

WORKING PAPER

*Financial vulnerability:
an empirical study of Ugandan NGOs*

Berta SILVA & Ronelle BURGER

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Financial vulnerability: an empirical study of Ugandan NGOs*

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Working paper CIRIEC N° 2015/15

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Abstract

Nongovernmental organisations (NGOs) pursue wide ranging and very diverse projects and they have become more vital for developing countries than ever. They draw public awareness for human rights, promote the development of democratic institutions and seek to improve the well-being of communities by being increasingly engaged in different aspects of socio-economic development, such as health and education.

However, NGOs are dependent upon their external environment, especially the financial resource environment. The financial situation of most organisations is negatively affected by constraints to credit, their inability to raise own capital and to engage in profit-making activities, which renders them financially vulnerable. The more financially vulnerable an NGO is, the more difficult it is to pursue long and medium term organisational commitments and goals. This may even result in decreased, interrupted or terminated programmes.

This study adapts the methodologies that have previously been used for developed countries to predict financial vulnerability in developing countries. It contributes to the body of empirical literature on development finance, by identifying alternative proxies to assess the financial vulnerability of the NGO sector, including donor conditions, endowments (investments funds or equity) and savings. It takes an empirical approach and examines a selection of studies on the financial vulnerability of NGOs, using data from 295 NGOs in Uganda to explore the possible relationship between organisational characteristics and financial vulnerability.

The study confirms the results of previous studies. Revenue concentration and surplus margin are significant predictors of financial vulnerability. The existence of equity is another variable which can help to manage financial vulnerability. The study also found that larger and community funded NGOs are less likely to be financial vulnerable.

Key words: financial vulnerability, NGO, funding sources, Uganda, organizational characteristics

JEL-codes: L30, O55

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1. INTRODUCTION

The objectives of NGOs, particularly in development countries, are wide ranging and very diverse, but most pursue long-term goals that seek to improve the well-being of communities, such as the delivery of social goods (*e.g.* health and education). They promote the development of democratic institutions by building capacity and engage powerful countries to come to the table and support those who respect democratic values. They managed to put issues of human rights and poverty alleviation on the global agenda and persuaded nation states to take appropriate action. Therefore, NGOs are widely recognised for their contributing to development and poverty reduction, especially in the poorest countries of the world and in fragile states where government capacity is often very weak.

However, the NGO sector in general suffers from high volatility and uncertainty of its income flows which turn them to be susceptible to financial problems and consider financially vulnerable. This fact is of importance since it may constrain organizations in achieving organizational goals, such as strengthening the capacity of community health services and other community institutions, enhancing food security in rural communities and promoting gender equality. That is a concern for all relevant stakeholders of NGOs (donors, governments and individuals) as it can force them to scale down or even interrupt the provision of programme services during times of financial distress. This situation is even worsened by the inadequate buffering of NGOs against financial difficulties due to difficult access to credit, their inability to raise capital and to engage in profit-making activities. Thus, an understanding of the relationship between the organizational characteristics of NGOs and their financial vulnerability can effectively mitigate the impact of financial vulnerability on effective programme delivery.

Most of the literature on financial vulnerability and the related assessment of financial risk tend to focus on the for-profit sector. It found a statistically significant relationship between financial distress and some accounting indicators, as well as between financial distress and organizational size, using logistic regressions. In a similar way this study addresses the susceptibility to financial vulnerability of NGOs from an institutional perspective by examining internal factors that may cause vulnerability.

It contributes to the literature on development finance by specifically focusing on NGOs and it expands the set of indicators that can be considered to assess financial vulnerability, by incorporating the unique attributes of the NGO sector in developing countries. It proposes that such a set of indicators should also include rigid institutional arrangements that inhibit NGO flexibility, such as donor conditions (*e.g.* time frame of expenditures), the existence of physical

assets (e.g. land and building) and access to financial services. It compares the flexibility of different sources of NGO income and explores the relationship between vulnerability and organizational characteristics, including size, asset holdings and donor conditions.

The study is based on the work of Greenlee and Trussel's (2000) and Tuckman and Chang (1991). It employs Tuckman and Chang (1991)'s accounting ratios to predict financial distress, but also draws upon Trussel and Greenlee (2001)'s and Trussel (2000)'s expanded analysis in which they included additional control variables, such as organizational size, sector and debt ratio in recognition of organizational heterogeneity.

Using panel data, collected from Uganda's NGO sector in 2002 and in 2008, this paper applies a Linear Probability Model to predict financial vulnerability. It distinguishes between donor funded and community funded NGOs, based on the premise that these divergent funding models are associated with a different set of risks and vulnerabilities. The model relies on accounting ratios and institutional features, such as the possession of assets, budget flexibility, and dependence on external sources of finance.

The paper is structured as follows: section two presents an overview of relevant literature; section three describes the data and methodology and gives an outline of the empirical approach; sections four and five present the descriptive and econometric analysis respectively, while section six concludes.

2. LITERATURE REVIEW

The aim of the review is to gain insight into the factors that cause NGOs to be financially vulnerable. It relies mainly on relevant studies that used datasets from developed countries, particularly from the National Center for Charitable Statistics (NCCS) (US). Greenlee and Trussel (2001) considered a sample of approximately seven thousands NGOs (for the period 1992 to 1995) from IRS Statistics of Income dataset. Trussel (2002) used IRS Core Files database and considered a sample of ninety four thousand NGOs for the 1997 – 1999 period. Keating, Fisher, Gordon and Greenlee (2005) cover approximately 290 thousands organizations during the period of economic contraction (1998 – 2000).

2.1 Defining financial vulnerability

Financial vulnerability is defined as a fluctuation of revenue streams (or volatility of income flows). Tuckman and Chang¹ (1991) defined financial vulnerability as the probability that an organization would “*cut back its service offerings immediately*” for three consecutive years, when it faces adverse economic conditions or when donors interrupt funding. Other studies on NGOs

¹ Also adopted by Greenlee and Trussel (2000).

have adopted a definition of financial vulnerability as a decrease in equity balances as proportion of total revenue (Trussel and Greenlee, 2001; Trussel, 2002) or as a decrease in total revenue larger than 25 per cent of total revenue (Keating, Fisher, Gordon and Greenlee, 2005).

2.2 Factors determining financial vulnerability

Financial vulnerability of an NGO is caused by external as well as internal factors. External factors relate to: economic shocks, cut offs of donor funds and delays in the receipt of funds² (factors which may be interrelated). Many organizations, irrespective of size, face problems to obtain funds as predicted and do need to change their plans of action or use alternative financial sources to cover expenditure. Bulíř and Hamann (2003) claimed that uncertainty about aid disbursement, even when donors are generally committed, is high. The authors also examined the causes of financial aid volatility with aid dependency, considering each category of aid and concluded that the relative volatility of aid flow increases with the degree of aid dependency.

However, NGOs should rather depend on their internal and controllable factors to have more sustainable financial position. Organizational characteristics, such as access to alternative sources of funds and years of experience can reduce the impact of financial stress. The general objective of the study is to find out the causes/factors of financial vulnerability within NGOs. Specifically, it sought to determine and analyze the institutional factors that affect financial position in Uganda.

2.2.1 Stability of revenue streams

As previously mentioned, NGOs are dependent on their external environment, especially to finance required project expenditures (Nunnenkamp, Öhler, and Schwörer, 2013). In general, they rely on a variety of funding sources: grants and contracts from governments, international and philanthropy agencies; donations from private donors and corporations and external debt from financial institutions. Unlike the profit sector, NGOs may find it difficult to raise the required finance. As there are no private owners, they do not have access to equity capital (Rose-Ackerman, 1986; Bowman, 2002). Debt finance is also limited because NGOs possess fewer assets to provide as collateral (Rose-Ackerman, 1986). However, NGOs can generate voluntary donations³ (Froelich, 1999).

² The channels through which economic shocks affect the revenue of NGOs are: a decrease of amount donated by the corporate sector and the general public (as their own incomes decline during adverse economic conditions); a reduction of NGOs' endowment portfolios and a decrease in government budget funds.

³ With a comparison with profit sector, Wedig (1994) referred to donations as stock issuance and donors as the owners of nonprofit institutions.

The financial structure of a NGO is related to its sources of funds and determines its risk profile, which might affect its capacity and management of programmes. Yan, Denison and Butler (2009; 48) confirmed that the financial structure “plays a crucial role in their sustainability and development”. Froelich (1999) advocated for an optimal combination of revenue sources to minimize financial risk (*i.e.* uncertainty in terms of the expected amount and time of receiving those funds). This is in accordance with the *financial portfolio theory*, relating to the selection of the best portfolio combination of funding sources, with different degrees of volatility (Carroll and Stater, 2009; Anheier, 2003; 293). Chang and Tuckman (1994) and more recently, Carroll and Stater (2009) confirmed this result, showing that NGOs are able to decrease revenue volatility and thus financial vulnerability through portfolio diversification.

The *resource dependence theory* supports with this concern of relying on only a few revenue sources. Organizations are accordingly encouraged to reduce their funding dependence on only a few sources and to reduce the risk due to uncertainty of funds by diversifying their revenue base (Pfeffer and Salancik, 1978; Chang and Tuckman, 1994). In similar vein, Bulíř and Hamann (2003) examined financial aid volatility and aid dependency and concluded that the relative volatility of aid flows increases with the degree of aid dependence. Foster and Fines (2007) support a more moderate view that a NGO should gradually shift from a few sources (or on one single and dominant type of funding source, such as government grants) to a greater diversify of funding sources, especially within funding sources (*e.g.* by receiving funds from different levels of government).

In contrast, two other studies (Foster and Fine, 2007⁴; Chikoto and Neely, 2014) refuted these theories, by stating that revenue concentration and reliance on a few stable sources of finance enhances growth through greater financial stability. These studies investigate the variability of four different sources of funds: donations from individuals and corporations, grants and contracts from agencies⁵ and governments; commercial activities (*e.g.* selling goods and services; fees for programme services) and investment income from endowments. They found that organizations that relied on private contributions/donations experience higher average income volatility and show higher financial vulnerability from resource dependency (*e.g.* when the main source of funds is commercial activities) (Carroll and Stater, 2009), and that organizations that relied on government grants experienced a more stable revenue source (Froelich, 1999).

⁴ Study conducted interviews with managers of a few organizations in the U.S. and found that more than two-thirds of organizations became big - relying on a specific and dominant source of funding.

⁵ The agencies concept include: international governmental organizations (*e.g.* World Bank and United Nations), Foundations (*e.g.* Ford Foundation) and other national and local nonprofit organizations.

Another way of stabilising revenue streams is through borrowing. Yan Denison and Butler (2009) studied the factors that determine the revenue structure and borrowing decisions of NGOs. They claimed that organizations with a low degree of fund concentration, as well as those with financial support from governments, are more likely to issue debt. This supports the notion that NGOs with more government funding are in stronger financial positions and have higher debt capacities to raise long-term loans. Bowman's study (2002) confirmed that well-endowed NGOs issue more debt relative to the value of physical assets. These findings are consistent with the *static trade-off theory* of capital structure where managers balance the cost of financial distress (including the risk of collapse) and tax savings benefits. NGOs can usually borrow at a tax-exempt rate or are entitled to reimbursement of their tax⁶. This benefit is attractive and encourages NGOs to use debt as a way to increase the amount of internal revenue (Boris and Steuerle, 1999). However, donors may restrict the use of the donated assets as collateral (Yan and Denison, 2009)⁷.

Bowman (2002) also found that community support is negatively related to leverage ratio⁸, which shows that donations reduce the need to borrow. Hence, internal financing is preferred to external financing (such as debt). His findings are consistent with the *Pecking order* theory as organizations always prefer to use internal finance sources (such as earnings) to borrowing or asset conversion (Bowman, 2002).

2.2.2 Flexibility versus conditionality of funds and administration costs

Different types and sources of funds often differ in terms of donor conditionalities and the extent of flexibility in the use of funds. The problem often is not the scarcity of funds or the number of sources of funds, but rather the possibility (or not) to re-allocate funds to other project costs. This relates to the fungibility of funds, which means that mutual substitution is possible. Agencies, particularly donors, due to problems of asymmetric information and associated difficulties to assess the performance and programme effectiveness of NGOs, often impose stringent rules and accounting practices (for example, monitoring of budget expenditure and reporting standards). A factor highlighted by Chikoto and Neely (2014) is the level of flexibility from providers as the fund balance may be restricted to specific budget lines, limiting management discretion and the financial capacity of the organization. It is particularly important in donor funding, where conditionality's are set *a priori* and often

⁶ NGOs are often exempt from corporate income tax, property, sales and value-added taxes, either on their primary activities or their commercial activities as they assist governments in the provision of social services and the delivery of public goods (Anheier, 2003).

⁷ The mentioned studies were unable to separate tax-exempt debt from taxable debt.

⁸ The financial leverage is the extent to which a firm relies on debt financing. The more debt an organization has, the less likely it is that organization receives community funds.

leave little space for modification⁹. This increases not only the administration costs of NGOs' by creating a need for more skilled workers and causing higher bureaucratization (e.g Government funds) (Froelich, 1999), but it increases the financial vulnerability of NGOs whenever disbursements are conditional to the fulfillment of these requirements (Buliř and Hamann 2003; Burger and Owens, 2013). Stiglitz (2002) claimed that many conditions, even well intentioned, undermine the central purpose of aid. He explained that in several studies of World Bank intervention, the extent of conditionalities did not “*ensure that money was well spent*” and that loans will be repaid. He argued that fungibility of funds and inadequate or even counterproductive conditions are the reasons for the failure of conditionality.

A measure that can capture the ‘rigidity *versus* flexibility’ of donor funds could be the number and frequency of required reports that the NGO needs to submit to the donor¹⁰. Reporting requirements are linked to the monitoring of budget expenditure and activity plans and whenever there is a discrepancy between the budgeted and actual figures organizations are required to explain the difference. Concentration of revenue sources alone is however not the main problem. A high concentration of revenue sources together with great flexibility to allocate funds may still leave an organization less financially vulnerable to shocks compared to an agency with highly diversified income resources but with rigid donor budget and reporting standards.

The proportion of total expenditure allocated to overheads is another critical donor constraint faced by NGOs. Overheads are administrative costs or operational costs and fundraising expenses. Donors consider these costs as an indicator of organizational inefficiency and prefer to rather fund direct programme activities (Trussel and Parsons, 2007; Tinkelman and Mankaney, 2007; Ashley and Faulk, 2010; Nunnenkamp, Öhler, and Schwörer, 2013). Tikelman and Mankaney (2007) define these costs as the ‘price’ of output/ the cost of obtaining a dollar’s worth of the programme output. Nunnenkamp and Öhler (2012) used the terminology ‘efficiency price’ as overheads are regarded as unproductive expenditures. Nunnenkamp, Öhler, and Schwörer, (2013) showed that higher administrative expenditures increase financial vulnerability and therefore the probability of non-survival for NGOs, particularly in the case of public funding.

In contrast, other authors (Tuckman and Chang, 1991; Greenlee and Trussel, 2000; Trussel and Greenlee, 2001; Trussel, 2002) claimed that the existence of considerable administration costs increases financial flexibility, which decreases

⁹ Barr, Fafchamps and Owens (2004) mentioned, in their study about governance of NGOs in Uganda, that these costs of monitoring and reporting are onerous and information was either not available or reliable at the time when requested.

¹⁰ This link between strict budget and reporting requirements is based on my own experience on finance of NGOs that receive donor funding (from private organizations, as well as from Government).

financial vulnerability. This is possible through the reduction of administrative expenses to release funds for programme activities. This enables NGOs to continue delivery programme services.

On the contrary, Chikoto and Neely (2014) argued that those types of costs are important drivers of growth in the capacity of NGOs, helping them to comply with donor conditions,¹¹ such as monitoring and reporting requirements.

If overhead costs are reduced, they can generate a negative impact on programme services as their main function is to provide supporting and facilitating mechanisms. The impact of cutting these costs could outweigh the decrease of programme expenditure. Szper and Prakash (2011) show that pressure to reduce overhead expenditures below a certain threshold “may be counterproductive”. Accordingly, Nunnenkamp, Öhler, and Schwörer, (2013) support the idea of setting ceilings as well as floors on these costs ratios.

The fundraising variable is a proxy for the amount spent to provide information to donors (*i.e.* reveals the cost of generating information) (Trussel and Parsons, 2007). Tinkelman and Mankaney (2007) stated that this type of cost can have a positive direct impact on donations, as it creates awareness about and gives publicity to the work of NGOs. However, it also may have a negative and long term indirect impact on the perceived ‘price’ of output. Research on the impact of fundraising costs on revenue shows a positive and statistically significant relationship between growth of NGOs (measured as an increase in total revenue) and fundraising expenditures (Chikoto, Neely and Gordon, 2014).

2.2.3 Accounting ratios

Typically, accounting ratios are used to predict the financial vulnerability of an organization, whether for profit or not for profit.

Equity balance is the first ratio and is measured by net asset divided by total revenue (Tuckman and Chang, 1991; Greenlee and Trussel, 2000) or the total liabilities divided by net assets (Ohlson, 1980; Trussel, 2002). The use of a ratio like equity balance highlights a potential liquidity problem, because some assets, particularly capital items, cannot easily and quickly be converted into liquid funds. Capital items are usually purchased with donor funds and, even when they are under control of charitable organizations (and depreciated every fiscal year), they belong to donors and only after the completion of projects and with special approval, can they be disposed of or sold. These items, therefore, do not really serve as a resource that NGOs can quickly use to address immediate financial vulnerability.

Another accounting ratio that can predict financial vulnerability is the surplus margin. It is calculated as net income (*i.e.* revenue minus expenditure) divided

¹¹ These conditions are also referred to as “requirements” and “conditionality” (Stiglitz, 2002).

by total revenue. It measures the cash flow position of NGOs. Some authors (Chang and Tuckman, 1994; Greenlee and Trussel, 2000; Trussel, 2002) agree that surplus margins (*i.e.* operational margins) work as a buffer against financial vulnerability and are important financial resources to stimulate the growth of organizations. However, in the context of NGOs, with strict budgets and where organizations aim to provide public benefit and maximizing social welfare, rather than profits, surplus margin are not expected to make a difference in the case of financial problem.

Previous studies (Tuckman and Chang, 1991; Greenlee and Trussel, 2000; Trussel and Greenlee, 2001; Trussel, 2002; Tevel, Katz, and Brock, 2014) found that accounting ratios: equity balance, revenue concentration, surplus margin and administrative costs are good predictors of financial distress. In a recent study by Tevel, Katz, and Brock (2014) examined the predictive validity of the existing models used by Tuckman and Chang (1991), Olson (1980) and rating agencies of NGOs, using a sample of performing arts organizations. It was found that Tuckman and Chang, who relied on these parameters, provided the best prediction of financial vulnerability compared to the others. However, later on, Keating, Fisher and Greenlee (2005) compared the models by Ohlson's (1980), Altman's (1968) and Tuckman and Chang (1991) to predict financial distress in the non-profit sector and concluded that none of them can successfully predict financial vulnerability. The explanatory variables were not statistically significant or were characterized by unexpected predicted signal of estimated coefficient. Therefore, accounting indicators have value and should be considered, but they also have their limitations (Szper and Prakash, 2011).

Another important aspect of studying financial vulnerability based on accounting ratios is related to the institutional space in which NGOs operate. Different institutions may interpret the ratios differently. NGOs need to negotiate with and report to state institutions as well as to market institutions with different and sometimes conflicting expectations and they respond and strategically act (*i.e.* shape their performance) in the ways that donors would like to in order to manage good relationships (Balsler and McClusky, 2005; Van Puyvelde, Caers, Du Bois and Jegers, 2012; Nunnenkamp, Öhler, and Schwörer, 2013)¹².

2.2.4 *Size and years of experience*

Intrinsic features of NGOs, such as size (measured by number of employees and volunteers or by value of assets or amount of annual revenue), stage of development (*i.e.* start up; regular operations, growth) and years of experience

¹² Cariño (1999) studied the challenges faced by Philippine' NGOs and one of that is the fund received from Government that can gage independency and autonomy of the recipient organization. As an example, the author stated that Government agency unlikely fund NGOs that take policy critiques and advocacy projects.

are other important determinants of the financial stability and financial capacity of NGOs (Fafchamps and Owens, 2009; Trussel and Greenlee, 2001; Trussel, 2002).

The size of an organization is an institutional factor that reflects its reputation and should be considered when analysing levels of financial vulnerability (Trussel and Parsons, 2007). Underlying theories are the ‘*liability of smallness*’ (Harger et al., 1996) and the ‘*liability of newness*’ (Stinchcombe, 1965). According to the former, small organizations are less able to benefit from economies of scale and also lack supportive networks, whilst the latter relates to a lack of organizational field experience, established strategies and procedures to cope with unexpected situations.

Empirical evidence supports the abovementioned theories. Cariño (1999) emphasized that smaller and less experienced NGOs may receive fewer grants due to their lack of information regarding funding possibilities, less experience in preparing and presenting project proposals or weaker reputations when compared to larger and older NGOs. Ruben and Schulpen (2008) in their critical assessment of the allocation of public funding by Dutch NGOs, claimed that larger organizations have a higher probability of being selected to receive funding and are deemed to have better networks and opportunities for partnerships when compared to smaller organizations¹³. Fafchamps and Owens (2009) observed a positive association between NGOs that obtain grant funding and duration of the operation. In a recent study Burger and Owens (2013) confirmed that larger organizations are likely to have more and stronger network connections and stronger reputations. A similar situation was found in the case of microfinance institutions (MFIs), where larger organizations were more profitable and received better performance rating scores (Beisland, Mersland and Randøy, 2014).

3. DATA AND METHODOLOGY

3.1 Data

This study uses a panel data set inclusive of 295 NGOs in Uganda conducted in 2002¹⁴ and again in 2008. In 2008 the research team surveyed the same NGOs that were interviewed in 2002. The team tracked those organizations through field visits and they only considered the demise of a NGO after it was confirmed by either the community development officer or a former member staff. It was

¹³ It is important to mention that the main criteria used in Dutch programme assessment procedures is that organizations have to be able to mobilize at least 25 percent of own (internal) funding. This criteria naturally excludes smaller organizations.

¹⁴ The sample was drawn from NGO Registration Board in the Ministry of Internal Affairs (that includes information since 1989) after checking the organizations that were actually operating. For instance, there were NGOs that were still operating, but had not renewed their licenses or, in other cases, they have already terminated operations.

also required from field workers to provide a short description of the time and reasons for non-survival. The survival rate for NGOs (*i.e.* still exist by 2008) in Uganda is 83 percent. In the first phase of this survey of nonprofit organizations, research differences in characteristics were observed between two groups of agencies according to their different funding sources (grant vs other). The former group is assumed to be older, larger and more sustainable.

In the second wave of the panel survey surviving NGOs were interviewed. The researchers were very accurate in classifying each organization and noting changes in their structure, finances and activities.

The questionnaires in both studies included the same questions about assets, revenue, expenditure, networks and leadership characteristics, governance, activities, funding sources, target groups, staff, grants and donor requirements.

3.2 Methodology

The studies on which this study is based measured financial vulnerability through programme expenses instead of using income data based on the fact that non-profit sector aims to maximize social well-being (partially through programme services). However, due to the available data which does not have sufficient information about programme expenditure (and given that records on expenditure may not always be reliable) and considering that NGOs drive their results towards zero profit (Verbruggen and Christiaens, 2012). This study uses income as the dependent variable. This alternative and simple way of measuring financial volatility was also used by Keating, Fisher, Gordon and Greenlee (2005) and they have called it “*funding disruption*”.

Thus, first, a dummy variable is created that takes the value 1 if the organization experiences a drop of funding of 25 percent or greater as a proportion of total revenue over the period 2000 and 2001. Then, it calculates the same variation for the period 2006-2007, as a second dependent variable. Secondly, the analysis runs the model using the explanatory variables of 2000 (initial period) and checks if coefficients vary significantly by using different dependent variables (*i.e.* different periods of falling income). Finally, the work combines these two dependent variables and creates a large drop variable as a robustness check (*i.e.* consider any of the two variations).

In accordance with the literature review, the empirical analysis considered the following indicators of financial vulnerability¹⁵:

- Surplus Margin (**MARGIN**): It measuring low income generation from operations cycles as the difference between the amount of recurrent revenues and recurrent expenditures as a percentage of total recurrent revenue. It reflects the short-term cash flow available that may affect management

¹⁵ The data do not allow to consider all indicators of financial vulnerability as discussed in the literature.

decisions in adverse financial contexts. Low operating margins are expected to increase financial vulnerability.

- Revenue Concentration Index (*CONCEN*): It determines low diversification of income sources, i.e. the number of sources from which an organization receives funds. The study divided the revenue sources into: grants, membership fees, fees paid by beneficiaries, income from services provided, donations, and others including endowment income. A NGO that presents a low concentration ratio is expected to be less financially vulnerable (as it has more options through which to fund operations than those with fewer alternative sources of funds. We expect this indicator to have a positive relationship with financial vulnerability.
- Reporting Requirements (*REPORT*): It measures rigidity of donor funds/budgets. Organizations that receive grants from donors or government funds, that are required to strictly comply with certain conditions will have fewer options to reallocate expenditure. This factor is measured based on the reporting requirements¹⁶. If an NGO is required to produce a monthly, quarterly or / and half a year progress report and / or interim accounts, the explanatory variable takes the value 1, and 0 if it produces these reports only once a year or not at all. When more reports are required to be issued, the NGO is less able to use available and committed funds to cover financial difficulties. A positive relationship between the independent and dependent variable is expected from the results.
- Limited access to funding sources (*FUNDING*): It is represented by a dummy variable for the existence of savings accounts. It takes a value 1 if an NGO has a savings account and 0 if it does not. Limited access to credit lines, savings accounts and overdraft facilities are typical of the not for profit sector and is expected to increase financial vulnerability.
- Size (*SIZE*): It is measured by the total number of employees and volunteers. It is expected that larger organizations may be less vulnerable to financial problems.
- The non-existence of capital and equipment assets is (*EQUITY*): It is represented by three dummy variables that takes a value 1 if the organization owns that specific asset and 0 if not. The rationale for using three variables is related to the degree to which each of them can be converted into liquid funds in order to compensate for the loss of income to cover programme costs. NGOs that lack this equity are expected to experience higher levels of financial vulnerability.
- Types of NGO according to source of main funds (community funded or donor funded): It appears an important distinction based on the study of Burger and Owens (2013) that used the same Ugandan data. Their empirical

¹⁶ The data also have information about visits from granting agencies to Head Offices and field visits to activities sites. However, this study only considered reporting requirements (progress reports and interim accounts).

work showed that NGOs funded mainly by donors are typically larger, richer and with lower levels of fund fluctuations (even though they may be less diversified) than community funded pairs¹⁷. It is expected that donor funded NGOs will be less prone to large downward dips than community funded organizations.

Table 1 reflects the indicators and the way they were calculated. The expected sign of each variable relates to whether they have an expected partial positive or negative impact on NGOs' financial vulnerability.

Table 1: Indicators, measure and expected sign

<i>Indicator</i>	<i>Measure</i>	<i>Expected sign</i>
Surplus Margin (<i>MARGIN</i>)	$\frac{\text{Total revenues} - \text{Total expenses}}{\text{Total revenues}}$	-
Revenue Concentration Index (<i>CONCEN</i>)	$\sum \left(\frac{\text{Revenue } j}{\text{Total Revenues}} \right)^2$	+
Reporting Requirements (<i>REPORT</i>)	Dummy variable ^a	+
Savings Accounts (<i>FUNDING</i>)	Dummy variable ^b	-
Size (<i>SIZE</i>)	Total staff and volunteers	+
Equity (<i>EQUITY</i>)	Dummy variable ^c	+

- The variable takes the value 1 if organization is required to report at least half a year and 0 if it reports annually or does not report.
- The variable is measured as 1 if the organization as a savings account and as 0 otherwise.
- This measure includes three dummies that take the value 1 if the organization owns capital assets (*i.e.* land and building, vehicles and equipment and machinery) and 0 otherwise. Table 2: Test of equal mean for NGO community funded and donor funded.

4. DESCRIPTIVE ANALYSIS

A NGO is financial vulnerable when there is the probability of a drop equal to or higher than 25 per cent in its total revenue.

The sample shows that 9.7 per cent of NGOs were considered financial vulnerable for the 2000 to 2001 period (with 195 total observations) and 14.3 per cent for the 2006 to 2007 period (total number of observations equal to 259).

Considering the full sample of organizations, the average surplus margin for 2000 is approximately 18 per cent of total revenue. The other accounting ratio, namely the revenue concentration index, presents an average of 81.35 per cent of total 2000 recurrent revenue.

¹⁷ The same study found that grant allocation by donor agencies is based on practice and tradition, which means that those funds are more likely to go to NGOs that have received funds in the past.

It is also important to examine differences between funding modalities. Table 2 summarizes and computes a t test of equal means for each NGO type (donor-funded or community-funded).

Table 2: Test of equal means for donor funded NGOs and community funded NGOs

<i>Variables</i>	<i>Community Funded</i>	<i>Donor Funded</i>	<i>t-test</i>	<i>Degrees of Freedom</i>
Surplus Margin (<i>MARGIN</i>)	0.1049	0.2274	-1.4725	146
Revenue Concentration Index (<i>CONCEN</i>)	0.7134	0.8605	-4.1568	146
Reporting Requirements (<i>REPORT</i>)	0.8704	0.7021	2.3460	146
Savings Accounts (<i>FUNDING</i>)	0.5926	0.4043	2.2313	146
Size (<i>SIZE</i>)	23.1111	40.5638	-2.1471	146
Land & Building	1.4815	1.4574	0.2803	146
Vehicle	1.6296	1.3511	3.3802	146
Equipment & Machinery	0.6111	0.8404	-3.2172	146
Financial Vulnerability (2000-2001)	0.0185	0.1915	-3.1055	146

Organizations that rely on donor grants are perceived to be more financially vulnerable than community funded organizations. The former has a 19.15 per cent probability of being financially vulnerable, while only 1.85 per cent of community funded institutions has that probability.

The organizations funded by donors show an average concentration index of 86.05, while NGOs funded by communities show an average concentration index of 71.34. The surplus margin is also higher for NGOs funded by donors. While NGOs funded by donors show 22.74 p.p, NGOs funded by community shows 10.49 p.p.¹⁸. The difference between these two means is significant.

When it comes to the dummy variables, it is surprising to observe that 87 per cent of community funded NGOs have regular reporting requirements, compared to 70 per cent for donor funded NGOs.

In terms of equity, the main significant difference is related to ownership of equipment and machinery. Almost 84 per cent of donor funded NGOs reported to have equipment and machinery, while only 61 per cent community funded NGOs reported to have these assets. This outcome is in line with the expectation that donor-funded agencies will be more affluent.

¹⁸ These results are consistent with the Burger and Owens study (2013) that stated that survivors NGO are typically more affluent and grant dependent (which may be related to revenue concentration).

Organizations funded by donors appeared on average to have less staff than community funded organizations¹⁹. The average figures for the existence of a savings account are slightly similar. However, these differences are not significant.

Correlation Analysis

A correlation analysis is useful to understand the expected coefficient signs, as well as the level of association between variables. Generally, the variables analysed present a low level of correlation.

Table 3: Correlation Matrix

<i>Variables</i>	<i>VARI (2000-2001)</i>	<i>VAR2 (2006-2006)</i>	<i>MARGIN</i>	<i>CONCEN</i>
<i>VARI (2000-2001)</i>	1.0000			
<i>VAR2 (2006-2006)</i>	-0.0379	1.0000		
<i>MARGIN</i>	-0.2170	0.0595	1.0000	
<i>CONCEN</i>	-0.0553	0.0108	0.2380	1.0000

Note: Based on 146 NGOs.

The highest correlation is between the independent variables. Surplus margin is positively correlated 0.238 with the revenue concentration index.

Changes in margins (*MARGIN*) is -0.217 correlated with immediate funding disruption. The sign of correlation between this variable and financial distress four years later change to a positive sign, but is still very low. Similar outcomes appear for the concentration index, but it is very low.

The correlation between the dependent variables is negative and low. A sharp drop in 2000-2001 revenue is correlated -0.0379 with a drop in revenue between 2006 and 2007.

5. REGRESSION ANALYSIS – LINEAR PROBABILITY MODEL

The empirical analysis uses the Linear Probability Model as a first effort to understand the impact of several possible predictors in the probability of a negative variation in total revenue as proxy of financial vulnerability. The reason to choose this model is because it is easy to draw a *ceteribus paribus* analysis of independent variables on the probability of financial vulnerability (*i.e.* it controls for other factors that simultaneously affect the income variation). However there are some shortcomings with LPM, specifically: it is possible to get prediction / results either less than 0 or greater than 1. Such results are difficult to interpret as the dependent variable is a probability ranging from 0

¹⁹ Further research is required and it is important to distinguish between different categories and kinds of staff, particularly, employees and volunteers.

to 1; a probability cannot be a linear function of independent variables (*e.g.* an increase of 10 per cent in surplus margin is expected to reduce the probability of financial problems, but a more 10 per cent increase is expected to have a smaller marginal effect).

As a first step, the study calculated the dependent variables defined as the variation of recurrent revenue as a percentage of total recurrent revenue for two periods between 2000 / 2001 and 2006 / 2007. Then, it creates a variable defined as 1 if the organization had a drop equal or greater than 25 percent as a percentage of total income in 2000, and 0 otherwise (*i.e.* does not take into account positive variations). The same calculation was done for 2006 and 2007 years and transformed into a binary variable. Finally, it combines these two dependent variables to create a large drop variable (*i.e.* consider any of the two variations).

The regression model was estimated using the explanatory variables outlined in the previous section. Table 4 also includes results for the dummy variable for type of organization (community funded is the omitted variable).

Table 4: Estimates of the Regression Model

<i>Variables</i> ^a	<i>VAR1 (2000-2001)</i>		<i>VAR2 (2006-2007)</i>		<i>Aggregated</i>
	<i>Coefficients (SE)</i>	<i>Coefficients (SE)</i>	<i>Coefficients (SE)</i>	<i>Coefficients (SE)</i>	<i>Coefficients (SE)</i>
<i>MARGIN</i>	-0.0456	-0.0597	-0.3009**	-0.2673**	-0.3252**
<i>CONCEN</i>	0.2957**	0.1889	0.5816***	0.655***	0.7591***
<i>REPORT</i>	-0.0923	-0.0674	-0.0958	-0.1174	-0.108
<i>SAVING</i>	-0.0048	0.007	-0.021	-0.2622	-0.0296
<i>SIZE</i>	-0.0006	-0.0006*	0.0005	0.0007	0.0001
<i>Donor Funded</i> ^b		0.1858***		-0.1345	
<i>Land & Building</i>	-0.0285	-0.0381	0.017	0.0284	-0.0234
<i>Vehicles</i>	-0.0915	-0.0658	-0.0266	-0.0287	-0.1096
<i>Equipment & Machinery</i>	-0.1950**	-0.2208***	-0.0505	-0.0542	-0.2825
<i>Constant</i>	0.3156	0.2589	-0.096	-0.0651	0.2582
R-square	0.0980	0.155	0.237	0.2565	0.2398
Number of obs.	148	148	67	67	67

Notes: The Linear Probability Model robust for error terms uses a sample for the year 2000-01 and 67 observations for 2006-07.

*Represents 10% level of significance; **5% level of significance; ***1% level of significance.

a. The latent dependent variable equals 1 if the NGOs is financial vulnerable and 0 otherwise.

b. The omitted variable of donor funded is community funded. The threshold to consider an organization as donor funded was income equal or greater than 30 percent of total revenue.

Overall, the first attempt to identify organizations that have a higher probability to be financially vulnerable showed a low predictive and explanatory power based on R-squared. However, a few points can be noted.

The concentration index was shown to be a positive and significant predictor of financial vulnerability across models. This finding is in line with the expected direction of causality. An organization with low diversity of income sources is likely to be more financial vulnerable. A variation of 10 percent in the concentration ratio is predicted to increase the probability of financial vulnerability by 2.96 p.p., holding all the other variables fixed. However, when the dummy for main source of income (donor vs community) is included in the model the concentration index variable loses significance (column 2). This fact may be due to a possible problem of omitted variables reflected in the first column, where the model excluded a relevant variable (*i.e.* source of funds) or because an overlap between funding sources variable and concentration ratio.

Evidence shows that an organization considered to be donor funded is expected to have an 18.58 p.p. higher probability of facing a decrease in total revenue than NGOs which are community funded (column 2). Even though this it is not what was expected, it is in line with the t test for equal means performed for different types of organizations. It was observed that donor funded NGOs are usually more concentrated in terms of income sources and more financially vulnerable than community funded organizations.

The surplus margin is shown to be correlated with future financial problems. As expected, there is a negative relationship between this variable and the predicted variable, but it is only significant in the long run (*i.e.* to predict a negative income variation between 2006 and 2007 depicted in columns 3 and 4). An increase of 10 p.p. in an NGO's surplus margin is expected to decrease by approximately 3 p.p. the probability that they faced a financial downturn in 2006 to 2007.

The larger the organization, the less likely it is to be financially vulnerable. As expected, the estimated coefficient on size is negative, meaning that there is a negative relationship between the size of the organization (measured by the number of employees and volunteers) and financial distress. This variable is significant at the 10 per cent level in the second model (column 2).

In terms of the existence of equity to cope with liquidity issues, the table shows that only equipment and machinery are negatively related to the independent variable. All other factors being equal, NGOs that owns equipment and machinery has a 0.195 lower probability of having a sharp decrease in current total revenue. The existence of donor restrictions on the liquidity characteristics of capital items can explain the difference in significance between equipment and machinery (more liquid) and land and building and vehicles (less liquid).

The availability of savings accounts and the existence of donor restrictions were not found to be significant in any of the predicted models.

6. CONCLUSION

This essay serves as preliminary work for further research on the topic of volatility within non-governmental organizations' revenues and the expected impact of this on programme activities.

Based on the literature review and the available data of NGOs in Uganda during two periods (2000 to 2001 and 2006 to 2007), the study defined the variables that could predict a variation in total revenues. The explanatory variables included: two accounting ratios, the surplus margin and revenue concentration index; whether the organization has a savings account as a proxy of funding resources; a dummy variable that reflects the level of report requirements; the size measured by total number of staff and ownership of capital assets as a proxy for equity.

Using the above data, the study attempts to answer the key questions. First the study defined financial vulnerability as a minimum drop of 25 percent in recurrent revenue (net of divestment) as a percentage of total revenue, on two separate periods of time – 2000 to 2001 and 2006 to 2007. The research methodology used a linear probability model to predict those variations of income. The findings show similar results to Greenlee and Trussel (2000) and related literature. The revenue concentration index was a significant predictor of financial distress in both periods. Surplus margin was only significant to predict financial vulnerability for the second period considered. The equity variable, particularly equipment and machinery, seems to help to cope with decreases in recurrent funding. Regarding the size of NGOs, larger organizations are negatively associated with financial problems. However those organizations are not funded mainly by donors as the coefficient for that type of organization is positive and significant.

This drives us to the second question, which was related to possible outcome differences according to size and type of organization. The empirical results showed organizations that rely on donor grants are predicted to have a higher probability of financial distress than their community funded counterparts. In terms of size, larger the organizations are less likely it is to be financially vulnerable.

The robustness of these findings will be tested with subsequent analysis using logit regressions and alternative specifications with more control variables.

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