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"What Explains Microfinance Distribution Surplus? A Stakeholder-oriented Approach"

(Previous title: Surplus Distribution and Characteristics of Social Enterprises: Evidence from Microfinance)

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The issue of surplus distribution has hardly been analyzed in the context of the social economy. This paper highlights the main drivers of distribution between various stakeholders of microfinance institutions (MFIs), which are an example of social enterprises. We focus on three major variables: size, governance structure and subsidies. Our results show that the size of the institution is the main indicator of the surplus that the organization keeps as a self-financial margin. Moreover, MFIs with a cooperative ownership structure allocate a larger part of their surplus to their employees, whereas non-profit organizations and shareholder-firm MFIs do not allocate their surplus in a significantly different way among their main stakeholders. Finally, we do not find any clear-cut effect of subsidies on the surplus allocation process.

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Surplus Distribution and Characteristics of Social Enterprises: Evidence from Microfinance

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Abstract

The issue of surplus distribution has hardly been analyzed in the context of the social economy. This paper highlights the main drivers of distribution between various stakeholders of microfinance institutions (MFIs), which are an example of social enterprises. We focus on three major variables: size, governance structure and subsidies. Our results show that the size of the institution is the main indicator of the surplus that the organization keeps as a self-financial margin. Moreover, MFIs with a cooperative ownership structure allocate a larger part of their surplus to their employees, whereas non-profit organizations and shareholder-firm MFIs do not allocate their surplus in a significantly different way among their main stakeholders. Finally, we do not find any clear-cut effect of subsidies on the surplus allocation process.

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I. INTRODUCTION

Which actors or stakeholders benefit from the value created by an institution? Do clients get cheaper products, staff higher salaries, or shareholders more dividends? The distribution of the value or surplus created by a company is a key issue in governance, revealing the balance of power among the people having an interest in the organization (Labie and Mersland, 2011). The objective of this paper is to validate the main drivers of surplus distribution inside microfinance institutions (MFIs).

Distribution of the surplus is especially crucial for hybrid financial institutions that have multiple goals, e.g. social or developmental and financial objectives (Battilana and Dorado, 2010; Gutiérrez-Nieto et al., 2009). It is even a major element of the identity of social enterprises, according to the UK Department of Trade and Industry (DTI). A social enterprise is defined as "a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximize profit for shareholders and owners" (DTI, 2002). MFIs are good cases for analyzing the distribution of social enterprises' surpluses. They combine social goals, poverty alleviation and financial objectives (Copestake, 2007; Armendáriz and Szafarz, 2011; Dorfleitner et al., 2012). Moreover, surplus distribution is a key concern in microfinance as Muhammad Yunus, the founder of Grameen Bank, insists that the surplus of social business in general, and microfinance in particular, should always be reinvested in them (Yunus et al., 2010).

Over the last twenty years, microfinance has spread rapidly in many countries, and on average MFIs have become more efficient over time (Caudill et al., 2009). Calling for more management research in microfinance, Khavul (2010, p. 65) argues that “to understand the opportunities for research, one approach could be to follow the money from its source, through its distribution, and to its use”. While the average MFI produces a low level of profit and surplus, it is unclear who will reap the benefits when it starts to be more profitable or generate a surplus. We will use the global productivity surplus (GPS) method to analyze the distribution of surpluses among different stakeholders. There is a large literature discussing the determinants of the profitability of MFIs, but it gives no indication about the characteristics of MFIs that earn large surpluses. We also question what kind of institutions use their surplus to favor their clients, increase staff salaries or keep the surplus in reserve for future investment or distribute it as

dividends to shareholders.

This article analyses specifically whether the size of the institution, its ownership structure and the level of subsidy can explain this distribution process. It will thus expand on what was done by Périlleux et al. (2012) because it does not confine itself to the status of MFIs but tests several other potential indicators of surplus distribution in microfinance. Contrary to Périlleux et al. (2012), who conduct a simple difference of mean analysis, this study is based on panel estimations using a database of 761 observations of 225 MFIs to investigate the main determinants of the surplus distributed to an MFI's principal stakeholders: its clients, staff, funds providers (lending institutions or savers), providers of all material inputs (e.g. office furniture, papers, vehicles) and the residual owners of "private value", which accounts for the dividends and reserve for future investments.

Our empirical analysis reveals that larger institutions keep a larger part of their surplus inside the organization as self-financial margin to strengthen the organization, finance further growth or remunerate shareholders, if any. The ownership structure influences the surplus allocation process since cooperatives give a significantly bigger portion of their surplus to employees. However, non-profit organizations (NPOs) and the comparatively more profit-minded shareholder firms (SHFs) do not significantly differ in the way they allocate their surplus among their main stakeholders. Finally, we do not find any clear-cut effect of subsidies on the surplus allocation process.

The rest of the article is structured as follows. The next section explains the application of the *global productivity surplus* theory to the microfinance sector and reviews the literature on the surplus generated by financial intermediaries such as MFIs. Section 3 presents the potential variables which explain the surplus distribution process and our hypotheses. Section 4 details the methodology and the database. Section 5 discusses the empirical results, and the last section concludes.

II. EFFICIENCY AND SURPLUS OF FINANCIAL INTERMEDIARIES

High interest rates and the commercialization of the microfinance sector have revitalized the debate on the distribution of MFIs' revenues among their various stakeholders. This issue is not restricted to microfinance since there is also a lively debate about the association between the

financial and social performance of all socially responsible actors (Drut, 2010) and more traditional companies. Distribution of the surplus, as profit, added value or net output, generated by an institution is part of this debate.[1]

One way of calculating the surplus generated by an institution and the way it is distributed is the "global productivity surplus *(GPS)*" methodology. This makes it possible to decompose the change in operating profit into a "quantity effect" and a "price effect" (Appendix 1). The methodology was developed by the Centre d'Etude des Revenus et des Coûts (CERC, 1969; 1987) to evaluate surplus distribution in public companies. At that time, studies based on this method were conducted in particular by Courbis and Templé (1975), Vincent (1971) and Burlaud and Dahan (1987). More recently, authors such as Grifell-Tatje and Lovell (2008), Estache and Grifell-Tatjé (2010) and Arocenaa et al. (2011) have rediscovered this method and used it in different sectors.

The GPS is defined as the variation of output quantities at constant prices minus the variation of input quantities at constant cost. As suggested by Périlleux et al. (2012), it corresponds to the "net output" generated by an MFI. It can also be called the "quantity effect" (Estache and Grifell-Tatjé, 2010; Grifell-Tatjé, 2011). As demonstrated in Appendix 1, this "quantity effect" is equal to a "price effect", which corresponds to the surplus distribution. If we apply this equality to microfinance, we obtain:

$$GPS_t = \underbrace{\left[\mathrm{DOL}_t \times i_{t-1} - \mathrm{DOL}_t \times pr_{t-1}\right]}_{\text{Output (O)}} - \underbrace{\left[DDE_t \times i''_{t-1} + DD_t \times i'_{t-1} + DN_t \times w_{t-1}\right]}_{\text{Input (I)}} = S_t^1 + S_t^2 + S_t^3 \quad (1)$$

The first term is the global surplus (GPS_t), where the output variation (O) represents the variation in the MFI's outstanding loan portfolio DOL_t at the previous year's interest rate charged to clients (i_{t-1}). We must also take into account the bad debt (i.e. clients who are behind on repayments) and should therefore reduce the output. This is done by subtracting $\mathrm{DOL}_t \times pr_{t-1}$

[1] The difference between these three concepts is not always straightforward. A firm's profit can be defined as the excess of revenues over costs for distribution to the owners. Its added value is the sum of wages and salaries, interest payments, rent and profits. Net output is the difference between the change in output quantities at constant prices and the change in input quantities at constant cost.

from O, where pr_{t-1} is the provision rate for clients who are suspected of repayment default.

The input (I) is composed of the suppliers of MFIs (the different parties bringing inputs): funds providers, workforce providers (staff) and other providers. There are two types of funds providers: savers and lending institutions (LIs). Regarding savers, MFIs' expenses engendered by deposit collection are expressed as follows: $\Delta DE_t \times i''_{t-1}$, the change in the deposit amount at the previous year's deposit interest rate (i''_{t-1}). Regarding LIs, MFIs' expenses for acquiring funding are defined as follows: $\Delta D_t \times i'_{t-1}$, the change in the funding amount at the previous year's external lending rate (i'_{t-1}). Regarding workforce, the MFIs' expenses generated by employees can be noted as follows: $\Delta N_t \times w_{t-1}$, the variation in the number of employees multiplied by the previous year's average salary. Finally, concerning other suppliers (providers according to the accounting definition), it is impossible to differentiate between price and quantity variations. For this reason, when analyzing surplus distribution, these suppliers are not included in the calculation of global surplus formation but are considered only in terms of value variation.

The second term shows the allocation of the GPS among the MFI's different stakeholders. The three surpluses (S^1_t, S^2_t, S^3_t) can be divided into more subcategories.

S^1_t is the surplus allocated to the clients (borrowers) of the MFI:

$$S^1_t = -\left[\left(\Delta i_t \times OL_t\right) - \left(\Delta pr_t \times OL_t\right)\right] \qquad (2)$$

This surplus is estimated by the interest rate variation multiplied by the portfolio. A negative sign means that an interest rate decrease $(\Delta i < 0)$ generates a gain for clients. This surplus must be corrected by the surplus gained or lost through bad debts: $\Delta pr_t \times OL_t$, where Δ pr represents the variation in the provision rate. This means that an increase in the provision rate generates a gain for borrowers, since they have the potential to reduce their repayments.

S^2_t is the surplus allocated to suppliers. In microfinance, there are four categories of suppliers: employees, savers, LIs, and providers. Thus S^2 can be deconstructed into:

$$S^2_t = \underbrace{\left(\Delta w_t \times N_t\right)}_{\text{Staff}} + \underbrace{\left(\Delta i''_t \times DE_t\right)}_{\text{Savers}} + \underbrace{\left(\Delta i'_t \times D_t\right)}_{\text{LIs}} + \underbrace{\Delta(f_t \times F_t)}_{\text{Providers}} \quad (3)$$

The surplus of employees or staff is related to the number of employees (N) and the salary variation (w), with a salary increase generating a gain for employees. The surplus of savers is related to deposits (DE), the surplus of LIs to external funds (D), and their respective interest rate variations. Thus, an increase in interest rates on savings (i'') and/or on external funding (i') improves the savers' and/or funding institutions' positions.

The last supplier category is the providers. As explained, in this case, it is not possible to make a distinction between price and quantity variations. Thus, we take into account the total change in the value of operating expenses: $(\Delta f_t \times F_t) + (\Delta F_t \times f_{t-1}) = \Delta(f_t \times F_t)$.

Finally, there is the portion of the surplus going to the MFI (S_t^3), which partly represents the self-financing margin, i.e. the shareholders' surplus that accounts for the dividends, if any, and reserve for future investments:

$$S_t^3 = \Delta GSFM_t \quad (4)$$

In the Appendix, table A1 provides definitions of the variables used to calculate the surplus equations.

This analysis shows that it is possible to identify the structural profile of the surplus gains (sources and uses) of each microfinance institution. The GPS method has two main advantages compared with other methodologies such as stochastic frontier analysis (SFA) or data envelopment analysis (DEA). First, it is based on a stakeholder approach (Freeman and Reed, 1983). It takes into account the interest of all stakeholders: employees, customers, shareholders, creditors, and other providers. This aspect is a perfect fit with the social economy sector, which is based on social responsibility principles.

Second, the GPS method provides crucial information that other methodologies, such as SFA or DEA, cannot supply. Indeed, SFA and DEA make it possible to calculate a measure of MFIs' efficiency and then use multivariate regressions to analyze the impact of social and financial performances on this efficiency measure (Hermes et al., 2011; Hartarska and Mersland, 2012). But these methodologies give no information on how the surplus is shared among the MFI's stakeholders. Consequently, the GPS method can be used alongside those methodologies to provide additional information on MFIs' social achievements by analyzing wealth distribution among stakeholders. It computes the gains and losses of each social group within a year. This

calculation is a crucial step in answering our paper's main question: what are the drivers of the surplus allocation process inside social enterprises?

However, the GPS method in itself offers no explanation for surplus performances, whether internal (due to the mission of the institution for example), or external (e.g. the environment or donors). It gives only empirical evidence of how this surplus is distributed.

Genescà Garrigosa and Grifell-Tatjé (1992) explain how the surplus method can be related to neoclassical theories of production. A major distinction is the fact that the surplus method considers as an "activity effect" the variation in profits due to changes in total output generated by both scale and productivity effects. We have followed the GPS method as developed by Burlaud and Dahan (1987) and applied to the microfinance sector by Périlleux et al. (2012). Griffel-Tatjé and Lovell (2008) and Arocena et al. (2011) used a more complex method especially because they wanted to isolate the productivity effect from the quantity-effect and to identify its three main components of productivity: the Cost Efficiency Effect, the Technical Change Effect and the Scale Effect.[2] However, the authors' method does not differ significantly as regards the surplus distribution process among the main stakeholders. Considering that our study focuses especially on the surplus distribution dimension, we did not need such a sophisticated subdivision and we used the basic version of the method following Burlaud and Dahan (1987).

A few authors have explored the surplus creation and distribution process. Dunning and Stilwell (1978) and Grifell-Tatjé and Lovell (1999) analyze the theoretical relationship between productivity change and profit change. Some studies have empirically investigated the surplus creation and distribution process in public and private large enterprises. Grifell-Tatjé and Lovell (2008) investigate the distribution of the financial benefits of productivity change in the U.S. Postal Service. Lawrence et al. (2006) calculate the distribution of the benefits of productivity improvements among consumers, labor, and the shareholders of Telstra, Australia's largest telecommunications firm. Arocenaa et al. (2011) analyze the changes in productivity, margins and prices with the trajectory of corporate profits in electric companies, and identify the main recipients of economic value growth. Finally, Estache and Grifell-Tatjé (2010) investigate how

[2] The "quantity effect" is subdivided into a "marginal effect" and a "productivity effect". The latter is then subdivided into three other effects: "technical change effect", "cost efficiency effect" and "scale effect".

the surplus generated by the Malian water sector privatization was distributed among labor, investors, intermediate input providers, users and taxpayers.

The literature also provides some preliminary indications about the distribution of the surplus in financial institutions: Grifell-Tatjé (2011) studies the differences of profit and surplus distribution among commercial banks, savings banks, and financial cooperatives. He shows that recipients of operating profit are the main beneficiaries of the surplus distribution process within commercial banks. More surprisingly, the staff do not benefit from a positive surplus in the distribution process within cooperative banks and savings banks. Last but not least, Grifell-Tatjé (2011) stresses that overtime was important for transferring the surplus from depositors to borrowers in the three types of banks. Regarding microfinance specifically, Honlonkou (2008) conducts a case study analyzing the surplus distribution of PADME, a MFI in Benin. Hudon and Perilleux (2013) undertake a case study looking at how the surplus is distributed over time among Compartamos' stakeholders. Finally, using a difference of mean analysis, Périlleux et al. (2012) apply the GPS theory to a large sample of MFIs and find some differences between MFIs registered as cooperatives, NPOs and SHFs.

All those studies give accurate pictures of the surplus distribution process, but they do not investigate the variables influencing this process, except perhaps Périlleux et al. (2012), who look at the impact of ownership structure on the surplus distribution process but only using the comparison of mean method.

In this paper, we investigate variables influencing surplus distribution among MFIs' stakeholders. We look at the ownership structure of MFIs and also at their size and the subsidies they receive, and we conduct econometric analyses. In the following section, we present the main hypotheses that will be tested.

III. POTENTIAL EXPLANATORY VARIABLES OF THE SURPLUS DISTRIBUTION PROCESS

Various factors can influence the distribution of the surplus generated by an MFI. Even though we control for other elements, such as the age of the institution, the economy of the country of operations, or the geographic location of the MFI, we test the relevance of three

indicators in particular: size (number of clients), level of subsidization, and ownership structure (cooperative, NPO, or SHF).

Size of MFIs

There is some empirical evidence suggesting that MFIs experience positive economies of scale. Figures show that all categories of MFIs have become more efficient in recent years (Caudill et al., 2009; Gutierrez-Nieto et al., 2007). According to many studies, economies of scale have played a central role in this increase, in terms of efficiency and financial or social performances. Caudill et al. (2009) find that especially large MFIs are becoming more efficient over time. Additionally, Zacharias (2008) concludes that bigger MFIs are associated with smaller average costs and therefore greater efficiency. Park and Ren (2001) analyze Chinese MFIs and find that microfinance programs initiated by the China Academy of Social Sciences (CASS) are likely to become more cost-efficient over time as they achieve scale economies. Morduch (2000) points out that financial sustainability has been achieved through economies of scale for well-known programs such as BancoSol. Gutierrez-Nieto et al. (2007) find that NPOs are more cost-efficient when they issue a large number of loans. Consequently, economies of scale imply that relative performance improves with size and thus with net output.

Hypothesis 1: The size of the institution has a positive influence on the global surplus (H1)

Economies of scale also support that size is a key factor for increasing self-financial capacity. Larger MFIs are more able to keep surplus inside the organization in order to improve their gross self-financial margin (GSFM). Empirical evidence collected by Caudill et al. (2009) supports the argument that the size of MFIs is related to higher efficiency. The 2009 MicroBanking Bulletin, which includes 1,084 MFIs, largely confirms these results and suggests that they also have higher financial self-sufficiency.

Furthermore, Hartarska et al. (2013) find that the microfinance industry has increasing returns to scale and therefore suggest that growing MFIs could consolidate to benefit from lower unit costs. The number of clients or breadth of outreach is a key performance indicator in microfinance. The self-financial margin of large MFIs may therefore be used as reserve for future investments and growth of operations. One famous example is the largest MFI in Latin America,

Banco Compartamos, a Mexican institution which financed a large part of its growth with its own reserve, its private value (*GSFM*). The Compartamos case suggested that the largest MFIs are more able to generate a reserve, possibly from profits retained for several years. The reserve enables the institution to finance future investments, contrary to smaller MFIs that face budget constraints to finance their growth.

Hypothesis 2: The size of the institution has a positive influence on the surplus distribution to private value, GSFM (H2).

Subsidies

It is unclear if subsidies would make MFIs more or less efficient. On the one hand, subsidies could cause inefficiency due to soft budget constraints (Kornai et al., 2003). Soft budget constraints often generate a substantial allocation inefficiency, which often translates into poor economic performances and less incentive to cut costs and innovate (Skoog, 2000). For instance, Bhutt and Tang (2001) argue that subsidies to microfinance nongovernmental organizations end up funding inefficient and lax management practices, resulting in limited outreach and high loan default. This would have a negative impact on MFIs' GPS.

However, productivity and efficiency are key indicators guiding donors' decisions (Balkenhol, 2007). This is particularly the case since some donors are now pushing MFIs to be more profitable and to gain access to commercial capital (Ghosh and van Tassel, 2008). MFIs will thus pay more attention to efficiency, monitoring and accounting systems in order to professionalize themselves and become more sustainable. Subsidies can thus be used to support technical progress but also to improve cost efficiency. Both of these factors increase the net output generated by the institution and thus a positive impact on its GPS.

Relatively few studies have provided empirical evidence of the impact of subsidies. Cull et al. (2009) find no clear evidence that subsidization necessarily reduces the efficiency of MFIs. Their results also suggest greater heterogeneity of subsidies per borrower among NPOs while median microfinance banks received no subsidy. Nawaz (2010) includes subsidies to analyze more sophisticated indicators of efficiency and financial performance, and their potential impact on mission drift. Another exception is Hudon and Traça (2011), who analyze the impact of subsidies on staff productivity in a sample of MFIs. Their main result is that subsidies have

helped MFIs to be more efficient up to a threshold of subsidization. Bogan (2012) incorporates one subsidy indicator, i.e. grants as a percentage of assets, in her study on the capital structure and sustainability of MFIs. She finds that the grants as a percentage of assets ratio is related to higher MFI costs per borrower. Finally, D'Espallier et al. (2013) find that the impact of subsidies on social performance differs substantially across regions. It is difficult to generalize about the impact of subsidies since this depends on many factors, such as the purpose or price of the subsidy. As the positive impact of subsidies on efficiency and operational costs seems dominant in the literature, we will assume that subsidies have a positive impact on the quantity effect (GPS).

Hypothesis 3: Subsidies increase the global surplus (GPS) of MFIs (H3).

Governance

Hansmann (1996) argues that the intrinsic differences between SHFs, cooperatives, and NPOs lie in the control of the organization and those who receive the profit from it, an element that can be analyzed through the surplus distribution. When cooperatives grow, the discretionary power of their technical staff tends to increase (Fischer and Mahfoudhi, 2011). Growth increases ownership dilution, which favors free-riding behaviors (Olson, 1965; Nilsson, 2001) and decreases members' ability to control the more complex tasks of employees (Branch and Baker, 2000). Consequently, large cooperatives are especially exposed to more entrenched employees and expense-preference behaviors (Hart and Moore, 1998).

The few empirical studies on governance in microfinance have provided contrasting results. Mersland (2009) suggests that contracts are cheaper in cooperatives and NPOs than in SHFs, while the cost of ownership-practice is lower in SHFs. Tchakouté-Tchuigoua (2010) includes cooperatives in his sample and reaches the opposite conclusion. Finally, Périlleux et al. (2012) are the only ones who directly compare the average surplus distribution of cooperatives, NPOs and SHFs. They find that cooperatives tend to give a larger part of their surplus to employees. Our sample is composed mainly of large rated cooperatives. Consequently, we can assume that cooperatives will favor employees in their surplus distribution process, as suggested by empirical and theoretical arguments.

Hypothesis 4: Cooperative status positively influences the surplus allocated to employees (H7).

IV. METHODOLOGY AND DATA

In order to test the four hypotheses set out in the previous section, we first specify a panel data model where the dependent variable is first the global surplus, then the surplus allocated to clients (borrowers), staff, and "private value", as well as to savers, LIs and suppliers. The explanatory variables of interest are the size of the MFI (related to Hypothesis 1 and 2), the MFI's subsidy intensity (Hypothesis 3) and the ownership structure (Hypothesis 4). We also control for a set of variables: the age of the MFI, its geographic origin, the size of the loan (as proxy for the poverty of the clientele), and the macroeconomic performance of the country where the MFI is based (Arun, 2005).

To estimate the parameters of the model, we opt for two different methods. We first run a panel random effects model with robust standard errors for heteroskedasticity and serial correlation. One of the main advantages of the random effects method is its ability to estimate time-invariant variables (Hausman and Taylor, 1981). The random effects model is often used to conduct analyses on MFIs' behaviors and performances (Hartarska, 2005; Vanroose and D'Espallier, 2013). We run Hausman tests to formally test the relevance of the random effect model. The results confirm that the model is fit for purpose.[3] Moreover, there is no risk of endogeneity bias resulting from reverse causality in the model since explanatory variables are calculated at the beginning of the surplus allocation process. Hence, surpluses resulting from the allocation process cannot influence the value of the regressors at the beginning of the period.

In a second stage, in order to test the robustness of the results obtained with the random panel method, we use three-stage least squares estimations (3SLS). This method enables us to take into account the possible direct influence of surpluses allocated to the other stakeholders on the surplus allocated to one specific stakeholder. The 3SLS makes it possible to estimate a system of simultaneous equations that contain endogenous explanatory variables that are dependent

[3] For each regression, we cannot reject the hypothesis H0 positing that there is no systematic difference between the coefficients obtained from the fixed effect and the random effect model (Prob>Chi2 always higher than 10%). This result supports the use of a random model.

variables in other equations in the system (Zellner and Theil, 1962). The exogenous variables are used as instruments for the endogenous variables.

The general specification of the model is presented as follows:

$$Spl_{i,t+1} = a + b_1 SIZE_{it} + b_2 GOV_i + b_3 SUB_{it} + b_4 GEO_i + b_5 AGE_{it} + b_6 ALS_{it} + b_7 GNI_{it} + b_8 YEAR_t + m_i + u_{i,t} \quad (5)$$

In the model Spl represents respectively the surplus coming from the "quantity effect" (GPS) and the surplus allocated to the different stakeholders. Those surpluses are expressed in relative terms as a percentage of "total wealth". The total wealth is composed of the GPS plus the additional funds made available for distribution owing to a reduction in input prices or an increase in output prices. This corresponds to the funds made available by the stakeholders who support losses in the surplus distribution process. Consequently, the surplus allocated to each stakeholder implicitly takes into account the surplus allocated to the other stakeholders as it is expressed as a percentage of total wealth (see Estache and Grifell-Tatjé, 2010 and Grifell-Tatjé, 2011).

$SIZE$ is the natural logarithm of the total number of borrowers served by the MFI. This variable indicates the differences generated by the size (such as economies of scale). GOV is a set of status dummies that shows differences in organizational structure between NPOs, cooperatives, and SHFs. SUB is the total amount of subsidies received by the MFI divided by its outstanding loan portfolio. GEO is a set of regional dummies that capture regional differences. AGE is divided into three categories: young, intermediate, and old. Table A2 in Appendix 1 illustrates the definition of each category, according to the MicroBanking Bulletin. ALS is the natural logarithm of the average loan size of the MFI divided by the gross national income (GNI) per capita in the MFI host country. GNI is the natural logarithm of the GNI per capita, which captures the standard of living of the country where the MFI is based. $YEAR$ is a set of dummies, which control for year-specific effects (e.g. changes in economic conditions). m_i is the institution-specific effect that captures all unobservable institution-specific variations, and u is the random

error term. In addition to those explanatory variables, the 3SLS model includes the surpluses allocated to other stakeholders.

Database construction

We construct the dataset with data gathered by two leading microfinance rating agencies[4]: Microfinanza and PlaNet Rating. Our database includes information from balance sheets and income statements, as well as additional variables such as the number of borrowers and employees, and indicators of operational and financial sustainability. Our database is a panel of observations made between 1999 and 2008. On average, we have 3.4 years of observations for each MFI.

The financial statements we use are one of the most trustworthy sources of information, since the MFIs in our sample have all been audited during the rating process. (This contrasts with the voluntarily released data used in other databases). These MFIs are among the largest and best managed institutions in the world. Nevertheless, given the well-established concentration of microfinance clients (Honohan, 2004), our sample is a good representation of the microfinance sector. As a matter of fact, basic statistics obtained from our sample appear to be similar to those in the largest databases on microfinance. For instance, the 1,084 MFIs in the 19th MicroBanking Bulletin [MBB] (MicroBanking Bulletin, 2009) yielded an average operational sustainability of 111% compared with our figure of 115%. The average number of borrowers is 9,013 for the MBB compared with 9,960 in our database; the average nominal yield is 31% in the MBB and 36% in our database; and average staff productivity in the MBB is 103 borrowers per staff compared with 123 in our database.

We use the 761 observations of the 225 MFIs to calculate the surpluses that are differentials between two years of observations. This gives us 532 surpluses. Among these 532 observations in our sample, 266 are NPOs, 169 SHFs, and 97 cooperatives. Geographically, out of the 532 observations, 139 are related to MFIs from Sub-Saharan Africa (SSA), 188 from Latin

[4] Other articles using databases from rating agencies are, for instance, Gutiérrez-Nieto et al. (2007), D'Espallier et al. (2011), Hudon and Traça (2011), Mersland et al. (2011) or Hartarska and Mersland (2012).

America (LA), 81 from Eastern Europe (EastEur), 46 from the Middle East and North Africa (MENA), and 78 from Asia. Only 131 of the 532 observed MFIs offer savings.

Descriptive statistics

Table 1 shows the summary statistics of our sample. The latter is dominated by NPOs and LA institutions. The organization's "Size" variable shows that on average MFIs serve 9,960 borrowers with an average loan size of US$ 790. The stock of subsidies received by MFIs in the past represents 1.36% of their outstanding portfolio. The "Age" variable shows that a majority of MFIs are more than 4 years old (73%) and 35% are older than 8. Finally, the GNI per capita of the countries where MFIs are located averages US$ 1,619 per inhabitant.

< Insert Table 1 >

V. ESTIMATION AND RESULTS

In this section, we empirically test the hypotheses we have previously defined regarding the impact of MFIs' size, ownership structure, and subsidies on the surplus allocation process. We develop a progressive approach. First, we look at the *t*-test table that shows the significant differences between the mean of the allocated surpluses. Then, we use a panel random-effect model and finally, we conduct a robustness check using a 3SLS model.

<Insert Table 2>

The first set of hypotheses is related to the size of the MFI. It suggests that size has a positive influence on the "quantity effect" (the GPS) (H1) and on the surplus allocated to the self-financial margin (H2). The *t*-tests support these two hypotheses. The most significant result is that, compared with small MFIs, large institutions keep on average a larger part of their surplus inside the organization as self-financial margin. The random-effect panel data analysis also

supports these first two hypotheses (Table 3). Moreover, the data show that larger MFIs allocate on average a larger share of their surplus to staff and clients. Finally, it is worth mentioning that size does not influence the surplus allocated to outside stakeholders, LIs and providers (Table 4).

<Insert Table 3> & <Insert Table 4>

The third hypothesis concerned the role of subsidies. It postulates a positive impact of the subsidies on the GPS (H3). Our empirical analyses do not support H3. Indeed, if the *t*-test table shows a slightly positive impact of subsidies on the GPS, random-effect estimations do not reveal any significant impact. However, Table 3 shows that subsidies have a positive impact on the three main stakeholder groups: clients, staff and shareholders (included in GSFM).

<Insert Table 5>

The last hypothesis is related to MFIs' ownership structure. H4 posits that co-op status has a positive impact on the surplus allocated to employees. This claim is validated through the different testing methods. Indeed, the *t*-test table shows that on average, the surplus allocated to the staff is significantly higher in co-ops s compared both with SHFs and with NPOs. Regression (3) in Table 3 supports this result, revealing that cooperatives give 14.5% more surplus to their employees. This result can be explained by the fact that the staff of large cooperatives have greater bargaining power because members have less control (Desrochers and Fischer, 2005). This bargaining power allows employees to get a large part of the institution's surplus. Moreover, we found no significant difference in the way that between NPOs and SHFs in the way they distribute their surplus.

Robustness checks

We can now turn to the last part of the empirical analysis, where we will test the robustness of our results using a three-stage least square model. 3SLS estimations confirm previous findings, with some exceptions. As shown in Table 5, the 3SLS method validates the positive impact of the size of the MFI on the GSFM (H2), but the coefficients associated with the

size of the MFI are no longer significant for the GPS, or for the surplus allocated to clients and staff. This suggests that those relationships were biased by endogeneity. Consequently, we cannot validate the hypothesis H1. We can however confirm the H2, since the larger MFIs tend to keep a larger surplus as self-financial margin consistently through our three methods of estimation. As other studies suggest, large MFIs are better able to keep an additional surplus within the organization to finance future investments or to distribute dividends.

Similarly to the panel analysis, the 3SLS model also invalidates H3. Subsidies do not have any significant impact on the global surplus generated by an MFI. Discipline imposed by donors does not push MFIs to be more efficient (Ghosh and van Tassel, 2008), but neither do soft budget constraints generate inefficient resource allocations. Finally, the cooperative status still has a positive impact on the surplus allocated to employees (H4). This positive impact is validated by the 3SLS method, even if the effect is slightly lower in this case, reaching 8%. This result is in line with theories supporting agency problems and free-riding behaviors in large cooperatives, due to ownership dilution (Jensen and Meckling, 1976; Nilsson, 2001). This reduces member control, thus increasing employees' bargaining power and making managers more likely to be entrenched (Hart and Moore, 1996; Desrochers and Fischer, 2005).

It is also worth mentioning that, as expected, the 3SLS estimations (Table 5) show that the GPS has a positive impact on the surplus allocated to all stakeholders. However, this impact is smaller for employees, with a coefficient of employees corresponding to only half the value of the one associated with the other stakeholders. Furthermore, the surpluses allocated to the different stakeholders negatively affect each other, revealing substitutability between the different surpluses.

In short, our empirical analysis confirms that large MFIs tend to keep a greater portion of their surplus inside the organization as self-financial margin to invest in further growth or to remunerate shareholders, if any. It also shows that cooperatives allocate more surplus to their employees. This result is in line with the literature on large cooperatives, which are more subject than other institutions to managers' strong bargaining power and expense preference behavior. Finally, our empirical analysis shows no significant differences between NPOs and SHFs in the surplus distribution process. Both types of organization do not seem to allocate their surplus

differently. This result confirms previous studies stressing that the main difference of ownership structure in microfinance is not related to NPOs or SHFs but to the specific features of cooperatives (Mersland and Strøm, 2008; Perilleux et al., 2012).

VI. CONCLUSION

How an organization distributes surpluses among its main stakeholders is a key governance issue, particularly for hybrid or double-bottom line institutions such as social enterprises. The GPS methodology is an indicator that analyzes the ways in which an organization distributes gains to its main stakeholders from one year to another. In this paper, we investigate the drivers of the surplus distributed to the principal stakeholders of one type of social enterprise: the MFI. We also analyze variables influencing the value created inside these institutions.

We find that the size of the institution is one of the main elements, which explains the increase in MFIs' self-financial margin. Bigger MFIs do not always generate larger surpluses but they tend to keep a greater share of their surplus inside the organization to finance future investments or dividends. Subsidies do not have a significant impact on the surplus allocated to the various stakeholders and do not influence the MFI's net output.

Regarding ownership structure, cooperatives tend to allocate a larger portion of their surplus to staff. There seems to be no significant difference in term of surplus allocation policies between NPOs and SHFs. These results are in line with Périlleux et al. (2012), who explain that the main difference in surplus distribution between the various ownership structures is not between NPOs and SHFs, but rather among cooperatives. Moreover, the results are also consistent with Mersland and Strøm (2008), who find that NPOs and SHFs differ very little in terms of social and financial performances.

These results may give food for thought for policymakers and for the overall debate about the efficiency and growth of social enterprises. While many observers have suggested that size and economies of scale could affect efficiency, size would not be always useful in reducing the prices paid by customers and paying better salaries, two factors linked to the social responsibility

of social enterprises. Further research conducted over a longer period and with a larger database of MFIs could therefore provide additional information, for instance, on the volatility of the GPS. That metric could then be compared with other indicators of social and financial performance.

LIST OF TABLES

Table 1: Summary of variables

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
MFI size						
Borr	Number of borrowers	526	9,960	15,512	74	110,266
MFI subsidies						
SUB	Subsidies/ Outstanding loans	531	1.36	17.29	0	398
MFI governance						
NP	Non-profit	532	0.5	0.5	0	1
COOP	Cooperative	532	0.18	0.39	0	1
SHF	Shareholder Firm	532	0.32	0.47	0	1
MFI Age						
YOUNG	Young	532	0.27	0.45	0	1
INTER	Intermediate	532	0.38	0.48	0	1
OLD	Old	532	0.35	0.48	0	1
MFI geography						
ASIA	Asia	532	0.15	0.35	0	1
LA	Latin America	532	0.35	0.48	0	1
AFSS	Africa: Sub-Saharan	532	0.26	0.44	0	1
EASTEUR	Eastern Europe	532	0.15	0.36	0	1
MENA	Middle-East and North Africa	532	0.09	0.28	0	1
Others						
Avloan	Loan portfolio/Borrowers	524	790.06	1,437.9	10.18	14,896.8
GNI	Gross National Income per capita	531	1,619	1,469	90	9,610

Table 2: t-test tables - Analysis of the three explanatory variables

		Size			*Subsidies*		
Variables	Description	Mean: Borrowers < 66th percentiles (357)	Mean: Borrowers > 66th percentiles (175)	*t*-Test	Mean: SUB < 66th percentiles (355)	Mean: SUB > 66th percentiles (177)	*t*-Test
Sclient	Surplus to Clients	-0.108	0.045	-2.26**	-0.079	-0.013	-0.98
Sstaff	Surplus to Staff	-0.003	0.050	-1.29*	0.023	-0.003	0.64
Sgsfm	Surplus to GSFM	0.093	0.248	-3.29***	0.093	0.247	-3.27***
Sli	Surplus to LIs	-0.167	-0.031	-0.93	-0.004	-0.362	2.48***
Sprovider	Surplus to Providers	0.161	0.117	1.43*	0.179	0.080	3.32***
GPS	Global Surplus	-0.020	0.404	-2.42***	0.224	-0.091	1.80**

	Ownership Structure								
Variables	Mean: SHF (169)	Mean: COOP (97)	*t*-Test	Mean: NP (266)	Mean: COOP (97)	*t*-Test	Mean: SHF (169)	Mean: NP (266)	*t*-Test
Sclient	-0.051	-0.138	0.80	-0.032	-0.138	1.18	-0.051	-0.032	-0.30
Sstaff	0.004	0.109	-1.94**	-0.014	0.109	-2.45***	0.004	-0.014	0.39
Sgsfm	0.188	0.007	2.90***	0.167	0.007	2.66***	0.188	0.167	0.40
Sli	-0.188	-0.032	-0.60	-0.114	-0.032	-0.87	-0.188	-0.114	-0.43
Sprovider	0.162	0.164	-0.05	0.130	0.164	-0.89	0.162	0.130	1.03
GPS	0.142	0.131	0.04	0.100	0.131	-0.20	0.142	0.100	0.21

Table 3: Random Effect Method - Variables influencing the Global Surplus and the surplus allocated to the three major stakeholders

VARIABLES	(1) GPS	(2) Sclient	(3) Sstaff	(4) Sgsfm
LnBorr	0.186***	0.0559**	0.0312**	0.0696***
	(0.0539)	(0.0248)	(0.0157)	(0.0208)
COOP	0.128	-0.0637	0.145***	-0.0956
	(0.226)	(0.164)	(0.0473)	(0.0632)
NP	-0.0723	-0.0171	0.0122	0.0302
	(0.215)	(0.0739)	(0.0447)	(0.0545)
SUB	-0.00155	0.00126***	0.000610***	0.00196***
	(0.00104)	(0.000387)	(0.000228)	(0.000257)
OLD	-0.282	0.163*	-0.0659	-0.118
	(0.187)	(0.0895)	(0.0679)	(0.0720)
INTER	-0.354	0.230**	-0.101*	-0.0575
	(0.256)	(0.0952)	(0.0523)	(0.0645)
LnGNI	0.0520	-0.0502	-0.0234	-0.00563
	(0.180)	(0.0553)	(0.0289)	(0.0393)
LnALS	0.0860	0.0333	0.0223	0.0437
	(0.0827)	(0.0443)	(0.0213)	(0.0281)
Area	YES	YES	YES	YES
Year	YES	YES	YES	YES
Constant	-1.497	-0.378	0.102	-0.662*
	(1.297)	(0.444)	(0.332)	(0.382)
N	522	522	522	522
# of id	222	222	222	222
R2-Within	0.0195	0.0141	0.00553	0.0246
R2-Between	0.0530	0.0811	0.0828	0.133
R2-Overall	0.0347	0.0609	0.0424	0.0852
Wald chi2	524.66***	415.69***	61.23***	226.53***

Level of Significance: *** if P-value=<0.01, ** if P-value=<0.05, * if P-value=<0.10

Table 4: Random Effect Method – Variables influencing the last three stakeholders

VARIABLES	(5) Ssaver	(6) Sli	(7) Sprovider
LnBorr	-0.00188	0.0312	0.00744
	(0.00332)	(0.0347)	(0.0135)
COOP	-0.0114	0.138	0.0208
	(0.0246)	(0.144)	(0.0469)
NP	0.00279	-0.0319	0.000218
	(0.0114)	(0.177)	(0.0327)
SUB	-1.86e-05	-0.00243***	-0.00106***
	(4.76e-05)	(0.000900)	(0.000234)
OLD	0.0136	-0.224**	-0.0107
	(0.0140)	(0.103)	(0.0356)
INTER	0.0131	-0.364*	-0.0324
	(0.00969)	(0.213)	(0.0310)
LnGNI	-0.00192	0.126	-0.0106
	(0.00993)	(0.157)	(0.0324)
LnALS	0.00654	-0.0522	0.0164
	(0.00670)	(0.0543)	(0.0149)
Area	YES	YES	YES
Year	YES	YES	YES
Constant	0.0300	-1.043	0.242
	(0.0770)	(1.074)	(0.301)
N	522	522	522
# of id	222	222	222
R2-Within	0.0429	0.0364	0.0783
R2-Between	0.0298	0.0360	0.0479
R2-Overall	0.0385	0.0331	0.0723
Wald chi2	14.38	955.51***	582.70***

Table 5: Three-Stage Least Square Method

VARIABLES	(1) GPS	(2) Sclient	(3) Sstaff	(4) Sgsfm	(5) Sli	(6) Sprovider
LnBorr	-0.0416	0.0318	0.0213	0.0409*	0.0409	0.0434
	(0.0287)	(0.0287)	(0.0147)	(0.0249)	(0.0276)	(0.0278)
COOP	-0.167**	0.160	0.0839**	0.148	0.162**	0.172*
	(0.0818)	(0.105)	(0.0400)	(0.106)	(0.0794)	(0.0940)
NP	-0.0830	0.0761	0.0417	0.0765	0.0809	0.0861
	(0.0631)	(0.0606)	(0.0324)	(0.0620)	(0.0619)	(0.0641)
SUB	-0.00229	0.00208	0.00115	0.00208	0.00223	0.00236*
	(0.00140)	(0.00132)	(0.000721)	(0.00135)	(0.00138)	(0.00140)
OLD	0.0327	-0.00592	-0.0184	-0.0546	-0.0351	-0.0416
	(0.0948)	(0.0937)	(0.0483)	(0.0888)	(0.0910)	(0.0953)
INTER	0.0782	-0.0486	-0.0414	-0.0967	-0.0795	-0.0890
	(0.101)	(0.114)	(0.0506)	(0.101)	(0.0955)	(0.105)
LnGNI	0.0292	-0.0298	-0.0144	-0.0222	-0.0278	-0.0286
	(0.0445)	(0.0389)	(0.0229)	(0.0441)	(0.0437)	(0.0452)
LnALS	0.00736	-0.0124	-0.00334	-0.00379	-0.00681	-0.00712
	(0.0281)	(0.0272)	(0.0145)	(0.0293)	(0.0274)	(0.0294)
GPS		0.961***	0.499***	0.880***	0.969***	1.025***
		(0.246)	(0.0364)	(0.278)	(0.0821)	(0.152)
Sclient	0.991***		-0.489***	-0.799**	-0.951***	-0.989***
	(0.230)		(0.136)	(0.372)	(0.247)	(0.280)
Sstaff	1.993***	-1.860***		-1.782***	-1.937***	-2.047***
	(0.153)	(0.631)		(0.598)	(0.193)	(0.369)
Sgsfm	1.025***	-0.859**	-0.519***		-15***	-1.076***
	(0.284)	(0.413)	(0.143)		(0.258)	(0.216)
Sli	1.031***	-0.980***	-0.515***	-0.914***		-1.058***
	(0.0875)	(0.282)	(0.0493)	(0.272)		(0.185)
Sprovider	0.970***	-0.877***	-0.487***	-0.881***	-0.943***	
	(0.127)	(0.254)	(0.0738)	(0.177)	(0.146)	
Area	YES	YES	YES	YES	YES	YES
Constant	0.0708	-0.0445	-0.0367	-0.0773	-0.0706	-0.0752
	(0.413)	(0.373)	(0.212)	(0.397)	(0.403)	(0.418)
N	522	522	522	522	522	522
R2	0.918	0.554	0.620	0.019	0.887	-1.944[5]
Chi2	667.4***	89.98***	276.5***	70.90***	301.0***	99.63***

NB: Year is used as additional exogenous instrumental variables

[5] A negative R-square can happen in three-square model (see Sribney et al., 2011). It does not mean that the estimations are not good. Actually, we are interested in the parameters of the structural equations. If the model produces estimations of these parameters with acceptable standard errors, it can be considered all right. It is only a problem if we want to do some projections of the dependent variable.

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Appendix 1: "Global Productivity Surplus" Demonstration

This appendix will demonstrate the following equation based on CERC (1969):

$$\sum(p_{t-1} \times DQ_t) - \sum(f_{t-1} \times DF_t) = \sum[(F_t \times Df_t)] + DGSFM_t - \sum[(Q_t \times Dp_t)] \quad (1)$$

Where Q_t is the output quantity at time *t*, p_t is the output price at time *t*, F_t is the input quantity at time *t*, f_t is the input cost at time *t*, $\Delta Q_t = Q_t - Q_{t-1}$ and $\Delta F_t = F_t - F_{t-1}$. $\sum \Delta Q_t \times p_{t-1}$ is the sum of all outputs produced by the organization, $\sum \Delta F_t \times f_{t-1}$ is the sum of all inputs used to produce the outputs

We know that the value of output production is equal to the value of input factors plus the gross self-financing margin.

For the period t-1, this can be symbolically expressed by the following equation:

$$\sum Q_{t-1} \times p_{t-1} = \sum F_{t-1} \times f_{t-1} + GSFM_{t-1} \quad (2)$$

Equation (2) can be written for the second year, the period t, as follows:

$$\sum[(p_{t-1} + Dp_t) \times (Q_{t-1} + DQ_t)] = \sum[(f_{t-1} + Df_t) \times (F_{t-1} + DF_t)] + (GSFM_{t-1} + DGSFM_t) \quad (3)$$

We replace $GSFM_{t-1}$ by its definition from (2) and we obtain:

$$\sum(p_{t-1} \times DQ_t) - \sum(f_{t-1} \times DF_t) = \sum[(F_{t-1} + DF_t) \times Df_t] + DGSFM_t - \sum[(Q_{t-1} + DQ_t) \times Dp_t] \quad (4)$$

Which can be simplified as such:

$$\sum(p_{t-1} \times DQ_t) - \sum(f_{t-1} \times DF_t) = \sum[(F_t \times Df_t)] + DGSFM_t - \sum[(Q_t \times Dp_t)] \quad (5)$$

The second term shows the allocation of the GPS. It can be used firstly to cope with a cost increase of the input factors: $\sum[F_t \times Df_t]$, secondly to allow a growth of the self-financing margin: $DGSFM_t$ and thirdly to finance a drop in output price represented by: $\sum[Q_t \times Dp_t]$.

Consequently:

(a) $-\sum[Dp_t \times Q_t]$ represents the surplus allocated to *clients* (S^1). A negative, resp. positive,

sign means that an increase in, resp. reduction of, the output price generates a loss, resp. a gain, for clients.

(b) $\sum[\Delta f_t \times F_t]$ represents the surplus allocated to the *suppliers* of the company (S^2). A cost increase generates higher revenues for suppliers.

(c) $\Delta GSFM_t$, represents the variation in the gross self-financing margin (S^3). If this term is positive, it represents an enrichment of the company itself. This money can be put in reserve accounts for future investments and capital growth, or allocated to enriching the company's *shareholders*, if any.

If we apply these equations to MFIs, we obtain the equations set out in section 2.

Table A.1: Variables of the surplus equations

Interest rate on credit (i_t)	"Financial revenue from loan portfolio" divided by the "outstanding loan portfolio".
Provision rate (pr_t)	"Net loan loss provision expenses" divided by the "outstanding loan portfolio".
Interest rate on deposits $(i_t^{"})$	Division of "interest paid on deposits" by the sum of the different types of deposits ("demand deposits", "compulsory deposits", "short-term" and "long-term time deposits").
Interest rate on external funds or financial debts (i') *from lending institutions*	Sum of the "interest paid on borrowings" and "other financial expenses" divided by the "financial debts".
Average salary/employee (s_t)	Division of "personnel expenses" by the "number of employees".
Other operating expenses	"Operating expenses" minus "personnel expenses"
Net operating income	"Financial income" (total financial revenues minus total financial expenses) minus the "net loan loss provision expenses" and "operating expenses".

Table A2: Age categories: The Microbanking Bulletin Methodology (2009)

Age	Number of years
Young	MFIs aged <5
Inter	MFIs aged 5 – 8
Old	MFIs aged 9 and over

Table A3: Correlation coefficients among the explanatory variables

		1	2	3	4	5	6	7	8	9	10
LnBorr	1	1									
COOP	2	-0.15***	1								
NP	3	0.04	-0.47***	1							
SHF	4	0.08*	-0.32**	-0.68***	1						
SUB	5	0.01	0.08*	-0.04	-0.03	1					
OLD	6	0.20***	0.09**	0.09**	-0.18***	0.06	1				
INTER	7	0.05	-0.12***	-0.02	0.12***	-0.03	-0.57***	1			
YOUNG	8	-0.27***	0.03	-0.08*	0.06	-0.02	-0.45***	-0.48***	1		
LnGNI	9	-0.23***	-0.06	0.14***	-0.10*	-0.06	-0.10**	0.09**	0.02	1	
LnALS	10	-0.27***	0.19***	-0.26***	0.13***	-0.04	0.06	-0.03	-0.03	-0.43***	1
LA	11	-0.08*	-0.08*	0.36***	-0.32***	-0.04	0.24***	-0.14***	-0.10**	0.46***	-0.23***
AFSS	12	0.14***	0.24***	-0.19***	0.01	0.09**	0.15***	-0.11**	-0.04	-0.70***	0.23***
ASIA	13	-0.14***	0.01	-0.21***	0.22***	-0.02	-0.13***	0.01	0.13***	-0.03	0.06
AFNMO	14	0.24***	-0.15***	0.28***	-0.18***	0.00	-0.14***	0.16***	-0.02	0.11***	-0.26***
easteur	15	-0.11**	-0.08*	-0.26***	0.34***	-0.02	-0.27***	0.19***	0.08*	0.18***	0.18***
spgpos	16	0.09**	0.00	-0.01	0.01	-0.02	0.00	-0.01	0.01	0.03	0.00
sclient	17	0.13***	-0.05	0.03	0.01	0.02	0.05	0.11**	-0.18***	-0.04	0.02
sstaff	18	0.03	0.10**	-0.06	-0.02	0.02	0.02	-0.06	0.05	-0.03	0.06
sgsfm	19	0.15***	-0.13***	0.04	0.06	0.04	-0.06	0.06	0.01	-0.01	0.00
ssaver	20	0.00	-0.03	0.02	0.00	0.00	0.03	0.02	-0.06	-0.06	0.08*
sli	21	0.01	0.03	0.01	-0.03	-0.02	-0.01	-0.05	0.07	0.07*	-0.07
sprovider	22	0.00	0.03	-0.05	0.03	-0.06	0.01	-0.05	0.05	-0.04	0.07

Level of Significance: *** if P-value=<0.01, ** if P-value=<0.05, * if P-value=<0.10

Table A3 continuation: Correlation coefficients among the explanatory variables

		11	12	13	14	15	16	17	18	19	20	21	22
LA	11	1											
AFSS	12	-0.44***	1										
ASIA	13	-0.31***	-0.25***	1									
AFNMO	14	-0.23***	-0.18***	-0.13***	1								
EASTEUR	15	-0.31***	-0.25***	-0.18***	-0.13***	1							
spgpos	16	0.01	-0.03	-0.07	0.06	0.04	1						
sclient	17	0.04	0.01	-0.09**	0.03	0.01	0.39***	1					
sstaff	18	-0.02	-0.02	0.05	0.00	0.01	0.35***	0.15***	1				
sgsfm	19	-0.08*	-0.09**	0.07	0.15***	0.04	0.31***	0.06	0.32***	1			
ssaver	20	-0.01	0.05	-0.06	0.01	0.01	0.11***	0.18***	-0.02	0.00	1		
sli	21	0.04	-0.01	-0.09**	0.02	0.03	0.82***	0.00	-0.02	0.03	0.01	1	
sprovider	22	-0.04	0.00	0.04	-0.05	0.05	-0.04	-0.19***	-0.09**	-0.27***	-0.02	-0.05	1

Level of Significance: *** if P-value=<0.01, ** if P-value=<0.05, * if P-value=<0.10