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Small Enterprise Growth and the Rural Investment Climate:

Evidence from Tanzania

Tidiane Kinda
Josef L. Loening

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Abstract

This paper analyzes characteristics of nonfarm enterprises, their employment growth patterns, and constraints in doing business in rural Tanzania. Using unique survey data, the authors describe a low-return sector struggling to compete in a difficult business environment. However, about one-third of rural enterprises are growing fast. Most enterprises engage in agricultural trade. Due to a rapidly growing agricultural sector in recent years, limiting demand-side constraints, rural enterprise constraints in Tanzania mainly operate from the supply side. This suggests that, in particular, access to finance, road infrastructure, and rural cell phone communication is correlated with employment growth. A major finding is that subjective and objective measurements of business constraints are broadly comparable. The authors discuss a number of factors that would help to unleash the full potential of private sector-led growth in rural areas. The findings show that marginal improvements in the rural investment climate matter for growth.

This paper—a product of the Agriculture and Rural Development Unit, Africa Region—is part of a larger effort to understand factors determining the investment climate and private sector initiative in rural areas. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at tidiane.kinda@ecogestion.u-clermont1.fr and jloening@worldbank.org.

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Produced by the Research Support Team

Small Enterprise Growth and the Rural Investment Climate: Evidence from Tanzania

Tidiane Kinda
CERDI-CNRS, Université d'Auvergne
tidiane.kinda@ecogestion.u-clermont1.fr

Josef L. Loening*
World Bank, Washington D.C.
jloening@worldbank.org

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1. Introduction

As indicated by the World Development Report 2008, "*Three of every four poor people in developing countries live in rural areas - 2.1 billion living on less than $2 a day and 880 million on less than $1 a day - and most depend on agriculture for their livelihoods.*" Changes in measures of poverty are largely determined by the performance of the rural economy. Given the rapid growth of the rural population (especially in Sub-Saharan Africa), and the growing natural resources constraints, it is primordial for developing countries to raise rural job opportunities outside the farm. Agricultural growth cannot meet solely the rural employment challenge. Private entrepreneurs are of particular importance because they create beneficial links between the nonfarm economy and agriculture contributing to alleviate rural poverty. The rural nonfarm economy can thus be a key source of new rural jobs. However, the contribution of the rural labor market and the particular importance of the rural investment climate as a pathway out of poverty is poorly understood and often neglected by policy makers (World Bank, 2008).

The investment climate refers to the opportunities and incentives for firms to invest productively, create jobs, and expand. Among others, it includes factors that are incentives or disincentives for starting and running a business, including financial services, infrastructure, governance, regulations, taxes, labor, and conflict resolution. The investment climate is recognized as important to improve output, employment, and enterprise productivity (World Bank, 2004; Dollar et al., 2005), all of which hold the potential to stimulate employment growth and reduce poverty. Micro-entrepreneurs in rural areas create jobs needed to increase income. They provide goods and services and often pay taxes needed to fund public investments, but the size of their contribution largely depends on the environment in which private business can operate. Both risks and barriers can undermine rural entrepreneurship, hence, it is important to understand the conditions necessary

to develop rural nonfarm enterprises.[1] The majority of studies on the investment climate, however, have not considered the heterogeneity of the investment climate across rural areas and industries. The standard approach is heavily biased toward registered (and bigger) enterprises in the manufacturing sector, which are typically located in urban areas. This paper aims to make an exception by looking explicitly at small and informal rural enterprises.

In Tanzania, where about 75% of the population resides in rural areas, it is particulalry important to understand how the economic environment affects enterprise growth. Some 28% of rural households reported that at least one member was working in a nonfarm business in 2005. The share of rural nonfarm self-employment income has increased, from about 6% in 1992 to more than 20% in 2005 (World Bank, 2007a). This is an important finding which requires further analysis.

Studies on the determinants of nonfarm enterprise growth and its correlation with the rural investment climate are very scarce, in particular for Sub-Saharan Africa. McPherson (1996) shows for five Southern African countries that firm age and size have a negative impact on firm employment growth. The analysis highlights also the importance of the proprietor human capital and gender for firm growth but does not assess the role of investment climate constraints. Liedholm and Mead (1999) show for small and very small enterprises in Africa (and Latin America) that location, vocational training and prior business experience matter for firm growth, beside firm age and growth. Also Sleuwagen and Goedhuys (2002) explained for Côte d'Ivoire firm growth by size and age. They do not provide direct evidence of enterprise constraints, but use descriptive firm perception data only to show that medium sized firms are negatively affected by infrastructure and financial constraints. Findings from Loening, Rijkers and Söderbom (2008) suggest that in Ethiopia enterprises show little growth and are mainly constrained from the demand-side. However, the sector

[1] Our definition of nonfarm enterprises includes all rural businesses engaged in non-primary productive activities. This includes the transformation, transport, and marketing of primary products, but excludes agriculture, forestry, hunting, and fishing. Households primarily engaged in the production of goods and services for home consumption are excluded.

generates a sgnificant share of rural income, plays an important role during the low season for agriculture when alternative job opportunities are limited, and is particularly important for women.

Ouside of Africa, Deininger, Jin and Sur (2007) find for Sri Lanka that infrastructure contraints negatively affect firm productivity and investment, particularly for small firms. They also show that new startups are negatively affected by infrastructure constraints. However, the authors do not analyze growth per se but focus on a number of firm performance indicators.[2] Fajnzylber, Maloney and Montes (2006) analyze the role of age, education, and many other covariates on firm growth for Mexico and find similar effects as for the US. The authors thus conclude that microentreprises in Mexico are comparable to those of developed countries since they offer job opportunities to low-productivity workers. Fisman and Svensson (2007) show that institutionnal problems measure by bribe payments of Ugandan firms is negatively correlated to firm growth. Johnson McMillan and Woodruff (2002) find the same results for Eastern European transition economies, using property rights protection as the institutional quality indicator.

This analysis uses a unique Rural Investment Climate Survey (RICS) collected by the National Bureau of Statistics (NBS) during January and March 2005.[3] Data was collected using face-to-face interviews with members of selected rural households, community leaders and owners or managers of nonfarm enterprises. Three separate, but interrelated survey questionnaires for households, enterprises and communities were used to collect data. The survey covers a total of 150 communities, 1,239 enterprises and 1,610 households in selected rural areas and small market towns. Agricultural households that operate a non farm enterprise make about 40% of the sample, households that do not operate an enterprise make up another 40%, and enterprises that are not household-based

[2] Dollar, Hallward-Driemeier and Mengistae (2005) also analyze the impact of investment climate on urban firm performance based on panel data.

[3] For an overview describing the methodology of the Rural Investment Climate Survey and some comparative findings for Sri Lanka, Nicaragua and Tanzania see World Bank (2007b).

another 20%. The survey was focusing on nonfarm enterprises, but did not cover commercial farms. A stratified multi-stage cluster sampling was used for each survey module. To ensure representation of all geographical and climatic zones, mainland Tanzania was initially stratified into seven zones based on agro-ecological characteristics. One region from each geographical zone was selected into the sample. Thus, Morogoro, Kilimanjaro, Tabora, Kagera, Kigoma, Mtwara and Mbeya were selected respectively from the East, Northern Highland, Central, Lake Victoria, West, Southern and Southern Highland zones.[4] By focusing on rural enterprises beyond major urban centers, the survey overcomes some of the biases inherent to traditional analysis. Moreover, inclusion of community data facilitates the understanding of objective factors shaping the investment climate, rather than relying on perceptions only.

The paper provides several methodological and emprical insights. At a methodological level, thanks to subtantive innovations in data collection, we can build on pioneering work that has highlighted the importance of informal private sector development in rural and urban areas in Africa (Liedholm and Mead 1999; Liedholm, 2002). In this paper we focus at the determinants of *rural* enterprise growth and the *rural* investment climate. Furthermore, at the emprical level, we are able to identify and rank major constraints to private sector growth. Our main findings suggest that private sector constraints in rural Tanzania mainly operate from the supply-side. In particular, better access to finance, infrastructure and cell phone communication is significanlty correlated with higher enterprise employment growth. Demand-side contraints are relatively less important due to the good performance of the agricultural sector during 2000-2005. We show that enterprises operate mainly in agricultural retail and wholesale trade. Small and young enterprises grow faster, a powerful finding

[4] A comparison of mean for standard indicators was made between the 2005 Rural Investment Climate Survey (RICS) and the 2001 Household Budget Survey (HBS) to evaluate sample population validity (World Bank, 2007a). The main findings suggest that the 2005 RICS can be considered as semi-representative at the national level, though sample weights were not used for the present analysis. Throughout the paper we therefore selectively complement our analysis of the 2005 RICS with the 2001 HBS.

for those concerned with job creation in rural Tanzania – and consitent with the small enterprise literature in developing countries.

The remainder of the paper is structured as follows: in section 2 we provide a profile of the rural economy. In section 3, based on the 2005 RICS, we present basic characteristics of rural nonfarm enterprises in Tanzania. In section 4 we assess their dynamics in terms of entry, exit and employment growth. In Section 5 we look at correlations of the rural investment climate on enterprise employment growth. Section 6 concludes.

2. Tanzania's rural economy

Tanzania is among the world's poorest countries, with a per capita income of about US$ 350 when measured at the official exchange rate. During most of its post-independence history, Tanzania pursued socialist policies that led to extended periods when economic performance was below the country's potential. In the mid-1980s, Tanzania embarked on economic reforms that were not sustained, and after an initial period of economic growth in the late 1980s, the early 1990s were again characterized by macroeconomic disequilibria and poor economic growth.

In the mid-1990s, Tanzania resumed its reform course with a commitment to macroeconomic stability. Macroeconomic stabilization was accompanied by wide-ranging reforms, including privatization of state owned enterprises, liberalization of the agriculture sector, efforts to improve the business environment, and strengthening the management of public expenditures. Economic performance in Tanzania has improved consistently over the past decade. Inflation fell from 27% in 1995 to 6% in 2006. The exchange rate is more stable, with positive effects on agricultural trade, in particular export crops. Annual average GDP growth increased from about 3.5% in the mid-1990s to about 5.9% in 2006. A key feature of the Tanzanian economy is the continued large share of informal sector activities: estimates suggest that informal activities may count for up for 60% of Tanzania's GDP (for a summary see World Bank, 2007a).

Agriculture plays a dominant role in Tanzania's economy, accounting for 46% of GDP and employing around three-quarters of the labor force in 2006. Given the magnitude of agriculture, improvements in overall economic growth rely heavily on the performance of the sector. Agriculture provides three-quarters of merchandise exports. In total, about 5 million hectares are cultivated annually, of which 85% grow food crops. For the past 10 years, the sector has grown more rapidly than in most other African countries. Agricultural growth has been increasing steadily and at a rate higher than population growth since 1999.

Erratic weather conditions and droughts imply significant income risk to Tanzanian households engaging in agriculture. Households can reduce risk by diversifying their sources of income: Entry into nonfarm enterprises implies an important source of income diversification, especially in rural areas where a large share of households will continue to farm while operating a nonfarm enterprise. Self-employment in the rural nonfarm sector does not reduce household engagement in agriculture; farm and nonfarm enterprises are complementary. When comparing household income with and without enterprises, the average earning level from agriculture in both groups is almost equal, with no statistically significant difference. In addition, a comparison of the average area farmed, about 2.3 hectares per household, reveals that both groups farm approximately the same area. Tanzanian household-based enterprises engaging in agriculture therefore try to diversify risks across agricultural and entrepreneurial activities (also see Angermann, 2001).

In Tanzania, about 68% of the 40 million population lives in rural areas, and nonfarm activities are an improtant source of income for approximately 1.2 million rural household in 2001. Nonfarm enterprises are an essential source of livelihood for a significant proportion of Tanzania's rural population. A number of empirical studies show that rural nonfarm enterprises positively affect household welfare in Tanzania (Reardon et al. 2001, Barrett et al. 2001, Lanjouw et al. 2001, Ellis and Ntengua 2003). A decomposition of changes in rural consumption suggests that shifts from

agriculture to non-agricultural activities have been an important contributor to poverty reduction (for a summary see for example World Bank, 2007a). Households that run a nonfarm enterprise in rural Tanzania have an income that is about one-third higher than that of those without (Sunderam-Stukel, Deininger and Jin, 2007).

3. A profile of rural nonfarm enterprises

Rural nonfarm enterprises are thus of crucial importance for Tanzanian rural population. With very low capitalization, Tanzanian rural nonfarm enterprises differ from their urban counterparts. The main activity is rural trade and the average productivity is low but registered enterprises exhibit higher labor productivity. The rural nonfarm enterprises sector in Tanzania is quite heterogeneous. Nevertheless, some characterization is possible.

Location and activity

According to the 2001 HBS, Tanzania's rural nonfarm sector includes about 1.2 million rural enterprises. Regionally, there are large differences. The highest enterprise density (the number of nonfarm enterprises per 1,000 households) is around the Lake region and in Central Tanzania (Figure 1). This pattern tends to mirror the concentration of roads or railways and associated economic activities. However, the concentration is not related to one single factor. For example, high densities can be found in regions with high agricultural productivity, but also in regions that tend to perform poorly. About one-half of the enterprises are located in rural areas, while the other half is located in small rural market towns.[5]

While the overall landscape of nonfarm enterprises in Tanzania is diverse, the predominant entrepreneurial activity of rural nonfarm enterprises across all regions is trading. About 57% of rural

[5] As defined by NBS geographical classification. Rural towns have higher population densities than rural areas and usually have their own markets or social service providers, such as schools and health centers.

businesses are engaged in wholesale or retail trading. Rural services also play an important role with a participation of 21%. The production sector accounts for 19% of all enterprise activity. Of the trading enterprises, 42% of rural enterprises buy and sell unprocessed agricultural commodities, while about 31% trade processed agricultural products. Despite the dominance of agriculture in rural Tanzania, only 2% of the trading enterprises are engaged in agricultural input trading. This low percentage explains the fact that agricultural inputs are often provided with pre-purchase agreements. With limited access to finance, rural enterprises can specialized themselves in agricultural inputs only if they receive government funds which is not common.

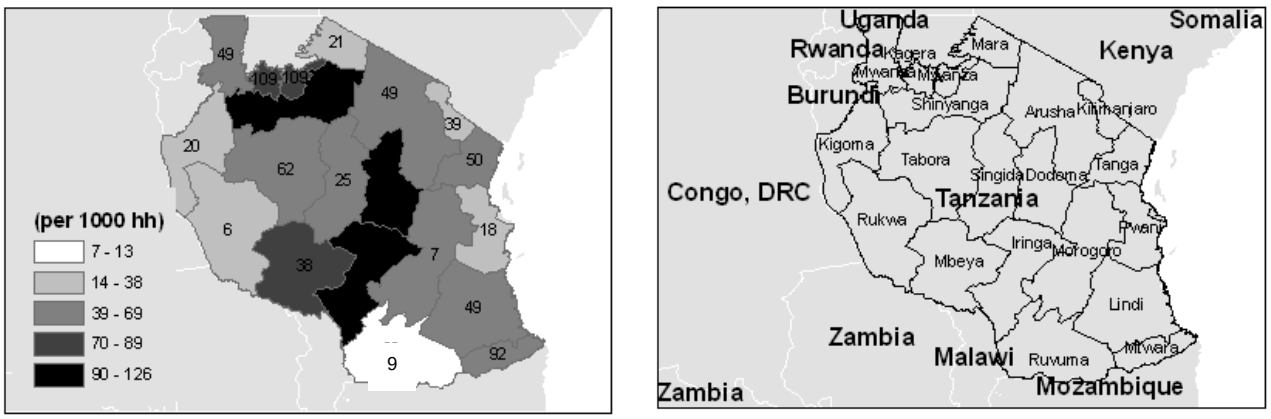
Table 1: Sectoral distribution of enterprises in trading and services (in %)*

Trading	**57**	**Services**	**21**
Unprocessed agricultural product	42	Personal services	53
Processed agricultural products	31	Business services	18
Wood and furniture	8	Hotel	11
Textile and clothing	7	Restaurant	9
Agriculture input	2	Transport services	9
Other	10	Financial services	0.5

*Besides Trading (57%) and Services (21%), other sectors play a minor role: Manufacturing (8%), Agroprocessing (6%), Construction (4%), Mining and Quarrying (1%), Other sectors (3%).

Source: 2005 Tanzania RICS.

Figure 1: Density of Rural Nonfarm Enterprises, 2001



Source: HBS 2001

Size, age and education

Nonfarm enterprises in rural Tanzanian are very small. The majority is operated by one person (the owner) during most parts of the year (figure 2). Self-employment is thus a crucial element in rural Tanzania given the scarcity of available jobs. However, during the peak season, enterprises often employ part-time or casual labor. About 77% of rural enterprises are owned by men in contrast to other Sub-Saharan countries where a larger share are owned and operated by women.[6] Most enterprises are young and new firms emerge rapidly. The median firm age is 5 years; figure 3 shows the distribution of firm age.[7]

Figure 2: Number of Workers per Enterprise, 2005

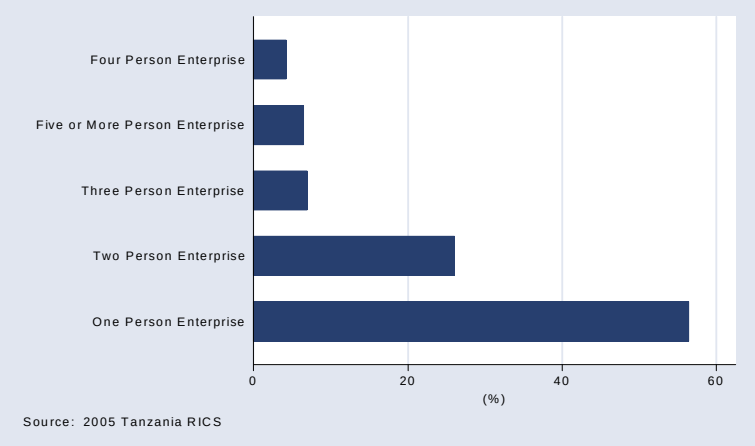
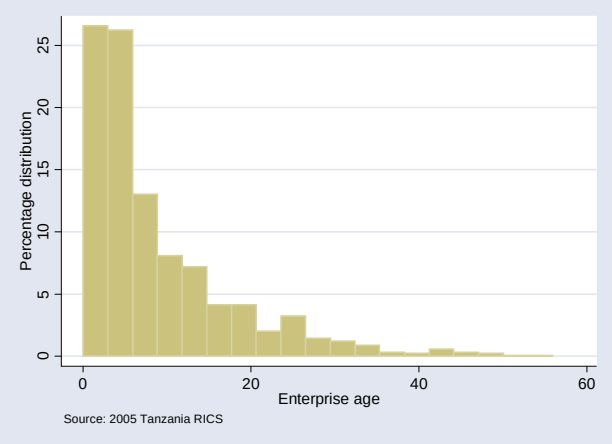


Figure 3: Distribution of Enterprises by Age, 2005



There is little regional variation in enterprise size and age. The only exceptions are Kilimanjaro, where businesses tend to be bigger, and Tabora, where enterprises are more experienced. Formal schooling appears to be an important prerequisite for entrepreneurial activities. Some 75% of rural entrepreneurs have primary education. About 11% have completed primary

[6] The low female participation is surprising given Tanzania's reputation of female entrepreneurship. In small survey in the Morongo and Ruvuma regions, Tovo (1991) finds more than 90% of women have at least one income generating nonfarm activity, and almost two thirds have two. Brewing and beer selling top the list of women's business ventures: this popularity is because it does not require regular labor. This is followed by cooking and selling food, and by selling agricultural or fishing surplus products. We conclude that these activities may be significant, but at the same time economically too small to be fully captured through the 2005 RICS.

[7] The median instead of the arithmetic mean is used throughout this paper when the distribution of a variable is skewed.

schooling. Secondary education is less common in rural areas, but it becomes more important when the enterprise is located in a rural market town. Nonfarm enterprises in rural Tanzania buy and sell locally with little access to outside markets. Their capitalization is low with a median total value for fixed assets of only US$ 120 per enterprise. The median net earnings per enterprise are only US$ 113; the median value added is equally low at US$ 83 per worker.

Informality and labor productivity

One of the most interesting finding is the difference between the relative productivity of enterprises based on registration, size, sector, and region. Survey data show that about 20% of the sampled enterprises claim to be unprofitable because total annual costs exceed sales revenues.[8] Standard measures such as total value added per worker are therefore unreliable. Total annual sales per average working day are used as an approximate indicator for labor productivity, a measure that also considers seasonal employment patterns and can serve as an approximate welfare indicator.

Tanzania's rural economy is dominated by informal sector activities.[9] About 27% of rural enterprises in towns are registered compared to 14% in rural areas. There is little variation by enterprise size, economic sector, or region. Asked about reasons for not registering a business, 54% of rural enterprises claim that there is no need to register. However, about 30% of businesses perceive registration and license fees as too high. Informal enterprises have lower sales than their formal counterparts but informal enterprises in the manufacturing and mining sectors, however, report higher sales levels than their formal counterparts. Median sales per labor day for formal enterprises in rural towns are more than double than for their counterparts located in rural areas

[8] An economic interpretation of this number is difficult given the fact that most entrepreneurs simply estimate their operating costs, which is more difficult than estimating sales revenues.

[9] Formality of rural nonfarm enterprises is defined as not being registered with any government agency *and* not complying with any legal obligation concerning taxes, safety, or labor laws. This definition somewhat oversimplifies the Tanzanian reality. Many small enterprises operate under various degrees of semi-formal legal status. For example, they do not register but pay taxes to local authorities.

(figure 4). The difference in means between formal and informal businesses is more pronounced for businesses located in rural towns - in rural areas, productivity gains would be marginal if transitioning to formal. It therefore appears rational for many enterprises in rural areas to stay informal to avoid associated cost increases and benefit from their relatively low barriers to entry. In rural market towns, however, becoming formal appears an attractive option. Excepted in (gold) mining sector, productivity differences by sector are not pronounced (figure 5).

Figure 4: Median Sales per Day of Labor by Location and Registration, 2005

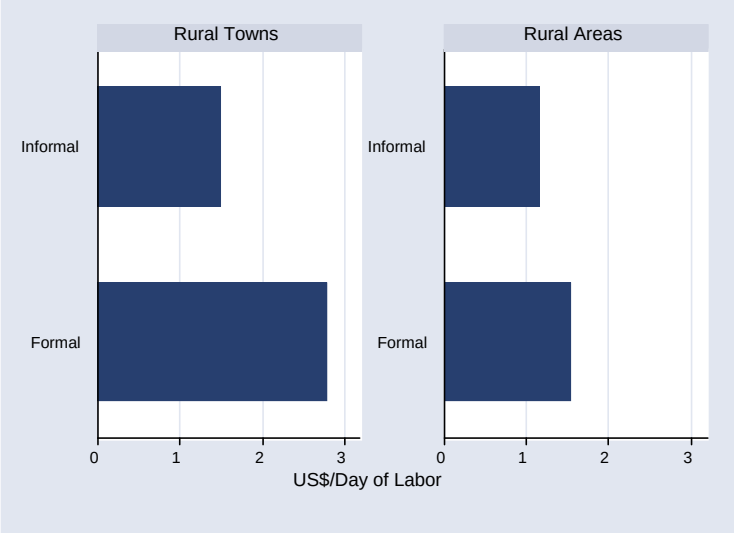
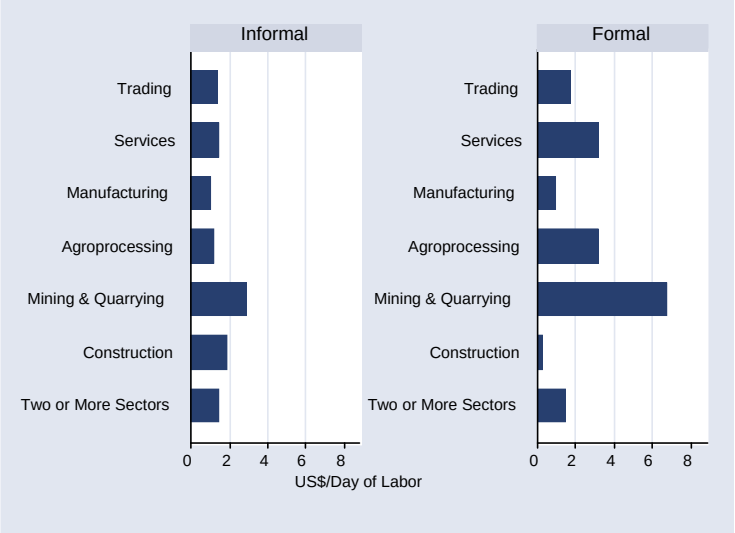


Figure 5: Median Sales per Day of Labor by Sector and Registration, 2005



Source: 2005 Tanzania RICS

One-person enterprises are relatively more productive than their larger counterparts. On average, these enterprises generate about US$ 1.5 on sales revenue per working day.[10] Overall, rural labor productivity tends to decline with enterprise size. The exceptions are enterprises that employ more than four workers. Seasonality is a hallmark of the Tanzanian rural nonfarm sector, a variation largely due to labor supply, demand for rural products, and availability of raw materials. More than 75% of Tanzanian enterprises are heavily affected by seasonality. Sales in all sectors usually peak

[10] This finding runs against mainstream evidence. A possible explanation is use of family labor, suggesting that larger rural firms use a higher amount of relatively less productive household family labor.

before planting and after harvesting seasons. The seasonality of nonfarm activities shows the close linkages to agriculture: households can substitute part of their income during the low season, when alternative job opportunities outside agriculture are limited. [11]

4. Small enterprise dynamics

Entry into the nonfarm sector

The nonfarm enterprise sector in rural Tanzania appears to be less dynamic than in comparable countries. The annual rate of new start-ups was about 11% in 2005,[12] a rate higher than the 6 to 7% rate often reported for industrialized countries, but substantially lower than the approximate 20% reported for urban and rural enterprises in other Sub-Saharan African countries (Liedholm and Mead, 1999).[13] Tanzanian start-up rates are even lower than in Ethiopia (with an estimated 17%) where rural enterprise activity is low and highly depend on agriculture (Loening et al., 2008). The comparatively low rate could be a result of high investment constraints, or possibly due to weaker entrepreneurship in Tanzania than in other countries. The majority of new enterprises are small firms - more than 60% are created as one-person establishments, mostly in the informal sector (Table 2). Formal enterprises are more likely to start as relatively big enterprise. A sectoral breakdown reveals that in the construction, manufacturing, and agro-processing sectors comparatively more enterprises are created in the category of having five or more workers.

[11] Seasonality can affect enterprise performance in following ways: First, with worker participation in both agriculture and the nonfarm economy, firms experience an ebb and flow of workers that hampers continuity and ability to upgrading skills. Second, seasonal demand fluctuations can also drive entrepreneurs into informality. Third, seasonality often implies an additional need for short-term capital (demand peaks) which cannot be met.

[12] This number is likely to provide a lower bound estimate because the estimate does not include firms that opened and closed during the survey period. The calculations are based on cross-sectional data and follow the methodology advocated by Liedholm and Mead (1999).

[13] Surveys were undertaken for Botswana, Kenya, Malawi Swaziland, Zimbabwe, Lesotho, Niger, Nigeria, and South Africa, covering more than 50,000 rural enterprises (Liedholm and Mead, 1999).

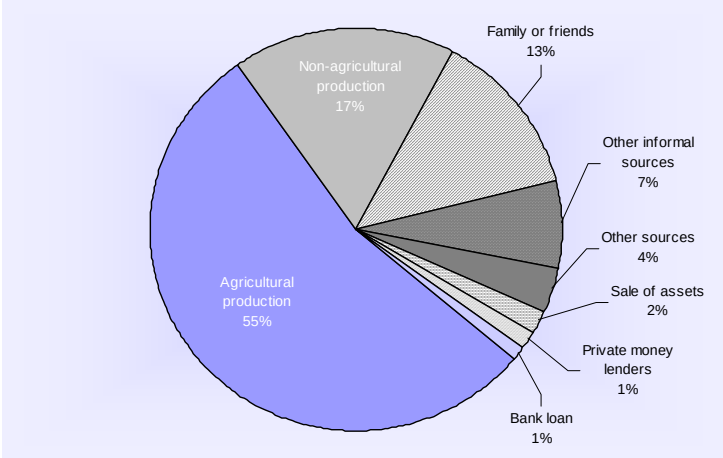
Table 2: Decomposition of Start-up by Enterprise Size, 2005

Category	Percentage distribution by enterprise size				
	Number of workers				
	1	2	3	4	5+
Overall	63	22	6	4	5
Formal	54	25	5	6	10
Informal	66	21	6	3	4
Sectoral breakdown [a/]					
Trading	65	22	6	4	3
Services	63	23	6	3	5
Manufacturing	62	20	2	1	15
Agroprocessing	58	18	8	3	13
Construction	64	16	2	2	16
Mining and quarrying	80	20	0	0	0
Two or more sectors	47	29	12	6	6

Source: 2005 Tanzania RICS. a/ The breakdown is approximate due the small number of observations in the production sector, and the small number of observations for larger enterprises

Start-ups of new rural nonfarm enterprises can indicate "good" or "bad" news. When agriculture is prospering and overall demand for nonfarm products or services is high, starting a business can mean prosperity. But when agriculture is languishing or population growth is high, start-up jobs may simply reflect the news that firms are acting as a sponge, soaking-up excess workers in marginal activities (Liedholm, 2002; Barrett et al., 2001). In Tanzania enterprise start-up is closely related to agriculture (figure 6), with about 55% of start-up capital from agricultural production. Seventeen percent is from non-agricultural income sources and more than 13% from local friends or relatives.

Figure 6: Sources of Start-up Capital, 2005

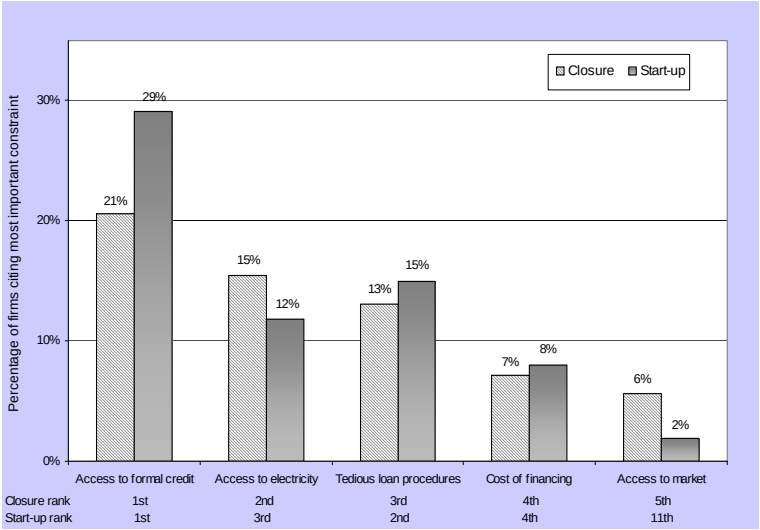


Source: 2005 Tanzania RICS

Business Closures

Tanzanian entrepreneurs perceive lack of access to formal credit as their main reason for closure. A surprising finding is that only a minority of rural entrepreneurs attribute "traditional" business failure, such as the lack of market demand, as an important reason for closures. Lack of market demand is often cited amongst the most important causes of business failure in Sub-Saharan Africa (Liedholm and Mead, 1999). Another surprising finding is that electricity access ranks second even though a large majority of rural entrepreneurs are traders without immediate need for electricity. One reason might be a difficulty in separating household and enterprise needs. It is also remarkable that the reasons for closure and preventing start-up are almost identical (figure 7), which could suggest that those who have closed their enterprises were able to immediately set-up a new business, and were as such not able to separate the constraints.

Figure 7: Perceived Reasons for Closure of Business – and Reasons Preventing Start-up, 2005



Source: 2005 Tanzania RICS

Enterprise growth

Growth of rural nonfarm enterprises can be measured in several ways, including sales growth, profits, and number of working days. If measurement error were not a problem, defining growth in terms of sales or profits might be preferable to a labor-based measure. However, the Tanzania RICS

data rely on a retrospective technique. Since most proprietors do not keep records, they can only estimate their sales or profits, even at the present time. Expecting that guesses from five years ago would be accurate might be folly. As a result, the key measurement of growth used in the Tanzanian RICA is number of working days which are easier to remember and a more robust measure of enterprise growth in rural areas from an accuracy standpoint (McPherson, 1996).

Employment growth generated by rural nonfarm enterprises has been moderate. Since most enterprises are very small, our preferred measurement of enterprise growth is the number of labor days worked by all individuals in the enterprise, rather than in terms of the total number of workers. The mean annual growth rate of labor days for the period 2000 to 2005 is about 4.5%. Employment growth is being propelled by a minority of enterprises (Figure 8). The distribution of average annual employment growth shows that about 60% of rural nonfarm enterprises have been stagnant, about 5% have contracted over the past years, with the remaining 35% growing, some quite substantially.[14] The differences are more pronounced between the formal and informal sector. Formal enterprises grew faster. A decomposition of the relative contribution of start-up and existing enterprises for 2005 suggests that most rural jobs (94%) were created from the growth of relatively high-performing firms. Employment generation through new start-ups had a relatively limited role (6%).

In general, when median growth rate of sales and employment are compared, annual sales growth is always higher than employment growth (with the exception of formal enterprises in Kigoma). This may reflect a rational behavior of very small enterprises with low long term return and limited capacity of utilization as in most African firms. The data also show that employment growth is regionally defined. Significant employment generation over 2000-2005 only took place in Kigoma, Kagera, and Tabora (Figure 9) but employment generation was almost entirely due to jobs in the

[14] We can only measure growth for enterprise that existed between 2000 and 2005. Employment growth could be slightly over- or underestimated depending on firm survival and new entries.

formal sector. The exception is Tabora, the only region that also showed significant employment growth in the informal sector.

Figure 8: Distribution of Enterprise Employment Growth, 2000-2005 (in percent)

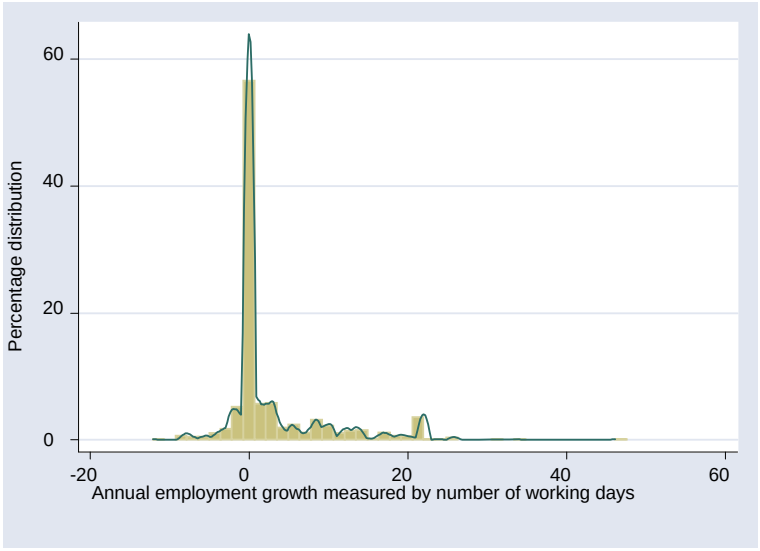
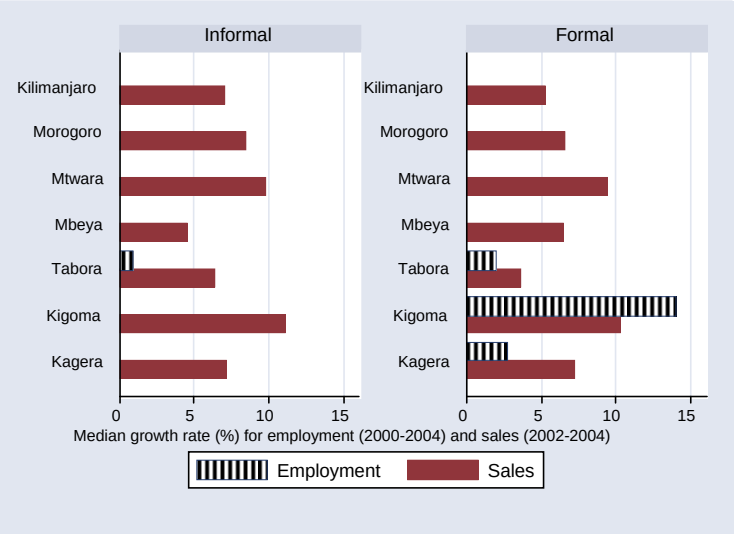


Figure 9: Employment and Sales Growth of Formal and Informal Enterprises by Region, 2000-2005
(Upper bars show median employment growth)



Source: 2005 Tanzania RICS

5. Determinants of rural nonfarm enterprise growth

Conceptual framework

There is no specific growth theory for rural nonfarm enterprises, but by combining theoretical insights with empirical evidence, it is possible to identify potential variables (Jovanovic 1982; McPherson 1996; Evans 1987; Fajnzylber et al. 2006; and Sleuwaegen and Goedhuys, 2002). Besides the factors that determine the rural investment climate, the two key determinants of enterprise growth are age and initial size. "Learning models" of enterprise growth along with empirical evidence from the United States and developing countries often support an inverse relationship between these two variables and enterprise growth. Once firms are established they learn about their efficiency, and competition forces the least efficient ones to exit. Managers learn about

their efficiency and adjust their scale of operations accordingly. Following Evans (1987), the basic empirical model is a general growth function *g* in size and age:

$$(1) \qquad G = \frac{S_{it'}}{S_{it}} = g(S_{it}, A_{it})$$

where $S_{t'}$ and S_t are the size of a firm for the period *t'* and in period *t*, respectively, and A_t is the age of the firm in period *t*. This functional relationship can be moderated through a set of investment climate variables *IC*:

$$(2) \qquad G = g(S_{it}, A_{it})e^{bIC}$$

The equation thus suggests the following regression framework:

$$(3) \qquad \frac{\ln(S_{it'}) - \ln(S_{it})}{d} = const + a_1 \ln(S_{it}) + a_2 \ln(A_{it}) + a_3 \ln(S_{it}) \times \ln(A_{it}) + \sum_{i=1}^{n} b_i IC + \varepsilon_{it}$$

where the dependent variable corresponds to the average annual growth rate, *d* stands for the number of years over which the growth rate is measured, and *a* and *b* are the coefficient vectors.

The partial derivates of growth with respect to size and age allow testing for alternative theories of firm growth. Learning models of firm growth such as Jovanovic (1982) suggest that these should be negative. In line with Evans (1987), higher order expansions of the logarithmic expression for firm size and age, and an interaction term between size and age are included in the regression. The higher order expansions (squared and cubic forms) highlight the variation of the growth-size (age) relationship over the size (age) distribution of firms. The basic framework also incorporates six regional dummies and a dummy for enterprise participation in the formal sector. A basic regression is run without investment climate constraints on average real sales and employment growth as a first step (in a second step, in the following sections, we add to this regression selected investment climate constraints; results are documented in the appendix).

Table 3: Determinants of Enterprise Employment and Sales Growth, 2000-2005

	Dependent growth variable:	
Explanatory variables	Annual growth of labor days 2000-2004	Annual growth of sales 2002-2004
	(1)	(2)
ln age	0.400*	0.057
	(2.22)	(0.62)
ln age squared	-0.156*	-0.047
	(-2.18)	(-1.07)
ln age cubic	0.020*	0.008
	(2.19)	(1.03)
ln size	-0.329**	-0.990**
	(-19.6)	(-3.65)
ln size squared	0.228**	0.179**
	(19.5)	(3.54)
ln size cubic	-0.037**	-0.011**
	(-16.3)	(-3.51)
ln size x ln age	-0.021**	0.005
	(-3.42)	(0.42)
Formally registred	0.009	0.009
	(1.70)	(0.47)
Constant	-0.119	1.871**
	(-0.82)	(3.93)
Regional dummies	YES	YES
Observations	722	828
Adjusted R-squared	0.65	0.18

Robust t statistics in parentheses

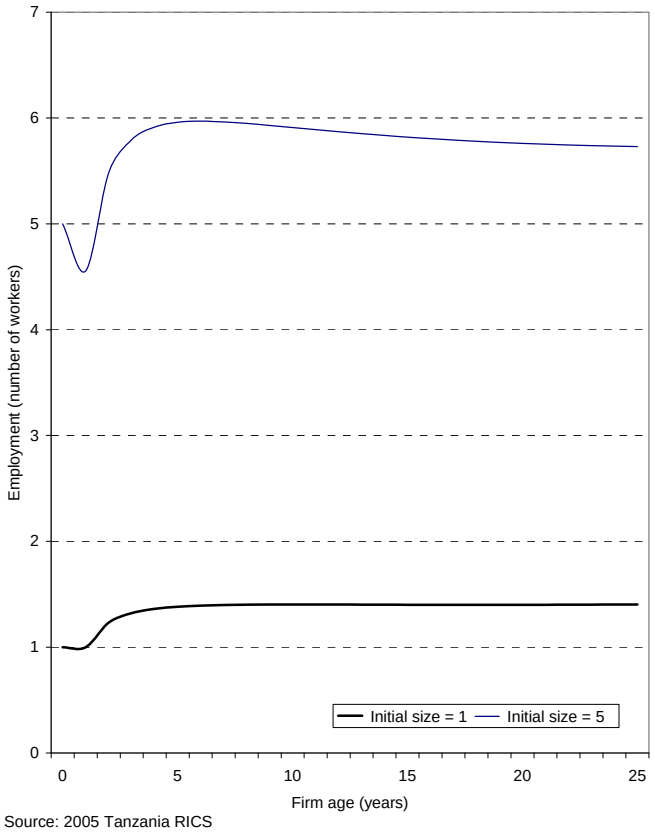
* significant at 5%; ** significant at 1%

Source: 2005 Tanzania RICS

The relationship between size and age on growth is nonlinear. The results are stable in the sense that using average instead of initial size in the regressions to address the problem of transitory fluctuations of enterprises (Mazumdar and Mazaheri, 2003) does not significantly change the sign or significance of the coefficients. In addition, sample censoring does not seem to bias the results significantly. Since most proprietors do not keep records, they can only estimate their sales or profits, even at the present time. It is likely that measurement errors of sales growth make the regression to perform poorly. By contrast, the number of working days performs well as measured by an R^2 of 0.65. Changes in working days are a more robust measure of enterprise growth in rural areas. For rural entrepreneurs that do not keep records, this measurement is easy to remember.

Among those firms that did grow between 2000 and 2005 in rural Tanzania, employment growth is systematically higher among smaller and younger firms. The inverse relationship between size and age on growth suggests an important role for these firms in rural Tanzania. Figure 10 predicts enterprise growth as a function of size and age to facilitate interpretation. The estimate is based on coefficients obtained from the regression analysis (table 3).

Figure 10: Firm Growth, Size and Age in Rural Tanzania



Source: 2005 Tanzania RICS

The analysis shows that after start-up, one-person rural enterprises in Tanzania will grow (40%) during the first four years and then remain stagnant. The average enterprise size is about 1.4 employees, a number that coincides with descriptive survey data for one-person start-ups. By contrast, a bigger enterprise with an initial start-up size of five employees contracts slightly during the first year, but grows relatively fast for five subsequent years (20% growth). Thereafter, employment growth declines and the firm eventually start to contract.

This "stylized" growth process shed light on the distribution patterns of employment growth in Figure 10. Employment generated by rural enterprises is rather low and occurs mostly for a minority of small and young enterprises. It is thus the youngest along with the smallest firms at start-up that are more likely to create jobs - a powerful finding for those concerned with job creation in rural Tanzania. However, after a certain period small enterprises appear to never grow substantially - unless other growth obstacles are considered. The following section analyzes to what extent the rural investment climate aligns with this growth process.

Constraints to enterprise operation and growth: investment climate perceptions

One of the main goals of the rural investment climate survey is to identify the leading factors that constrain enterprise operations and growth. The survey asked entrepreneurs whether they perceived various problems as an obstacle. Although these subjective rankings are not a definitive priority-setting tool, they can be a useful starting point. Additional and more objective data from the community and household survey and quantitative analysis will add weight to the survey results, followed by an extension of the regression analysis.

In rural Tanzania, nonfarm enterprises are most concerned about access and costs of rural finance (figures 11 and 12). About 61% of rural entrepreneurs rate financing as a major or severe constraint to business operations. A comparison between rural areas and small market towns reveals that constraints related to governance and taxation increase with the level of urbanization and market access -the level of perceived business constraints is generally higher in rural areas than in small rural market towns. Not surprisingly, governance constraints score higher in market towns than in rural areas where government presence is limited. However, the level of perceived tax constraints does not differ between rural areas and market towns. Independent by the type of location, the accessibility and cost of rural finance remains the main constraints. This finding echoes a large body of similar analyses for countries in Sub-Saharan Africa (Liedholm, 2002; Bigsten and Söderbom, 2006).

Figure 11: Top Five Constraints of Rural Market Towns and Their Rural Area Ratings, 2005

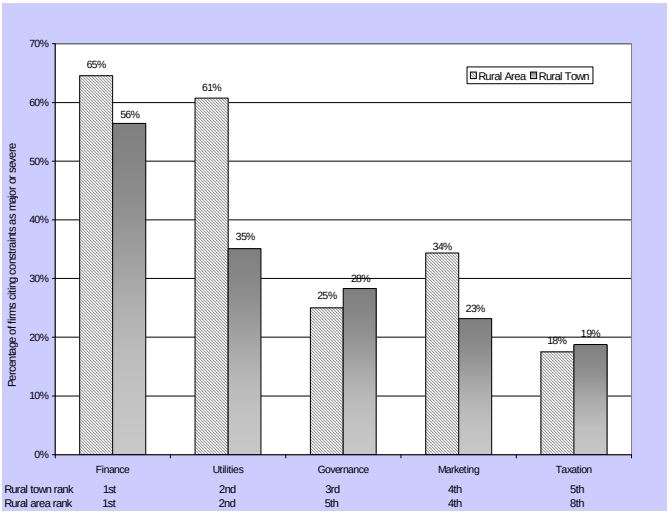
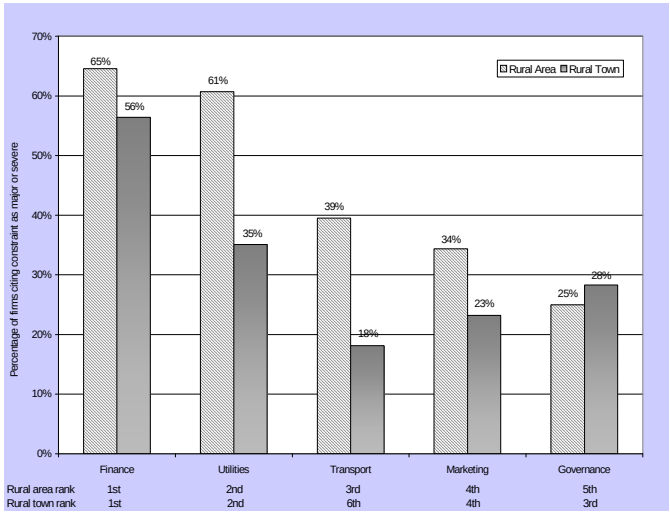


Figure 12: Top Five Constraints of Rural Areas and Their Rural Market Town Ratings, 2005

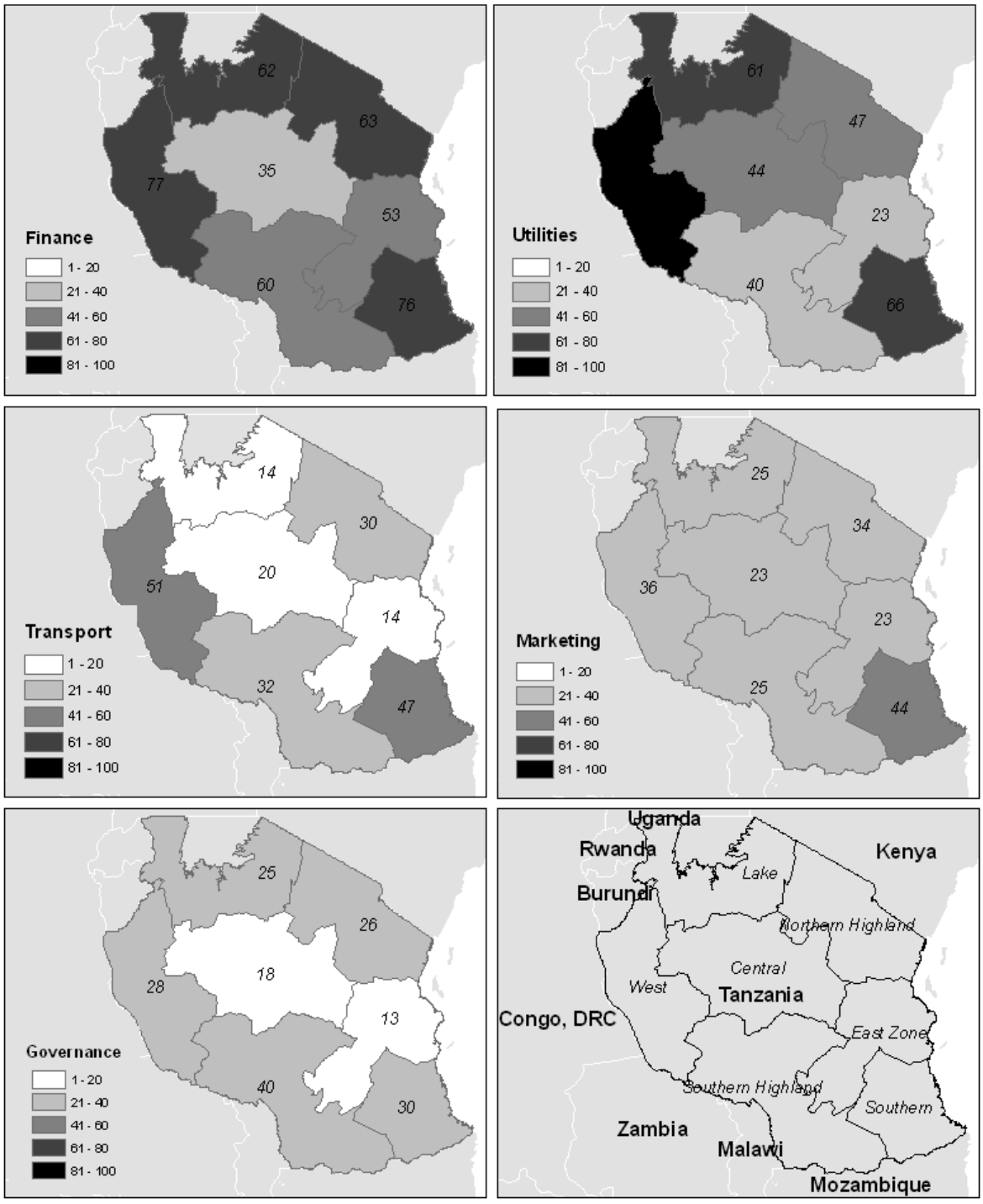


Source: 2005 Tanzania RICS

The claim that limited access to public utilities is the second most important constraint is difficult to interpret because 57% of rural entrepreneurs are traders who may not need electricity or water access for their rural businesses, but instead may reflect their household's desire for better access to services. Factors that constrain enterprise productivity and growth differ by geographic zone. Figure 13 plots the top five business constraints identified by rural entrepreneurs - finance, public utilities, transport, marketing, and governance. Several findings emerge from the visualization.

Finance, utilities, and transport infrastructure clearly emerge as the main factors that impede business operations and growth, but there are large regional differences. Financing constraints are perceived as particularly severe in the Lake region, Northern Highlands and Southern zones. Access to public utilities and transport infrastructure is perceived as a major and severe constraint in the Western zone. Finally, the map clearly indicates that Central Tanzania is the only zone that scores better in three aspects of the rural investment climate (finance, transport infrastructure, and governance). With the exception of rural finance, it is rarely the region with the lowest level of business constraints. However, it is the only zone that scores relatively better in all of these areas.

Figure 13: Major and Severe Business Constraints by Geographical Zone, 2005

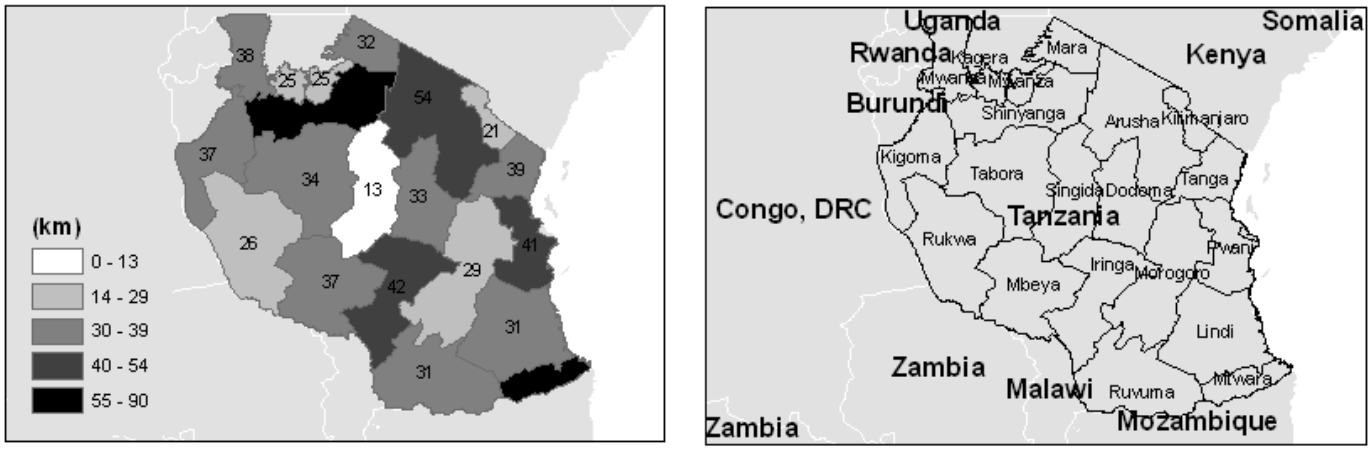


Note: Business constraints for geographical zones are approximate. Morogoro, Kilimanjaro, Tabora, Kagera, Kigoma, Mtwara and Mbeya represent the East, Northern Highland, Central, Lake Victoria, West, Southern and Southern Highland zones, respectively. The maps indicate the percentage of rural entrepreneurs identifying finance, utilities, transport, marketing or governance problems as a major or severe business constraint.
Source: 2005 Tanzania RICS

Objective measurements of investment climate perceptions

In this section we make use of the community module of the enterprise survey. Access to formal financial services for individual enterprises is extremely limited. The average distance to the nearest money-lending institution is 30 kilometers. About 58% of the surveyed communities claim to have access to financial services, predominantly through informal channels. More than one-half of the financial institutions are either cooperatives or other community-based establishments, one-third are government-owned institutions or private banks, and the remaining sources of rural finance are private moneylenders or other sources. In about two-thirds of these communities, however, households can access loans for nonfarm investment purposes. Community-level data therefore support the claim from entrepreneurs that access to rural finance is insufficient. Regionally, access to rural financial institutions is particularly poor in the northern and southern parts of the country, but better in Tabora in central Tanzania (figure 14).[15]

Figure 14: Mean Distance to Rural Financial Institution, 2001



Source: 2000/2001 HBS

Community-level data supports perceived constraints from entrepreneurs that business activities suffer from poor road infrastructure. About 17% of the surveyed communities do not have a main road connection. Of those communities that have road access, about 40% are isolated during

[15] The Central zone encompasses Tabora, Dodoma, Singida regions. It is the driest zone in the country with an annual rainfall of less than 500 mm. The major crops are millet and sorghum.

the rainy season because the roads are seasonal (**Error! Not a valid bookmark self-reference.**4). The available means of transportation are also limited. Only 28% of communities have public transport services. Bicycles or pack animals are the main means of transportation for about 8% of rural households. As a consequence of poor road infrastructure, the time to travel to markets is high.

Table 4: Road Types Within and Outside Communities, 2005

Type of road	Within community (%)	Outside community (%)
Mud	73	52
Concrete	19	30
Asphalt	3	13
Gravel	3	4
Other	2	2

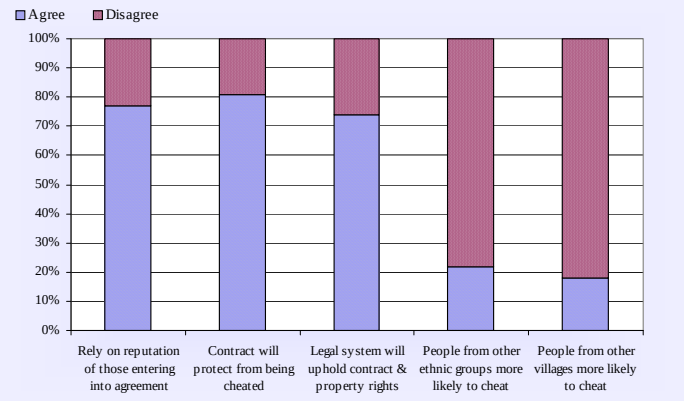
Source: 2005 Tanzania RICS

Only 40% of communities are electrified. Not only do most of the surveyed communities lack access to electricity, but even in electrified communities most households do not have access to power. As few as 30% of households in electrified communities use electricity. In those communities that have access to electricity, responding community leaders report that getting a power connection for new businesses took more than 140 days (three times longer than in urban areas as measured by the urban ICA). The public electricity supply is not very reliable. It was interrupted on average 71 times during 2005. Most entrepreneurs do not have access to basic means of communication also. Only 13% of rural entrepreneurs own a fixed line or cell phone.

The evidence describing local governance is somewhat uneven. About two-thirds of the surveyed communities do not report conflicts with local authorities that negatively affect the business environment, but the other one-third does. A large majority of communities report confidence in

local dispute resolution and contract enforcement mechanisms (Figure 15). When conflict occurs, it is mainly because of disputes over land holdings.

Figure 15: Confidence in Conflict Resolution and Legal Environment by Communities, 2005



Source: 2005 Tanzania RICS

Simulating gains from a better investment climate

Having presented major subjective and objective investment climate constraints, we now include them into the employment growth regression as a second step (equation 3). The results are displayed in the appendix. Objective measurements (community constraints) are preferred to subjective measurements (perceived business constraints). Potential constraints are regressed individually on growth because of multicollinearity, unclear causalities and the complicated interaction process among business constraints (Ayyagari et al., 2006; Bigsten and Söderbom 2006). For example, some constraints may affect firm growth only indirectly through their influence on other obstacles.

Econometric simulation is conducted to facilitate the interpretation of the investment climate coefficients. The simulations are based on the regression model of the determinants of enterprise employment growth. Key determinants are enterprise size and age, and a number of objectively measurable investment climate constraints at the community level. For the simulation we use a Monte Carlo technique that produces standard errors of the parameters (King et al., 2000).

Parameters that are significantly correlated with employment growth include transport infrastructure, access to finance, access to cell phone communication, registration with a government office, a reduction in registration days, and reductions in violent social conflicts. Interestingly, and contrary to the perceptions of entrepreneurs, access to electricity does not turn out to significantly correlate with employment growth. But for those rural entrepreneurs who do use electricity, reliability matters. A decrease in interruptions could stimulate growth. Because most entrepreneurs are traders, these findings appear plausible.

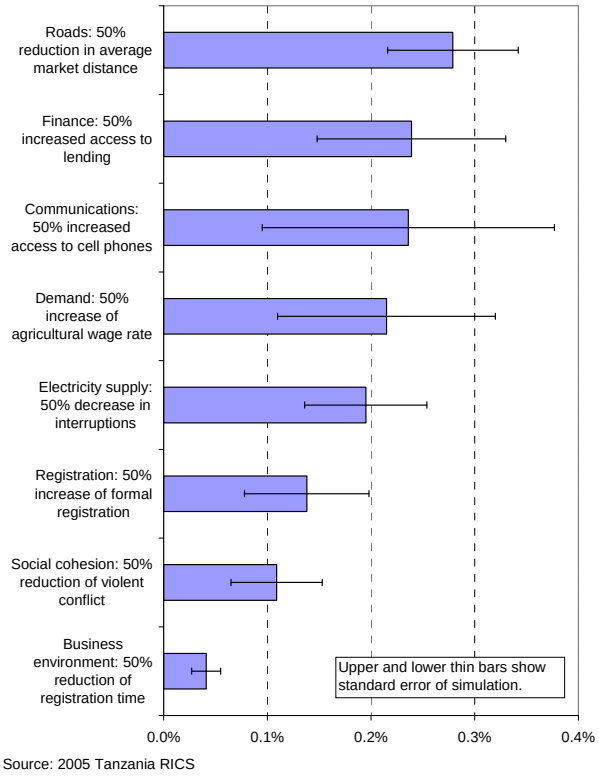
The simulations are helpful to visualize the impact of potential gains if such improvements could be made, but should be read with caution. They rely on empirical data and methods that are subject to measurement error, do not fully consider some of the interactions that encompass the rural investment climate, do not address causality issues, and provide little guidance on how to achieve the selected improvements. It is evident from figure 16 that the estimated investment constraints have a large margin of error. Nevertheless, the simulations are useful in comparing the magnitude of individual investment climate variables with respect to their correlation with rural employment growth.

Removing the constraints of inadequate road infrastructure and finance would have the strongest effect on employment growth. The simulations assumed a 50% improvement of selected investment climate indicators.[16] The ranking of a constraint's impact on growth does not change with different assumptions. Figure 16 shows that improved access to markets would have the strongest effect on employment growth, followed by access to rural finance. Interestingly, rural cell phone communication ranks third. Demand-side factors such as higher rural wages due to productivity

[16] For example, mean distance to the next market was assumed to decrease from 17 to 11 kilometers.

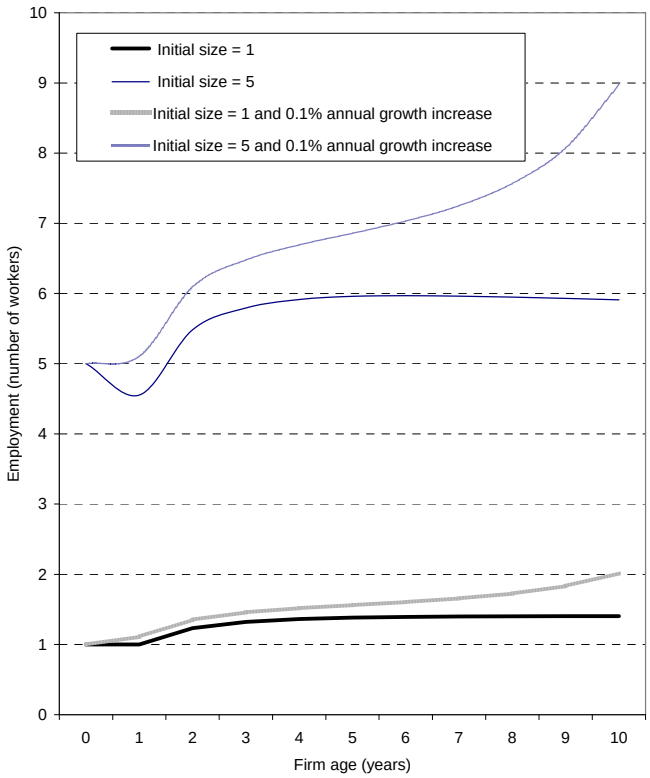
increase in agriculture or other factors, rank fourth.[17] For those rural entrepreneurs who do use electricity, a decrease in interruptions could stimulate growth. Also legal registration and lower registration costs could boost growth. Finally, reduced conflicts could potentially benefit growth.[18] The simulations show that the estimated effect of selected measures of the investment climate would range from less than 0.1 up to about 0.3% on annual employment growth.

Figure 16: Improving the Rural Investment Climate: Estimated Gains on Enterprise Employment Growth



Source: 2005 Tanzania RICS

Figure 17: Visualization of Business Constraints' Impact on Employment Growth over 10 Year-horizon



[17] We assume that higher agricultural wages due to increased demand agricultural growth may raise the income of potential customers, which may lead to higher demand for nonfarm products or services. This ought to lead to growth in the nonfarm sector.

[18] The ranking of business constraints identified through the regressions is considered robust. Using spatial econometrics to assess the determinants of rural labor wage in Tanzania, Mduma and Wobst (2005) identify similar constraints.

How big are these growth effects for a typical enterprise? Over the medium term, even a marginal improvement in the rural investment climate could be significant and lift the rural economy out of stagnation. Figure 17 builds on the simulations and plots the stylized enterprise employment growth process. The scattered lines assume that a broad improvement of the rural investment climate would result in a 0.1% increase in employment growth (much lower than the estimated impact of individual constraints ranging from 0.04 up to almost 0.3%, respectively). Even a marginal improvement of the investment climate could provide substantial gains for the rural economy. Over a 10-year period, a one-person enterprise would reach the two-worker category and experiences continued growth. After an initial period of stagnation, a five-person enterprise would generate on average up to four additional workers. Overall, this is in line with the findings presented in previous section. In relative terms, smaller rural enterprises would benefit most from an improved investment climate. Over a 10-year horizon, a one-person start-up firm could double its size while a five-person start-up enterprise could grow by 80%.

The analysis confirms much of the earlier descriptive evidence. Business constraints perceived by rural entrepreneurs are broadly consistent with objective and subjective measurements at the community level. They are also correlated with enterprise growth.

6. Conclusion

The rural nonfarm private sector in Tanzania has grown too big to ignore. Tanzania encompasses more than one million of small rural enterprises. Results of this pilot survey suggest that some 28% of rural households have at least one family member working in a rural nonfarm enterprise. Moreover, evidence regularly suggests that rural nonfarm enterprise activity is a key source for income growth and diversification for the rural poor in Tanzania.

Overall, we describe a low-return rural enterprise sector struggling to compete in a difficult business environment. A central finding of our analysis is that even marginal improvements of the

rural investment climate matter. Perceived constraints and constraints measured with objective data at the community-level are largely consistent, suggesting some robustness of the empirical results. Enterprise constraints in rural Tanzania mainly operate from the supply-side; suggesting that access to finance, road infrastructure and rural cell phone communication - by reducing transaction costs and facilitating market information - is correlated with employment growth.

The dominance of the agriculture sector indicates that most rural enterprises in Tanzania are highly dependent on the performance of agriculture in the long-run. This suggests that favorable policies and investment for agriculture play a big role. In the survey year 2005, however, supply-side constraints are more important than agricultural demand-side constraints. This may be because demand exists due to a relatively favorable agricultural environment. This suggests that in areas where a buoyant economic base exists, efforts focusing improving supply-side constraints could be successful to promote nonfarm activities. In addition, as 57% of rural nonfarm enterprises are trading enterprises, favorable internal trade policies seem to be of utmost importance in determining enterprise performance. The large share of informal rural nonfarm enterprises may be explained by the fact that being formal is costly - transaction costs and taxes for formal nonfarm enterprises seem to remain high.

It is important to emphasize that the analysis is based on a pilot data collection exercise. This analysis of rural enterprise dynamics is the first of its kind in Tanzania, and only a few of comparable surveys have been completed elsewhere. Therefore, the conclusions should be taken carefully. They aim to stimulate dialogue and future analysis of the rural private sector. Much remains to be learned about the investment climate and its impact on rural enterprise growth in Africa.

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Appendix 1: Correlations between community-level investment climate constraints and enterprise employment growth, 2000-2005

Explanatory variables	Coefficients		N	Adj. R^2
	Statistically significant	Statistically insignificant		
Finance				
Access any non-farm financial service a/		-0.003	589	0.61
		(-0.53)		
Access to rural private bank		-0.009	537	0.66
		(-0.86)		
Access to urban private bank		0.014	537	0.66
		(1.39)		
Access to cooperative bank		-0.005	537	0.66
		(-0.83)		
Access to community group bank		-0.012	537	0.66
		(-1.10)		
Access to money lender	0.016**		537	0.66
	(2.62)			
Access to other financial sources		-0.004	537	0.66
		(-0.55)		
Access to government bank		-0.001	537	0.66
		(-0.12)		
Infrastructure				
Roadside location	0.029*		627	0.64
	(2.49)			
Distance to next market or city (x10 in km)	-0.005**		560	0.66
	(-4.22)			
Access to cellular phone service	0.008*		560	0.66
	(2.08)			
Access to electricity		0.003	627	0.63
		(0.56)		
Electricity interuptions (number/month)	-0.001**		257	0.52
	(-3.35)			
Average duration of interuptions (hours)	-0.002*		257	0.52
	(-2.71)			
Market demand				
Agricultural wage rate (x1000 in TSh/day)	0.003*		604	0.62
	(2.06)			
Construction wage rate (x1000 TSh/day)		0.001	594	0.61
		(1.01)		
Public works wage rate (x1000 Tsh/day)		0.002	563	0.61
		(0.35)		
Business environment				
Number of days to register (x100)	-0.005*		578	0.60
	(-2.75)			
Social violence in community	-0.011*		602	0.61
	(-2.48)			
Number of thefts in community (x100)		-0.013	510	0.61
		(-1.86)		

Robust t statistics in parentheses. a/ Microfinance constraints are regressed jointly.
* significant at 5%; ** significant at 1%.