environmental NGOs is mainly due to the difficulty of obtaining detailed data on the operation of third sector organizations in Brazil as we found with respect to environmental organizations.

A significant growth has been observed in the number of environmental NGOs in Brazil in recent years, due to the increasing concern of the population with socio-environmental issues. According to S. S. Amaral (1995), between 1990 and 1995, among the roughly 5,000 NGOs that were created in Brazil, about 1,500 act in the environmental realm. This illustrates the importance of such organizations in the Brazilian third sector.

For the empirical analysis, we used data for the year 2006 on the performance of 315 environmental NGOs in Brazil, published in the 2007 Environmental Management Analysis Yearbook[5]. We selected only the NGOs that disclosed their expenditures on projects throughout the year 2006. For that reason, the sample used only contains 105 of the 315 organizations.

Due to the scarcity of information on NGOs, the initial selection for publication in the 2007 Analysis Yearbook was done starting from a list of entities registered in the National Council for the

Environment (Conama), in the National Association of NGOs (Abong), and in the Brazilian Forum of NGOs, comprising a total of 1,070 organizations. This number was reduced, since many NGOs either did not fit Conama's criteria that describe the operations of NGOs, or could not be contacted. Those NGOs that presented replies to the survey that were too different from the average of the information provided by other organizations were also excluded.

The survey covered many aspects, such as the origin of the resources received in 2006, the means of dissemination of information on their activities, their main objectives, among others. However, in this work, we use information regarding the year of establishment of the organizations, their scope of activity (local, state, regional, national and/or international)[6], the number of members of their boards, the number of employees and volunteers, and the amount of money spent on projects during the year 2006. This information was used to estimate the Stochastic Production Frontier of the NGOs.

Specification and Estimation of the Stochastic Production Frontier. Using the data on the activities of 105 Brazilian environmental NGOs in 2006, the following specification was used for the stochastic production function:

$$\ln Y_i = \beta_0 + \beta_1 \ln K_i + \beta_2 \ln L_i + \\ + (V_i - U_i) \qquad (3)$$

in which Y_i, K_i and L_i represent, respectively, production, capital stock, and labor stock of each of the organizations in the sample.

To measure the production of Brazilian environmental NGOs, we used data provided by the organizations themselves on how much they spent on projects during the year 2006. NGOs engage in the provision of public goods, and this is done through the projects they carry out; therefore, the expenditures of the organizations on projects is used as a proxy for their production. In order to measure capital stock, we used the NGOs' age (natural logarithm), assuming that the older the organization, the more experience it has in the fund-raising market, which could reflect directly on its expenditures on projects. As a measure of labor stock, we used the number of employees plus the number of volunteers who work for the organizations (natural logarithm).

We follow the discussion about the olsonian "economic sclerosis" here (Olson, 1982) and Wallis & Oates, 1988). The variable "age" can be understood both as a measure of capital ("experience") of the NGO and also as a source of sclerosis, meaning that older NGOs has more experience in rent-seeking. That´s the reason we use it both as a factor of production and as a factor of inefficiency.

We used the following variables to model the NGOs' inefficiency factor: (a) NGOs' age (natural logarithm), (b) number of members who form the organizations' boards, and (c) dummies for the NGOs' scope of activity (municipal, state, regional, or national/international).

We also intended to evaluate the impact of transfers of public resources to NGOs on their efficiency. However, the variable that could be used to test such hypothesis (percentage of resources obtained by sources other than the government) did not present variability in the sample and, therefore, the results obtained in the regression were not satisfactory.

Results. The estimated parameters of the production frontier specified in equation (3) are presented in Table 1. The results obtained are consistent with the literature presented earlier in this study, and all of the estimated parameters are statistically significant at the 5% level.

The coefficients of the dummy variables for state, regional, and national/international scope are significant. Using the municipal scope dummy variable as a reference, all the others (state, regional, and national/international scope) are negative in sign, and present an increase – in absolute value – as the NGO's activity broadens. In other words, the organizations that have a broader scope of activity tend to be more efficient than those with local action (Brown; Kalegaonkar, 2002). One possible reason for this result is the parochial effect, which would be stronger in NGOs of predominantly local scope, due to the proximity to local interest groups.

M. Auteri and R. E. Wagner (2007) point to NGOs' boards as an important tool of internal control that contributes to an increase in the organizations' efficiency. This effect is confirmed by the negative sign of the coefficient of the variable "number of board members" ($\delta_5<0$). A similar result was found by R. K. Aggarwal et al. (2007) and J. Greenlee et al. (2007), according to whom the existence of an administrative board or the number of its members positively impacts the performance of nonprofit organizations.

The variable that measures the NGOs' age, in the error term, presents a positive sign ($\delta_4>0$). This result can be interpreted as evidence favorable to the hypothesis that older NGOs develop not only more projects (which is captured by the positive sign of β_1), but also structures and/or mechanisms that negatively affect their performance in terms of efficiency, an argument similar to that of M. Olson (1984).

Finally, the value found for the inefficiency indicator, γ, suggests that a significant part of the total variance of the composed error term in the production function is explained by the variance of the technical inefficiency.

Table 1

Estimated parameters of the stochastic production frontier

Parameters/variables	Estimates	t-value
β_0	11.08	18.70
β_1 (Ln NGOs' age)	18.00	6.88
β_2 (Ln number of employees and volunteers)	0.37	1.99
δ_0	3.85	3.64
δ_1 (z_1- state scope dummy)	-2.18	-1.67
δ_2 (z_1- regional scope dummy)	-2.19	2.21
δ_3 (z_1- national/international scope dummy)	-3.15	-3.24
δ_4 (z_2- Ln NGOs' age)	1.56	3.09
δ_5 (z_3- number of board members)	-0.11	-2.18
σ^2 ($\sigma^2=\sigma_u^2+\sigma_v^2$)	4.89	3.84
γ	1,00	138523.9
Log of the Likelihood Function	-216,26	

Source: Prepared by the authors based on regression results.

Conclusions

In this work we studied some of the factors that would exert influence on the efficiency of NGOs in Brazil. To that end, we used a sample of 105 environmental NGOs that act in local, state, regional or national/international level in the year 2006.

According to the economic literature, nonprofit organizations, like profit-maximizing organizations, are subject to agency problems, caused especially by the existence of asymmetric information in the oversight of the agents' actions by the principal. The literature suggests that the boards of directors of the organizations can be an important tool for reducing agency costs, with a positive effect on the efficiency of those organizations.

Thus, one of the variables tested in the model was the number of members in the boards of directors of the NGOs in the sample. The results confirm what is usually suggested in theory, namely, that the number of board members positively influences the performance of nonprofit organizations, reducing their inefficiency.

Under the hypothesis that the environment external to NGOs can influence their behavior and, consequently, their efficiency, we also tested the importance of proxies for the proximity of NGOs to local politicians. The result, in general, confirms the hypothesis rose earlier in the paper: the broader the NGOs' scope of activity, the higher their efficiency. In other words, a greater inclusion of NGOs in the international funding market – which is generally more competitive than local funding markets – seems to make them more efficient.

As to the effects of the NGOs' age in explaining the technical inefficiency component, the results suggest that, in the sample analyzed, the organizations' age is positively related to their inefficiency. At the same time, when interpreted as a production input, this variable proved to contribute to the increase in the NGOs' expenditures on projects, also in accordance with the theoretically expected result.

In spite of its limitations, this paper contributes to fill the existing gap in the literature on the incentives underlying NGO activity in Brazil.

Notes

[1] The agency theory was developed by M. C. Jensen & W. H. Meckling (1976).

[2] See also J. L. Miller-Milsensen (2003) for a reference of the same problem in non-profit environment.

[3] This method was independently proposed by D. Aigner, C. A. K. Lovell and P. Schmidt (1977), and W. Meusen and J. Broeck (1977). Later, F. R. Forsund, C. A. K. Lovell and P. Schmidt (1980), P. Schmidt (1986), P. W. Bauer (1990), G. E. Battese (1992), W. H. Greene (1993), G. E. Battese and G. S. Coelli (1995) contributed to the improvement of the method and to the extension of its applications.

[4] In order to estimate a Cobb-Douglas production function.

[5] In Portuguese: Anuário Análise de Gestão Ambiental (2007).

[6] Local-scope NGOs are those whose activities are focused in the entity's host city. NGOs of state scope act in various cities in one single Brazilian state. Regional-scope NGOs are those that act in more than one state belonging to at least one of the Brazilian regions: North, Northeast, Center-West, South and/or Southeast. Finally, national/international-scope NGOs are those that carry out activities throughout the Brazilian territory and/or in other country or countries.

References

1. Aggarwal, R.K., Evans, M., Nanda, D. (2007). Access, Board Size, and Incentives in Nonprofit Firms // Management Accounting Section (MAS) Meeting.
2. Aigner, D., Lovell, C.A.K., Schmidt, P. (1977). Formulation and Estimation of Stochastic Frontier Production Function Models // Journal of Econometrics. Vol. 6, n. 1.
3. Amaral, S.S. (1995). Meio ambiente na agenda internacional: comércio e financiamento // Estudos Avançados, Vol. 9, n. 23.
4. Andreoni, J., Payne, A.A. (2003). Do Governments Grants to Private Charities Crowd Out Giving or Fund-raising? // The American Economic Review, Vol.93, n. 3.
5. Andrés-Alonso, P., Cruz, N.M., Romero-Merino, M.E. (2006). The Governance of Nonprofit Organizations: Empirical Evidence from Nongovernmental Development Organizations in Spain // Nonprofit and Voluntary Sector Quarterly, Vol. 35, n. 4.
6. Anuário Análise Editorial de Gestão Ambiental. (2007). Editora Silvana Quaglio.
7. Associação Brasileira das Organizações Não Governamentais. (2005) Ação das ONGs no Brasil - perguntas e repostas. Internet access: http://www2.abong.org.br/final/bibli.php?ID=150. [Accessed September 2007].
8. Auteri, M., Wagner, R.E. (2007). The Organizational Architecture of Nonprofit Governance: Economic Calculation within an Ecology of Enterprises // Public Organization Review, Vol. 7, n. 1.
9. Battese, G.E. (1992). Frontier production functions and technical efficiency: A survey of empirical applications in agricultural economics // Agricultural Economics, Vol. 7, n. 3-4.
10. Battese, G.E., Coelli, T.J. (1995). A Model for Technical Inefficiency Effects in a Stochastic Frontier Production Function for Panel Data // Empirical Economics, Vol. 20, n. 2.
11. Battese, G.E., Corra, G.S. (1977). Estimation of a Production Frontier Model: With Application to the Pastoral Zone of Eastern Australia // Australian Journal of Agricultural Economics, Vol. 21, n. 3.
12. Bauer, P.W. (1990). Recent Developments in the Econometric Estimation of Frontiers // Journal of Econometrics, Vol. 46, n. 1-2.
13. Brody, E. (1996). Agents without Principals: The Economic Convergence of the Nonprofit and For-Profit Organizational Forms. New York Law School Review, 40.
14. Brown, D.L., Kalegaonkar, A. (2002). Support Organizations and the Evolution of the NGO Sector // Nonprofit and Voluntary Sector Quarterly, Vol. 31, n. 2.
15. Chauvet, L., Collier, P., Fuster, A. (2006). Supervision and Project Performance: A Principal-Agent Approach. Internet access: http://users.ox.ac.uk/~econpco/research/pdfs/SupervisionandProjectPerformance.pdf. [Accessed November 2007].
16. Cooley, A. (2004). The Marketplace of Humanitarian Action: A Political Economy Perspective. Internet access: http://programs.ssrc.org/emergencies/publications/cooley.pdf. [Accessed November 2007].
17. Cooley, A., Ron, J. (2002). The NGO Scramble: Organizational Insecurity and the Political Economy of Transnational Action // International Security, Vol. 7, n. 1.
18. Fama, E. F., Jensen, M. C. (1983). Separation of Ownership and Control // Journal of Law and Economics, 26.
19. Forsund, F.R., Lovell, C.A.K., Schimidt, P. (1980). A Survey of Frontier Production Functions and of their Relationship to Efficiency Measurement // Journal of Econometrics, Vol. 13, n. 1.
20. Greene, W.H. (1993). The econometric approach to efficiency analysis. In: Eried H.O., Schmidt, S.S. & Lovell, C.A.K. (Eds) The measurement of productive efficiency: Techniques and applications. Oxford University Press New York.
21. Greenlee, J., Fischer, M., Gordon, T., Keating, E. (2007) An Investigation of Fraud in Nonprofit Organizations: Occurrences and Deterrents // Nonprofit and Voluntary Sector Quarterly, vol. 36, n. 4.
22. Jensen, M.C., Meckling, W.H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure // Journal of Financial Economics, vol.3, n.4.
23. Meeusen, W., Van Den Broeck, J. (1977). Efficiency Estimation from Cobb-Douglas Production Functions with Composed Error // International Economic Review, Vol. 18, n. 2.
24. Meyer, C. (2000). The economics and politics of NGOs in Latin America. Praeger Publishers.
25. Miller-Millesen, J.L. (2003). Understanding the Behavior of Nonprofit Boards of Directors: A

Theory-Based Approach // Nonprofit and Voluntary Sector Quarterly, Vol. 32, n. 4.
26. Olson Jr. M. (1984). The rise and decline of nations: economic growth, stagflation, and social rigidities. Yale University Press.
27. Putterman, L. (1993). Ownership and the Nature of the Firm // Journal of Comparative Economics, 17.
28. Schimidt, P. (1986). Frontier Production Functions // Econometric Reviews, Vol. 4, n. 2.
29. Thornton, J. (2006). Nonprofit Fund-Raising in Competitive Donor Markets // Nonprofit and Voluntary Sector Quarterly, vol. 35, n. 2.
30. Valor Econômico. (2007). CPI das ONGs investigará entidades que receberam mais de R$ 200 mil. Internet access: www.valoreconomico.com.br. [Accessed November 2007].
31. Wallis, J. J., Oates, W. E. (1988). Does economic sclerosis set in with age? An empirical study of the Olson hypothesis. Kyklos, Vol. 41, n. 3.
32. World Bank. (1998). Assessing Aid: What Works, What Doesn't, and Why. Oxford University Press.

The paper submitted: February 01, 2010
Prepared for publication: June 01, 2010

Cláudio D. SHIKIDA, Marina G. MELO, Ari Francisco de ARAUJO Jr.

NEVYRIAUSYBINIŲ APLINKOSAUGOS ORGANIZACIJŲ EFEKTYVUMAS BRAZILIJOJE: AR SKATINIMAS SVARBU?

S a n t r a u k a

Straipsnyje siekiama nustatyti ir aprašyti veiksnius, kurie įtakoja nevyriausybinių organizacijų veiksmingumą Brazilijoje. Tyrimas atliktas 2006 m. naudojant 105 vietinių, regioninių ir nacionalinių/tarptautinių nevyrausybinių aplinkosaugos organizacijų duomenis. NVO veiklų ir projektų finansavimo šaltiniai yra tarptautinio bendradarbiavimo organizacijos, valdančios institucijos, narių įmokos, fizinių ir juridinių asmenų aukos, pačių nevyriausybinių organizacijų vykdoma veikla. NVO sektorius generuoja didelį kapitalo kiekį visame pasaulyje, todėl būtina suprasti, kaip šio sektoriaus dalyviai reaguoja į skatinimus ir kontrolės mechanizmus. Dėl informacijos asimetriškumo tarp įgaliotojo ir įgaliotinio nepelno siekiančios organizacijos susiduria su atstovavimo problemomis. Ši asimetrija didėja dėl įgaliotojo priežiūros stokos įgaliotiniams. Straipsnyje NVO našumas matuojamas kaip išlaidos aplinkosaugos projektams. Įgaliotojo-įgaliotinio problema susidaro dviem būdais: pirma, didesnis tarybos narių skaičius įtakoja geresnę įgaliotojo kontrolę įgaliotiniui; antra, Brazilijos nevyriausybinės aplikosaugos organizacijos turi stiprius ryšius su tarptautinėmis NVO. Vadinasi, kuo platesnė geografinė NVO veiklos sritis, tuo įgaliotojo kontrolė turi būti geresnė. Šios dvi hipotezės yra tikrinamos ekonometriškai, pasitelkiant 105 nevyriausybinių aplinkosaugos organizacijų stochastinių ribų vertinimą. Straipsnyje ekonometrinis metodas apima atsitiktines gamybos funkcijos paklaidas; techninį firmų neefektyvumą, kuris atsako už nukrypimus nuo numatyto ir potencialaus našumo. Tyrimo rezultatai patvirtino, kad: 1) didėjantis NVO tarybos narių skaičiaus gerina nevyriausybinių organizacijų efektyvumą; 2) kuo platesnė geografinė NVO veiklos sritis, tuo jos produktyvesnės. Tyrimas parodė, kad ilgesnį laiką veikiančios nevyriausybinės organizacijos parengia ne tik daugiau projektų, bet ir gali sukurti rentos siekiančias struktūras.