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Public Support of Microfinance Institutions in the Light of Costs and Benefits Generated by them: An Example from Uganda

von

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LIST OF ACRONYMS

AMFIU	Association of Micro Finance Institutions of Uganda
BOU	Bank of Uganda
CEA	Cost-effectiveness Analysis
CERUDEB	Centenary Rural Development Bank
CO	Credit Officer
FINCA	Foundation for International Community Assistance
GDP	Gross Domestic Product
GTZ	German Technical Cooperation
IAS	International Accounting Standards
IMF	International Monetary Fund
KfW	Kreditanstalt für Wiederaufbau
MDI	Micro Deposit-Taking Institution
MFI	Microfinance Institution
MFF	Microfinace Forum
NGO	Non Government Organization
RG	Revenue Grants
SDI	Subsidy Dependence Index
TP	True Profit
UBOS	Ugandan Bureau of Statistics

LIST OF NOTATION

α	Conversion factor, start and end stocks to average stock
AP	Accounting profit
c	Rate paid by an MFI on soft debt
D	Average soft debt
d	Benefit per dollar-year of deposits
Div	Dividends
E	Average equity
E_0	Start Equity
FF	Fresh subsidized funds in a year less true profit
i	Yield on lending
K	sum of revenue grants and discount on expenses
LP	Average loan portfolio
*LP*i*	Revenue from lending
m	Opportunity cost of soft debt[i] for the market
NPCp	Net present cost to the poor
r	Opportunity cost of equity for the market, or real rate of interest
RG	Revenue grants
S	Subsidy or generic average stock
τ	Tax rate on true profit

INTRODUCTION

Microfinance has caused enthusiasm in many countries which is based on the relativ success of a few well-known microfinance institutions (MFIs), such as Grameen, in mobilising savings, distributing large amounts of credit with high repayment rates and a good outreach on a quite sustainable basis.

Today, there is a vast amount on impact assessment and outreach studies in the field of microfinance whereas hardly any studies exist assessing the costs and benefits of microfinance institutions [De Aghion and Morduch (2005), p. 233; Terberger-Stoy (2001), p. 58; Hishigsuren (1999), p. 16]. This absence of information might be due to the enthusiastic attitude towards the concept of microfinance, as well as to the relish of public support for microfinance, which hindered the emergence of critical questions [Terberger-Stoy (2001), p. 58].

However, critics of failed state-owned banks have formulated a devastating critique concerning public support of MFIs, while economic analysis also showed that, in principle, public support in microfinance can be well-designed [De Aghion and Morduch (2005), p. 251] if donors and practitioners are aware of the level and kind of support desirable to achieve the best performance of MFIs.

Due to the absence of information about costs and benefits of public support for MFIs and the rising critique of public support, the aim of this paper is to analyse the effects of public support to MFIs and their costs and benefits.

Therefore, in the first chapter basics about microfinance and the financial sector in developing countries will be presented in order to explain the purpose of MFIs in developing countries. The second chapter deals with public support and its role in microfinance business. This chapter will conclude with a confrontation of the costs and benefits of MFIs generated due to public support. The third chapter describes the financial sector in Uganda and the microfinance activities in that country. The chapter also highlights the regulatory and supervisory framework of the microfinance sector in Uganda.

The forth chapter analyses two selected Ugandan MFIs. This chapter will reveal if the two subsidised institutions are worthwhile in terms of costs and benefits for the poor and also show the subsidy dependence of the institutions over time. The paper finally concludes with a short discussion.

A. BASICS ABOUT MICROFINANCE

1. Microfinance Institution - for what Purpose?

Microfinance Institutions are institutions which offer loans, savings, financial and other related services to poor people. These people are normally excluded from commercial lending, either because their requested loan size is too small or they are unable to put up collateral or due to high transaction costs connected with lending to them.

From the viewpoint of basic economics, the need for microfinance is somewhat surprising because of the principle of diminishing marginal returns to capital, which says that enterprises with relatively little capital should be able to earn higher returns on their investments than enterprises with a great deal of capital. Poorer enterprises should thus be able to pay banks higher interest rates than richer enterprises. Money should therefore flow from rich depositors to poor entrepreneurs.

This principle of diminishing returns is derived from the assumed concavity of production functions, as illustrated in figure 1. Concavity is a product of the assumption that when an enterprise invests more (i.e., uses more capital), it should expect to produce more output, but each additional unit of capital will bring smaller and smaller marginal gains.

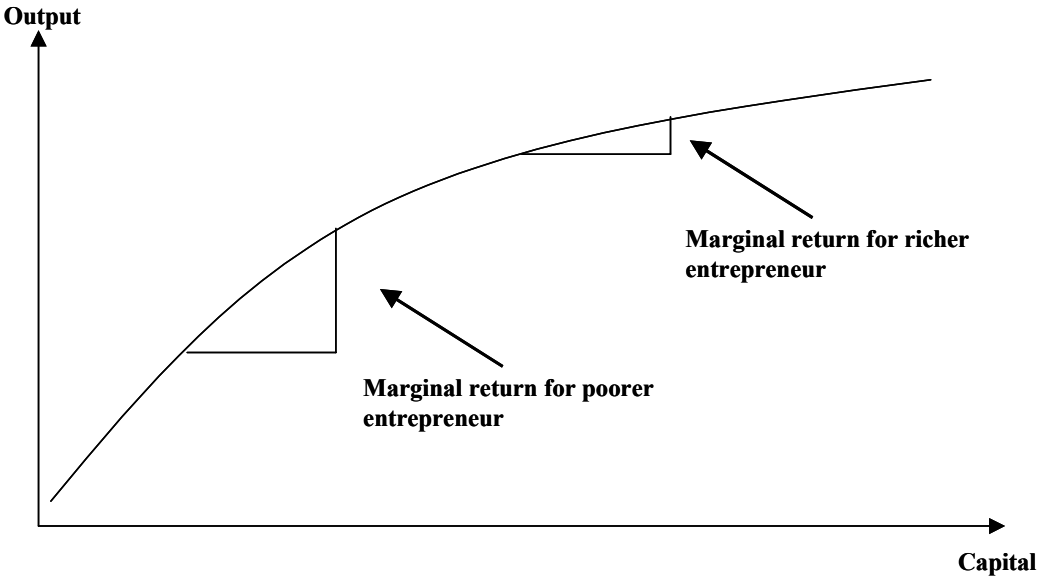

Figure 1: Marginal Returns of Capital of rich and poor Entrepreneurs [Adapted from de Aghion and Morduch (2005), p. 5]

As the figure 1 shows, concavity implies that the poor entrepreneur has a higher marginal return to capital and thus a higher ability to repay lenders than a richer entrepreneur.

According to these findings, an investor should invest more money in low-income countries where capital is relatively scarce and not in industrialised countries. Money should move from the North to the South, not out of altruism but in pursuit of profit. Furthermore, no one would expect investment to occur in the wealthy countries in the face of return differentials of this magnitude [De Aghion and Morduch (2005), pp. 5 and 6].

The economist Robert Lucas Jr. measured the extent of the expected difference in returns across countries. Lucas found out that borrowers in India should be willing to pay fifty-eight times as much for capital as borrowers in the United States, because the marginal product of capital in India is about fifty-eight times the marginal product of capital in the United States [Lucas (1990), .92].

According to this idea, one can argue that there is no need for microfinance institutions in developing countries due to the capital flows from rich to poor countries. However, the reality is far more different than the described model above. Capital flows in poor countries are quite scarce compared to the capital flows from wealthier countries. Of course, there are some investments made by wealthy countries in poorer ones, but these capital flows fall short compared to the flows predicted by the theory above. Some 80 percent of the world's people living in low-and lower- middle-income economies do not have access to formal sector financial services [Robinson (2001), pp. 10 – 11]. The question why investments are in fact more likely to flow from poor to rich countries or flow within rich countries, and not in the other direction must be asked. Another question is what role MFIs are playing in this context.

The principle of diminishing marginal returns, used above, assumed that education levels, business savvy, access to information commercial contracts, and access to other inputs are the same for people in developing countries and the ones in industrial countries. Since it is obvious that this is not true, the production function will not be the same for the rich and the poor [De Aghion and Morduch (2005), p. 17]. The new situation counting these differences is described in the following figure 2.

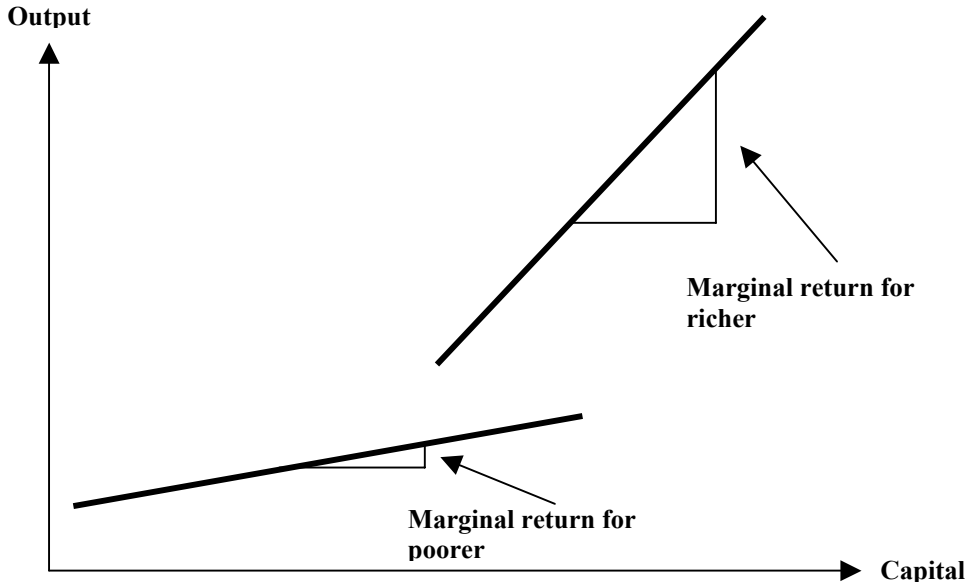

Figure 2: **Marginal Returns to Capital for Entrepreneurs with differing complementary Inputs [Adapted from de Aghion and Morduch (2005), p. 18]**

The rich entrepreneur has a higher marginal return with the same amount of capital than the poorer entrepreneur. Due to less marginal returns the poorer entrepreneur can not pay for credit at high interests either and therefore full repayment of loan might be almost impossible.

Due to the missing links between the financial markets of developing countries and the poor and the unequal situation of poor and rich entrepreneurs MFIs arose to serve the poor, which are excluded from commercial financing.

A look at the financial market in developing countries, shown in the next chapter, can provide an initial answer to some of these questions.

2. The Financial Sector in Developing Countries

The following chapter will give a brief overview on the financial market in developing countries and point out the reasons for the inefficiency of the financial sector of these countries.

One obvious main difference between financial sectors in industrialized and developing countries is that in developed countries the financial sector is often state-run and even the central reserve bank is not independent on the government [Hemmer (2002), p. 405]. Also there is no noteworthy competition among the financial institutions, so that oligopolistic and cartelised structures have arisen [Hemmer (2002), p. 407]. Therefore, the financial system in developing countries is not in the position to absorb economic shocks and deal with financial crisis nor is it in a state necessary for an effective monetary policy [Hemmer (2002), p. 408].

Another main difference is the portion of informal lenders in the financial market. The informal sector is characterised by personal relationships, individual operators, ease of access, simple procedures, rapid transactions and flexible loan terms and amounts [Robinson (2001), p. 50]. Hoff and Stieglitz [(1993), p. 34], for example, found a share of the informal sector in developing countries ranging from 49 and 93 percent. The reason for the large proportion of informal institutions and lenders is based on the fact that, as discussed earlier, most of the poor people in developing countries are unable to get loans from commercial banks because the loans are too small compared with the thereby incurred costs and due to the fact that the poor do not have any securities to assure repayments. Another reason is the fact that the branches of commercial banks are often underrepresented in rural areas and villagers have no alternative but to keep the money under their mattress [KfW (2002), p. 18].

A third point is scarce collateral. The borrowers in developing countries are often too poor to possess assets, like land, that could be collateralized. Furthermore poorly developed property rights make appropriating collateral in the event of default difficult especially in such areas [Besley (1994), p. 31].

The fourth main difference is the problem of enforcing loan repayment. Enforcement problems can generally be divided into two parts. First of all, the lender must attempt to enforce repayment after a default has occurred. Secondly,

enforcement problems exist due to the poor development of property rights in developing countries [Besley (1994), p. 33].

The problem of covariant risk due to segmented markets worsens the difficulties of enforcement. The credit market, especially in rural areas, tends to be segmented, meaning that the lender's portfolio of loans is concentrated on a group of individuals facing common shocks to their incomes. This could happen in one particular geographic area or with farmers who produce one particular crop.

The difficulties of enforcement also help to explain the widespread use of informal financial arrangements in developing countries.

Informal arrangements can replace conventional solutions, such as physical collateral, with other mechanisms because they operate locally using local information and enforcement mechanisms like social ties [Besley (1994), p. 32]. Informal sanctions may persuade individuals to repay loans in situations where formal banks are unable to do so.

3. Differences in Costs of Microfinance compared to Commercial Finance

Since this discussion paper addresses in the costs of MFIs in the Cost-Effectiveness Analysis later on, it is important to know why mircofinance lending is more expensive than commercial lending. This chapter therefore shows main differences of Microfinance and commercial finance.

Microfinance differs in many ways from commercial finance because they do not have the same goal. While commercial banks focus on profit maximising, microfinance aims to offer financial services to clients who fail the criteria to acquire money from commercial banks. Nevertheless, microfinancing of course also intends to make profit, however, in order to reach sustainability. Table 1 therefore shows the main differences of MFIs and commercial banks.

Table 1: Comparison of Commercial Banks and Microfinance Institutions

Area	Commercial Bank	Microfinance Institution
Lending Methodology	▪ Based on collateral ▪ More documentation ▪ Less labor intensive ▪ Loans are usually serviced monthly, quarterly, or yearly	▪ Based on character ▪ Less documentation ▪ More labor intensive ▪ Loans are usually serviced in weekly or bi-monthly
Loan Portfolio	▪ Fewer loans ▪ Loans are larger in size ▪ Collateralized ▪ Longer maturity ▪ More stable delinquency	▪ More loans ▪ Loans are smaller in size ▪ Uncollaterilized ▪ Shorter maturity ▪ More volatile delinquency
Institutional Structure	▪ Profit maximizing institutional and individual shareholders ▪ Creating by spin-off from existing regulated institutions ▪ Centralized organizations with branch officers located in cities	▪ Mainly non-profit institutional shareholders ▪ Creation by conversion from NGO or formation of new entry ▪ Decentralized set of small units in areas with weak infrastructure

[Adapted from Berger (2000), p. 3.]

Mainly due to the many small and labour intensive loans provided to poor customers, microfinance is more expensive than providing standard banking services to larger clients [Robinson (2001), p. 47]. It is not only due to the amount of loans disbursed, but also the fact that the clients are generally located a distance from the branch, require continuous monitoring and have high transaction costs which increases the costs of microfinancing [Ledgerwood, Burand and Braun (2002), p. 22]. Table 2 will give an overview of typical costs of a MFI compared to the cost of a commercial bank and a development bank. As one can see, the total operating costs of a MFI are much higher compared to the other institutions. The typical costs in this table reflect the costs for these institutions in Uganda. In other countries the proportion of these costs might be different but the primary statement will be the same.

Table 2:Comparison of typical MFI Costs with those of Other Financial Institutions (in US$)

	Development Bank	Commercial Bank	MFI
Portfolio size	9,090,000	9,090,000	9,090,000
Average loan size	1,136,250	181,800	227.25
Number of loans	8	50	40,000
Managers	0.5	1	20
Manageable case load	8	10	400
No of officers necessary	1	5	100
Av. Salary per Credit Officer (C.O.)	2,272.5	1,636.2	636.3
C.O. salary cost per month for a Sh 10 bn portfolio	2,272.5	8,181	63,630
Direct Costs:			
Annual C.O. salary per Sh 10bn portfolio	27,270	98,172	763,560
Transport costs for field operations	1,818	6,817.5	45,450
Back-office clerical & processing costs	1,363.5	4,545	16,362
Total direct costs	**30,451.5**	**109,534.5**	**825,372**
Indirect operational costs	381,780	681,750	2,363,400
Inflation (7%)	636,300	636,300	636,300
Total operating costs	**1,048,531.5**	**1,427,584.5**	**3,825,072**
Cost covering interest rate required	11.5%	15.7%	42.1%

[Adapted from Ledgerwood , Burband and Braun (2002), p. 23.]

This chapter pointed out why MFIs are much more costly than commercial institutions, and therewith often need to be supported. Hence, the next paragraph will go into more detail to show public support of MFI. Before that the following chapter will discuss the different situation of an entrepreneur in an industrialized country compared to one in a developing country. This is important since the access to capital is not the only factor for the success of someone's project and the therewith connected repayment of loan.

B THE MATTER OF PUBLIC SUPPORT

1 The Role of Public Action

The term public support includes support from governments, international donors and NGOs. This kind of support is not only limited to monetary support but also includes a variety of other kinds of support to MFIs. The main reason for public intervention is the fact that almost all MFIs make losses and rely on public support [Hardy, Holden, and Prokopenko (2002), p. 9]. This does not only apply to the very small MFIs but also to MFIs, which are considered to be very successful, like the Grameen Bank [Morduch (1999), p. 230]. Today, most of the existing MFIs depend on public support and would not be able to exist without it. Since public support is not without costs for society, the question has to be raised whether the subsidised MFIs are worth these costs.

In the following the main types of public support and also the reasons and justification for public support are described.

2 Public Support

Donors and the government have two ways to intervene in the microfinance business: subsidies and/or regulation and supervision. While donors only intervene via subsidies, the government can also regulate and supervise the microcredit sector. Since the cost-effectiveness analysis only counts public support in form of subsidies, this paper will only go into this type of public support.

A subsidy is generally a monetary grant given by the government or donors to lower the price, faced by producers or customers of a good (here the credit), because they are considered to be public interest. Microlenders take subsidies in many ways – not only in form of monetary grants.

Sometimes subsidies are direct, for example in form of grants to help pay for staff training. Other subsidies are indirect and come via soft loans. A soft loan is a loan given by a donor, who might prefer to support a microfinance institution by granting a loan to be repaid within twenty years at an interest rate of one percent a year. The subsidy comes in when the interest on loans obtained through the

market would be higher. At other times, the subsidy may take the form of tax holidays, loan guarantees, soft equity or the assumption of exchange rate risk.
To give an example how large subsidies can be, Morduch [(1999), p. 230; De Aghion and Morduch (2005), p. 236] calculated for the period of 1985 – 1996, about 11 cents subsidy for every dollar on average in Grameen's average loan portfolio

3 Justification of Public Support

Neoclassical theory stipulates that the free functioning of the market should lead to an optimal allocation of resources. In an idealised credit market therefore, loans are traded competitively and the interest rate is determined through supply and demand. Because individuals with the best investment opportunities are willing to pay the highest interest rates, the best investment opportunities should theoretically be selected. But because of market failiures, this optimal allocation can not be found in the credit market for poor people.
Market failure is a situation in which markets do not efficiently organise production or allocate goods and services to consumers (for example, a failure to allocate goods in a way some see as socially or morally preferable). The term is normally applied to situations where the inefficiency is particularly dramatic, or when it is suggested that non-market institutions, like the state or donors, would provide a more desirable result. The following will discuss the main reasons of market failure that are most relevant in credit markets in developing countries.
Even in the absence of market failures public support might be justified as an argument to protect depositors, protect the borrowers and to control their market power, to protect the financial system and public funds, to provide information for market participants, and to support innovation in microfinance.

3.1 Imperfect Information

In the case of imperfect information, the lender does not have sufficient information about the borrowers and the projects they are able to undertake. These information problems create inefficiencies. Credit markets can face significant

problems when due to imperfect information adverse selection and moral hazard may arise.

(a) Adverse Selection

In a credit market, risk-averse and risk-friendly borrowers are acting parts. In this case the risk-friendly borrowers are characterised with the highest risk of default and with higher demand for loans at a given interest rate. Due to the higher demand of risk-friendly borrowers the demand for loans increases. The lenders react to the hereby connected increasing risk and charge a risk premium above their opportunity costs. The effect is an increased price for loans and a shortage of loan supply, resulting in too little investment in the economy of the country. Risk-averse borrowers will now retreat from the market and the risk for lenders in the market will increase. Due to imperfect information lenders do not have the ability to distinguish between the risk-averse borrowers and the risk-friendly ones and thus may make adverse selection [Borchert and Goos (2004), pp. 6 and 7].

According to de Aghion and Morduch [(2005), p. 35] public support can be seen as one attempt to overcome adverse selection, in this case Government policy that expands lending, e.g. through subsidies, raises welfare by offsetting the negative effect that high-risk borrowers create for good borrowers [Besley (1994). p. 36].

(b) Moral Hazard

A second problem, which may arise due to imperfect information, is moral hazard, which can emerge when lenders are unable to appraise borrower's actions or the realisation of project returns [De Aghion and Morduch (2005), p. 43]. The central risk for the lender is that individuals who are in debt might slacken their efforts to make the project successful.

An increase in interest rates can affect the behaviour of borrowers negatively, reducing their incentive to take actions, which are conductive to repaying their loans. Riskier projects are more attractive at higher interest rates because, at the higher interest rate the borrower will prefer a project that has a lower probability of being repaid, and borrowing money to invest in a project divides the risk between lender and borrower because if the project fails and the loan is not repaid, the lender bears the costs of the loan.

3.2 Enforcement Problems and undefined Property Rights

The enforcement problem, which is also often referred to as "ex post moral hazard", emerges after the loan is issued and the borrower has invested. Even if those steps proceed well, the borrower may decide to take the money and run away once the project returns are realised [De Aghion and Morduch (2005), p. 45]. Lenders in credit markets in developing countries often lack reliable mechanisms to enforce repayment. One reason are insufficient property rights, which hinder borrowers to use their land as collateral for loans. Since the lender does not have enough information about the client, he will require a collateral for the loan to minimise his risk of lending. But borrowers who cannot give such a guarantee might not be served by the lender although his project might be worthwhile.

Furthermore, the enforcement problem will also occur when the borrower is unwilling to repay the loan. This kind of situation arises when the lender does not fully observe the borrowers' profit, so the borrower can make false claims of loss and default. But the most effective solution is to tackle the root of the problem by establishing formal titles to land and clear property rights over assets that make it easier for the poor to offer collateral and for the lender to enforce contracts. This implies the need for public support by implementing adequate laws for property rights and by controlling their realisation and execution to overcome this problem.

3.3 High Transaction Costs

As mentioned earlier, credit markets in developing countries face high transaction cost. Lending money to poor people can make the existence of this markets no longer worthwhile [Arndt (1988), pp. 224- 225]. Due to this fact, commercial banks often are not willing to lend to them. Moreover, not only the banks face high costs. Poor clients also encounter substantial transaction costs (e.g. time and transportation costs) in dealing with banks, because banks are often not conveniently located. This costly access for the poor is considerably decreased by informal lenders, e.g. by being located close to their clients, and by speedier loan approvals [Okurut *et al* (2004), p. 6]. The failure which occurs here is, that there

are people who would like to borrow and lenders who have money to lend, but due to too high transaction cost no deal with the poor takes place.

According to Myint [1985] the incomplete state of development of the organisational framework causes much of the high transaction costs. If government or donors are able to reduce these costs by implementing more public support, e.g. by strengthening the organisational framework by the government or subsidies from donors more people will be served by loans. But this has to be handled with care because in some cases public support might worsen the problem due to the implementation of a wrong or too bureaucratic organisational framework.

4 Costs and Benefits of Public Support

The following table 3 gives a summary about the cost and benefits of the different types of public support. As a matter of course the summarised costs and benefits do not occur in each MFI nor in each country in the same way depending on the existing macro- and microeconomic situation of the respective country and as well as the chosen type and scope of public support in this country.

The matrix itself does not indicate where relative importance should lie, but it places non-financial costs and benefits, on par with financial cost and benefits. Thus, the matrix provides a way to present the relationship between costs and benefits without reducing them to monetary units [Ziller (2003), pp. 142 - 146].

Table 3: General summarizing Conspectus of Costs and Benefits of the three different Types of Public Support

	Costs	Benefits
Subsidy	▪ Costs of donors and government for supporting the MFI ▪ Perverse effects on other market participants, e.g. due increasing of marginal costs of lender, enforcement externalities, and weakening of reputation effect and therewith increasing interest rates ▪ If ongoing subsidy: increase of moral hazard and therewith poor management, aid dependence, weakening of the incentives to achieve sustainability, suppressing the scope of competition and creating a lack of innovation, weaken budget discipline, diminishing and misallocating of resources for the poor	▪ Helps to overcome of start-up costs ▪ Financing of innovation ▪ Giving ability to serve the very poor and to conduct business
Regulation	▪ Costs of complying ▪ Cost for officers and bureaucracy ▪ Costs of failures ▪ Cramps competition ▪ Bears down innovations ▪ Risk of imposition of interest rate controls ▪ Danger of over regulation	▪ Protection of depositors and borrowers ▪ Increase in efficiency by facilitating improved use of collateral ▪ Greater access to sources of funds ▪ Greater ability to offer services beyond microcredit ▪ Improving of operational procedures through meeting higher standards ▪ Enhanced legitimacy in the financial sector ▪ Building transparency and security ▪ Network of financial branches in rural areas
Supervision	▪ Reporting requirements for MFI ▪ Supervision costs from 1 to 5 percent of assets ▪ High cost for the government for supervisors and the institutional framework ▪ Endanger effective supervision of other institutions	▪ Providing information about the performance of regulation in practice

C MICROFINANCE IN UGANDA

1. The Financial Sector in Uganda

The financial system in Uganda is characterised by the co-existence of formal and informal financial markets. The formal market is dominated by seventeen commercial banks which are fully controlled by the private sector, six credit institutions which are subject to supervision by the Bank of Uganda (BOU) and three development banks which are non-deposit-taking institutions and are not supervised by the BOU [Apire (2002), p. 14].

The financial sector in Uganda has significantly improved despite the turbulence it has experienced since 1992. At this time some commercial banks were closed and there was an interruption in the sale of the Bank of Uganda. These factors together with a slow response by the government to unfreeze savings accounts, and accordingly pay depositors of failed banks, contributed in a major way to the decline in the general public's confidence in the countries banking system [Apire (2002), p. 15]. The improvements within the financial sector are evident in the expansion of the sector and the increased number of monetary instruments available for undertaking financial transactions, liberalisation of interest and foreign exchange rates, as well as government divesting from the management of public sector banks. However, these implemented improvements are mainly macro-level policies and experience in other developing countries has shown that such policies and deregulation of the formal financial sector has not increased the access to formal finance for the poor [Okurut *et al* (2004), p. 4].

Uganda's financial sector, also still has some weaknesses. The sector lacks medium to long-term finance and has a low savings-to-GDP ratio. The sector also has generally high operating costs, which have kept commercial bank lending rates at high levels. While treasury rates are at 7.6 percent, lending rates average 24 percent [Hanning and Mugwanya (2000), p. 3].

Furthermore, the commercial banks in Uganda are located almost entirely in the urban areas and offer only a narrow range of financial services. They concentrate on providing working capital mainly to medium and large-scale enterprises. And "the formal financial institutions are inflexible in their operations, with respect to the needs of small – scale enterprises and the poor people in the rural areas who

may not have collateral or well-written feasibility studies to solicit for loans" [Nannyonjo and Nsubuga (2004), p. 8]. Above all, the access to formal lenders for poor people in Uganda is restricted due to stringent requirements which include high minimum balances for account opening, onerous collateral requirements for loans, and long and costly bureaucratic processes [Okurut *et al* (2004), p. 4]. The result of this constrained access to formal credit is, that the poor rely almost exclusively on the informal sector. The Uganda Bureau of Statistics estimates that only 10 percent of the rural population and 5 percent of the rural poor have access to financing services in terms of savings and credit [UBOS (2005)].

A survey by the Ugandan Bureau of Statistics undertaken in 1999/2000 found out that circa 90 percent of rural and urban people have never applied for a loan and that out of the people who applied for a loan only 0.5 percent took their loan from a bank while the rest took their loan from informal lenders. According to the data, of those who did not apply for credit, only 45 percent indicated that they did not need such a credit. The remainder were mainly pessimistic about their own ability to access such a credit. Despite the fact that several commercial banks and MFIs operate in Uganda, around 50 percent of people who would like to take a loan or deposit their money do not have access to financial services, which shows that the financial market in Uganda only reaches half of the potential clients.

2. Players of Microfinance Industry in Uganda

The main players of the microfinance industry in Uganda besides the MFIs itself are the Bank of Uganda, the Microfinance Forum, and the Association of Micro Finance Institutions of Uganda (AMFIU).

(a) Bank of Uganda

The Bank of Uganda (BOU) is the central bank of the country. In late 1999, the BOU issued a Policy Statement on Microfinance Regulation that confirmed the role of the government as an enabler, instead of a provider, of microfinance [Goodwin-Groen, Bruett, and Latortue (2004), pp. 5 - 6].

The BOU, as a key player in formulating a regularly framework for regulation and supervision of the microfinance sector, regulates microfinance under a tired

framework and aims to create an enabling environment for the growth of the rural financial system [Kalyango (2005), pp. 5 and 9].

(b) Microfinance Forum

The Microfinance Forum (MFF) is chaired by the government. It was created to facilitate the dialogue between the stakeholders and all of those involved in the founding of the MFF. In 1998 the Ministry of Finance formally requested that the forum becomes the main discussion group for microfinance, where new developments and constraints in the microfinance industry should be discussed Furthermore, informal contracts among donors, MFIs and representatives of the Ministry of Finance are channelled into a more formal mechanism for collaboration through this forum. The MFF monitors developments and provides guidelines for practitioners and donors, participates actively in policy formulation, monitors and evaluates the performance of the microfinance industry. It prepares and monitors grant-based support initiatives for the poorest of the poor. Today, the MFF has become the most important collaborative mechanism in Uganda [Nannyonjo and Nsubuga (2004), pp. 19 and 23-24; Goodwin-Groen, Bruett, and Latortue (2004), pp. 5, 10 and 26].

(c) Association of Micro Finance Institutions of Uganda (AMFIU)

AMFIU is run by MFIs. It is an umbrella organization of MFIs throughout Uganda. AMFIU was founded in 1996 and has a membership of more than 100 MFIs [AMFIU (2005)] which represents more than 80 percent of the microfinance market in terms of clients and loan [AMFIU (2003), p. 9].

AMFIU's aim is to create a national network of MFIs. Therefore it monitors the performance of MFIs especially of non-deposit taking MFIs, lobbies the government to push the development of an appropriate legal framework for MFIs, and develops education programmes for MFI clients. AMFIU also coordinates and organises learning workshops, exchange visits, seminars etc. with other organizations and the public for members [AMFIU (2005)]. A critical point according to AMFIU is the unresolved conflict of interest between promoting member interests and monitoring member activities [Goodwin-Groen, Bruett, and Latortue (2004), p. 27].

3. Microfinance in Uganda Today

In 2003 most of the MFIs were situated in Kampala and other big cities of the urban areas, although three quarters of Uganda are rural [Wright and Rippey, (2003), p .i]. These MFI started to compete more for clients than for donor funds and it seems certain that the large number of financial service providers that now exist is more than the market will be able to support. Consolidation is therefore inevitable in the urban regions [Wright and Rippey, (2003), p.i], while the rural area still remains underserved with MFIs. The limited number of MFIs operation in the northern region can be attributed to the ongoing insurgency in that region of the country and the therewith higher transaction costs and risk for MFIs. Furthermore MFIs are mainly located in the urban area to reach a critical mass of clients in order to operate with moderately low overheads [Nannyonjo and Nsubuga (2004), p. 11; Ledgerwood, Burand and Braun (2002), p. 1].

In 2004 AMFIU counted over 500 registered MFIs [Ledgerwood, Burand and Braun, (2002), p. 1] and according to estimations from the German Technical Cooperation (GTZ) there were more than 2,000 non-regulated MFI [Köhler, (2004), p. 18]. Commercial banks are also increasingly recognising the potential of the microfinance market and are currently focussing on small savings mobilisation. Currently, one commercial bank, Centenary Rural Development Bank (CERUDEB), operates in the microfinance sector [Hanning and Mugwanya (2000), p. 3].

In this year Uganda had a population of nearly 24 million and close to 1.5 million people were employed in micro- and small enterprises [Goodwin-Groen, Bruett, and Latortue (2004), p. 3]. The typical clientele consists of women groups in urban areas carrying out trade and produce buying [Hanning and Mugwanya (2000), p. 3].

D ANALYSIS OF THE MICROFINANCE INSTITUTIONS FINCA AND FAULU UGANDA

Aim of this analysis is to identify if the two subsidised MFIs investigated here are worthwhile in terms of costs and benefits and to what extent they depend on subsidies. Therefore two approaches are presented below to answer these questions.

1. FINCA Uganda and Faulu Uganda at a Glance

1.1 FINCA Uganda

Founded in 1992, FINCA Uganda has provided micro-finance services utilising a group-based lending methodology to economically active poor women for more than a decade. FINCA Uganda is one of the five African affiliates of FINCA International Inc. and has been using the Village Banking Methodology developed by FINCA International. Today, FINCA Uganda is still wholly controlled by FINCA International. In Uganda, FINCA has one headquarter and six regional branches. In 2003, FINCA Uganda was the first MFI transforming into an MDI. Until today FINCA Uganda is the only MDI in the country. Today, FINCA Uganda offers loans, voluntary savings, insurance, and leasing. In 2004, FINCA Uganda had 43,420 clients, compared to 36,912 clients in 2003. The clients of FINCA Uganda are almost exclusively women. In 2004 FINCA had around 90 percent female members. The average loan balance in 2004 was 133 US $ compared to 66 US $ in 2003 [FINCA (2005)]. The main sources of funding are still grants besides loans and savings.

1.2 Faulu Uganda

Faulu Uganda was founded in 1995 as a programme of Food for the Hungry and incorporated as a company limited by shares in 1999. A long-term goal of Faulu is to transform into an MDI. Therefore Faulu Uganda must still secure funding for about 40 percent of its transformation costs. Currently, the MFI does not meet the

transformation requirements [MicroRate (2004), p. 2]. The main sources of funding are grants, loans, and shareholder capital. In 2004, Faulu Uganda ceased intermediating clients' savings because the MFI is still unregulated and is ill-equipped to manage the risks of this practice [MicroRate (2004), pp. 1-2]. Today, Faulu Uganda has four urban and four rural branches in Uganda, whereas the four rural branches were all founded in 2003. In 2004, Faulu Uganda had 31,459 clients compared to 570 in 1998. The portfolio in 2004 was about 2,771,267 US $ compared to 251,167 US $. Currently, Faulu Uganda offers loans, insurance, and training and consulting.

2. Cost-Effectiveness-Analysis of the Institutions

2.1 The Cost Effectiveness Analysis (CEA)

The following remarks about the CEA are based on the work of Mark Schreiner [(1997), especially chapter 8].

The CEA is a way to check if a subsidised MFI is the best way to help the poor by measuring the cost to the poor in a so-called test of bang-for-the-buck. The test of bang-for-the-buck answers the question asked by the poor: How much benefit per output would offset costs? Therefore, this analysis compares the cost of the poor per unit of output for the poor with a ratio of discounted flows of costs to discounted flows of output:

$$Average\ cost\ to\ poor = \frac{Discounted\ stream\ of\ costs\ to\ poor}{Discounted\ stream\ of\ outputs}. \qquad (1)$$

Less cost per unit of output means that the poor require less consumer surplus per unit of output to offset costs and to make a MFI worthwhile. All else constant, the lower the cost to the poor per unit of output, the more likely a MFI would pass a benefit-cost analysis.

Schreiner suggests that the costs to the poor can be considered as a loss of welfare caused by the MFI since the funds were not used in the best other development project and measures these costs as the net present costs (NPC_P) of the flows of funds between the poor and the MFI.

The NPC_P are the result of discounted outflows minus discounted inflows:

$$NPC_P = Discounted\ outflows - Discounted\ inflows \quad (2)$$

The output of a typical MFI can be measured as the average amount of dollars outstanding (dollar-years-debt), the average number of loans outstanding (loan-years of loans), the amount of dollars disbursed, the amount of loans disbursed, or years of membership, whereby Schreiner suggests that outputs should be measured not as stocks but as flows.

The presented framework of the CEA has the advantage that it is very easy, simple and fast compared to a full blown Cost-Benefit-Analysis.

But nevertheless the CEA has some weak points too. The most important weakness of this framework is that it uses financial data derived for other purposes and follows accounting principles instead of economic logic. Accounting data is seldom good and normally not appropriate for the purposes discussed here) and Schreiner put this into the words [Schreiner (1997), p. 209]: «Garbage in gets garbage out».

2.2 Assumptions

The adjusted statements of FINCA and Faulu Uganda are taken from the end-of-year financial statements. I assume that FINCA Uganda started its activities in 1997 with no net worth because there was no financial data available before 1997. Before FINCA Uganda transformed into an MDI, it was tax-exempt until 2002. Schreiner [1997] assumed a surplus for the poor *d* of two cents only per dollar-year of deposits because the deposits of the MFI he investigated were forced and members chose to make deposits as part of the price of membership. For Schreiner, this was reason to assume that the poor do not benefit a lot from forced deposits [Schreiner (1997), p. 271]. Since the deposits on FINCA Uganda are not forced, I assume a higher surplus for the poor *d* of four cents for the years 2003 and 2004. The years before, FINCA Uganda did not take deposits.

For Faulu Uganda I assume that it started its activities in 1998 with no net worth, since there was no financial data available before 1998. Faulu Uganda was tax-exempt until 2002. As with FINCA Uganda, I assume a surplus for the poor *d* of

four cents per dollar-year of deposits until 2003 because the deposits of Faulu also were voluntary savings. As mentioned above, Faulu Uganda did stop savings in 2004, therefore *d* is zero for that year.

2.3 Results

The net present costs to the poor of the use of funds in FINCA Uganda were roughly between $0.8 million (line bb of table 7 on page VII) in 1997 and $1.8 million in 2004. The Output of FINCA Uganda (seen as average loan portfolio, loans disbursed, member years, and number of loans disbursed) grew each year.

The bang-for-the–buck for the cost to the poor per dollar-year of debt showed a required surplus to offset costs of 31 cents for each dollar lend by the poor. This means that FINCA Uganda was worthwhile in the years 1997 to 2004 if the average borrower could get a surplus of 31 cent of each dollar lent in those years (line t of table 8 on page VIII).

For Faulu Uganda the net present costs to the poor of the use of funds were about $0.9 million in 1998 (line bb of table 13 on page XIII) and $1.4 million in 2004. The Output of Faulu Uganda (seen as average loan portfolio, loans disbursed, and member years) grew each year.

The bang-for-the–buck for the cost to the poor per dollar-year of debt showed a required surplus to offset costs of 54 cents for each dollar lend by the poor (line t of table 14 on page XIV). This means that Faulu Uganda was worthwhile in the years 1998 to 2004 if the average borrower could get a surplus of 54 cent of each dollar lent in this year.

Compared to the results for Grameen (10 cent required surplus) and BancoSol (6 cent required surplus) calculated by Schreiner [(1997), pp. 178 and 184], the required surplus for FINCA and Faulu Uganda are quite high.

The required surplus of FINCA Uganda for the other years ranges from 30 cents to 41 cents and did not decrease over the years but has its ups and downs. From 1997 to 2004, FINCA Uganda helped more poor customers the same rather than helping the same poor customers more. This follows since output grew each year but the surplus required to offset costs was more or less constant over this time.

The required surplus of Faulu Uganda for the other years ranges from 54 cents to 134 cents. From 1999 to 2004, Faulu Uganda helped more the same poor

customers rather than helping more poor customers the same. This follows since output grew each year and the surplus required to offset costs decreased since 1999 constantly from 134 cents to 54 cents.

2.4 Conclusion

Both institutions have a high-required surplus to offset the costs to the poor. In contrary to FINCA Uganda, Faulu Uganda was able to reduce these costs over the years. The high costs of both institutions compared to Grameen and BancoSol might be due to the age of the two other institutions and hence their experience in microfinance business. BancoSol, for example, also had very high-required surplus of about 76 cent in 1988 [Schreiner (1997), p. 178]. This also might explain why the younger MFI Faulu Uganda has a higher required surplus compared to FINCA Uganda. But of course there a many other factors, like clients and different services offered, which lead to different required surpluses of the institutions. Despite the higher required surplus of Faulu Uganda, due to its constant decrease of required surplus from 1999 till today, Faulu Uganda was a better investment of public funds, since one can expect further decreases of required surplus over the next years below 30 cents, while FINCA Uganda seems to remain at around 40 to 30 cents of required surplus in the future, too.

3. Subsidy Dependence Index of the Institutions

3.1 Subsidy Dependence Index (SDI)

The SDI answers the question how far a subsidised MFI - which may be worthwhile or not - is from being able to pay market prices for all its funds.
The SDI is a sensitivity test that shows the required change in the average lending interest rate for the MFI to maintain its business without public support [Yaron (1992), p. 18]. The interest rate is not the only possibility to reduce dependence on subsidies. The SDI takes this assumption because of its simplicity and because lending is the prime activity of most of the MFIs [Yaron (1992), p. 16; Schreiner (1997), p. 96].

The SDI is defined as follows [Schreiner (1997), p. 89]:

$$SDI = \frac{S}{LP \cdot i \cdot (1 - r \cdot \alpha / 2)}. \qquad (7)$$

Where S = Annual subsidy received by an MFI,
LP = Loan Portfolio,
i = Yield on lending,
r = Opportunity cost of equity for the market, and
α = Conversion factor, start and end stocks to average stock.

Not the grant itself is the subsidy. Donors entrust subsidised resources to an MFI that are priced below the opportunity costs of these resources. The difference between the opportunity cost and the price the MFI pays is then a subsidy [Schreiner (1996), p.4] and it is defined by Yaron [(1992), p. 17] and Schreiner [(1997), p. 81] as:

$$S = D \cdot (m - c) + [(E \cdot r) - AP] + K. \qquad (8)$$

Where:
D = Average soft debt,
m = Opportunity cost of soft debt[1] for the market,
c = Rate paid by an MFI on soft debt,
E = Average equity,
AP = Accounting profit and
K = sum of revenue grants and discount on expenses.

The biggest strength of the SDI is that it shows the extent of the subsidy by quantifying it. Furthermore, it shows the extent of subsidy dependence. Since donors and the government often do not know how much an MFI costs society, the SDI allows them to compare MFIs with other uses of public funds. Second, with the SDI, one can see the development of subsidy dependence over time and see if the MFI could improve or not.

A limitation of the SDI is that it does not discount flows of funds, which is no issue in short time frames but in long time frames. Furthermore, the SDI does not measure self-sustainability. A negative SDI is needed, but it is not enough [Yaron and Schreiner (1999), p. 18].

3.2 The SDI of FINCA and Faulu Uganda

The SDI of FINCA Uganda in 2004 was 94 percent (line l of table 9 on page IX), while the nominal yield was 76 percent (line m). The change to reach subsidy-free yield in 2004 was 0.71 (line n). With inflation at 5 percent (line p), the real subsidy free yield was 137 percent (line q). This subsidy free yield did decrease since 2001, before the subsidy free yield did not follow any rule and had its ups and downs. In the years 2000 and 2003 FINCA Uganda had a quite low dependence on subsidies, but increased again in the following years.

The amount of subsidy per year peaked in 2004 at about $2.5 million (line k).

These numbers conclude that if FINCA Uganda wants to survive without subsidies it would have to charge an interest of about 137 percent in 2004 for loans on its borrowers.

The SDI of Faulu Uganda in 2004 was 66 percent (line l of table 15 on page XV). The change to reach in 2004 subsidy-free yield was 0.38 (line n). With inflation at 5 percent (line p), the real subsidy free yield was 86 percent (line q). The subsidy free yield did decrease since 1998 till 2003, and increased a bit in 2004, which might be reasoned due to the looking of Faulu Uganda for fund because of the high transformation cost to become an MDI. The amount of subsidy per year peaked in 2004 at about 639,504 US $ (line k).

These numbers conclude that if Faulu Uganda wants to survive without subsidies it would have to charge an interest of about 86 percent in 2004 for loans on its borrowers.

[1] The soft debt is e.g. a loan taken by the MFI which is not at market interest rates but at lower subsidized interest rates.

3.3 Conclusion

The SDI showed the amount of subsidies injected into the MFIs analysed, and the dependence on subsidies over time. The data showed that FINCA Uganda received more subsidies than Faulu Uganda. Contrary to FINCA Uganda, Faulu Uganda could decrease constantly its dependence on subsidies over time. But one cannot compare both institutions like this, since all else is not constant e.g. FINCA Uganda has more clients than Faulu Uganda and also the loan portfolio is much bigger at FINCA Uganda.

E DISCUSSION

The aim of this paper was to identify the costs and benefits of MFIs in the light of the public support granted to them. Since funds earmarked to help the poor are scarce, one has to know the amount of public support injected into a MFI and the costs and benefits it generates in order to judge if public support of that MFI is a worthwhile investment of these funds.

As shown in chapter B, public support of MFIs takes various forms, whereas the chosen type of public support has an influence on the nature of benefits and costs of the MFI. The main reason why donors and the government support MFIs is due to market failures. An obvious purpose of intervention is to subsidise early innovators, but subsidies should be phased out along the way in order to avoid negative side-effects [Besley (1994), p. 44]. Continued subsidies will not strengthen MFI operations but undermine management efficiency and clients` behaviour if they get the impression that the cheap credit is a gift. Other tools considered appropriate for strengthening MFIs are regulation and supervision. Creating a special microfinance legal framework seems to make most sense in a country where a critical mass of strong MFIs that are in a position to use such a framework safely already exists [Christen and Rosenberg (2000), p. 16)]. But one also has to keep in mind that government regulation holds the threat of over-regulation and the corresponding negative effects on microfinance business especially on innovation. In the case of Uganda, there is an exemplary system of regulation and supervision. The MDI Act of 2003 found many supporters. Unfortunately, today there is only one institution in the country that could fulfil all requirements and bear the therewith-associated transformation costs.

The framework of the CEA used in this paper showed that the MFIs analysed here are apparently not worthwhile in terms of costs and benefits for the poor because the required surplus to offset cost to the poor was very high and I doubt that the poor will gain this surplus for each dollar lent. The analysis could not point out if the MFIs were worthwhile or not in terms of costs and benefits for society. But donors can use the CEA to find out if a MFI is worthwhile in terms of costs and benefits to the poor. The CEA has the advantage for donors that it is much cheaper and easier than a full-blown cost-benefit analysis and therefore it is quite practical for donors who are interested in the costs and benefits of a MFI.

To know the amount of public support injected into a MFI, the framework of the SDI by Yaron was used. The SDI also showed the subsidy dependence of the MFIs over time. The analysis disclosed that both institutions would not be able to operate without public support. To become independent from subsidies, the yield on lending would have to be so high that on the one hand borrowers might not be able to pay the interest and on the other hand borrowers also would not be willing to lend to these institutions. Since the microfinance business in Uganda is quite competitive, they would prefer to lend from other institutions. Therefore, raising interest rates to that level is not an option for these MFIs for becoming independent from subsidies. Donors can use the SDI to know how much the public support of the MFI will cost them and if the MFI could decrease its subsidy dependence over time because the long-term goal of each MFI should be to survive without subsidies after the start-up so that the scarce funds can be used in another project or another new MFI to help the poor.

Donors should be aware of the costs and benefits of the different types of public support, since they affect not only the MFI itself but also cause side-effects on other market participants. This knowledge is necessary to allocate scarce development funds wisely. The presented framework in this paper is one way of helping donors to judge if the investment in a MFI is worthwhile or not.

As a matter of course the framework does not claim to be complete and without weaknesses but the advantages of the two presented frameworks are their practicability, low costs and relative simplicity.

APPENDICIES

Table 4: FINCA adjusted Assets and Liabilities, 1997-2004

Year ending Aug. 31	1997	1998	1999	2000	2001	2002	2003	2004
Cash and short-term invest	208.095	116.709	382.024	493.336	601.899	473.552	493.840	258.442
Portfolio performing	332.077	731.558	955.550	1.391.024	1.713.971	2.559.960	2.852.706	6.045.837
Portfolio contaminated arrears	0	0	0	0	0	0	0	0
Portfolio (gross)	**341.132**	**750.876**	**981.238**	**1.412.400**	**1.713.971**	**2.559.960**	**2.922.456**	**6.195.650**
Reserve for loan losses	(9.055)	(19.318)	(25.688)	(21.376)	(27.962)	(54.799)	(69.750)	(149.814)
Portfolio (net)	**332.077**	**731.558**	**955.550**	**1.391.024**	**1.686.010**	**2.505.161**	**2.852.706**	**6.045.837**
Deprec. fixed assets (net)	24.173	61.600	67.130	132.949	214.482	296.851	434.007	647.171
Non-deprec. fixed assets	0	0	0	0	0	0	10.867	42.900
Total fixed assets (net)	**24.173**	**61.600**	**67.130**	**132.949**	**214.482**	**296.851**	**444.874**	**690.071**
Long-term invest.	0	0	0	0	0	0	0	752.230
Other assets	26.113	42.250	124.728	90.448	547.952	336.837	365.259	281.472
Total assets	**590.458**	**952.117**	**1.529.432**	**2.107.758**	**3.050.341**	**3.612.400**	**4.156.680**	**8.028.052**
Deposit libs.	0	0	0	0	0	0	613.116	1.328.490
Market debt	0	0	181.057	161.977	336.383	290.970	135.270	1.627.736
Soft debt	82.739	42.862	44.238	30.176	342.731	309.680	269.433	3.241.917
Other libs	19.564	38.700	31.663	147.721	127.132	176.725	131.190	484.739
Total liabilities	**102.303**	**81.562**	**256.958**	**339.874**	**806.246**	**777.375**	**1.149.010**	**6.682.882**

Source: Financial statements of FINCA. All figures in 2004 US$.

Table 5: FINCA adjusted Income Statement, 1997 - 2004

Year ending Aug. 31	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Rev. lending, LP*i	122.169	284.694	547.273	1.159.255	1.609.995	2.057.305	2.630.164	3.385.058
Rev. investments	0	0	0	0	0	0	0	0
Rev. adj. inflation	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Exp. adj. inflation	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Exp.int. deposit libs.	0	0	0	0	0	0	(78.463)	(251.093)
Exp. int. market debt	0	0	(8.542)	(34.726)	(27.071)	(39.699)	(6.648)	(72.575)
Exp. int. soft debt	(375)	(2.522)	(3.425)	(1.895)	(118.874)	(79.704)	(21.121)	(192.956)
Financial Margin	**121.794**	**282.173**	**535.306**	**1.122.634**	**1.464.050**	**1.937.902**	**2.523.931**	**2.868.434**
Rev. other op.	5.053	9.950	11.314	26.396	72.636	137.712	263.589	64.764
Exp. other op.	(162.012)	(327.069)	(223.277)	(466.146)	(251.949)	(633.086)	(561.149)	(622.140)
Exp. prov. reserve for loan loss	(5.936)	(10.263)	(6.877)	(2.380)	(17.091)	(44.616)	(14.950)	(101.110)
Exp. extraord. write-offs(net)	0	0	0	0	0	0	0	(11.473)
Exp. personnel	n.a.	n.a.	(322.200)	(382.833)	(613.598)	(827.912)	(1.003.179)	(1.540.395)
Exp. adminsitration	n.a.	n.a.	n.a.	n.a.	(683.678)	(833.692)	(945.629)	(1.354.006)
Exp. depreciation	(9.415)	(17.505)	(24.963)	(33.029)	(60.549)	(97.165)	n.a.	n.a.
Operating margin	**(50.516)**	**(62.714)**	**(30.697)**	**264.643**	**(90.179)**	**(360.857)**	**262.613**	**(695.927)**
Rev. extraordinary (net)	0	0	0	0	0	0	0	0
Rev. grants, RG	176.801	299.082	295.020	21.687	316.381	321.717	155.082	266.444
Acct. profit, AP	**126.285**	**236.368**	**264.323**	**286.330**	**226.203**	**(39.140)**	**417.695**	**(429.483)**
Tax	0	0	0	0	0	0	0	(25.974)
Dividends declared, Div	0	0	0	0	0	0	0	0
Change retained earnings	**126.285**	**236.368**	**264.323**	**286.330**	**226.203**	**(39.140)**	**417.695**	**(455.456)**

Source: Financial statements of FINCA. All figures in 2004 US$.

Table 6: FINCA adjusted Equity, 1997-2004

Year ending Aug. 31	**1.997**	**1.998**	**1.999**	**2.000**	**2.001**	**2.002**	**2.003**	**2.004**
Open retained earnings	140.484	215.671	433.245	680.892	897.600	1.061.465	1.040.340	1.343.089
Change retained earnings	71.317	217.574	247.647	216.709	163.865	(21.126)	302.749	(422.037)
Close retained earnings	**215.671**	**433.245**	**680.892**	**897.600**	**1.061.465**	**1.040.340**	**1.343.089**	**921.052**
Open reserve adj.	0	0	0	0	0	0	0	0
Change reserve and adj.	0	0	0	0	0	0	0	0
Close reserve and adj.	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Open direct grants	261.145	272.484	401.116	528.576	684.992	876.886	1.438.648	1.169.940
Change direct grants	11.339	128.632	127.461	156.416	191.894	561.762	(268.708)	(1.015.490)
Close direct grants	**272.484**	**401.116**	**528.576**	**684.992**	**876.886**	**1.438.648**	**1.169.940**	**154.450**
Open-paid-in cap. public	0	0	0	0	0	0	0	0
Change paid-in cap. public	0	0	0	0	0	0	0	0
Close paid-in cap. public	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Open-paid-in cap. private	0	0	0	0	0	0	0	0
Change paid-in cap. private	0	0	0	0	0	0	0	1.516.748
Close paid-in cap. private	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**965.067**
Total equity	**488.155**	**834.361**	**1.209.468**	**1.582.592**	**1.938.351**	**2.478.988**	**2.513.029**	**2.040.569**

Source: Financial statements of FINCA. All figures in 2004 US$.

Table 7: FINCA Net Present Cost to the Poor since Birth in 1997 through 2004

Line	Year ending Aug. 31		1997	1998	1999	2000	2001	2002	2003	2004
a	Real opp. cost Equity for the poor	Data	0	0	0	0	0	0	0	0
b	inflation given IAS 29 practice	Data	0	0	0	0	0	0	0	0
c	**Nom. opp. cost equity for poor rho**	**a+b+a*b**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
d	Beta 0	Data	0	1	1	1	1	1	1	1
e	Beta t	Data	1	1	1	1	1	1	1	1
f	Delta for poor at the end of the year	f(t-1)*(1/(1+c))	1	1	1	0	0	0	0	0
g	Gamma for the poor, since birth	Data	1	1	1	0	0	0	0	0
h	Beta t*Delta	e*f	1	1	1	0	0	0	0	0
i	Start Equity Eo	Data	0	0	0	0	0	0	0	0
j	Fresh funds less (TP-Tax), FF	Data	638.229	645.527	641.124	638.928	1.064.597	993.743	888.826	1.812.765
k	Accumulated FF	k(t-1)+j	638.229	1.283.756	1.924.880	2.563.809	3.628.406	4.622.148	5.510.974	7.323.739
l	Accum. discounted FF	l(t-1)+g*j	529.730	942.867	1.327.542	1.583.113	1.934.430	2.321.990	2.508.643	2.816.813
m	Private paid-in capital	Data	0	0	0	0	0	0	0	1.516.748
n	Accum. private paid-in cap.	n(t-1)+m	0	0	0	0	0	0	0	1.516.748
o	Accum. disc. private paid-in cap.	0(t-1)+g*m	0	0	0	0	0	0	0	257.847
p	Dividends, Div.	Data	0	0	0	0	0	0	0	0
q	Accumulated Dividends	q(t-1)+p	0	0	0	0	0	0	0	0
r	Accum. discounted dividends	r(t-1)+l*p	0	0	0	0	0	0	0	0
s	True Profit	Data	(60.455)	(79.951)	(43.532)	254.005	(526.486)	(726.310)	2.077	(1.880.402)
t	Actual Tax	Data	0	0	0	0	0	0	0	0
u	**True Profit less actual tax**	**s-t**	**(60.455)**	**(79.951)**	**(43.532)**	**254.005**	**(526.486)**	**(726.310)**	**2.077**	**(1.880.402)**
v	Accum. TP-Tax	v(t-1)+u	(60.455)	(140.407)	(183.938)	70.066	(456.420)	(1.182.730)	(1.180.653)	(3.061.055)
w	Term 1	(d-h)*i	0	0	0	0	0	0	0	0
x	Term 2	l-h*k	32.667	141.738	334.466	543.248	750.663	1.050.081	1.301.628	1.537.669
y	Term 3	o	0	0	0	0	0	0	0	257.847
z	Term 4	r-h*q	0	0	0	0	0	0	0	0
aa	Term 5	h*v	(47.084)	(87.621)	(94.897)	28.418	(148.907)	(325.460)	(258.587	-534.636
bb	**NPC of Poor since birth**	**w+x-(y+z+aa)**	**79.751**	**229.359**	**429.363**	**514.829**	**899.570**	**1.375.541**	**1.560.215**	**1.814.457**

Source: Authors own calculation based on financial satements of FINCA. All monetary figures in 2004 US$.

Table 8: FINCA Cost to the Poor per Unit of Output, 1997-2004

Line	Year ending Dec. 31		1997	1998	1999	2000	2001	2002	2003	2004
a	**NPC of Poor since birth**	**Data**	**79.751**	**229.359**	**429.363**	**514.829**	**899.570**	**1.375.541**	**1.560.215**	**1.814.457**
b	Ave. loan portfolio, LP	[LP(t-1)+LP]/2	166.038	531.817	843.554	1.173.287	1.538.517	2.095.585	2.678.933	4.449.271
c	Ave. number of members	Data	3.324	8.473	16.400	18.634	29.224	35.610	36.912	45.432
d	Val. disbursed (ausbezahlt)	Data	1.171.812	2.359.937	4.013.551	4.033.840	8.897.237	11.989.827	14.285.563	20.297.495
e	# loans issued	Data	17.081	33.832	46.643	62.720	76.906	84.006	107.187	127.615
f	Epsilon	Data	1,30	0,64	0,63	0,56	0,49	0,42	0,38	0,32
g	Omega	Data	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
h	Nom. opp. cost equity for poor, rho	Data	0,28	0,25	0,21	0,27	0,24	0,19	0,26	0,25
i	Delta at end of year	i(t-1)*(1/(1+h))	0,78	0,62	0,52	0,41	0,33	0,28	0,22	0,17
j	Delta^(t-Omega)	i(t-1)*(1/(1+h))^(1-g)	0,88	0,70	0,57	0,46	0,36	0,30	0,25	0,20
k	Accum. disc. dollar-years of debt	k(t-1)+b*f	215.318	556.883	1.091.181	1.744.467	2.491.080	3.367.928	4.372.628	5.804.950
l	Accum. disc. member-years	l(t-1)+c*f	4.311	9.752	20.140	30.515	44.697	59.597	73.442	88.067
m	Accum. disc. dollars distributed	m(t-1)+d*j	1.034.131	2.679.367	4.956.709	6.801.953	10.038.457	13.630.937	17.138.017	21.107.903
n	Accum. disc. loans distributed	n(t-1)+e*j	15.074	38.660	65.126	93.817	121.792	146.963	173.277	198.237
o	Ave. annual deposit libs.	Data	0	0	0	0	0	0	(78.463)	(251.093)
p	Ave. disc. ave. dep. libs.	p(t-1)+o*f	0	0	0	0	0	0	(13.878)	(45.181)
q	Surplus dollar year deposits	Data	0	0	0	0	0	0	0,04	0,04
r	Social value of dep. libs.	p*q	0	0	0	0	0	0	(1.177)	(4.410)
s	**NPC of poor since birth w/dep. libs**	**a-r**	**79.751**	**229.359**	**429.363**	**514.829**	**899.570**	**1.375.541**	**1.561.392**	**1.818.868**
t	Cost to poor/dollar-years of debt	s/k	0,37	0,41	0,39	0,30	0,36	0,41	0,36	0,31
u	Cost to poor/member-years	s/l	19	24	21	17	20	23	21	21
v	Cost to poor/dollar disbursed	s/m	0,08	0,09	0,09	0,08	0,09	0,10	0,09	0,09
w	Cost to poor/loans disbursed	s/n	5	6	7	5	7	9	9	9

Source: Authors own calculation based on financial satements of FINCA. All monetary figures in 2004 UD$.

Table 9: FINCA Subsidy Dependence Index, 1997-2004

Line	Year ending Dec. 31		1997	1998	1999	2000	2001	2002	2003	2004
a	r*Alpha		0,25	0,24	0,24	0,26	0,31	0,25	0,22	0,26
b	r*Alpha/2	a/2	0,13	0,12	0,12	0,13	0,15	0,13	0,11	0,13
c	1-r*Alpha/2	1-b	0,87	0,88	0,88	0,87	0,85	0,87	0,89	0,87
d	Tax rate, Tau		0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20
e	Start equity, E0	Data	0	488.155	834.361	1.209.468	1.582.592	1.938.351	2.478.988	2.513.029
f	Rev. lending, LP*i	Data	122.169	284.694	547.273	1.159.255	1.609.995	2.057.305	2.630.164	3.385.058
g	Fresh funds less (TP-Tax), FF	Data	638.229	645.527	641.124	638.928	1.064.597	993.743	888.826	1.812.765
h	True Profit, TP	Data	(60.455)	(79.951)	(43.532)	254.005	(526.486)	(-726.310)	2.077	(1.880.402)
i	Tax	d*Max(0,h)	0	0	0	0	0	0	415	0
j	True Profit less tax, TP-Tax	h-i	(60.455)	(79.951)	(43.532)	254.005	(526.486)	(726.310)	1.661	(1.880.402)
k	**Subsidy, S**	**a*e+b*g-c*j**	**133.641**	**263.725**	**316.257**	**179.465**	**1.091.626**	**1.251.014**	**646.078**	**2.530.758**
l	SDI	[a*e+b*g-c*h*(1-d)]/[f*c(1-d)]	1,44	1,24	0,80	0,28	0,92	0,78	0,35	0,94
m	Nom. yield lending in year, i	Data	0,74	0,54	0,65	0,99	1,05	0,98	0,98	0,76
n	Change in yield	l*m	1,06	0,67	0,52	0,27	0,96	0,77	0,34	0,71
o	Subsidy-free nom. yield in year	m+n	1,80	1,20	1,17	1,26	2,01	1,75	1,32	1,47
p	Uganda Infl.	Data	0,07	0,04	0,01	0,06	0,04	(0,01)	0,05	0,05
q	**Subsidy-free real yield in year**	**(o-p)/(1+p)**	**1,61**	**1,11**	**1,15**	**1,13**	**1,90**	**1,78**	**1,22**	**1,37**

Source: Authors own calculation based on financial satements of FINCA. All monetary figures in 2004 Dollars.

Table 10: Faulu adjusted Assets and Liabilities, 1998-2004

Year ending Aug. 31	1998	1999	2000	2001	2002	2003	2004
Cash and short-term invest	175.859	193.720	151.098	179.986	226.661	417.177	474.714
Portfolio performing	251.168	380.156	710.819	1.071.472	1.708.861	2.097.799	2.825.805
Portfolio at risk	n.a.	n.a.	n.a.	1.183	20.592	59.314	73.397
Portfoilo (gross)	**264.737**	**393.613**	**710.819**	**1.072.655**	**1.729.453**	**2.157.113**	**2.899.202**
Reserve for loan losses	(13.569)	(13.457)	(14.216)	(21.830)	(33.731)	(45.806)	(128.041)
Portfolio (net)	**251.167**	**380.156**	**696.603**	**1.050.825**	**1.695.722**	**2.111.306**	**2.771.161**
Deprec. fixed assets (net)	48.770	43.954	42.308	42.126	113.613	332.778	354.031
Non-deprec. fixed assets	425.139	313.912	311.377	263.568	600.159	74.269	63.822
Total fixed assets (net)	**473.910**	**357.866**	**353.684**	**305.693**	**713.772**	**407.047**	**417.853**
Long-term invest.	0	0	0	0	0	29.483	28.213
Other assets	5.444	30.646	198.832	56.609	99.725	105.953	141.932
Total assets	**906.380**	**962.389**	**1.400.217**	**1.593.114**	**2.735.880**	**3.070.967**	**3.833.873**
Deposit libs.	115.940	34.880	78.478	139.360	682.960	620.760	0
Market debt	79.338	239.613	336.596	489.150	689.263	970.856	1.840.093
Soft debt	1.951	34.865	46.431	112.646	371.733	450.961	1.000.882
Other libs	10.359	7.869	21.842	0	0	18.272	17.484
Total liabilities	**207.587**	**317.227**	**483.348**	**741.156**	**1.743.956**	**2.060.849**	**2.858.460**

Source: Financial statements of Faula Uganda. All figures in 2004 US$.

Table 11: Faulu adjusted Income Statement, 1998-2004

Year ending Aug. 31	1998	1999	2000	2001	2002	2003	2004
Rev. lending, LP*i	89.365	164.856	239.670	510.073	864.181	1.169.371	1.387.556
Rev. investments	31.565	3.282	0	0	0	0	0
Rev. adj. inflation	0	0	0	0	0	0	0
Exp. adj. inflation	0	0	0	0	0	0	0
Exp.int. deposit libs.	(3.332)	(1.012)	n.a.	(4.042)	(19.808)	(15.827)	0
Exp. int. market debt	(12.105)	(6.420)	(5.348)	(15.109)	(65.696)	(121.383)	(189.293)
Exp. int. soft debt	(121)	(835)	(963)	(3.099)	(3.898)	(33.987)	(102.218)
Financial Margin	**105.372**	**159.871**	**233.360**	**487.824**	**774.779**	**998.174**	**1.096.045**
Rev. other op.	22.751	35.345	77.163	49.261	26.703	37.047	5.840
Exp. other op.	(60.183)	(99.606)	(10.040)	(12.187)	(4.076)	(359)	(5.629)
Exp. prov. reserve for loan loss	0	(50)	(4.518)	(8.928)	(12.644)	(13.574)	(84.209)
Exp. extraord. write-offs(net)	0	0	0	-311	0	0	0
Exp. personnel	(128.521)	(169.290)	(254.972)	(344.876)	(393.483)	(412.773)	(547.748)
Exp. adminsitration	0	0	(241.026)	(277.433)	(367.157)	(483.218)	(567.422)
Exp. depreciation	(7.646)	(10.792)	(13.589)	n.a	n.a	n.a	n.a
Operating margin	**(68.226)**	**(84.521)**	**(213.621)**	**(106.649)**	**24.122**	**125.296**	**(103.123)**
Rev. extraordinary (net)	0	0	0	0	0	0	0
Rev. grants, RG	175.147	160.831	275.664	53.754	53.526	25.560	19.196
Acct. profit, AP	**106.921**	**76.310**	**62.042**	**(52.896)**	**77.648**	**150.856**	**(83.928)**
Tax	0	0	0	0	0	(15.880)	(1.217)
Dividends declared, Div	0	0	0	0	0	(6.756)	0
Change retained earnings	**106.921**	**76.310**	**62.042**	**(52.896)**	**77.648**	**128.220**	**(85.145)**

Source: Financial statements of Faula Uganda. All figures in 2004 US$.

Table 12: Faulu adjusted Equity, 1998-2004

Year ending Dec. 31	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Open retained earnings	45.800	152.720	214.515	266.846	221.476	292.911	390.519
Change retained earnings	106.920	76.947	62.042	-48.069	71.434	134.185	13.006
Close retained earnings	**152.720**	**229.667**	**276.557**	**218.777**	**292.911**	**427.096**	**403.525**
Open reserve adj.	0	0	0	0	0	0	6.465
Change reserve and adj.	0	0	0	0	0	7.071	(6.465)
Close reserve and adj.	**0**	**0**	**0**	**0**	**0**	**7.071**	**0**
Open direct grants	0	546.074	393.115	0	15.542	73.560	0
Change direct grants	546.074	(125.190)	(393.115)	15.353	58.017	(73.560)	0
Close direct grants	**546.074**	**420.884**	**0**	**15.353**	**73.560**	**0**	**0**
Open-paid-in cap. public	0	0	0	616.774	624.385	624.385	570.912
Change paid-in cap. public	0	0	0	0	0	0	0
Close paid-in cap. public	**0**	**0**	**639.220**	**616.774**	**624.385**	**624.385**	**570.912**
Open-paid-in cap. private	0	0	0	1.054	1.067	1.067	976
Change paid-in cap. private	0	0	1.093	0	0	0	0
Close paid-in cap. private	**0**	**0**	**1.093**	**1.054**	**1.067**	**1.067**	**976**
Total equity	**698.794**	**650.551**	**916.869**	**851.957**	**991.922**	**1.059.619**	**975.412**

Source: Financial statements of Faula Uganda. All figures in 2004 US$.

Table 13: Faulu Net Present Cost to the Poor since Birth in 1998 through 2004

Line	Year ending Aug. 31		1998	1999	2000	2001	2002	2003	2004
a	Real opp. cost Equity for the poor	Data	0,20	0,20	0,20	0,20	0,20	0,20	0,20
b	inflation given IAS 29 practice	Data	0,04	0,01	0,06	0,04	-0,01	0,05	0,05
c	**Nom. opp. cost equity for poor rho**	**a+b+a*b**	**0,25**	**0,21**	**0,27**	**0,24**	**0,19**	**0,26**	**0,25**
d	Beta 0	Data	1	1	1	1	1	1	1
e	Beta t	Data	1	1	1	1	1	1	1
f	Delta for poor at the end of the year	f(t-1)*(1/(1+c))	0,80	0,67	0,56	0,46	0,39	0,32	0,27
g	Gamma for the poor, since birth	Data	0,85	0,72	0,52	0,44	0,45	0,27	0,22
h	Beta t*Delta	e*f	0,80	0,67	0,56	0,46	0,39	0,32	0,27
i	Start Equity Eo	Data	0	0	0	0	0	0	0
j	Fresh funds less (TP-Tax), FF	Data	721.562	586.489	925.721	708.725	822.796	778.512	837.656
k	Accumulated FF	k(t-1)+j	721.562	1.308.051	2.233.772	2.942.497	3.765.293	4.543.805	5.381.461
l	Accum. discounted FF	l(t-1)+g*j	611.100	1.031.475	1.509.159	1.822.451	2.188.961	2.398.507	2.580.292
m	Private paid-in capital	Data	0	0	1.093	1.054	1.067	1.067	976
n	Accum. private paid-in cap.	n(t-1)+m	0	0	1.093	2.147	3.214	4.281	5.257
o	Accum. disc. private paid-in cap.	o(t-1)+g*m	0	0	564	1.030	1.505	1.793	2.004
p	Dividends, Div.	Data	0	0	0	10501	0	0	0
q	Accumulated Dividends	q(t-1)+p	0	0	0	0	0	0	0
r	Accum. discounted dividends	r(t-1)+l*p	0	0	0	0	0	0	0
s	True Profit	Data	(68.568)	(89.295)	(223.367)	(128.440)	(46.136)	(2.204)	(349.696)
t	Actual Tax	Data	0	0	0	0	0	24.681	1.892
u	**True Profit less actual tax**	**s-t**	**(68.568)**	**(89.295)**	**(223.367)**	**(128.440)**	**(46.136)**	**(26.885)**	**(351.588)**
v	Accum. TP-Tax	v(t-1)+u	(68.568)	(157.863)	(381.229)	(509.669)	(555.805)	(582.690)	(934.278)
w	Term 1	(d-h)*i	0	0	0	0	0	0	0
x	Term 2	l-h*k	32.926	159.534	268.307	460.329	736.456	937.820	1.138.653
y	Term 3	o	0	0	564	1.030	1.505	1.793	2.004
z	Term 4	r-h*q	0	0	0	0	0	0	0
aa	Term 5	h*v	(54.942)	(105.231)	(211.772)	(235.933)	(214.408)	(187.316)	(250.284)
bb	**NPC of Poor since birth**	**w+x-(y+z+aa)**	**87.868**	**264.765**	**479.515**	**695.232**	**949.359**	**1.123.344**	**1.386.932**

Source: Authors own calculation based on financial satements of Faulu Uganda. All monetary figures in 2004 US$.

Table 14: Faulu Cost to the Poor per Unit of Output, 1998-2004

Line	Year ending Dec. 31		1998	1999	2000	2001	2002	2003	2004
a	**NPC of Poor since birth**	**Data**	**87.868**	**264.765**	**479.515**	**695.232**	**949.359**	**1.123.344**	**1.386.932**
b	Ave. loan portfolio, LP	([LP(t-1)+LP]/2	125.584	315.662	538.380	873.714	1.373.273	1.903.514	2.441.234
c	Ave. number of members	Data	5.170	8.070	13.085	18.861	24.016	27.464	31.459
d	Val. disbursed (ausbezahlt)	Data	149.749	131.037	153.910	156.572	192.348	220.701	255.787
e	# loans issued	Data	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
f	Epsilon	Data	0,86	0,69	0,65	0,57	0,50	0,45	0,41
g	Omega	Data	0,50	0,50	0,50	0,50	0,50	0,50	0,50
h	Nom. opp. cost equity for poor, rho	Data	0,25	0,21	0,27	0,24	0,19	0,26	0,25
i	Delta at end of year	i(t-1)*(1/(1+h))	0,80	0,66	0,52	0,42	0,35	0,28	0,22
j	Delta^(t-Omega)	i(t-1)*(1/(1+h))^(1-g)	0,90	0,73	0,59	0,47	0,38	0,32	0,25
k	Accum. disc. dollar-years of debt	k(t-1)+b*f	180.562	195.761	401.696	708.379	1.145.258	1.768.031	2.549.034
l	Accum. disc. member-years	l(t-1)+c*f	4.469	10.073	18.609	29.353	41.362	53.817	66.724
m	Accum. disc. dollars distributed	m(t-1)+d*j	119.991	206.794	286.948	360.078	434.079	503.648	567.884
n	Accum. disc. loans distributed	n(t-1)+e*j	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
o	Ave. annual deposit libs.	Data	57.970	75.410	56.679	108.919	411.160	651.860	0
p	Ave. disc. ave. dep. libs.	p(t-1)+o*f	28.985	66.690	95.030	149.489	355.069	680.999	680.999
q	Surplus dollar year deposits	Data	0,04	0,04	0,04	0,04	0,04	0,04	0,04
r	Social value of dep. libs.	p*q	580	1.334	1.901	2.990	7.101	13.620	13.620
s	**NPC of poor since birth w/dep. libs**	**a-r**	**87.288**	**263.431**	**477.614**	**692.242**	**942.258**	**1.109.724**	**1.373.312**
t	Cost to poor/dollar-years of debt	s/k	0,80	1,34	1,18	0,97	0,82	0,62	0,54
u	Cost to poor/member-years	s/l	19,40	26,02	25,56	23,48	22,61	20,37	20,79
v	Cost to poor/dollar disbursed	s/m	0,72	1,27	1,66	1,91	2,15	2,18	2,44
w	Cost to poor/loans disbursed	s/n	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Authors own calculation based on financial satements of Faulu Uganda. All monetary figures in 2004 US$.

Table 15: Faulu Subsidy Dependence Index, 1998-2004

Line	Year ending Dec. 31		1998	1999	2000	2001	2002	2003	2004
a	r*Alpha		0,26	0,24	0,25	0,27	0,34	0,29	0,27
b	r*Alpha/2	a/2	0,13	0,12	0,12	0,14	0,17	0,15	0,13
c	1-r*Alpha/2	1-b	0,87	0,88	0,88	0,86	0,83	0,85	0,87
d	Tax rate, Tau		0,20	0,20	0,20	0,20	0,20	0,20	0,20
e	Start equity, E0	Data	0	698.794	650.551	916.869	851.957	991.922	1.059.619
f	Rev. lending, LP*i	Data	89.365	164.856	239.670	510.073	864.181	1.169.371	1.387.556
g	Fresh funds less (TP-Tax), FF	Data	721.562	586.489	925.721	708.725	822.796	778.512	837.656
h	True Profit, TP	Data	(68.568)	(89.295)	(223.367)	(128.440)	(46.136)	(2.204)	(349.696)
i	Tax	d*Max(0,h)	0	0	0	0	0	(441)	(69.939)
j	True Profit less tax, TP-Tax	h-i	(68.568)	(89.295)	(223.367)	(128.440)	(46.136)	(1.764)	(279.757)
k	**Subsidy, S**	**a*e+b*g-c*j**	**151.927**	**320.196**	**472.506**	**460.088**	**465.761**	**405.125**	**636.904**
l	SDI	[a*e+b*g-c*h*(1-d)]/[f*c(1-d)]	2,24	2,63	2,58	1,24	0,80	0,51	0,66
m	Nom. yield lending in year, i	Data	0,71	0,52	0,45	0,58	0,63	0,61	0,57
n	Change in yield	l*m	1,60	1,37	1,15	0,73	0,50	0,31	0,38
o	Subsidy-free nom. yield in year	m+n	2,31	1,90	1,59	1,31	1,13	0,93	0,94
p	Uganda Infl.	Data	0,043	0,008	0,062	0,036	(0,012)	0,047	0,045
q	**Subsidy-free real yield in year**	**(o-p)/(1+p)**	**2,17**	**1,87**	**1,44**	**1,23**	**1,16**	**0,84**	**0,86**

Source: Authors own calculation based on financial satements of Faulu Uganda. All monetary figures in 2004 US$.

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