NORWEGIAN SCHOOL OF ECONOMICS

What determines microenterprise growth?
Evidence from Tanzania

Thesis for the Master of Science in Economics and Business Administration
-
Major in International Business

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by

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Bergen, Spring 2012

Abstract

This study provides empirical evidence on the growth determinants of microenterprises funded by microfinance loans through the analysis of survey data of Tanzanian microentrepreneurs. We find strongly positive correlations between business loans and sales growth; however several factors prevent entrepreneurs from growing their businesses. Evidence of a gender divide and a business formality divide is found, with female entrepreneurs experiencing lower sales growth than their male counterparts, and licenced businesses experiencing higher growth than informal ones. The latter divide is most likely due to improved access to credit and to larger markets through government contracts. The gender divide confirms findings in recent research which point to an unexplained inferior performance by female entrepreneurs, but unfortunately our data do not shed light on what the causes might be. Finally, the insights gained on the importance of business formality for firm growth could suggest that the microfinance movement needs to rethink its role in helping poor entrepreneurs by either serving as a stepping stone on the way to formality or by adapting to the needs of formal entrepreneurs.

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1. Introduction

Despite the overwhelming economic development of a host of third world countries in the latter part of the twentieth century, many developing nations continue to struggle with low income levels and seemingly endless poverty traps. Although progress has been noted in achieving poverty reduction targets such as the United Nations Millennium Goals (United Nations 2012), the fact remains that about 40 % of the world's people live on two dollars a day or less (Collins et al. 2009). The many initiatives by international organisations such as The World Bank and the United Nations in fighting poverty seem to come short of the impact needed to push poor nations out of the poverty traps they are caught in, as these nations are troubled by a myriad of problems. Obstacles resulting from poor governance, weak formal economies and educational institutions, national contexts of continuous conflict and populations in poor health contribute to rendering the eradication of poverty an increasingly complex and demanding undertaking.

Nevertheless, alternative approaches to state-aid policies have been developed over the last decades in order to provide novel solutions to the problem of poverty. Microfinance is one of the most lauded of these novel approaches ever since it gained popularity through the work of pioneers such as Muhammad Yunus in Bangladesh in the 1970s (Perkins 2008).

The prospect of offering no-collateral loans of small sums to the many people living under a dollar a day in the world represents a viable alternative to current state-aid policies and deserves closer analysis. Although more than 154 million individuals already benefit from small loans of only a couple of hundred dollars (Daley-Harris 2009, p.3), so called microloans, the potential of microfinance is large and could help millions more of poor individuals rise from poverty. Thus, studying and gaining a better understanding of the growth determinants of micro-enterprises is essential in fighting poverty in developing nations, as about a third of the labour force in such nations is self employed (Woodruff 2007).

The aim of this study is to identify the growth determinants of microenterprises in developing nations through the data analysis of a group of Tanzanian entrepreneurs between 2008 and 2011.

The results of the analysis will provide insights on this specific group of entrepreneurs, but also insights which will add to the existing literature on the determinants of microenterprise growth. Moreover, the analysis will provide grounds for recommendations on how to limit

impediments to firm growth for the surveyed entrepreneurs. To the extent that these entrepreneurs are representative of microentrepreneurs in developing nations, the recommendations can be useful and generalized for the latter group of entrepreneurs.

Further, this paper attempts to provide a theoretical interpretation of the growth determinants of microenterprises by adapting the Solow exogenous growth model in the perspective of microenterprises. The predictions of this theoretical model will then be compared to findings from the data analysis.

The paper is organized as follows. We will firstly present the motivation for the data analysis. Thereafter, we will present a literature review of findings from recent research on microenterprise growth determinants. In Chapter Three we present an adapted theoretical framework building on the Solow growth model and in Chapter Four we present our findings from the data analysis. These results are compared to the predictions of the theoretical framework in Chapter Five. Finally, Chapter Six concludes and presents recommendations for future research.

1.1 Motivation for data analysis

Substantial research has been dedicated to understanding what barriers prevent micro-enterprises from growing sales and profits, and in particular what type of capital is lacking among the entrepreneurs: financial (Cull, McKenzie and Woodruff 2008), human (Berge, Bjorvatn and Tungodden 2010) and managerial (Bruhn, Karlan and Schoar 2010a) for example, or a combination of these. Despite the potentially large impact of such capital endowments on microenterprise business performance, it is not given that the effect of increased capital levels (broadly defined) on performance is the same for all entrepreneurs. In light of the reality that women are the primary clients in many microfinance institutions (Grameen Bank 2011), it is crucial to establish what determines the growth of female-run microfirms, and in particular what potentially distinguishes them from male microenterprise owners. Further, given the stringency of loan criteria in microfinance institutions, the financial fragility of micro-enterprises and the exposure of their owners to life cycle events which generate large cash outflows (Collins et al. 2009), it is essential to understand how financial capital can be better tailored to entrepreneurs to match their cash flows and ensure proper spending on business purposes. Moreover, understanding the implications of operating in the

informal economy, and more importantly the benefits associated with graduating to a formal business status, is relevant in determining whether microfinance should focus on formality in the future. Indeed, most microenterprises are not government registered firms (in 2003 about half of total urban employment was informal and microfirms contribute to increased informality according to Tokman (2007)), so if substantial benefits from formalization are found it could be relevant to encourage microfirms to take steps towards business formality.

The data analysed is part of the dataset used in the study by Berge, Bjorvatn and Tungodden on Tanzanian microfinance clients published in 2010 (Berge, Bjorvatn and Tungodden 2010).

Before presenting the data analysis, we will proceed with a literature review of the growth determinants of micro-enterprises and we will particularly analyse if and how gender, degree of formality and financial capital constraints mediate these effects.

2. Literature review

Capital constraints and lack of business skills are increasingly seen as the foremost obstacles hindering microentrepreneurs from increasing sales and ultimately employment. Influential microfinance pioneers such as Muhammad Yunus have for decades been calling for an international focus on large capital transfers to the poor, instead of business teaching as he believes their current skill set is sufficient to enable them to achieve firm growth (Yunus 1999). Further, a range of studies find positive impacts of capital shocks in the shape of business grants or in-kind transfers of investment capital such as equipment or stocks (e.g. Cull, McKenzie and Woodruff 2008). Several sources thus seem to suggest that providing means of increasing microentrepreneurs' financial capital stocks would suffice in unleashing the high returns on capital needed to achieve the desired income and employment increases. Nevertheless, many scholars argue that the provision of affordable credit does not suffice and that fundamental business knowledge on how to best make best use of such grants is necessary, underlining the potential of business teaching to the poor (de Mel, McKenzie and Woodruff 2008a). Several experiments consisting of teaching basic calculations of business profits, revenues and changes in these have led to significant increases in sales revenue for the treated entrepreneurs (Berge, Bjorvatn and Tungodden 2010).

Nevertheless, in the few studies conducted on the effect of business training on business performance, the beneficial effects of the training have proved inexistent for women in the treatment group. This gender effect is observed despite the women possessing the same level of business knowledge as the men in the treatment group in many cases (Berge, Bjorvatn and Tungodden 2010), and it seems that they are unable to use this knowledge for the benefit of their microfirms.

Indeed, no significant increases in sales or employment are found for women in such treatment groups and despite the difficulty in explaining this phenomenon, many scholars believe the disparities are a result of either nature or nurture. It is thus thought that the differences could be due to either fundamental biological differences between men and women in their entrepreneurial mindset or differences shaped in the process of socialization. Thus reported differences in risk aversion and competitiveness between men and women (Bönte and Jarosch 2011) are either due to nature or to nurture in the shape of the socialization of women and the norms in developing nations by which women might not be encouraged to compete in the business environment. Researching and eventually addressing these large gender differences is essential in strengthening the potential of microfinance to fight poverty, given the large share of microentrepreneurs who are women (Grameen Bank 2011).

Moreover, the importance of formality for sales growth and business performance is an oft neglected factor which can mark a divide between thriving and struggling entrepreneurs regardless of credit levels. Indeed, microfirms in developing nations are more often informal as business operations, locations and employment relationships are not registered with local government. This *de jure* status of illegality represents a real obstacle impeding sales growth for many firms as formalization allows easier access to credit (Tokman 2007) and potentially access to more attractive markets. Indeed, licenced firms can more easily qualify for better loans as they are able to list and monetize their assets, sales and costs.

2.1. The importance of capital constraints on sales and employment growth for microentrepreneurs

There is ample evidence in recent research supporting the view that relaxing financial capital constraints would allow many microentrepreneurs to grow the income of their businesses.

Indeed, it is assumed that marginal returns to capital are high when capital levels are low, so providing credit to those with low capital levels would lead to immediate high returns (Karlan and Morduch 2009). According to these authors this holds for many of the microentrepreneurs of the world and the challenge lies in identifying them and servicing them in a cost-efficient manner.

Lending mechanisms and interventions

Given the inherent differences between microentrepreneurs and credit clients of traditional banking institutions, different interventions and mechanisms are usually adopted in order to minimize the impact of these inequalities on the repayment likelihood of loans. Indeed, microfinance clients typically lack collaterals, have less savings and are more affected by risks of various kinds which reduces the expected likelihood of repayment. Group lending, credit scoring, dynamic incentives with growing loan sizes upon successful repayment, emergency fund contributions and customized repayment schedules are common tools used by MFIs (Microfinance institutions) to minimize this risk (Karlan and Morduch 2009 and Morduch 1999).

Group lending is common for microfinance loans and is a solution to problems of moral hazard and adverse selection which raises repayment rates and lowers lending costs (in the shape of interest rates). This tool provides incentives for similar types to group together (Morduch 1999) and leaves the monitoring to peers instead of banks, something which incentivizes borrowers to choose safe activities and reduces the likelihood of strategic defaults. Karlan (2007) lends support to this view in a quasi-randomized experiment from Peru in which the author concludes that groups with greater levels of social connection (ethnic ties and geographic proximity) have lower default and higher saving rates. The major problem of group lending is that participants get all the downside risk of a member defaulting on their loan, and no upside risk. For this reason, several banks, including Grameen Bank, are moving away from joint liability (Banerjee and Duflo 2010). Nevertheless, these banks have not chosen to abandon mandatory weekly meetings because of the value in terms of social capital which is created through the frequent encounters between the borrowers: the members of the lending group build mutual trust and because of fear of social shaming, bankruptcy is even more undesirable then because of the loss of future borrowing possibilities.

Other dynamic incentives such as threshold lending also help overcome the obstacle of informational asymmetry. Collateral substitutes, such as emergency fund contributions, have been devised, amounting to 0,5 % of every unit borrowed (Morduch 1999).

2.1.1. The impact of financial capital increases on business performance

In a randomized field experiment conducted by Cull, McKenzie and Woodruff (2008) in Mexico in 2005, random capital shocks to microfirms with capital stocks of less than USD 1000 were found to generate sizeable capital returns. The shocks were distributed in the shape of equipment or cash of values corresponding to USD 140. Returns of an average of 100 % were obtained for so-called superconstrained firms, namely firms for which the owners claimed that capital was a binding constraint and who had never had a formal loan or supplier credit before.

Support for these findings is found in a similar experiment conducted in Sri Lanka in 2005 by de Mel, McKenzie and Woodruff (2008a) in which average returns following capital shocks amounted to 68 % per year. Capital shocks were administered in the shape of unconditional cash grants or equipment grants as in the Mexico experiment and the treatment effects were of equal magnitude for the two types of grants. Equipment grants had to be spent on the businesses whereas the cash transfers were not earmarked. Nevertheless, more than half of the cash grants were spent on business purposes, with only 5 percent going to household purchases.

Evidence in support of large capital transfers to microentrepreneurs

On the basis of years of experience working with developing countries Jeffrey Sachs argues that the only way to eradicate poverty is to provide the poorest nations with the means with which they can develop in a self-sustaining manner. He advocates a "big-push" of capital investments (in the broad sense of the term) in developing nations which could suffice to end poverty by 2025 according to his calculations (Sachs 2005). Among the needed capital injections in the developing world, Sachs puts forth six essential types: human, business, infrastructure, natural, public institutional and knowledge capital. He mentions machinery, facilities and motorized transport used in agriculture, services and industry as examples of business capital. Since the poorest of the poor have virtually no means to save money and are

disproportionally affected by natural disasters relative to individuals in developed nations, Sachs believes that initiatives such as microfinance are not appropriate for the destitute because of the riskiness associated with the repayment of the loan. Instead, such tools are useful for those one step higher on the ladder, hence for the most destitute capital grants is the only way to provide business capital (referred in Myers 2005).

Nevertheless, it should be noted that the destitute are urgently in need of increases in income, and sometimes even when this is provided through loans which are hard to reimburse. Indeed, in an extensive survey led by Collins et al. (2009) of household capital allocation among poor households in Bangladesh, India and South Africa from the early 2000s, novel insights on the allocation of financial capital within households in developing nations are made. In fact, the authors find that the financial lives of the poor are much more complicated than previously expected and that the poor manage cash flows much larger than what their income should suggest through the use of loans, savings and a myriad of cash management tools. For the poorest of the poor, cash management tools become even more important in order to accumulate usefully large sums of money, according to the authors. Rethinking the purpose of microfinance in light of the results is necessary, as it is clearly not just used as a funding tool for starting new businesses.

2.2. The importance of business knowledge on sales and employment growth for microentrepreneurs

Despite the potential of microfinance as a development tool which can enable individuals to rise from poverty and achieve stable and decent incomes, this tool has so far failed to fulfill its potential in reaching these goals. Research shows that among the many impediments to growth, a lack of education and business knowledge in particular hinders the expansion of many microenterprises.

In a study of micro enterprises in five African nations from 1996, McPherson (1996) argues that assistance measures aimed at promoting the formation of human capital of micro entrepreneurs in order to allow firm growth are of major importance. It is concluded that there is both a need for technical assistance to the entrepreneurs but also a need for a country-wide effort to improve the overall educational attainment. The research concludes that entrepreneurs in Lesotho with business training experience have higher sales growth than

those without, and that proprietors in Botswana and Swaziland who have completed secondary school managed faster growing firms than those with no schooling.

Recent research comparing the characteristics of Sri Lankan own account workers, SME owners and wage workers conclude that capital is likely not the only, nor even primary, constraint impeding firm growth (de Mel, Woodruff and McKenzie 2008b). Findings from an experiment led by de Mel, McKenzie and Woodruff (2008b) suggest that SME owners are substantially more motivated, able and ambitious than own account workers and the data even shows that the latter share more similarities with wage workers along these dimensions. In fact, own account workers in the survey have less schooling than both of the other categories on average, and score lower on the financial literacy test. A first learning to draw from this study is that education seems essential in making the step from own account work to becoming an employer.

2.2.1. The impact of business training on sales and employment growth for microentrepreneurs.

Human capital

Given the ample evidence of the importance of education and ability in ensuring sales growth for microenterprises, several initiatives have been taken to allow for the formation of human capital among such firm owners. Based on results from the many different teaching approaches, it seems evident that the teaching of business knowledge to microentrepreneurs enables them to increase sales levels.

A business course taught to microloan clients in Dar es Salaam, Tanzania, proved successful in improving the sales, profits and practices of male participants in the course (Berge, Bjorvatn and Tungodden 2010). These results contrast with a similar experience conducted in Peru among microloan clients, in which the training was only found to significantly increase sales in bad months and to lead to better record keeping, separating private withdrawals from the accounts of the firm (Karlan and Valdivia 2010). The latter initiative did however not lead to an increase in the number of sale points or the number of start-ups. Both studies did nevertheless find that the clients with the lowest level of formal education stand to gain the most from such courses (Bjorvatn and Tungodden 2010), which are encouraging findings given the low educational level of most own account workers noted in de Mel, McKenzie and

Woodruff (2008b). Additionally, both find that the training has no significant effect on business performance measures for the treated women.

Drexler, Fischer and Schoar (2010) make important contributions to knowledge about the importance of the design of business courses through a randomized experiment conducted among microentrepreneurs in the Dominican Republic in 2010. By teaching two different business courses on financial accounting skills using different teaching methods they underline the importance of tailoring the teaching method to the existing knowledge base of the entrepreneurs. One of the courses was taught with an emphasis on a simplified view on financial decision making by teaching easily implemented business rules without attempting to ensure that the clients understood the underlying accounting concepts (dubbed the "rule-of-thumb" approach). The other focused on teaching a complete understanding of financial decision making, with all the concepts and material this entails. Similar to Karlan and Valdivia's findings from Peru (2010), the impact of the training is particularly effective in reducing the frequency and amplitude of negative sale shocks, especially for the recipients of the rule-of-thumb training.

Managerial capital

Recent studies also underline the importance of managerial capital in ensuring microfirm growth (Bruhn, Karlan and Schoar 2010a). These authors define "managerial capital" as the "organizational and managerial abilities to manage an effective operations scale up" (p. 4), which they believe allow for an increase in the productivity of the other inputs in the production function and on the amounts needed of these inputs. They argue that even if it possible to empirically establish the importance of managerial capital in sustaining firm growth, the successful formation of this capital through teaching is an important obstacle.

In an experiment conducted among 150 Mexican microfinance clients in 2009 (Bruhn, Karlan and Schoar 2010b) such a formation of managerial capital was attempted through the provision of heavily subsidized consulting services (four hours a week on average) to each firm over the period of one year. Although the consulting services enabled productivity improvements for the treated firms there were no significant increases in employment or sales to note. The authors note that the limited time period of the project (1 year) and the sample size might explain the lack of significant results in terms of sales and employment growth. Despite the evidence provided by this study on the benefits of consulting services in

improving business outcomes of micro-enterprises, the cost remains prohibitively high for most entrepreneurs operating on this scale.

Despite the mixed results in these studies on the impact of business teaching on business outcomes for micro-enterprises, there are some promising results to note as in Berge, Bjorvatn and Tungodden (2010). Of equal importance, we should note that there is a continuously improving understanding of the effects of education on business performance. Indeed, despite the difficulties encountered in transferring such knowledge, it seems clear that the lack of education and business knowledge represents an important impediment to growth for many entrepreneurs. Thus, it is possible to imagine a paradigm shift in the policy and research efforts on microfinance in which the focus no longer is solely on financial capital constraints, but rather on human capital constraints.

2.2.2. The mediating effect of gender on business training benefits for business performance

Nevertheless, such a conclusion would first have to be nuanced in light of increasing evidence on unequal gender effects of business training on business performance. In many of the aforementioned studies the authors find that the beneficial effects of the business training on sales growth and firm expansions are only valid for male entrepreneurs. In fact, in several experiments it is found that the effects are altogether inexistent for female entrepreneurs.

Bearing in mind that a majority of lenders in many microfinance institutions are women (Grameen Bank 2011), this realization is of the utmost importance. Additionally, given the recent research suggesting that women have a larger propensity than men to expend income on socially beneficial goods such as health services and food, this conclusion is of even greater importance (Duflo 2011).

Indeed, in the study by Berge, Bjorvatn and Tungodden (2010) referred to earlier; the strong effects of the business training on business performance outcomes are in fact limited to male entrepreneurs. Although the business courses had equally strong effects for both men and women on the level of business knowledge, it only had significant effects on business outcomes for men. This leads the authors to believe that there might be substantial differences in terms of mind-set between men and women which explain why women are reluctant to use the recently acquired knowledge in the running of their businesses. In fact, the women in the

sample proved to be significantly less willing to compete than men, which might explain this disparity. The results are in line with those from microentrepreneurs in Peru (Karlan and Valdivia 2010) and from Sri Lanka (de Mel, McKenzie and Woodruff 2009).

In a recent study by de Mel, McKenzie and Woodruff (2009) using a survey of microentrepreneurs from Sri Lanka, the gender divide in terms of business performance is confirmed, but ability, risk aversion or entrepreneurial attitudes are not found to be the explanatory factors as in other studies. Instead, a major insight from this study is that the gender gap in performance is in fact larger in female dominated industries. The experiment consisted of granting business grants of different sizes to both female and male entrepreneurs in the sample. While the reported profits for treated males increased by 6,5 percentage points to 14 %, the profit increases were inexistent for the treated women. In fact, the latter only invested the larger grants and not the smaller ones, and these investments didn't yield any return. The study concludes that household redistribution inequalities (by which men have a larger influence on the allocation of household income earned by both partners) might in large part determine the investment decisions of women, but asserts that the reason for which women fail to invest grants remains unknown (de Mel, McKenzie and Woodruff 2009).

The finding that returns for the treated entrepreneurs in the same experiment did not differ with risk aversion and the perceived uncertainty in calculating profits of participants in a different study of the same data (de Mel, McKenzie and Woodruff 2008a), supports the theory that diverging risk attitudes do not constitute the determining differences between men and women that could explain such differences in returns.

Among the possible explanatory factors, three potential reasons are most frequently reported in recent studies, namely differences in "nurture", "nature" or a lack of attractive employment alternatives for female entrepreneurs in wage work.

a. Differences in "nature" as an explanation for differences in risk attitudes and willingness to compete

A difference in "nature" between men and women could explain the differences in competitiveness and risk willingness reported in numerous studies (Berge, Bjorvatn and Tungodden 2010 and Bönte and Jarosch 2011)

b. Differences in "nurture" as an explanation for differences in risk attitudes and willingness to compete

A difference in "nurture" related to the socialization of women and the influence of informal institutions in the developing nations where most female microentrepreneurs operate is held to explain the observed differences in risk attitudes and willingness to compete. These socialization processes and norms are thought to explain the observed differences in risk tolerance and willingness to compete. In this respect, a recent randomized experiment conducted in India consisting of the teaching of business knowledge to a homogeneous group of female entrepreneurs of different religions (Hindu, upper and lower caste and Muslim women), sheds light on the influence of religious norms on business outcomes (Field, Jayachandran and Pande 2010). The treatment only had a significant effect on the lower castes in terms of loan uptake, the explanation provided being that they are less restricted by social expectations and more in need of improving their business performance than the mostly wealthier upper caste and Muslim entrepreneurs.

These constraints imposed by social norms are even more detrimental to improving the socio-economic situation of the households of female microentrepreneurs when recent research shows that women spend relatively more income on socially beneficial goods such as education or health treatments for their offspring. Indeed, in a study by Benhassine et al. in Morocco (2011, referred in Duflo 2011), it is shown that women spend significantly more of conditional cash transfers on improving the education of their children than men do.

c. A lack of attractive wage employment alternatives for women leading to less skilled female entrepreneurs self selecting into entrepreneurship

A lack of attractive alternatives in wage employment for women leading to a disproportionally high share of less entrepreneurial and less skilled women self selecting into entrepreneurship is considered a plausible explanation for the lower female microenterprise performance. This explanation is put forth by Berge, Bjorvatn and Tungodden (2010) in their study of Tanzanian entrepreneurs and highlights the distinction between so-called necessity (or subsistence) and transformational entrepreneurs as denoted by Schoar (2009) and Poschke (2010). In Schoar's framework (2009), subsistence entrepreneurs are defined as those merely

generating enough income from their enterprise to subsist, while transformational entrepreneurs grow their incomes and hire paid workers. According to the author, subsistence entrepreneurs make up a majority of the entrepreneurs in developing nations and there is little mobility between the two groups. The distinction is made along the dimensions of human capital and risk willingness: a higher degree of both these factors distinguish transformational entrepreneurs from subsistence ones. In this logic one can imagine a higher proportion of male entrepreneurs sharing similarities with transformational ones, while many female entrepreneurs would be categorized as subsistence ones, given the observed differences in risk willingness (Bönte and Jarosch 2011 for example). This categorization by gender is given some support in Poschke's (2010) analysis of the GEM (Global Entrepreneurship Monitor) data in non-OECD nations. Llussa (2011) builds on these conclusions in the analysis of the same GEM data by noting that necessity entrepreneurship activity increases with lower education and income. Evidence is found in this data showing that women have lower income levels, but the most striking differences are found in terms of confidence of having the required skills to succeed in business.

Naturally, these different explanations for the weaker business performance of female entrepreneurs have different policy implications.

2.2.3. Policy implications of gender differences in the effect of business training on business performance

Although research has yet to establish whether it is nature, nurture, a lack of attractive income opportunities on the job market, or a combination of these which makes returns to capital so much lower (or even inexistent) for women compared to men, it is essential to address and implement policies than can efficiently remedy such differences.

In a number of studies concluding on the large differences in return as a result of gender, fostering business networks and focusing on promoting female-dominated industries are mentioned as suggested policy initiatives. If research were to show that the differences are founded in natural differences, certain studies (Bönte and Jarosch 2011) state that initiatives must be carried out early on in the lives of potential entrepreneurs.

Creating and sustaining business networks accessible to women is the main policy suggestion by Llussa (2011) as a result of her findings on GEM data indicating that female entrepreneurs are poorer, less educated and more intimidated by failure. Despite the paucity in academic literature describing successful initiatives in creating such networks, one could argue that such efforts have already been made to a large extent through the use of group lending in a host of microfinance institutions. When we know that many MFIs have mainly female borrowers, one can already conclude that most female microfinance clients already possess a business network they are active in. Further research on initiatives of this type and their subsequent success rates is however needed to make final verdicts.

Other studies have focused on analyzing the dynamics of female-dominated industries in which many female microentrepreneurs in developing nations operate. Ghani, Kerr and O'Connell (2011) find agglomeration economies in female-dominated sectors in their study of female entrepreneurship in manufacturing and services sectors in India. It appears that female-dominated sectors are correlated with a higher relative share of subsequent female entrepreneurs in those sectors. The rationale is that higher female presence in certain industries enables more women to become microentrepreneurs by integrating those industries. This insight is promising insofar as female dominated industries boast high returns and are not heavily saturated. However, in the same study it is found that the value-added per worker in female owned companies is two to three times as low as in male-owned firms. Attracting more women to unprofitable industries could well be the worst thing to do in order to ensure improved capital returns.

This latter finding harmonizes with the results from the cash injection experiment conducted in Sri Lanka by de Mel, McKenzie and Woodruff (2009) in which it is shown that female dominated industries such as coir and lace have lower returns than male dominated ones. Additionally, the authors note the existence of strong cultural stigma discouraging women from working in typically male industries, and vice-versa, making matters worse.

2.3. The importance of formality on sales and employment growth for microentrepreneurs

Most microenterprises in the developing world operate in the informal economy, and this form of employment by which individuals work on their own account or start a

microenterprise hiring others, is gaining importance in developing nations (Tokman 2007). This categorization is made for firms which aren't registered in an official government registry, often depriving them of privileges and exempting them from duties that usually come with such registration. The concept of "informal employment" was first mentioned in an ILO report from 1972 (ILO 1972, referred in Tokman 2007) and was defined by a lack of access to the market and productive resources and marked by low productivity and low income jobs (Tokman 2007).

This categorization as mostly illegal firms often stems from the lack of registration and compliance with legal and administrative requirements which is due to a lack of access to credit programs, training and to the marketplace. Thus, most microfirms in developing nations consist of hybrid firms operating somewhere between complete legality and compliance, and illegal enterprise. This translates into partial compliance with labour laws but the neglect of tax obligations for example (Tokman 2007).

Tokman (2007) notes that the challenge of growing informality in business is to successfully integrate those firms operating informally into the formal sector as this is the only way to ensure future firm growth. Likewise, many informal firms which only subsist are not made to compete in a formal business environment according to the author, and thus shouldn't make the step to formality.

Nevertheless, there are high time and money costs related to formality as many administrative procedures are required in developing nations to make the change. Indeed, in a study from Peru conducted by Tokman (Tokman 2001, referred in Tokman 2007, p.5) it was shown that full compliance with a package of social insurance contributions necessary to achieve formality would represent a 50 % cut in profits of 75 % of the surveyed enterprises. Adding income and tax requirements to these insurance contributions further reduced the share to 35 %.

Further, the status of informality also has negative ramifications for employment as a vast majority of employment in micro-enterprises in developing nations is precarious.

Findings from research on the effects of international trade on intra-industry reallocations and aggregate industry productivity can be applied to the formality/informality dichotomy of microenterprises with great relevance. Indeed, Melitz (2003) developed a framework on the basis of growing empirical evidence that only the most productive firms in a given industry

become exporters once these markets open up to international trade. In his study, the author underlines the importance of the fixed costs of export for the decision to export, which in our case can be assimilated to the fixed cost of acquiring a business licence.

The model builds on the assumption that firms are heterogeneous with regard to productivity levels and that international trade not only implies additional per unit production costs but also fixed costs resulting from finding and informing foreign buyers of a company's products along with learning about the foreign market. Further, companies must adapt products to foreign standards (by means of testing, packaging and labeling products). All these initiatives carry costs which will induce only the most productive firms to enter the export market, while other firms only produce for the local market and the least productive are forced out of business. Increased international trade leads to further reallocations towards more productive firms and the result is that the aggregate productivity level of the industry increases, as does the welfare level.

Firms make the decision to enter an industry based on uncertain assumptions about their productivity levels. However, they base the decision to export based on certain knowledge of productivity levels, thus in knowledge of whether they are able to cover the fixed costs entailed by exporting.

In the model, Melitz (2003) demonstrates that the more productive firms are larger (in terms of revenue and production volume), charge lower prices and have higher profit levels. The overall picture that can be drawn as a result of the reallocation resembles a Darwinian evolution according to the author: only the most efficient firms export and increase profits and market shares. Some of the less efficient firms still export and increase their market shares but still face profit losses. Moreover, other less productive firms remain in the industry but do not export and the least efficient firms leave the industry as their productivity levels fall below a certain threshold under which revenues are too low to cover costs.

Analogously, this model can be applied to the acquisition of business licences, and thus formality for microenterprises, with great pertinence. The cost of acquiring a business licence can be assimilated to the fixed costs of exporting as it can be reasonably assumed that the procurement of such a licence usually entails adapting business practices to new requirements in addition to paying a fixed fee. One can imagine that these adjustments consist of business performance recording obligations such as income and profit computations, and the statement of employment relationships and ownership relations within the firm. It is also possible that certain product requirements need to be fulfilled as in the case of exporting firms. These

adjustments entail both a time and a fixed monetary cost which, along with the licence fee make up the total fixed cost of formalization. As with exporting firms, only the most productive informal firms will be able to afford formalization and be able to benefit from the larger markets and profit increases this can enable. Less productive microenterprises will remain informal and as the competition within the industry (defined as the informal industry here) increases as a result of the higher productivity threshold driven by the most productive firms, it is imaginable that the least productive informal firms go bankrupt altogether.

Moreover, microentrepreneurs make decisions on starting a business based on uncertain knowledge of their own productivity and ability to compete in the marketplace, just like in any industry. Subsequent to entry into the informal industry they gain knowledge of their productivity levels and are able to make a decision on applying for a business licence with certainty about their ability to make the needed productivity gains to remain in formality.

This perspective is helpful in understanding why microfirms remain informal and seems to provide evidence suggesting that the formalization of firms built on microfinance is necessary in order to fulfil the microfinance promise of higher income and employment levels. The challenge thus remains to identify the characteristics of microenterprises which succeed in becoming formal and the measures needed to increase productivity levels sufficiently to integrate the formal economy. In other words, there is a need to distinguish between transformational and subsistence entrepreneurs as defined by Schoar (2009) and Poschke (2010) along the lines of risk willingness, human capital and productivity levels as Melitz's (2003) research highlights.

2.3.1. Policy implications of the importance of formality for firm growth

Undeniably, there seems to be an urgent need for a paradigm shift in how to encourage formalization of microenterprises. There are essentially two options available to encouraging this change in formalization: adapting formalization requirements (costs and procedures) to make them more in line with the capabilities of informal entrepreneurs, or to create an *ad hoc* regulatory system different from existing regulatory schemes applying to firms operating in more organized sectors.

De Soto (1995, referred in Tokman 2007, p.10) proposes a new method of recognizing property titles in order to improve the access to credit for the poor. Access to credit is often contingent on the presence of collateral in the shape of assets, and finding ways to demonstrate the ownership of property of the poor could help overcome this obstacle. He suggests calling on witnesses such as neighbours to confirm ownership of land and having third parties recognize boundaries of properties when there are conflicts of interest. Further, alternative ways of recognizing labour relationships could enable steps towards a formal status being taken by microfirms. For example, accepting verbal agreements or proof of payment as sufficient evidence of employment would enable the formalization of labour relationships.

Tokman (2007) suggests that a culture change among microentrepreneurs is needed in order to achieve formality: they must pool productive resources and build ties to other businesses in order to survive in a competitive marketplace. Relationships with customers must also change; as entrepreneurs are encouraged to produce for "faceless" entrepreneurs who demand high quality, service and professionalism. Further, they must learn to defend their interests together by setting up business trades and credit organizations.

In return Tokman (2007) underlines the importance of efforts by financial institutions to enable this transition by acknowledging new methods of property valuation, and by educational institutions to allow the entrepreneurs to keep accounts of their transactions in order to comply with formality.

3. Theoretical framework: the Solow exogenous growth model applied to microenterprise growth

Models of exogenous income growth attempt to explain income differences between nations of the world and to determine what factors drive macroeconomic growth. Ultimately, the goal of development tools such as microfinance is precisely to promote higher growth rates and close the gap between the poorest and richest nations. The main difference between macro-level development tools and micro-level development tools lies in the perspective adopted when analyzing income changes, whereby the micro-level economics per definition deal with income evolution at micro-level whereas economic growth theories look at income levels on a macro-level, i.e. by comparing nations.

Nevertheless, I shall argue that exogenous growth models such as the Solow growth model can be applied to micro-level growth relationships with great relevance and benefit. Much of the dynamics predicted and observed in income growth on national levels could also be valid when attempting to explain how microenterprises grow.

Before applying exogenous growth models to microenterprise growth models I shall proceed by presenting and explaining the most widely recognized exogenous growth model, the Solow growth model.

3.1. Fundamentals of the Solow growth model

The Solow growth model is the basis of much contemporary and recent research on income growth and income differences between nations and has gained widespread recognition for its validity in explaining observed income disparities and growth rates across the world (Gärtner 2006). Developed by the Nobel Memorial Prize in Economic Sciences laureate Robert Solow in 1956 (The Lindau Mediatheque 2008), the model highlights the importance of savings and investments along with production efficiency in increasing income in the short-run, but perhaps its most significant contribution is the finding that only technological progress can increase income in the long-run in the presence of constant returns to scale to production factors. Like all exogenous growth models the Solow model originates in the production function:

$$Y = F(K, L) \tag{1}$$

This formula explains that the output Y is a function of the capital stock K and the labour stock L. One of the assumptions underlying this relationship is that output can only increase if one of the factor stocks increases. Further, if one of the input levels remains fixed, increases in the other factor input will generate smaller and smaller output gains because of diminishing marginal returns. Finally, the model assumes constant returns to scale, namely that increases in the factor inputs yields increases in the production output of the same proportion.

Since production functions as those described above do not lend themselves to useful empirical predictions, more specific formulas such as Cobb-Douglas production functions are preferred:

$$Y = AK^{\alpha}L^{1-\alpha} \tag{2}$$

The variable A here denotes the production technology in the given nation and α represents the share of capital in production and 1-α the share of labour in production.

In order to better compare economies of different sizes and populations the growth equation is more often represented on a per capita basis. Given our assumption of constant returns to scale and assuming that the workforce consists of the entire population, we can multiply the components of the production function by $\frac{1}{L}$ to obtain per capita values:

$$\left(\frac{1}{L}\right)Y = F\left[\left(\frac{1}{L}\right)K, \left(\frac{1}{L}\right)L\right] \text{ which yields } \frac{Y}{L} = F\left(\frac{K}{L}, 1\right) \tag{3}$$

Renaming these fractions so that $y \equiv \frac{K}{L}$, $l \equiv \frac{L}{L}$ and $y \equiv \frac{Y}{L}$ we obtain the so-called intensive form of the production function: $y = f(k)$ (Gärtner 2006).

Likewise, transforming the Cobb-Douglas production function to a per capita equation gives the following formula:

$$y = ak^{\alpha}l^{1-\alpha} \tag{4}$$

Here a represents technology per capita and with the assumption of full employment for the population, $l = 1$, we obtain the following production function:

$$y = ak^{\alpha} \tag{5}$$

In the Solow model, technology is usually thought of as the production facilities and knowledge available to the country at hand, but this component of the model is not clearly defined and is therefore more commonly referred to as the Solow residual, which is an estimate of technological progress. It is a residual because the contribution of technology to income growth is usually derived as the amount of growth not explained by growth in the capital and labour stocks (Gärtner 2006).

It appears from our model that increases in income levels can occur as a result of increased production factor stocks or improved technology which are represented by higher values of a. However, the Solow model extends the production function by including the expenditure of capital stocks on either investment or savings in the production function. Indeed, since the circular flow model maintains that planned spending equals planned income in equilibrium we can postulate that the savings must be equal to investments in a model with no trade and no government (Gärtner 2006). Thus $S = I$ with S denoting savings and I planned investment. Since individuals can either consume or save income we can denote the share of income consumed as c, and conversely the share of income saved as s.

This implies that:

$$S = sY = I \qquad \qquad (6)$$

Changes in capital do not only depend on the savings rate however, as capital is lost to depreciation and needs to be replaced. Denoting depreciation as d we can outline capital growth so (in per capita terms):

$$\Delta k = sy - dk = sak^\alpha - dk \qquad \qquad (7)$$

In order to understand the impact of capital growth for income growth in a model where the labour stock is assumed to be constant, a graphical representation is helpful.
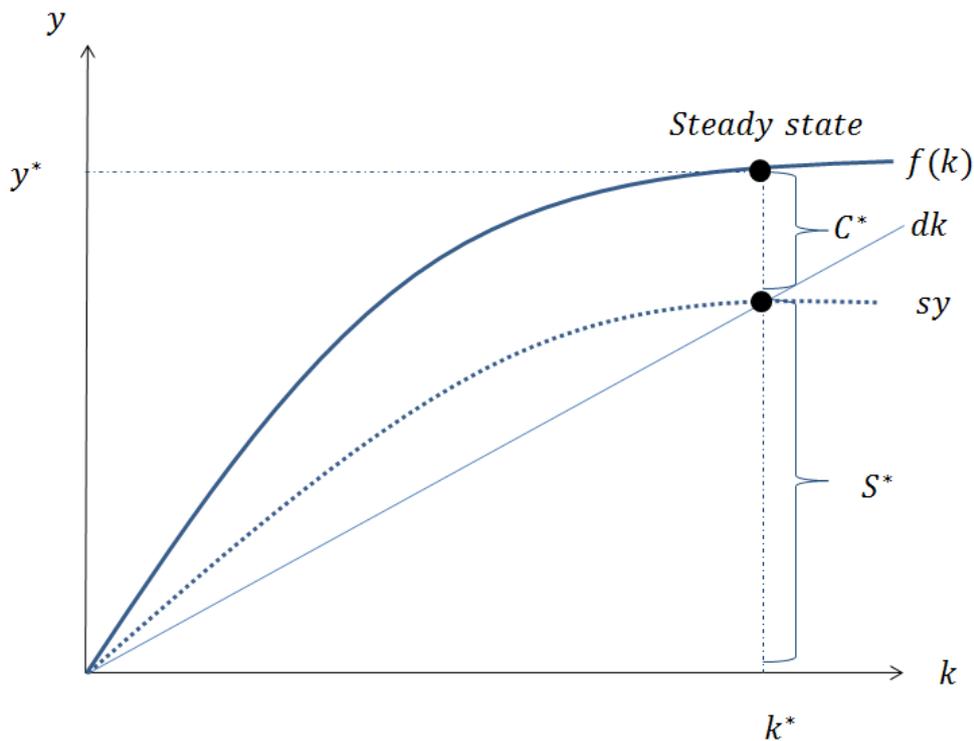
Figure 1: The Solow exogenous growth model

The required investment rate is depicted by the *dk* line and equilibrium values are marked by a star. The equilibrium income corresponds to the point on the production curve at which the required investment line intersects the savings curve, *sy*. If the savings curve is higher than the investment requirement line the capital stock grows as there is more capital than needed to replace capital lost through depreciation. As a result, income grows. The opposite holds when the investment requirement line is below the savings curve, underlining the importance of capital growth for income growth.

We mentioned previously that only technological progress can raise income levels in the long run. This can be more intuitively understood by use of the graphical framework presented in figure 1.
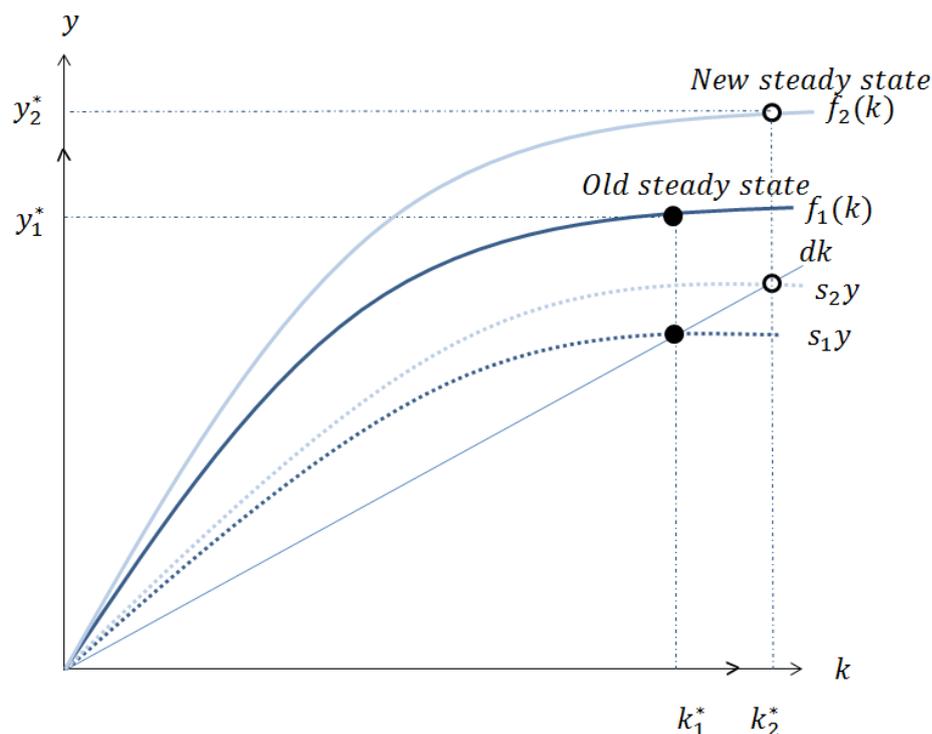
Figure 2: The impact of technological progress on savings and income

As it appears, a technological improvement in production leads to an upwards shift in the production function and the savings curve. The income curve is thus higher for all capital levels, underlining how new technology allows for the production of more output with the same stock of capital and inputs as before. The savings curve intersects the investment requirement line at a higher capital level and the ensuing steady state is at a higher income level than before.

The Solow growth model has found extensive support in empirical research on the growth rates of nations. Indeed, about 60 % of international differences in per capita incomes can be attributed to differences in the investment rate and in population growth. In fact, higher population growth is detrimental to per capita income as new populations do not contribute with added capital when they enter the workforce. Adding an estimate of human capital to the equation raises the explanatory power to 80 % (Gärtner 2006).

The main shortcoming of the neoclassical growth model, as it is commonly referred to, is its inability to explain how one promotes economic growth. In other words, the model's failure to explain how the investment rate can be raised and what constitutes technological progress and how it can be driven (The Economist 2006). On the same note, the model is unable to

take account of differences in innovativeness and ingenuity between nations as these elements are caught in the aforementioned Solow residual along with the impact of technological progress on income growth (The Economist 2006).

A common yet erroneous implication of the Solow model is that since the model predicts a negative relationship between income levels and income growth levels, one should expect a convergence of national income levels across the world. The data on national income levels and evolutions in the latter part of the twentieth century show no indication of such an absolute convergence (Gärtner 2006). Instead, there is support for a so-called relative convergence hypothesis: namely that there is income convergence for nations with the same steady states, that is for countries with similar investment rates and population growth rates.

3.2 Applying the Solow growth model to microenterprise growth

We have presented and described the Solow exogenous growth model and explained its usefulness in understanding income differences between the nations of the world and the drivers of macroeconomic growth. This framework can also be useful for our purpose in studying microenterprise owners and the growth of their companies. In fact, many of the same relationships are valid for microenterprises if we think of these as countries.

Capital stocks, labour stocks, technology level and investment levels can be measured for each microenterprise just as for nations, and when analyzing microentrepreneurs in developing nations, an alternative definition of technology can be relevant. As mentioned earlier, technology in the Solow model usually pertains to production technology in the shape of machinery of production methods. In the case of microentrepreneurs it can be argued that the impact of production technology perhaps isn't as decisive as it is for firms in the developed world where much competition seems to be centered on small improvements in existing technology combined with large scale production. Many microenterprises, on the other hand, operate on a much smaller scale and in industries such as commerce and trade where technology has less of an impact on business performance.

Hence, a broader definition of technology encompassing personal characteristics of microentrepreneurs and the social constraints they face could be fitting when applying the Solow framework to microenterprise growth. Given the findings of recent research on the

importance of a competitive mindset and basic skills on how to manage businesses for microenterprise growth (Berge, Bjorvatn and Tungodden 2010 for an example), such a broad definition of technology could make the comparisons of the findings from our data analysis with the applied Solow model more interesting.

The impact of personal attributes of the entrepreneur such as entrepreneurial mindset and skills seems intuitively obvious and is gaining increasing support in academic research, as we have noted. The concept of social constraints is perhaps more vague but should be understood to encompass the constraints imposed on the entrepreneur through the dominant norms of society. These norms translate into expectations which can effectively hinder certain entrepreneurs in achieving income growth, such as domestic obligations and religious expectations which sometimes hinder female entrepreneurs from growing their businesses or from dedicating more resources to it. Nevertheless, such constraints must be understood not only as externally generated ones which can easily be removed, but also as internalized constraints adopted through socialization, as they can often be ingrained in the mindset of the affected entrepreneurs as well. This underlines the potentially large impact of differences in the extent of social constraints on the "level of technology" and subsequently on income levels, but also on the level of income growth. If the norms are strongly ingrained in the mindsets of citizens, acceding to a higher "level of technology" can be all the much harder.

We have thus exemplified how technology differs between entrepreneurs because of their unequal characteristics, but also because of the extent to which they are affected by social constraints.

As we turn to the adaptation of the Solow model to microenterprise growth models, we can build on the model developed in the previous section by extending the definition of capital sources. Since we are determining growth determinants of microenterprises in developing nations we can establish that these firms are most often credit constrained and thus borrowing from microfinance institutions constitutes an important capital source for them. Let us denote these loan sizes m and assume they are exogenously determined.

As in the previous model, we focus on capital growth as a source of income growth and assume that the labour stock remains constant. This is a plausible assumption as many microenterprises are probably only run by their founder and given the low levels of sales and profits we are dealing with, which don't allow for extensive employment activities. Thus capital growth is financed by savings and borrowing.

Extending equation (7) from part 1.1 yields the following:

$$\Delta k = sy + m - dk = sak^{\alpha} + m - dk \tag{8}$$

Since it makes little sense to provide numerical values to assess the "level of technology" of the different microentrepreneurs, we can define two types of entrepreneurs with varying levels of technology. Let us denote entrepreneurs with high technology a_1 entrepreneurs, and those with low levels of technology a_2 entrepreneurs. This indicates that a_1 entrepreneurs have higher levels of business skills, a more competitive mindset (and higher risk willingness) and face lower social constraints.

We can note that entrepreneurs will only use borrowed money for investment purposes as long as savings and borrowed money cover capital depreciation. This implies that the returns to increasing the capital stock must be positive.

There are thus two components in our growth equation which have important impacts on the income levels and income growth levels: investment rates (financed by either savings or borrowing) and technology type. Let us analyze the impact of technology level on income and the impact of increases in investment ensuing from increased capital stocks in a similar graphical framework as in figure 2:
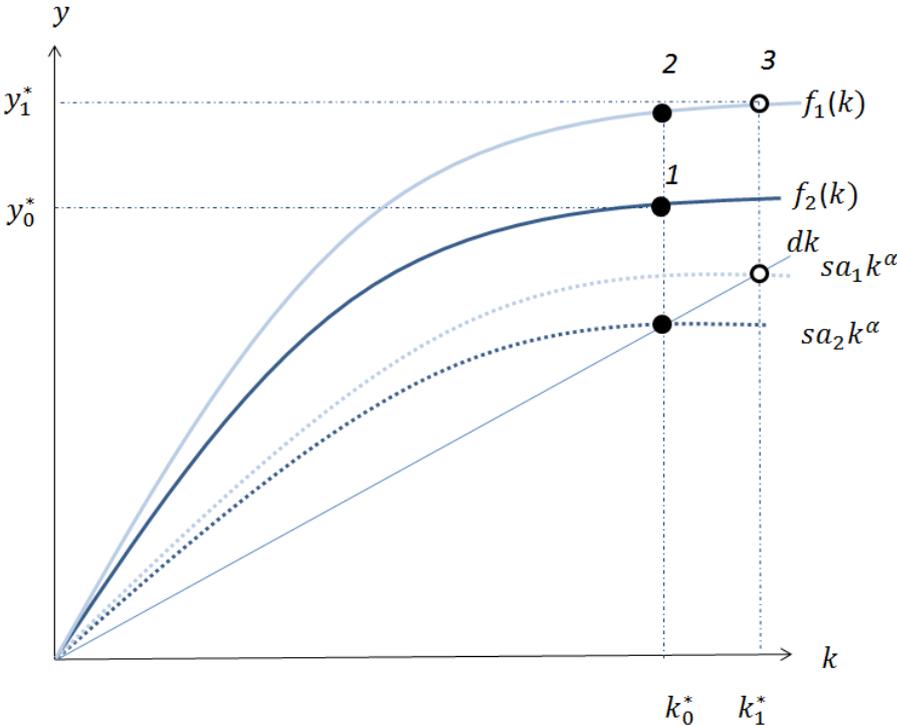
Figure 3: The Solow exogenous growth framework applied to microenterprise growth models

Capital level differences with given technology level

Let us assume that both entrepreneurs are high-technology entrepreneurs but that they have different levels of capital stocks as one possesses k_0^* and the other k_1^*. Both entrepreneurs thus operate with the savings function $sa_1 k^\alpha$ and the accompanying production function $f_1(k)$ since they are high-tech entrepreneurs. However, because they possess different levels of capital they will not be situated on the same segment of the production function: the capital investments of the entrepreneur with capital k_0^* will exceed the required investment while the investments for the entrepreneur with capital k_1^* will be exactly large enough to cover capital requirements resulting from capital depreciation.

The result is that the high-capital entrepreneur will be in a steady state with a higher income level (point 3) and that the low-capital entrepreneur will have a lower income level without being in steady state (point 2). The income of the low-capital entrepreneur will eventually move towards the higher-level steady state income as the entrepreneur increases investments and adds to the capital stock. Since a higher capital stocks entails a larger share of capital being depreciated, the savings curve will eventually intersect the capital requirement line, bringing the low-capital entrepreneur to the same steady state as the high-capital entrepreneur in point 3. Providing a business loan to the low-capital entrepreneur could accelerate this process however, as the capital stock would grow faster with the additional capital contained in a loan.

It thus appears that for a given technology smaller businesses will grow faster than larger ones.

Technological level differences with given capital levels

If we analyze the situation where the entrepreneurs have different levels of technology but identical capital levels, the high-tech entrepreneur will operate with a savings- and production function higher up than for the low-tech entrepreneur. This is so because higher technology levels (higher levels of a) always yield higher income levels, *ceteris paribus*. This is in line with the findings explained in 1.1 but can also be noted graphically as we observe that the upwards shift of the savings function implies an upwards shift of the production function as well, yielding higher income levels for identical capital levels.

Taking capital level k_0^* as an example we note that the low-tech entrepreneur will be in a steady state equilibrium since the savings function sa_2k^α crosses the investment requirement line at this capital level (point 1). The high-tech entrepreneur's savings function sa_1k^α does not cross the savings requirement line at this level however, and thus he is not in a steady state equilibrium (point 2). The ensuing income level of the low-tech entrepreneur is thus lower than for the high-tech one, but since the high-tech entrepreneur's income level is not in a steady state this income will grow while the income of the low-tech entrepreneur will stay put given its steady state equilibrium. In terms of a microenterprise entrepreneur, the high-tech entrepreneur will not only have larger sales (income), but also a higher growth rate for these sales.

The key finding in this scenario is thus that high tech entrepreneurs will have higher growth rates than low-tech entrepreneurs.

4. Results from the data analysis

The following data analysis is based on a dataset from a survey conducted by Berge, Bjorvatn and Tungodden (2010) among microfinance entrepreneurs belonging to the rural microfinance institution PRIDE in Tanzania between 2008 and 2011. Results of the impact of business training on business knowledge were published in Bjorvatn and Tungodden (2010), and preliminary results of the effect of business training on business performance were published in Berge, Bjorvatn and Tungodden (2010). Please consult these articles for experiment details.

Unlike the analysis carried out in Berge, Bjorvatn and Tungodden (2010) in which the business performance of the entrepreneurs having received either business grants, business training or both were studied; I have analysed the determinants of baseline sales and the evolution of sales over the 3 year period for the entire sample.

The results of the study by Berge, Bjorvatn and Tungodden (2010) indicate that business training had significant effects on business performance, but not the business grant. These increases in sales for the entrepreneurs having followed the business course were only valid for men; despite the increase in business knowledge being similar for the treated men and women. Revised results for the long-term effects indicate that the results of the increased business knowledge on sales are only valid for men in the long run, as effects are not significant for women. The increased knowledge and the capital contained in the business grant led to an increased number of businesses in the long-term, but for women the impact of the grant is significantly negative: it reduced the number of businesses in the long term in fact (Berge et al. 2012).

This led the authors to conclude that there was a difference in mind-set between men and women in the sample, the latter being significantly less competitive than men; which explained why the treated women did not grow their businesses.

In this data analysis I will analyse the observed gender effects on the entire sample but also other factors which may impact on the sales level and growth over the three year period.

4.1. Determinants of the sales level in 2008

We can first have a look at the average sales levels and the frequency of different sale levels, along with the averages for the explanatory variables. Figure 4 contains the percentile and average values of the sales in 2008. As we can observe, the average monthly sales value in 2008 is 2 489 228 Tsh (1568 USD with the current conversion rate), and 75 % of the sample experienced sales of 2 850 000 Tsh or less, which is close to the average.

Note: all sales figures are in Tanzanian Shilling (Tsh).
1 USD = 1587.3 Tsh on 12/06/12
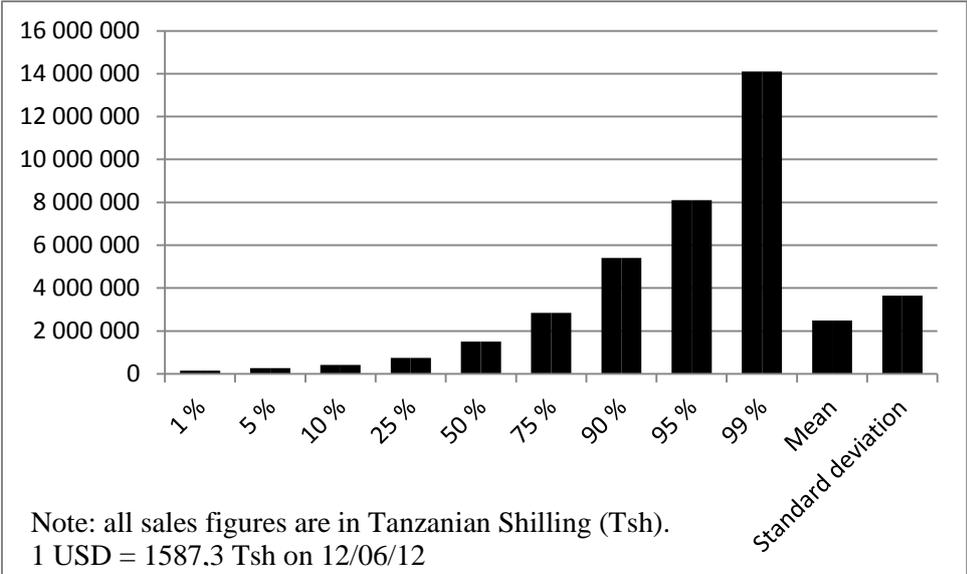
Figure 4: Total monthly sales in 2008 (percentiles and average values)

Variable	Mean	Standard deviation	Minimum	Maximum
Gender	0,65	0,47	0	1
Manufacturing	0,15	0,36	0	1
Services	0,37	0,48	0	1
Commerce	0,70	0,46	0	1
Number of businesses	1,54	0,63	0	1
Number of paid employees	1,08	1,63	1	4
Loan size	770,34	238,40	500	1000
Ownership of business licence	0,18	0,38	0	1
Business accounting skills	4,93	1,12	1	7
High level of education	0,28	0,45	0	1

N = 644 for all variables. Gender indicates the share of women in the sample.

Table 1: Descriptive statistics for sales level regression variables

Before analysing the determinants of the sales level in 2008 let us have a closer look at the gender differences for the variables that are included in the regression.

Variables	Women	Men	Mean difference	Significance
Sales in 2008	2 187 640 (182 218)	3 062 518 (228 592)	-874 877 (301 021)	***
Manufacturing	0,11 (0,015)	0,24 (0,028)	-0,12 (0,030)	***
Services	0,44 (0,024)	0,26 (0,029)	0,18 (0,039)	
Commerce	0,69 (0,022)	0,70 (0,031)	-0,006 (0,038)	
Number of businesses	1,55 (0,030)	1,53 (0,044)	0,02 (0,052)	
Number of paid employees	1,03 (0,082)	1,18 (0,102)	-0,15 (0,135)	
Loan size	772 (11,6)	766 (16,0)	5,61 (19,8)	
Ownership of business license	0,17 (0,018)	0,21 (0,027)	-0,04 (0,032)	
Business accounting skills	4,86 (0,054)	5,05 (0,075)	-0,19 (0,093)	**
High level of education	0,31 (0,023)	0,24 (0,028)	0,07 (0,037)	

Standard errors are in brackets. The significance of differences in means is marked by asterisks. *** indicates significance at the 0,01 level, ** at the 0,05 level and * at the 0,1 level.

Table 2: Significance of gender differences in sales level regression variables

As we can see, men have significantly higher sales than women, more frequently operate in the manufacturing industry and have a higher level of business accounting skills.

Let us now analyse the determining factors explaining the sales level in 2008. The dependent variable of the model is the logarithm of the sales level in 2008 which we have chosen to proxy for the size of the firm. Using the logarithm of the sales level allows us to reduce the influence of extreme observations (outliers).

Further, the model includes the independent variables *Gender* (indicates the gender of the client), *Manufacturing* (indicates whether the entrepreneur operates in the manufacturing sector), *Services* (indicates whether the entrepreneur operates in the service sector), *Commerce* (indicates whether the entrepreneur operates in the commerce sector), *Number of businesses* (indicates the number of businesses owned by the client), *Number of paid employees* (indicates the number of paid employees hired by the entrepreneur) , *Loan size* (indicates the amount of the loan the client possesses), *Ownership of business licence*

(indicates whether the client possesses a business licence), *Business accounting skills* (indicates the number of correct answers obtained on a business accounting knowledge test) and *High level of education* (indicates whether the entrepreneurs has more than 7 years of education). We include sector of activity as a control variable as it is unlikely to change in the treatment period and can determine the level of demand faced by the business owners and thus the sales level. We include education and business knowledge variables as research suggests there is a strong correlation between educational attainment (and particularly business knowledge) and business performance. Moreover, as results of business teaching on business performance for male entrepreneurs in the same sample (Berge, Bjorvatn and Tungodden 2010) provide evidence of such a correlation, it is relevant to establish whether the same relationship is observed for the sample as whole (including those who didn't receive such training).

Explanatory variables	Logarithm of sales in 2008	Significance
Gender	-0,2762 (0,074)	***
Manufacturing	-0,3861 (0,114)	***
Services	-0,3162 (0,099)	***
Commerce	0,4018 (0,109)	***
Number of businesses	0,3338 (0,071)	***
Number of paid employees	0,1747 (0,023)	***
Loan size	0,0006 (0,000)	***
Ownership of business licence	0,2929 (0,088)	**
Business accounting skills	0,0233 (0,031)	
High level of education	-0,0804 (0,0769)	
Observations	644	
Adjusted R-squared	0,27	

Standard errors are in brackets. The significance of coefficients is marked by asterisks. *** indicates significance at the 0,01 level, ** at the 0,05 level and * at the 0,1 level.

Table 3: Determinants of sales level

As it appears from the regression results, gender, sector, number of businesses, number of paid employees, loan size and licence in 2008 are all significantly related to the sales level in 2008 for all the entrepreneurs of the sample.

Gender: women had 27 % lower sales than men in 2008, all else equal.

Sector: the sector in which the entrepreneur operates seems to affect sales greatly: entrepreneurs with firms in the manufacturing sector had 38 % lower sales on average, while those with firms in the service sector had 32 % percent lower sales, all else equal. Operating a firm in the commerce sector seems to correlate with 40 % higher sales on average, *ceteris paribus*.

Number of businesses: owning one more business implied 33 % higher sales in 2008. This result is not so surprising as owning more than one business usually implies increasing the number of goods manufactured or sold, thus the turnover.

Total number of workers: Having one more worker in the enterprise raised sales in 2008 by 17 % for the surveyed entrepreneurs, all else equal. Likewise, this result is not very surprising as a larger number of employees implies the possibility to conduct more business transactions. This result also harmonizes with our adaptation of the Merlitz (2003) model of aggregate industry productivity: more productive firms which tend to enter export markets (in our case formality) have larger outputs and revenues, thus more employees normally.

Loan size: a larger loan size correlates positively with sales in 2008. A loan of 500 000 Tsh more (371 USD) increases sales by 30,5 % (500 * 0,00061).

Licence: licenced business owners had 29 % higher sales in 2008, all else equal.

Business accounting skills: a higher score on the business accounting test does not significantly correlate with the sales level in 2008.

High level of education: Highly educated entrepreneurs in the sample do not have significantly higher sales than less educated ones, all else equal.

As we can see the explanatory power of the model is 27 %. The overall impression is that sector and gender are strongly related to sales levels. Besides these correlations, endogenous business factors such as the number or employees and the number of firms are also significantly associated with the sales levels. We should also note the importance of the licence to operate, which substantially increases sales levels.

The higher sales level for commerce firms in 2008 is confirmed in follow-up analyses from 2012 (Berge et al. 2012), in which firms in the commerce sector are found to have significantly higher profit and sales levels.

It is noteworthy to observe that knowledge (in the shape of education and business accounting skills) is not significantly related to the sales level in 2008, in contrast with what the findings from recent research suggest.

4.2. Determinants of sales growth between 2008 and 2011

As we have analysed what major factors are related to sales levels, we now turn our attention to the factors which relate to sales growth rates between 2008 and 2011.

Firstly, looking at the descriptive statistics we note the negative average sales change over the period. There was a drop in sales of 18 % on average in this three year period and a majority of the sample experienced a negative sales evolution as the 50th percentile value is negative. We should however note the high volatility of the sales development as the standard deviation is of 114 %.
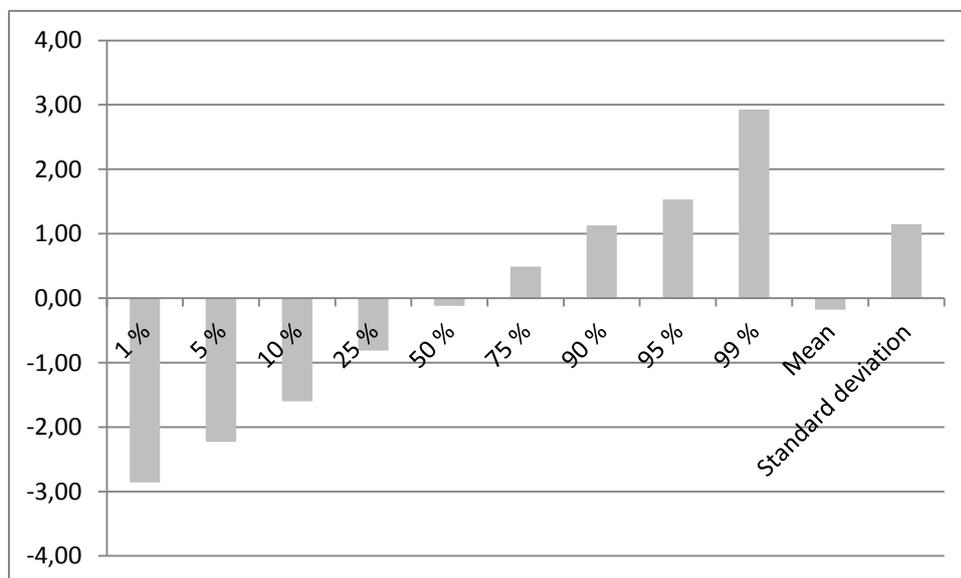
Figure 5: Difference between logarithms of total monthly sales in 2011 and 2008

The logarithm of the change in sales between 2008 and 2011 is the dependent variable used to proxy the change in sales over this 3-year period. It is defined as the difference between *lnsales11* and *lnsales08* (respectively the logarithm of sales in 2011 and the logarithm of sales in 2008), and as explained for the sales level regression I have chosen to use the logarithmic values in order to reduce the influence of extreme observations.

The model includes the independent variables *Gender* (indicates the gender of the client), *the Logarithm of Sales in 2008* (indicates the sales level in 2008), *Manufacturing* (indicates whether the entrepreneur operates in the manufacturing sector), *Services* (indicates whether the entrepreneur operates in the service sector), *Commerce* (indicates whether the entrepreneur operates in the commerce sector), *Number of businesses* (indicates the number of

businesses owned by the client), *Number of paid employees* (indicates the number of paid employees hired by the entrepreneur), *Loan size* (indicates the amount of the loan the client possesses) and *Ownership of business licence* (indicates whether the client possesses a business licence), *Business accounting skills* (indicates the number of correct answers obtained on a business accounting knowledge test) and *High level of education* (indicates whether the entrepreneurs has more than 7 years of education).

In order to ensure that entrepreneurs who no longer run a business aren't included in the regression we added the criteria that sales in 2011 must be positive.

Explanatory variables	Difference between Logarithm of sales in 2011 and 2008	Significance
Gender	-0,2010 (0,099)	**
Logarithm of Sales in 2008	-0,4911 (0,054)	***
Manufacturing	-0,2067 (0,155)	
Services	0,0839 (0,132)	
Commerce	0,0190 (0,147)	
Number of businesses	-0,1633 (0,097)	*
Number of paid employees	-0,0082 (0,033)	
Loan size	0,0004 (0,000)	*
Ownership of business license	0,2460 (0,120)	**
Business accounting skills	0,0322 (0,041)	
High level of education	0,0205 (0,102)	
Observations	525	
Adjusted R-squared	18,6	

Standard errors are in brackets. The significance of coefficients are marked by asterisks. *** indicates significance at the 0,01 level, ** at the 0,05 level and * at the 0,1 level.

Table 4: Determinants of sales growth

The change in sales from 2008 to 2011 can be explained by many of the same factors explaining the sales level in 2008, such as the gender of the entrepreneur, the number of businesses owned, the possession of a business licence and the size of the microloan. The direction of the correlation of these factors with the dependent variable is not always the same as in the sales level regression, however.

Gender: It appears that male entrepreneurs experienced a 20 % higher sales growth than female ones, *ceteris paribus*.

Sales in 2008: A 100 % higher sales level in 2008 reduced the sales growth between 2008 and 2011 by almost 50 %. This seems to indicate that firms with higher sales levels in 2008 experienced the biggest sales decreases (in percentages) in the three year period, all else equal.

Sector: as we observe, the sector in which the entrepreneur operates is not significantly related to sales growth. Thus it would be erroneous to interpret the coefficients of the variables, although we can note the perhaps surprising positive direction of the correlation between entrepreneurs with a firm in the service sector and sales growth. This correlation was negative in the sales level regression.

Total number of workers in 2008: this variable is not significant in the growth regression so interpreting the size of the coefficient would be erroneous. We can however note the negative sign of the coefficient, indicating that increasing the amount of workers in the three year period reduced the sales level.

Licence: owners with a business licence experienced 24 % higher sales growth than those without any in this 3 year period, all else equal.

Number of businesses in 2008: unlike the sales level regression in which this variable was positively correlated with the dependent variable, the opposite is the case in this model. Setting up one more firm in 2008 reduced the sales growth by 16 % on average, all else equal.

Loan size: firms with larger loans also experienced higher sales growth, all else equal. For example, a loan of 500 000 Tsh more correlates with a sales growth of 20 % (500*0,0004).

Business accounting skills: a higher score on the business accounting test does not significantly correlate with the sales growth between 2008 and 2011.

High level of education: Highly educated entrepreneurs in the sample did not experience significantly higher sales growth between 2008 and 2011 than less educated entrepreneurs, all else equal.

Relative to the sales level regression we can firstly note that both sector and total number of employees in 2008 no longer significantly relate to sales growth.
We note that the importance of gender for sales growth is substantial, as is the possession of a business licence. Besides these variables, it appears that endogenous business factors such as the loan size and the number of businesses in 2008 determined the growth of sales between 2008 and 2011.

The negative correlation between sales growth and the number of businesses is intuitively surprising. The results should firstly be assessed in light of the national GDP growth for the period (detailed in part 4.4). Nevertheless, regardless of the evolution of the formal economy, the negative and strong coefficient of the sales level in 2008 on the sales growth shows that the largest firms (measured in terms of sales) experienced the lowest growth, indicating a convergence tendency among the PRIDE micro-enterprises: smaller firms experienced relatively stronger growth (or lower decreases) than large ones and there is a convergence tendency in the number of businesses owned since adding new ones reduced the growth level in this period.

We also note the insignificant relationship between sector and sales growth which is in contrast to the sales level regression in which there was a strong correlation between these. Similarly, neither accounting knowledge nor level of education is significantly related to sales growth.

In sum, the firms which grew the most were male-owned, licenced firms with large loans, and given the results from the sales level regression it seems that these were smaller firms.

4.3. Comparison of findings from the sales determinants with the applied Solow model of microenterprise growth

We have presented an applied model of the Solow exogenous growth model to microenterprise growth models and analysed the results from the regression analyses

explaining the variance in the sales levels in 2008 and in the sales growth between 2008 and 2011. It is now appropriate to compare the theoretical framework with our empirical evidence from PRIDE in Tanzania to determine whether we find support for our framework.

The model predicts a convergence in the sales level of microenterprises when they share the same level of technology, all else equal. In other words, smaller firms (measured in terms of capital stock in the framework) should grow faster than larger ones which are already in a steady state. We find evidence of convergence in our data analysis with entrepreneurs owning smaller businesses (in terms of number of firms and sales level) experiencing higher growth than the owners of larger firms.

Moreover, we noted that the provision of capital increases in the shape of business loans for low capital entrepreneurs in an equal-technology environment would accelerate the income growth for such entrepreneurs by adding capital to savings. The model predicts that such loans could enable the low-capital entrepreneurs to catch up with the steady state income of the high-capital entrepreneur more quickly. In the growth regression of our data analysis we find that loans are positively correlated with sales growth, providing support for this theory.

The model also predicts lower growth rates for low-technology entrepreneurs, *ceteris paribus*. We recall that technology was defined broadly in the adapted Solow model as encompassing personal characteristics of microentrepreneurs and the social constraints they face. In this respect it can be reasonably argued that female microentrepreneurs in developing nations can be considered low-tech types given the social constraints they face, which can provide disincentives for expending efforts on improving microenterprise performance.

Relative to the results from our data analysis we find evidence of possible social constraints limiting the scope of action of female entrepreneurs in improving their firm performance, namely the finding that they spend significantly more money on paying school fees than men. This provides grounds for categorising the female PRIDE entrepreneurs of our sample as low-tech entrepreneurs, and given the strong and significantly negative correlation between sales growth levels and female entrepreneurs in the sales growth level, we can conclude that we find evidence in line with the predictions of the model.

This broader definition of technology in the adopted Solow model also allows for a relevant analysis of business licences as a type of technology. Indeed, business licences can be thought of as technology as they seem to give access to cheaper capital and to larger markets and

business opportunities through government contracts for example. A higher level of technology increases the steady state income of entrepreneurs for any given level of capital, and leads to higher growth, *ceteris paribus*. Granted, a business licence is not exogenous as the concept of technology is defined, but if we look at business licences as expressions of the entrepreneurial ambition of entrepreneurs we can arguably consider it to be a type of technology. Indeed, only the most ambitious entrepreneurs will take the required measures to acquire a business licence (time and money wise), and could thus be said to operate on a different production function once they have acquired such a licence.

Since licensed business owners can be said to operate with a higher level of technology they also experience higher growth. This relationship is confirmed in our data analysis as we noted a strongly positive and significant correlation between the ownership of a business licence and sales growth rates in section 4.2. Finally, we should note that the impact of a licence on sales growth rates seems to most likely capture both the importance of the possession of a business licence for credit access and market opportunities, and the importance of the mind-set of the entrepreneur.

In sum, we can conclude that there is a good fit between the predictions of the adapted Solow exogenous growth model and our data analysis of PRIDE entrepreneurs. We find empirical evidence for the relationships predicted by the model which underline the potential of business loans in increasing income and the importance of social constraints and formality for achieving higher income growth rates.

4.4. Income growth in Tanzania between 2008 and 2011

The overall negative sales development for the entire sample of PRIDE entrepreneurs might seem surprising at first given the many merits associated with microfinance and its potential to provide microfirm growth. However, this development must be assessed in light of overall macroeconomic income growth in Tanzania for the relevant period.

Source: World Bank and Global Finance
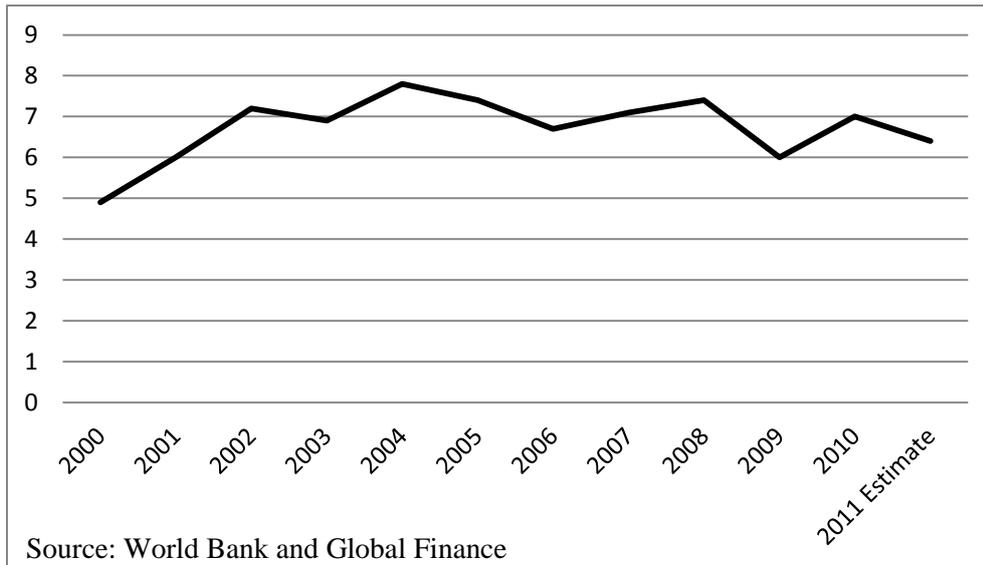
Figure 6: Tanzanian GDP development from 2000 to 2011

As the GDP growth data of the World Bank indicate, there was a dip in GDP growth from 2008 to 2009 of 1,4 percentage points (World Bank 2010). The growth picked up again the following year however, reaching 7 % which is more than the average of 6,7 % between 1997 and 2010. The World Bank figure for 2011 is unavailable but a predicted estimate provided by Global finance predicted a growth of 6,4 % (Global Finance 2011).

Indeed there seems to have been a noteworthy dip in GDP growth for the year 2009 but the improved growth the subsequent years could lead us to think that the sales development for the PRIDE entrepreneurs shouldn't have been so negative. Moreover, the growth rates of the formal economy captured in the GDP figures are high, especially compared to the average growth rate of 3,6 % between 1989 and 2001 for the country. This leads us to conclude that the negative sales growth in the informal economy cannot be attributed to the GDP evolution in the overall formal economy.

4.5. The motivations for ownership of a business licence and associated benefits

Given the strong correlation between sales (both volumes and growth rates) and the ownership of a business licence, it is interesting to analyse what reasons motivate entrepreneurs to apply for a business licence and what advantages these yield.

Advantage	Percent
Reduced interference from local government officials	0,36
Access to capital	0,34
Access to business opportunities	0,22
N	536

Table 5: Reported advantages of business licences

As we observe, most respondents claim that the greatest advantages of possessing such a licence are respectively a reduced interference from government officials and the (improved) access to capital. Another 22 % of entrepreneurs state that a major advantage of the licence is also the business opportunities it entails.

In light of the substantial benefits associated with the ownership of such a licence, one can wonder why not all entrepreneurs possess one. Indeed, only 18 % of entrepreneurs possessed a business licence in 2008 and this share was virtually unchanged in 2011.

It is thus relevant to analyze the reported reasons for not possessing such a licence.

Reason	Percent
Discouraging attitude from government officials	0,36
Costliness of licence	0,34
Time required to acquire licence	0,22
N	536

Table 6: Reported reasons for not having a business licence

Most respondents claim that the most important reason for not having a business licence is the discouraging attitude of government officials, closely followed by the costliness of a licence and the amount of time required to obtain one. This seems to harmonize with the reported advantages of a licence, as government interference seems to be an important business obstacle for the PRIDE entrepreneurs which they are willing to pay to overcome.

It would be interesting to establish which privileges the possession of a business licence grant to a microfinance client, and what requirements need to be met in order to obtain one. Indeed,

there seems to be a focus on avoiding government interference in the dealings of the enterprises of the entrepreneurs, and it would be interesting to establish whether licenced firms benefit from special treatment in their dealings with authorities. Unfortunately we were unable to gather information on this matter, a possible reason for this is that privileges vis-à-vis government officials are probably not explicitly recognised.

Further, the second most frequently reported advantage of a business licence is the access to capital it grants. We noted that there were large correlations between the loan size in 2008 and sales levels and sales growth rates. It is possible that the possession of a licence contains a strong informational signal advantage; namely that licence owners have met certain financial strength criteria which enables them to benefit from preferential access to funding. In reference to research by Tokman (2007), it could be that in qualifying for a business licence firms have been required to demonstrate what their assets consist of and of what value these are. These classifications might then have allowed them to qualify for better loans as PRIDE and other lending institutions are more certain of the value of their collaterals. Although I was unable to acquire information on this matter, the reasons suggested for explaining how loans provide improved access to capital seem plausible.

Identifying transformational and subsistence entrepreneurs

Given the strong relationship between business formality and productivity and between entrepreneurial potential and business growth noted by Tokman (2007), Schoar (2009) and Poschke (2010), it is pertinent to attempt to identify what characterizes the licenced PRIDE entrepreneurs and what could mark the difference between subsistence and transformational entrepreneurs in our sample. We recall that informality is defined as a lack of registration of a firm in government records (ILO 1972, referred in Tokman 2007), and that formal enterprises are characterised by high productivity according to Tokman (2007), potentially because of a mechanism similar to the one put forth by Melitz (2003), where only the most productive firms are able to pay for the fixed costs of formality (like in Melitz's model, only the more productive firms can pay for the fixed costs of export). In line with Schoar's (2009) and Poschke's (2010) definitions of transformational and subsistence entrepreneurs we can look for differences in risk willingness and human capital within our sample.

In order to measure differences in productivity and education we tested if there were significant differences in the ownership of a licence in 2008 with regard to sales levels in 2011 and with respect to whether the entrepreneur has a high level of education (more than 7

years, the average being approximately 8 years). With reference to the reported advantages of the ownership of a business licence by the sample, we also tested for significant differences in ownership of business licences with regard to loan size.

We expect noticeable differences in sales levels with regard to education and in licensing with regard to productivity in line with the aforementioned research: more educated entrepreneurs should experience higher sales and licenced entrepreneurs should be more productive by measure of sales.

Further, one should expect licenced business owners to possess larger loans since this is one of the foremost advantages of the licences according to the sample.

Variables	Not licensed	Licensed	Mean difference	Significance
Education	0,14 (0,35)	0,27 (0,44)	-0,13 (0,03)	***
Loan size	0,17 (0,38)	0,21 (0,41)	-0,04 (0,035)	
Sales level	0,16 (0,36)	0,26 (0,44)	-0,10 (0,03)	***
Gender	0,17 (0,38)	0,21 (0,41)	-0,04 (0,03)	

Standard deviations are in brackets except for the mean differences for which standard errors are in brackets. The significance of differences in means are marked by asterisks. *** indicates significance at the 0,01 level, ** at the 0,05 level and * at the 0,1 level.

Table 7: Identifying significant differences between entrepreneurs as a result of licence ownership

In order to test the significance of education, sales, loan size and gender on the ownership of a licence we looked at entrepreneurs with high education (more than 7 years) and at those with less than 7 years, at entrepreneurs with loans at the 75th percentile (above 326 000 Tsh) and at those with lower loans, and at entrepreneurs with sales at the 75th percentile (above 22 233 686 Tsh) and at those with lower sales. The variable indicating whether an entrepreneur experienced high or low sales in 2011 takes the value 1 if the sales are above the sales level of 75 % of the respondents, and 0 if the sales are below 75 % of the distribution. All the figures are for the year 2011 and we looked at the ownership of business licences in 2008. We chose these cut-offs levels as we assumed that approximately 25 % of the sample should be eligible for a business licence seeing as a bit fewer possessed one in 2011 (17 %), thus the 25 % most educated entrepreneurs in the sample with the highest sales levels and loan sizes should be closer to our definitions of transformational entrepreneurs.

We also tested for the significance of gender for the possession of a licence as research suggests that there may be a gender divide in entrepreneurial success (Berge, Bjorvatn and Tungodden 2010 for example).

As table 7 indicates, we find significant differences in the probability of being highly educated and in high sales with regard to the ownership of a business licence. Only 14 % of the entrepreneurs who aren't licenced have higher education levels, whereas 27 % of those licenced have higher education levels.

Further, 21 % of those with a business licence have large loans against 17 % for those without one, and 26 % of those licenced are among the 25 % of entrepreneurs with the highest sales in 2011 while only 16 % of those without a licence are in this category. Finally, 21 % of those licenced are men whereas only 17 % of the entrepreneurs without a licence are men.

As we can observe, the correlations with the ownership of a licence are particularly large for education and sales levels. It seems clear that the licenced entrepreneurs are highly educated and quite productive, which is in line with research by Tokman (2007) and Schoar (2009) and Poschke (2010). It also harmonizes with our interpretation of Melitz's (2003) model on the importance of productivity for formality.

Finally, results from table 2 lend support to Schoar's research (2009) indicating differences in sales level with regard to gender between transformational and subsistence entrepreneurs. Indeed, in our sample men have significantly higher sales than women, which lends support to the finding of a gender divide in entrepreneurial success in recent research.

4.6. The motivations for borrowing and spending of loans

It is interesting to have a closer look at the motivations, criteria and benefits associated with business loans given the large positive impacts of these on both sales levels in 2008 and sales growth, and given the attractiveness of access to finance leading to the popularity of business licences. As noted in the analysis of the regressions, larger loan sizes correlated with larger sales levels and higher sales growth.

Given this strong positive impact of loan size on sales level we should first investigate whether the entrepreneurs report being capital constrained, in which case larger loans would

allow them to invest in profitable opportunities they do not have sufficient capital to invest in without external funding.

It appears that the clients consider themselves capital constrained. Indeed, practically all clients claimed that a gift of 100 000 Tsh would be very important to them. The fact that a 100 000 Tsh grant only represent 5 % of average monthly sales makes it even more clear that the clients seem capital constrained. Moreover, the claim of the entrepreneurs that 90 % of such a grant would be spent on business expenses also lends support to this conclusion.

The relative importance of capital among constraints impeding firm growth

It is also interesting to establish the relative importance of capital constraints compared to other constraints (in terms of human capital for example), to understand the extent to which lack of capital is an impediment to firm growth. Given that 49 % respondents claim that they consider capital constraints the most important constraint to developing their businesses and 47 % the lack of business training, we can conclude that capital is certainly lacking in the view of entrepreneurs but that knowledge on how to manage this capital is also lacking.

The relative importance of PRIDE loans as a financing source

In order to assert whether capital is as large of a constraint as reported by entrepreneurs, is it pertinent to assess how large a share of loans are PRIDE loans since survey responses are relative to the size of PRIDE loans. A large share of PRIDE loans in the overall loan portfolio would lend support to the importance attributed to the size of the PRIDE loan reported in the regression analyses.
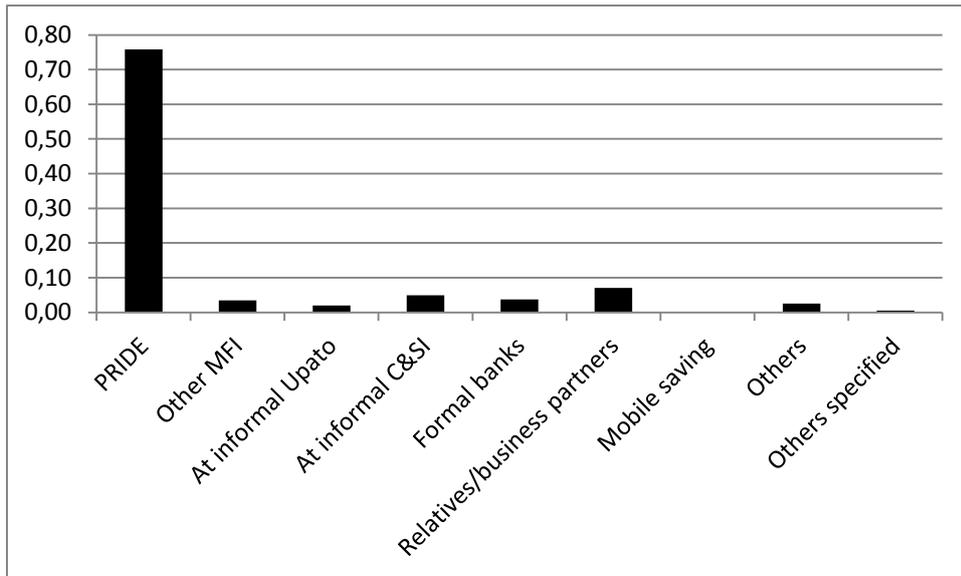
Figure 7: Respective shares of funding sources for entrepreneurs

The distribution of total loans shows that more than three quarters of the total borrowed money of the surveyed entrepreneurs comes from PRIDE loans. This lends support to the observation that the size of PRIDE loans is an important driver of sales. These observations are in line with our conclusions on the motivations for obtaining a business licence, as an improved access to capital was the second most frequently reported advantage of such a licence. We note that PRIDE loans make up the foremost source of credit for the entrepreneurs and that the second most favoured source of financing is relatives and business partners.

Indeed, it appears that capital constraints make up the most important impediment to business growth in the view of the entrepreneurs. Investigating what these loans are spent on can enable us to understand this finding.

Spending of PRIDE loans
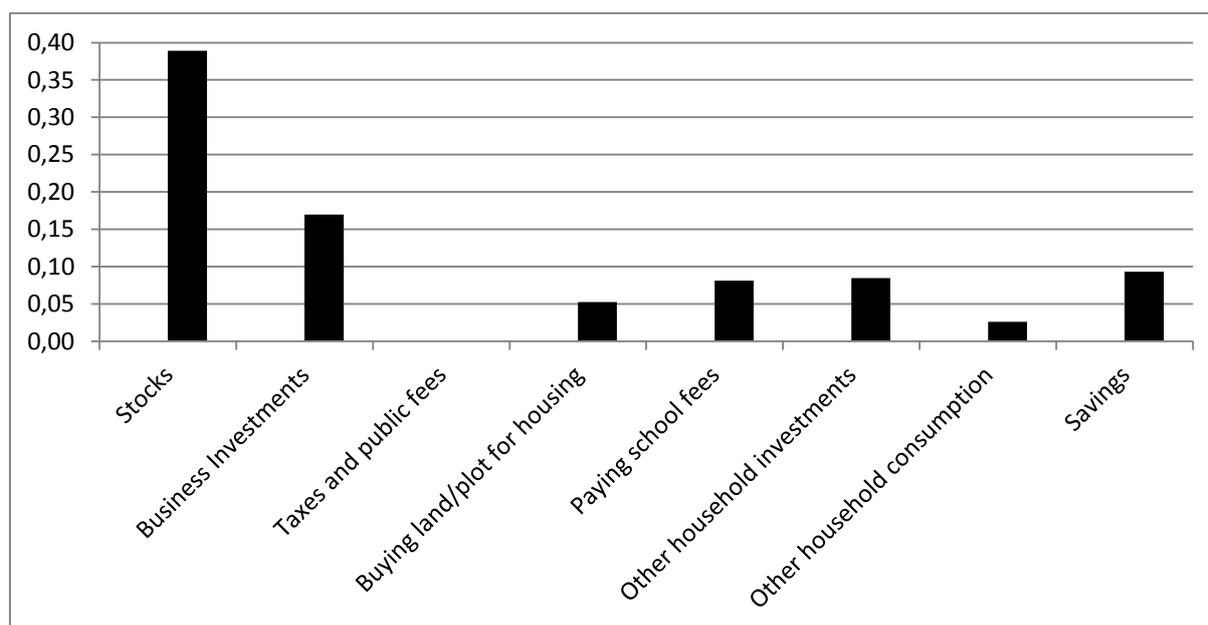
Figure 8: Major expenditure posts of PRIDE loan

Self-reported information on the allocations of PRIDE loans indicates that 39 % of the last loan received was spent on buying stocks. This is by far the most frequent expenditure, and we should note that savings, school fees, other land plots and other household investments each make up close to 10 % of the expenditures from the loan. The finding that non neglectable shares of the business loans are spent on non-business related purposes illustrates how business loans are also used as an important cash flow management tool by the poor in line with findings by Collins et al. (2009). Indeed, school fees and savings are household expenditures the PRIDE entrepreneurs require loans for, and although these are worthy recipients of funding it is encouraging to note that the entrepreneurs are willing and able to spend the business loans on business purposes.

The fact that buying stocks constitutes the primary use of new loans coupled with the insight that only a quarter of the loan is spent on purely non-business purposes (land for housing, school fees, other household investments and consumption and lending money to others) is a positive inference. Indeed, business loans are overall spent for their intended purposes and this provides more reason to believe the entrepreneurs are capital constrained. Additionally, the fact that, on average, none of the loan is spent on repayment of other loans supports this conclusion.

Further, 17 % of the loans are spent on business investments in the shape of new premises, renovation and smaller investments such as cooking equipment. This indicates that the loans are not only used to sustain current sales but also for investment in new business opportunities. These results harmonize with the recommendations put forth by Sachs (2005) and in particular with his call for large capital injections in developing nations. This population of PRIDE entrepreneurs isn't representative of the most deprived which Sachs speaks of in his work, as they possess some basic capital already and are eligible for microcredit. Nevertheless, it is encouraging to see that the credit that is made available to these Tanzanian entrepreneurs is in large part spent on facilities and equipment to be used in industry or service companies, in other words on the "business capital" he mentions as necessary to eradicate poverty (Sachs 2005).

Although Sachs' argument is made on a macroeconomic level it can be interpreted on a microeconomic level. There is evidently a great need for financial capital among our microentrepreneurs to fund investments in "business capital" which lends support to the call for larger capital transfers on an international level to developing nations. Yet, one could argue that what is needed on a micro-level is rather larger capital transfers from MFIs to entrepreneurs, i.e. larger loan sizes. Since the borrowed capital is already being largely spent on "business investments" it could be more efficient and sustainable boosting the capital stocks and lending capacity of microfinance banks instead of transferring capital through governments which runs the risk of capital diversion and increased administrative costs.

It is thus clear that there is a capital constraint on the basis of the positive correlations with sales growth observed and the high proportion of loans spent on business-related purposes meant to improve business performance. In light of the many requirements microfinance clients, and PRIDE clients in our case, need to meet in order to be granted business loans it could be interesting to look at the opinions of the affected individuals on these borrowing criteria. Understanding what aspects of loan criteria they are satisfied with, and more importantly which they deem excessive, is useful in the perspective of improving the design of loans so as to limit the financial capital constraint as much as possible.

4.6.1. Opinions on PRIDE borrowing requirements

Approximately four out of five entrepreneurs state that they are overall satisfied with PRIDE and seem to appreciate the opportunities for business networking and social interaction the meetings give, but they are more divided in their opinion on loan cycles and loan sizes.

Indeed, the PRIDE loans this group of entrepreneurs benefit from are so-called "MEC loans" which are group loans for which five PRIDE members share responsibility, with weekly mandatory one hour loan meetings (PRIDE 2005). A majority of entrepreneurs do not think the meetings take too much time, and 60 % strongly believe the meetings are useful for business networking. Moreover, a majority strongly believe the PRIDE meetings are pleasant social events and very few disagree with this.

The sample is divided on the matter of loan cycles however. A majority strongly believe that the cycle is not too rigid; nevertheless, some 33 % strongly disagree.

On the matter of loan size there is also disunity in the opinions. Although there seems to be more entrepreneurs agreeing that the loans are not too small, a substantial share of PRIDE clients believe otherwise (some 33 %). About a fifth of respondents are undecided on this issue.

It is possible that these opinions would vary with the level of entrepreneurialism and notably between the aforementioned subsistence and transformational entrepreneurs. Indeed, gender and sales growth rates could be some characteristics distinguishing transformational and subsistence entrepreneurs according to recent research on the topic, yielding different levels of satisfaction with the PRIDE loans.

i. Spending, borrowing and saving differences by sales growth levels

When looking only at entrepreneurs who experienced high growth in the 3-year period (above 30 % which is the case for 30 % of the sample) the results indicate that they are slightly more satisfied with the loan sizes than the sample as a whole. Does this indicate that the more prosperous clients are also less credit constrained than the average PRIDE entrepreneur? Actually, they seem to have smaller loans than the average client, in fact they are smaller by 29 478 Tsh on average.

Differences in sources of financing relative to sales level

However, lower PRIDE loan sizes on average does not necessary imply that more prosperous entrepreneurs have lower overall loan levels. The reported financial positions posts indicate different sources of funding relative to the level of sales growth. At this point it is fitting to precise that informal Upatos consist of rotating savings and credit societies.

Loans Borrowing category	All sample	High Sales Growth entrepreneurs	Mean difference
PRIDE savings	201 204 (378 653)	171 726 (463 303)	29 478
At other MFI	9270 (91 540)	11 198 (120 521)	-1928
At informal Upato	5177 (31 390)	2842 (17 305)	2335
At informal credit and savings ins	13104 (109 448)	5983 (54 155)	7121
Formal banks	9952 (97 068)	14 789 (123 685)	-4837
Relatives/ business partners	18 623 (138 485)	10 661 (134 274)	7962
Mobile savings	0	0	0
Others	6741 (147 684)	1310 (18 218)	5431
Specify others	1391 (35 302)	3143 (53 066)	-1752
Total	265 462	221 652	43 810
N	644	258	

Standard deviations are in brackets.

Table 9: Differences in borrowing between high growth clients and sample average

Overall it is clear that more successful entrepreneurs have smaller outstanding loans than the average respondent. In particular PRIDE loans are of a much smaller size, but also loans with relatives and informal credit and savings institutions. Nevertheless, we can note the large difference in terms of loans with formal banks. This could be due to the larger growth rate of these firms making them more creditworthy clients and thus eligible for more formal sources of funding. It is also imaginable that the higher growth entrepreneurs demand less credit

because they don't need to. That is, it is possible that they rely on savings to fund business activities.

Differences in savings relative to sales level

Savings			
Savings category	**All sample**	**High Sales Growth entrepreneurs**	**Mean difference**
PRIDE savings	164 151 (256 497)	140 891 (308 818)	23 260
At other MFI	4128 (30885)	4587 (37 821)	-459
At informal Upato	20 224 (74 207)	15 125 (70 921)	5 099
At informal credit and savings ins	24 714 (110 110)	21 750 (95 841)	2 964
Formal banks	382 897 (1 753 337)	451 010 (2 425 834)	-68 113
Relatives/ business partners	100 162 (462 739)	103 702 (498 793)	-3 540
Mobile savings	12 304 (47 424)	13 457 (54 163)	-1 153
Others	75 504 (209 046)	64 463 (187 086)	11 041
Specify others	51 635 (224 011)	47 457 (289 353)	4 178
Total	835 719	862 442	-26 723
N	644	258	

Standard deviations are in brackets.

Table 10: Differences in saving between high growth clients and sample average

The figures in table 10 indicate that more successful entrepreneurs save more in formal banks, whereas the average entrepreneur seems to prefer PRIDE saving schemes. Yet again, this might be due to the more solid financial position of the growing entrepreneurs which allow them to save in formal banks instead of just MFIs. We can also note that prosperous entrepreneurs also save 26 723 Tsh more on average, which is 17 087 Tsh short of bridging the gap up to the mean loan size of an average PRIDE entrepreneur mentioned previously (the borrowing gap of 43 810 Tsh less the savings gap of 26 723 Tsh). This lends support to the hypothesis by which successful entrepreneurs are less capital constrained because they can rely more on savings to fund their business activities.

ii. Spending, borrowing and saving differences by gender

Given the large impact of gender on sales growth and –levels, it is relevant to analyse the funding sources by gender in attempting to explain the superior performance of male-owned firms. Indeed, it is possible that male-owned firms have higher or better loans, more savings to fund business expenses with, or more discretion in the allocation of their income than women.

Gender differences in sources of financing

Analysing differences in sources of borrowing between men and women reveal that men have significantly larger loans from formal banks than women (in the order of 20 043 Tsh more on average against an average of 3043 Tsh for women). This might be due to the higher sales level and growth observed for men in the regression results, which would give them access to cheaper funding and more flexibility in their borrowing. Indeed, loans in formal banks don't require sharing borrowing responsibilities with other lenders in the shape of group loans, and thus also exempt the borrower from obligations such as weekly loan meetings.

Loan source	Female entrepreneurs	Male entrepreneurs	Mean difference	Significance
PRIDE	192 698 (414 745)	217 374 (298 456)	-24 676 (31 404)	
Other MFI	9725 (67 534)	8407 (125 263)	1317 (7595)	
At informal Upato	6609 (36 822)	2455 (16 511)	4154 (2599)	
At informal C&SI	16 615 (129 407)	6430 (53 696)	10 185 (9072)	
Formal banks	3043 (58 977)	23 086 (9615)	-20 043 (8015)	***
Relatives/business partners	17 915 (150 293)	19 968 (112 988)	-2053 (11490)	
Mobile saving	0 (0)	0 (0)	0 (0)	
Others	9491 (181 867)	1513 (20 186)	7978 (12 250)	
Others specified	2123 (43 610)	0 (0)	2123 (2928)	
Total	258 219	279 233	-21 014	
N	422	222		

Standard deviations are in brackets. The significance of differences in means are marked by asterisks. *** indicates significance at the 0,01 level, ** at the 0,05 level and * at the 0,1 level.

Table 11: Differences in borrowing between female and male entrepreneurs

Gender differences in spending of PRIDE loans

Further, there is also a significant difference in the spending of PRIDE loans according to gender: men spent 5 722 Tsh more of their last PRIDE loan on repaying loans on average, and 15 218 Tsh more on other expenditures. This finding could be tied to the higher sales of men enabling more debt down payment, but household redistribution decisions might also help explain: women might have less of a say in the spending of their own money and thus less means to pay down loans. It should be noted that women spent significantly more on paying school fees than men.

Finally, we cannot note any significant differences in terms of saving patterns between the men and women of the sample.

Spending of PRIDE loan	Mean differences	Significance
Stocks	-22 616 (31 723)	
Business investments (BI) - smaller	-17 481 (11 440)	
BI - new premises	-9799 (13 616)	
BI - renovation	-2710 (6322)	
BI - livestock	441 (1790)	
Taxes and public fees	0 (0)	
Buying land/plot for housing	-3637 (10 090)	
Paying school fees	40 630 (11 581)	***
Other household investments	-346 (13 827)	
Other household consumption	-17 (4748)	
Savings	17 830 (10 688)	
Paying loan back	-5722 (2241)	**
Other	15 218 (9032)	**
Total loan size of last PRIDE loan	-11 717	

Standard errors are in brackets. The significance of differences in means are marked by asterisks. *** indicates significance at the 0,01 level, ** at the 0,05 level and * at the 0,1 level.

Table 12: Gender differences in major spending posts of PRIDE loans

In sum, we can conclude that men have a relatively better financial position than women as they have larger and better loans (formal bank loans assumed better than MFI ones) and spend more of their loans on paying down debt as opposed to for example paying school fees. The latter should be seen in light of household redistribution models in more traditional societies by which women's income are often spent on socially beneficial goods such as education (Duflo 2011). Whether this is a result of free will or male spouses having the final say in income redistribution decisions remains to be seen.

Main findings from the data analysis

The data analysis of our sample of PRIDE entrepreneurs from Tanzania confirms some of the findings in Berge, Bjorvatn and Tungodden (2010) which pertain to the entrepreneurs that underwent business teaching and/or received business grants. We find strong correlations between gender and sales, both in terms of level and in terms of growth rate. However, we do not find any significant relationship between education or business skill levels on the one hand, and sales levels and growth rates on the other hand, unlike the results presented in Berge, Bjorvatn and Tungodden (2010).

We do find strong correlations between the ownership of a business licence and sales (levels and growth rates), which underline the importance of formality for microenterprises. The sales growth regression also reveals a convergence tendency among the microenterprises in our dataset: the firms with higher sales levels in 2008 grew the least and entrepreneurs with more firms experienced lower growth, *ceteris paribus*.

In fact, the average sales development of the microenterprises was negative in the three year period. This development cannot be justified when we look at the overall macroeconomic evolution in the formal economy of Tanzania over the last years, as despite a drop in GDP growth between 2008 and 2009 the overall tendency for the region is one of high growth. Thus, there seems to be evidence of a divide between the formal and informal Tanzanian economy.

Given the strong correlation between the ownership of a business licence and sales, further analysis of motivations for acquiring licences and benefits ensuing from its ownership were conducted. The results revealed that reduced interference from local government and an improved access to capital were considered the most important benefits, and that the discouraging attitude of government officials and the costliness of the licences was what prevented entrepreneurs from acquiring these. This information helps explain why only a fifth of entrepreneurs possess such a licence.

As the possession of a business licence marks the difference between informality and formality, it is useful in attempting to distinguish between transformational and subsistence entrepreneurs in the sample. Our results indicate that licenced entrepreneurs have significantly higher education levels, larger loans, higher sales and are more often male. These results are

in line with research by Tokman (2007), Schoar (2009), Poschke (2010) and our adaptation of Melitz's results (2003).

Moreover, as a major advantage of formality seems to be better access to capital we looked at motivations for borrowing capital. The entrepreneurs report being capital constrained and it seems that PRIDE loans constitute a particularly important source of funding. This capital constraint is confirmed by figures on how such loans are spent, as 39 % of PRIDE loans are spent on stocks and 17 % on business investments.

In light of this large capital constraint, we analysed the opinion of the entrepreneurs on the borrowing terms of PRIDE as this could provide insights on how to reduce the capital constraint. The results reveal that most entrepreneurs are satisfied with PRIDE but that there is disunity as to the satisfaction with loan cycles and sizes.

Since it is possible opinions could vary with the level of entrepreneurialism of the PRIDE clients, we analysed whether there were any significant differences in opinions with regard to sales level, gender and sector. The results indicate that higher sale entrepreneurs lend more from formal banks and less from PRIDE, and that they save more. This indicates that they are less credit constrained and thus do not rely as much on PRIDE for loans.
Further, male entrepreneurs were shown to have significantly larger loans and to spend significantly more on repaying debt than women. It was revealed that the latter spent more on school fees than men however, in line with findings by Duflo (2011) and research on household income allocation decisions.

6. Conclusion and recommendations for future research

Microfinance as a development tool capable of reducing poverty has much to show for it and has certainly enabled countless entrepreneurs to grow their way out of poverty.

This study has provided empirical evidence on the growth determinants of microenterprises which are funded by microfinance loans. We have found that there are strong and positively significant correlations between sales growth and microfinance loans, lending support to the findings in studies such as those conducted by Cull, McKenzie and Woodruff (2008) and de Mel, McKenzie and Woodruff (2008a).

Nonetheless, the overall sales development for our sample over the studied period was negative on average. In our analysis we found many mediating effects which might explain why the average PRIDE entrepreneur experienced a negative sales development between 2008 and 2011, and particularly what kind of entrepreneurs grew. Despite the established importance of business knowledge we confirmed the discouraging gender divide observed in Berge, Bjorvatn and Tungodden (2010), noted the importance of formality in a sector marked by informal firms and observed that the entrepreneurs with the highest amount of firms and sales in 2008 grew less than the average firm, *ceteris paribus*. Indeed, there was a clear convergence tendency for the firms in the sample, as the entrepreneurs with the highest sales and amount of firms experienced the lowest growth. This development couldn't be attributed to the overall income evolution on a national level. This convergence is in line with a theoretical adaptation of the Solow growth model to microenterprises, which underlines the importance of high levels of technology (broadly defined in our case) for income levels, and the impact of capital in accelerating the income growth of skilled entrepreneurs. Moreover, unfortunately the data did not enable us to determine the underlying reasons for the observed gender divide.

The convergence observed in the sample is perhaps a discouraging finding with regard to the microfinance rationale: the potential of microfinance is supposed to be evidenced by the existence of larger firms which hire more employees and expand into new subsidiaries.

Much of the microfinance policy discourse and its accompanying credibility as a poverty reduction tool rely on providing evidence of income increases as a result of greater access to

finance. With reference to the observed importance of business licences, we could state that perhaps there is a need for an increased focus on formality in the field of microfinance. The practitioners within this field must ask themselves whether this tool can best serve the poor as a stepping stone to formality with the formal credit and formal employment relationships that implies, or if microfinance can adapt to formality by proposing increasingly diversified credit products.

On a final note, we could remark that as developing nations aspire to income levels of Western nations it is interesting to note that the informal sectors are small in these nations today. This is not to say they haven't been large in the past, on the contrary Western nations were built on businesses operating informally. However, these businesses sooner or later graduated to formality and created the dynamic employment markets, high capital return rates and the efficient governments these economies benefit from today.

Recommendations for future research

Future research should focus on providing further insights on the reasons underlying the chronically weaker business performance of female entrepreneurs and the noticeably superior performance of licenced entrepreneurs. There should be a specific focus on providing empirical evidence on whether the reason for the large gender gap is mostly due to nurture or nature. This is crucial given the widely different policy suggestions it would imply and would indicate the extent to which the gender difference can be remedied through new measures.

Moreover, the strong correlations observed between formality and sales indicate that this aspect of microenterprises should be investigated further. It would be of particular interest to establish whether licenced entrepreneurs experience sustained growth over the long run, and if so, whether they continue to use MFIs as sources of funding. In other words, it is relevant to analyse if microfinance can play an important role for small scale formal businesses in developing nations. Additionally, efforts should be made to uncover whether there are efforts being made to facilitate the acquisition of licences for entrepreneurs.

Lastly, given the marked positive impact of business loans on sales growth, more research should focus on policy recommendations which aim at improving the borrowing practices of MFIs and particularly on measures these can take to be able to lend more all the while ensuring continuously high payback rates.

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