Constraints to the Growth of Small Firms in Northern Myanmar*

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Abstract: This paper uses survey data collected from North Western Myanmar to analyze business activity and determine the most binding constraints to firm growth. While the level of entrepreneurship is very high, most firms earn low income and are small and informal with no employees. The most binding constraints are related to financing and competition. We find that informal credit constrained firms grew 8.4% less in 2008-2010. This lack of credit combined with an apparent aversion to debt, limit investment despite high returns. Returns on investments are about 73% per year, which is within the range found in other developing countries.

Keywords: rural investment climate, enterprise development, poverty reduction, small firms growth, Myanmar

JELL Classification: O1, O5, L2

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1 Introduction

At the dawn of the 20th century, Burma was the richest state in Southeast Asia, glimmering with prosperity and the expectation of greater things. By the dawn of the 21st century Myanmar was the poorest state in Southeast Asia (Turnell, 2009). Its grand buildings were in decay, its borders were shut and its people were among the poorest of any in the world. As Turnell (2009) comments "[Myanmar's history] is a history of repression and release, and repression again. It is a history of economic construction, reconstruction and decay. It is a history of plans, and of chaos. It is a history of hope, and hopes dashed".

The elements that underpin Myanmar's history of torrid economic development are not widely understood. This paper offers a rare glimpse into Kalaymyo, a city with a population of approximately 200,000 people in the west Sagaing region of Myanmar, shedding light on the areas stagnant economic growth and the most important constraints to business growth. The research uses an original dataset of 677 households (including 492 firm owners) living in Kalaymyo in 2011. The survey was designed to provide information on the household, business and living conditions of individuals in Kalaymyo. The survey is broadly consistent with the World Bank Rural Investment Climate Surveys, so that firm constraints are comparable with global findings.

The relationship between poverty alleviation and business development is well established. As such, Kelly et al. (2008), argue that there are many feasible approaches to poverty reduction that are made possible through commerce; and further, that there are profits in developing markets that have been previously overlooked which are of great consequence to efforts of poverty alleviation. Accordingly, business conditions are important for poverty alleviation. Of particular interest then, are constraints to the growth of business. Efforts to understand the constraints to enterprise growth in developing countries are not new; this area was addressed as early as 1962 by Stanley and Morse, where they comment "By and large [enterprises of the poor] do not prosper. When they do prosper, it is not for long. [These] small industrial firms have never grown beyond a certain point, as if there were a physical barrier between the small and medium sized

range impossible to cross".

This physical barrier between small enterprises and medium enterprises has been a focal point of recent literature. Several papers use inter-regional datasets to evaluate differences that emerge across the world (Batra et al., 2004; Ayyagari et al., 2008). Specifically, these papers evaluate a range of firm level constraints including national policy instability, financial constraints, regulation, inflation, exchange rate fluctuations and corruption. In each of these papers, the authors conclude that finance, corruption and property rights are important factors for firm growth in the developing world.

Another set of papers evaluate firm level constraints at a national level. Fisman and Svensson (2007) show that in Uganda corruption is an important constraint to firm growth, with a one percentage point increase in the rate of bribery resulting in a three percentage points decline in firm growth. Using data from China, Bangladesh and India, Dollar et al. (2005) find that the availability of financial services has a strong positive effect on growth rates of assets, employment, and output. They also show that this effect varies within countries, indicating the importance of local governance. Bigsten and Soderbom (2006) conclude that investment in Africa is low because firms have been unable to identify investment opportunities. Credit constraints were therefore found to be an important, but not the most important constraint. Rajan and Zingales (1998) focus on the role of the financial sector, showing that countries with a more developed financial sector are better able to support the growth of firms.

The analysis of firm constraints in this study follows Dinh et al. (2010); Hausmann et al. (2008) in which the growth diagnostic approach is used to understand the most binding constraints on firm growth. This approach differs from previous efforts at understanding firm constraints in that it acknowledges that the list of constraints on enterprise growth in developing countries is a long one; and further that, due to scarce resources, it is impractical to address each of these constraints simultaneously. This approach therefore attempts to reveal the most "binding" constraints, which are defined as the constraints which have the largest effects on enterprise growth.

The results show that credit access, electricity provision and the intensity of market

competition were the most serious constraints. Of these, access to informal finance was found to be the most binding constraint limiting business growth. Firms that identified informal finance as a major constraint to business growth earned, on average, 8.4% less than other firms between 2008 and 2010. Restricted access to markets and formal lines of finance were also significant constraints for enterprise income growth.

The rest of the paper proceeds as follows. Section 2 discusses the survey and data. Section 3 characterizes the firms and their owners. Section 4 analyzes the determinants of income, borrowing and investment. Section 5 evaluates the constraints to enterprise growth, establishing which ones are binding and section 6 concludes.

2 The Survey and the Data

This study involved the collection of primary data from Kalaymyo, a small urban center in the west Sagaing region of Myanmar. Kalaymyo is an urban regional hub surrounded by intensive agriculture and is home to approximately 200,000 people . The area is in the Sagaing Region, but also close to Chin State. Sagaing is the largest state/region/division in Myanmar, while Chin State is one of the smallest. While the study area is in the Sagaing Region, in many respects it associates more closely with the Chin State, in that the majority of its people are Chin. According to the UNDP poverty profile, Chin State is the poorest area in Myanmar with 73% of the population and 46% of the urban population falling below the poverty line. In contrast, Sagaing Region as a whole tends to perform substantially better. Of all people living in the Sagaing Region, 27% of them fall below the poverty line, dropping to 22% for urban areas. The study area therefore lies between two areas with dissimilar poverty headcounts.

The design of the survey is based on the rural investment climate survey, as developed by the World Bank. Information was collected on household characteristics, firm characteristics, investment climate, supply and demand of finance, poverty, well-being of individuals and the obstacles for firm start-ups. The area of study is divided into 42 villages among which seven were randomly selected and the surveyors provided estimates

of the total number of households in each. The surveyors were then asked to record all addresses in the chosen village. A random sample of 70 to 140 households was then derived for each village, with an additional 20 households per village randomly selected in case of non-response. This led to 545 households answering questions. In addition to the random sample, we targeted clients of a microfinance institution in the area, and interviewed 132 of 180 client households. The microfinance sample largely shares the same demographic characteristics as the representative random sample. The final sample consists of 677 households with a total of 2744 individuals. In all interviews, the head of the household responded to the questions. Among all head of households interviewed, 35% were female.

The small number of villages in our survey limits our analysis for infrastructure related constraints. The lack of supply of electricity and roads affect all households even though some may not need the infrastructure for their business. We find that despite a high proportion of firms citing electricity and telephone access as a problem, our econometric analysis does not find these as binding constraints because there is no enough variation across households. However, other constraints show enough variation across households and are not limited by this issue. Our choice of villages was limited to a degree, by a lack of resources and institutional constraints. The survey was conducted near the Chin Hills which, at the time of the study, had certain access restrictions.

3 Households and Firm Characteristics

3.1 Household Characteristics

Head of households interviewed for the study are aged between 18 and 84 with 93% in the working age of 20 to 65. Males were overrepresented in the initial random sample (74%) but the addition of the microfinance clients, which targets primarily female entrepreneurs, decreased the proportion to 65% in the final sample. Literacy rates are very high in the region with 97% of the head of households able to read and write. The educational attainment is also high with 63% of interviewees obtaining a secondary education

or higher. The average family size was 5.3 and most children had some education. The overall poverty rate is 18.3% based on a poverty threshold determined by the UNDP in 2004. The level of firm ownership is very high in the region. For instance, 67% of households in the random sample were classified as business owners. The rate increased to 73% with the inclusion of microfinance clients which can get a loan only if they owned or are starting up a business. This level of enterprise ownership is higher than corresponding rates in other developing countries.[1] When disaggregating enterprise ownership by poverty status, we find that the poor are equally likely to own firms as the non-poor. The firm ownerships rates were 66% for the poor versus 67% for the non-poor.

3.2 Firms Characteristics

One question in the survey asked respondents to identify who owns the firm in the family. Figure 1 shows that 67% of firms are a jointly owned by all family members, 20% are owned by only the husband and 12% owned by the wife only. This ownership structure makes it hard to determine the gender and educational level of the enterprise owner. In our econometric analysis, we will assume that the gender and educational attainment of the enterprise owner are those of the household head.

There is a mixture of new and old firms with a larger share of older firms. We defined three categories: up to 5 years old are categorized as young firms, mature firms are between 5 and 10 years and the rest are categorised as older firms. We find that 28% are young, 23% are mature and 48% are older than 10 years. Decomposing firms by sector (Table 1) shows that business in Kalaymyo is dominated by service firms (45%) followed by agriculture (34%) and manufacturing (21%).[2] The lack of enterprise diversity, as discussed at length by Banerjee and Duflo (2011), is made clear in this sectoral composition. Within the services sector, for instance, street vendors and general stores account for 64% of total services activity (equal to almost one quarter of all businesses). Within the agricultural sector, the same lack of diversity occurs, with 62% of firms producing staple

[1] Banerjee and Duflo (2011) show that using 18 developing countries, 50% of the extremely poor in urban areas owned a business and that figure is very similar to the somewhat poor.

[2] The definition of sectors follows the ISIC rev.3. Here, manufacturing and industry are used interchangeably but it mainly include manufacturing of goods and construction.

crops. Unlike the agriculture and services sectors, the manufacturing sector is somewhat more diversified. Individuals involved in tailoring account for 24% of all manufacturing followed by carpentry (21.0%), building or brick layering (15.2%) and furniture manufacturing (11.4%). However, this diversity of enterprise is a minority in the overall economy with manufacturing accounting for just 21% of all business activity.

Another key characteristic of firms in Kalaymyo is that most operate in the informal sector. Overall, only 37% are registered with the government. Registration rates are highest in agriculture (46%), services (35%) and then manufacturing (27%). This registration pattern follows from the location of operation. In fact, most businesses are operated out of the owner's home (53.5%) or have no fixed location (26.2%). Manufacturing firms are more likely to be operated from the owner's home (e.g. brick layers) and service firms are more likely to have no fixed location (e.g. street vendors or transport businesses). It is therefore not surprising that most firms do not have any employee (about 90%). For the few enterprises that did have employees, 80% of them had either one or two employees. Just a small fraction of firms in manufacturing had more than two employees. The enterprises analyzed are not just low earning, and hiring few people, but they are also growing very slowly or even contracting.

Survey respondents were asked to estimate the sales or income generated by their firms in the years of 2008, 2009 and 2010. The answers to this question have to be interpreted with care, as firms don't have accounts to look at and the question required respondents to recall information from 3 years ago. It is easy to see that the numbers are rough estimates as most are multiples of 100,000 kyat. Nevertheless, these estimates can be used to assess the determinants of income and analyze various constraints to firm success. Moreover, income is not a very good measure of enterprise success. However, the nature of the firms made it hard to measure profits as the vast majority are small informal firms with no accounts.[3] It was not appropriate to measure firm success by the number of employees either, as most firms did not have any employees.

The average income for all enterprises in 2010 for the sampled population was 1,422,240

[3]It is unlikely that respondents could recall details about there input costs.

kyat (USD$1,778), while the median income was just 900,000.[4] Figure 2 shows how enterprise incomes are skewed to the left, with 75% of enterprise incomes falling below 1,400,000 kyat. In other words, just a handful of businesses are earning high incomes, while the incomes for the majority are very small. This is consistent with the 'missing middle' concept observed in numerous developing countries and regions, whereby small and medium firms fail to develop into large firms (Dinh et al., 2010; Krueger, 2007). This inevitably results in restricted and exclusive growth patterns and consequentially, high poverty levels.

Looking at incomes by sector (table 1) reveals that firms in manufacturing earn on average twice as much as those in agriculture and almost 50% more than firms in services. This explains the low overall average income since most firms operate in agriculture and service sectors. As mentioned above, incomes seem stagnant. After controlling for high rates of inflation experienced in Myanmar in 2008 and 2009 (23% and 11% respectively), the survey data revealed an average contraction of 6.3% in real income for all firms between 2008 and 2010 (see figure 3). This finding remains robust after controlling for enterprise longevity, where no evidence is found to suggest that long lived firms are growing faster or have higher incomes.

One explanation for stagnant enterprise incomes can be found in firm investment levels. Over the last three years, just 25% of all businesses had invested in some form of capital. The enterprises that made an investment during the 2008-2010 period, had on average, 87% higher sales in 2010 than those enterprises that did not. The difference in means is significant at the 1% level. Fixed capital investments were predominantly in land (approximately 30% of all fixed investments), equipment or machinery (30%) or buildings (27%). Businesses that invested did not just have a higher income - they also grew faster between 2008 and 2010. Enterprises that invested grew by 73 percentage points more than those that did not invest.[5] This suggests that the returns to investment are positive

[4]At the time of the survey, the official Kyat:USD exchange rate was approximately 7:1. However, the street exchange rate is markedly weaker at 800:1. The street exchange rate is used in this analysis as it is commonly referred to as the market rate. In April 2012, the exchange rate was floated at close to the street exchange rate.

[5]The growth rate was calculated as (income in 2010-income 2008)/income 2008. This difference in means is significant at the 10% level.

and substantial.

Intuitively, individuals would not take out a loan unless their return was higher than the interest rate (after accounting for risk and profit). An average real interest rate of 42% , further supports the conclusion that returns to investment are both positive and substantial (see Table2).[6] The high level of returns to capital is typical in developing countries. For instance, Banerjee and Duflo (2004) estimate annual returns to investment for Indian firms in the range 74%-100%. Using a randomized field experiment, de Mel et al. (2008) find returns of capital for microenterprises in Sri Lanka ranging from 55% to 66% per year. A similar study in Mexico by McKenzie and Woodruff (2008) finds even larger returns, ranging from 250-360% per year. Other estimates are 50-250% per year for agricultural firms in Ghana (Udry and Anagol, 2006) and more than 113% per year for retail shops in Kenya (Kremer et al., 2007).

To explain this phenomenon, an indication of both the desire and ability to invest in enterprise is needed. Figure 4 provides a crude estimate of this, showing the proportion of individuals with firms who accessed credit over the last three years (17% of the sample), those who did not need credit (41%) and those who did want credit but could not access it (42%). This clearly shows that overall access to credit in Kalaymyo is very low.[7] For those who could not access credit, constraints in the supply of loanable funds are likely to be important. It is remarkable that, in the context of high returns to investment, 41% of all firms indicated that they did not have any need for a loan. This may be due to their aversion to risk and the history of financial crises in the country, which many believe has eroded trust in the financial sector. For instance, 87% of people who did not want to access credit cited a reluctance to get into debt as the main reason for not actively seeking a loan. There is evidence of this trust deficit in the data where a statistical difference was found between State bank interest rates and the interest rates for all other providers (see table 2). Interest rates on State bank loans are, on average, 20% p.a. (or 1.69 per

[6]The real interest rates are the nominal interest rates minus the inflation rates. Despite this high real interest rate, very few people identified high interest rates as a reason why they would not seek additional funding. This is because the returns to credit are quite high.

[7]Microfinance clients were excluded from this section because 100% of all clients had access to credit over the last three years.

month) lower than all other loan providers. However, despite having lower interest rates, State bank loans account for just 7% of total loans. This indicates either that people choose not to take State bank loans because the perceived costs of borrowing from the State are much higher or that the State's supply of loanable funds is limited. The second of these two reasons is in line with anecdotal evidence from business owners that State banks are less interested in the loanable funds market and more involved in currency exchange markets.[8] The characteristics of firms that borrow and invest will be analyzed in the next section.

Another key issue in the business environment for firms in Kalaymyo is access to physical infrastructure, which has an important role in promoting investment and encouraging enterprise growth.[9] According to Stern (1991), "the deficiencies of infrastructure are likely to account for a substantial part of low productivity in developing countries." This is because it is very hard to run factories when electricity is unreliable, telephone connections are poor, and transport links between centers of production and consumption are hazardous or non-existent.

In Kalaymyo, just 20% of all firms have access to electricity. As we will see in the next section, the quality, cost and access to electricity is identified as a major constraint to business growth. Access to telecommunications, however, is significantly worse. Just 2.4% of all business owners have access to a telephone. This is likely to have important consequences for business growth in terms of synchronizing value chains and ensuring efficient delivery between enterprise and end users (i.e. just in time production). Waverman et al. (2005) evaluates the benefits of a good telecommunications system by describing the emergence of a "growth dividend" arising from a reduction in interaction costs, simultaneously expanding market boundaries and increasing information flows. In stark contrast to this, the availability of water is very high, with 99% of business owners reporting access. This results from an advantageous geographic location and also a very

[8]This 'supply constrained' environment is quite different from elsewhere. For instance,Collins et al. (2009) show that the poor living in Bangladesh, India and South Africa have a complex mix of savings and lending portfolios from numerous specialized sources.

[9]For instance Kinda (2010) shows that for 58 countries between 1970 and 2003, that the provision of physical infrastructure positively affects foreign direct investment and portfolio investment for enterprise growth.

shallow water table in parts.

4 Determinants of firm income, financial access and investment

In this section we want to identify the firm and owner characteristics that are linked to high income and those that are important to determine which firms borrow and invest.

4.1 Determinants of firm income

For the determinants of income, we run OLS regressions of the logarithm of incomes from 2008 to 2010 on various characteristics. The definition of the variables and summary statistics are presented in table 3. Most of the variables were discussed in the previous section.

Table 4 shows that firms with owners that attained higher levels of education earned slightly a higher income in 2010 but not significantly in the other two years. Firms managed by males earn more income; the coefficient is large and significant at the 1% level. Young firms, those less than 5 years old, earn lower income with a high and significant coefficient. The coefficients on mature firms, while positive, are not significant for all years. Regarding sectoral differences, we find that service firms earn a higher income compared to agriculture and the coefficient of manufacturing is not significantly different from zero in all three years. As we saw in table 1, manufacturing firms have the highest income, followed by services and then agriculture. However, our sample has fewer manufacturing firms, which explains the fact that the coefficient on manufacturing is not significant. Another finding is that formal firms earn higher incomes in all three years. This finding is consistent with the evidence that informal firms are less profitable and less productive. We also find that firms with employees, either measured as dummy variable or using the logarithm of one plus the number of employees, have marginally higher income.

In the previous section, external finance and investment decisions were discussed at

length. The coefficient for investment is large and significant in all three years. In 2010, firms that invested in the three years earned 24% more than firms that did not invest. However, the causality between investment and income can run in both directions. Firms that invest can earn high returns and higher incomes but also firms are more likely to be able to invest if they have higher incomes in the first place. The second direction is very likely given that firms are highly credit constrained. To deal with this endogeneity issue, we could have looked at the regression of lag investment and income or use instrumental variables. Unfortunately investment times are not known and suitable instruments were not available. Instead, regressions were run for both directions and as is discussed below, the evidence points to investment causing income.

In the last column of table 4, we include an interaction term between borrowing and investing and found it to be significant at the 1% level. This highlights the importance of financial access for the success of firms in Kalaymyo. We also included two dummy variables for firms that have access to electricity and a telephone. We find that access to telephone is associated with higher income but there no significant association between access to electricity and income. In this case also the causality may run in both directions.

4.2 Determinants of financial access and investment

As previously noted, excluding the clients of the microfinance institution from the sample shows that only 17% of firms obtained a loan during the period 2008-2010. Here, we focus on the characteristics of firms and owners that determine the likelihood of borrowing and investing. The same characteristics discussed in the previous section are used. Probit models are estimated and we report the marginal effects in table 5. Three specifications that differ by the year of income are presented.

The results show that only income and formalization are significant predictors for obtaining a loan.[10] A 1% increase in log of income leads to 9-10 percentage points increase in the probability of obtaining a loan. This means that lenders give loans to the more successful firms and the poorest are excluded from the credit market. Also formal

[10]The regressions for loan exclude the microfinance clients as the institution has its specific qualification criteria.

firms are about 70-80% more likely to obtain a loan than informal firms. This finding confirms that one of the channels of formalization is increased participation in the credit market.[11] As we have seen in the previous section and we'll see next, borrowing increases the likelihood of investment, which in turns increases income.

For investment, we also included incomes for 2008-2010. The results in table 5 show that high income in 2008 and 2009 don't increase significantly the likelihood of investing, but income in 2010 increases the probability by 17.6 percentage points. The coefficient is significant at the 10% level. This effect is very small compared to the effect of obtaining a loan. The coefficient on loan is highly significant at the 1% level in all years and obtaining a loan increases the likelihood of investment by 76 to 78 percentage points. These findings show that high incomes do not lead to more investment but the ability of borrowing is the more important factor. The level of education is also a big determinant of the decision to invest. The level of education increases the likelihood of investing by 30 percentage points. Moreover, firms in the service sector are more likely to invest in all three years, while young firms invest less. This is consistent with the previous finding that young firms earn lower incomes and are not more likely to borrow Formality does not increase the likelihood of investing, which means its effect is through the ability to borrow.

5 Constraints to Enterprise Growth

This section discusses the business environment and identifies which constraints are the most limiting for enterprise growth. Survey participants were asked questions about various constraints they may face in the operation of their business.

5.1 The relevance of constraints

The survey's business constraint questions were asked in a two stage process. First, participants were asked if various issues were "relevant" to their business. To illustrate this,

[11] An exception is by a recent study by de Mel et al. (2012) that finds, in an experiment in Sri Lanka, formalization does not lead to a notable increase in profits for most firms.

consider a storekeeper selling clothes at the local market. For this business, agricultural price controls are clearly not a relevant issue. Second, where an issue was identified as relevant, business owners were asked to grade the corresponding constraint from zero (not a constraint) to three (a major constraint).

For each constraint then, a measure of relevance is presented for the whole sample, indicating the proportion of businesses for which the issue is applicable. A second set of figures is then presented, indicating the severity of the issue in constraining business growth. It is therefore possible for a constraint to not be widely relevant (where few businesses identify it as applicable), and still return a high proportion (of those businesses for which it was applicable) identifying it as a major constraint to business growth. As this study is looking to understand constraints to the business community as a whole, however, it does not focus on issues identified as relevant by only a small proportion of respondents. A constraint is considered important for business growth if it satisfies two criteria; it must both be relevant for a large proportion of businesses in the sample and have a high proportion of those businesses grading it as a serious constraint.

Figure 5 shows the nine most relevant issues for businesses. Generally, three categories of issues were identified as particularly relevant for businesses, namely financing, electricity and markets (including high competition and weak demand). Issues relating to telecommunications, roads, tax systems, government, land use policy, licenses & permits, labor markets, and agricultural policy were identified as relevant to a smaller proportion of respondents.

5.2 Severity of constraints

The grading results, shown in Table 6, for each constraint provide a revealing snapshot of the difficulties of operating a business in Kalaymyo. The results serve to confirm just how challenging a region this is for businesses. There are significant constraints in the area of physical infrastructure, government policies and market competition. However, these issues pale in comparison to the severity of constraints created by a dysfunctional financial system.

There are a range of financing issues which are cited as serious constraints in the region. Perhaps the most striking is the lack of access to own and family capital, with 78% of all respondents identifying this as a major problem for business growth - the highest proportion for any constraint in the survey. It is interesting that access to formal lines of finance is deemed not relevant by 78% of all respondents. Drawing on the experiences of local microfinance projects in the area, this should be interpreted as a general lack of profile of the formal banking sector in the community. Anecdotal evidence suggests that there is a tendency to rely on family and community for capital well before investigating opportunities offered by private and state banks. There is likely a number of reasons for this, including a volatile history of the formal banking sector over the last 50 years. Given the general reliance of business on informal sources of financing then, these findings suggest an inability to fund investments generally. This constraint is central to understanding the broader business environment of Kalaymyo.

Another important enabler of economic growth and business development is physical infrastructure. Businesses require roads to transport goods between locations; electricity to maintain productive capacities and to take advantage of technological improvements; and telecommunication infrastructure to maintain supply chains and reduce transaction costs. Each of these categories of infrastructure is a significant challenge for businesses in Kalaymyo.

Electricity issues were identified by many as a serious constraint to enterprise growth, with electricity provision having three subcategories, namely cost, access and quality. The cost of electricity was both the most relevant issue and had the highest proportion of respondents stating that it was a major problem for business growth. Lack of access to electricity was also considered a major constraint as was power surges and blackouts. Importantly, electricity access is not differentiated by poverty status (that is, both the poor and non poor lacked access to electricity), meaning that electricity access is likely limited to a majority of people for supply reasons rather than demand. It is not surprising that only 20% of all businesses in the area have access to electricity.

As with electricity, telecommunications infrastructure comprised three sub categories,

namely cost, access and quality. Access to telephone services is the most serious constraint to enterprise growth (in this category) with approximately 18% of business owners stating that it is a serious constraint, while approximately one in ten businesses identified telephone costs and telephone quality as a serious constraint. Poor roads was generally less of a constraint than both telecommunication and electricity infrastructure with 11% of all respondents stating that it was a serious constraint.

The results for infrastructure as a constraint to business growth need to be looked at in the context of the current business environment. The current business environment is a reflection of current infrastructure provision. Businesses are, by design, accustomed to operating with poor electricity access, little telecommunications and poor roads provision. As this is largely the same environment for all firms, it is likely that business owners do not understand the full implications of infrastructure provision on economic development and business growth. As a result, these figures are likely to reflect a very conservative assessment of infrastructure constraints on business growth.

Market conditions were also frequently cited as major constraint to business growth, with the most significant of these being the existence of too many sellers or tough competition. Approximately 40% of all respondents identified this as a major constraint to enterprise growth. This is unsurprising given that the majority of firms are small retailers selling non-differentiated goods. For instance, approximately 37% of businesses are either street vendors or staple crop producers (see Table 1).

Government policies and regulations can have a strong influence on the ability of businesses to grow. Participants were asked about both tax systems and land use regulations (including agricultural policies). With respect to the former, high tax rates was shown to be an important business constraint. Approximately 73% of those that identified tax as a relevant issue stated that it was a major concern. Interestingly though, 72% of participants did not identify high taxes as a relevant constraint, which may imply that only a small proportion of businesses actually pay tax. This is consistent with the finding that only 37% of firms are registered with the government. This may have important implications for tax efficiency, equity and the overall ability of the government to collect

taxes and fund public infrastructure.

Land use and agricultural policies generally scored very low in terms of their relevance for business owners. As a result, these issues do not come across strongly as constraints to enterprise growth. Land ownership uncertainty is the only exception to this, where approximately 21% of respondents identified land ownership uncertainties as a relevant issue, with 75% of these businesses identifying it as a major constraint (equating to 16% of all respondents). These results need to be considered in the context of the survey overall where just 34% of all businesses operated in the agricultural sector. The results may differ markedly for more rural areas in the wider region.

It is somewhat surprising that corruption was not identified as much of a constraint to business growth. Only 9% of respondents identified corruption as a major constraint, while 91% of businesses state that it was not a relevant issue at all. Anecdotal evidence from people in Kalaymyo suggests that corruption is a serious and pervasive issue, transcending all parts of life, and it is interesting that this has not come through more strongly in the data. Corruption is generally difficult to measure however, and it is more likely that the survey did not capture its full effect, rather than corruption being unimportant to business growth. It is also possible that business owners view corruption as a conduit for business growth, rather than being a constraint.

Using the pre-established criteria for determining an important constraint (relevant for a high proportion of businesses and a high proportion of businesses identifying it as a major constraint to business growth), constraints relating to credit access, electricity provision, and the intensity of market competition appear to be the most serious for enterprise growth. As will be discussed, this is not uncommon for developing countries. The next section uses regression analysis to determine the "most binding" of these constraints.

5.3 Binding constraints to enterprise income growth and investment

Up to this point, constraints have been analyzed according to their severity and there has been no discussion as to which constraint is the most binding and which would have the largest effect on business growth should it be removed. Figure 6 is the starting point for

this analysis, showing those constraints that are most often reported as serious by enterprise owners. Issues involving financing are regarded as the most serious constraints (for the highest proportion of businesses); while issues involving key infrastructure (particularly electricity services), competition and tax rates are also often cited. These constraints are broadly consistent with those found by the World Bank across developing countries.

Using the work of Hausmann et al. (2008) (hereafter HRV), analysis is undertaken to understand which of these constraints are binding. HRV takes a practical approach to answer this question, using the theory of "second best" (Lipsey and Lancaster, 1956). According to this theory, when there are multiple constraints, addressing one constraint may not lead to a pareto improvement. Where this is the case, it is more appropriate to address the most binding constraint, defined as the one with the largest effect (Dinh et al., 2010) (hereafter DMN).

This section follows the work of DMN , applying their methodology to the data.[12] For this analysis, we are looking to derive the binding constraint with respect to enterprise income growth between 2008 and 2010 and the decision to undertake capital investment as analyzed in section 4.2. Enterprise income growth between 2008 and 2010 is calculated in the following way:

$$EIG_i = (\ln EI_{i10} - \ln EI_{i08})/2$$

Where EIG_{it} is enterprise income growth[13] for firm i between 2008 and 2010. Nineteen constraints have been selected based on their relevance to businesses (as identified in the previous section). Summary statistics for each of these constraints are shown in table 6. Participants were asked to grade each of these constraints on a scale of zero to three;where three indicates a serious constraint and zero corresponds to no constraint.

Three models, adapted from DMN, were developed using enterprise income growth

[12]Dinh et al. (2010) use a dataset of over 30,000 across 98 countries. As such, this work considers a range of fixed country effects that are not necessary to consider when only analysing one geographic location.

[13]There are several shortfalls of using enterprise income growth rather than employment growth. Enterprise income is likely to be more volatile and may suffer from reporting bias, especially since it is relaying on participants ability to recall enterprise incomes from 2 years previous. However, due to the small size of enterprises (many of which had few or no employees) in Kalaymyo it was not practical to use employment growth, which is used by various other researchers.

between 2008 and 2010 as the dependent variable. The models are defined below:

$$EIG = b_0 + b_1\text{Individual Obstacle} + b_2\text{Firm and Owner Characteristics} + e_1 \quad (1)$$

$$EIG = b_0 + b_1\text{All 19 Obstacles} + b_2\text{Firm and Owner Characteristics} + e_2 \quad (2)$$

$$EIG = b_0 + b_1\text{Only Significant Obstacles } + b_2\text{Firm and Owner Characteristics} + e_3 \quad (3)$$

Model one includes firm characteristics with each constraint analyzed separately. Model two then uses all 19 obstacles in the regression along with the firm and owner characteristics. Finally, model three takes only the important constraints from models one and two and uses them alongside the firm and owner characteristics. To be considered important, a constraint must satisfy three tests. The obstacle must reach significance, it must have the expected sign (i.e it must be negative) and the effect must be large. For investment, the left hand side is replaced by the dummy invest and the equations are estimated by probit.

Firm and owner characteristics are included because the data evaluating obstacles to enterprise income growth is subjective. For instance, it is possible that more successful firms are less likely to view the business environment as restrictive. This possibility is controlled for by including owner and firm characteristics as in the previous section.

The results for income growth of each model are shown in table 8. A consistent finding across each of the models is that the financial constraints (both formal and informal access to capital) and market access are significant constraints to enterprise income growth. For instance, firms that identified informal finance as a minor problem experienced, on average, 2.8% lower enterprise income growth between 2008 and 2010 than those businesses for which this was not a problem. For those firms that identified informal finance as a major constraint, enterprise income growth was on average, 8.4% lower (2.8 multiplied by

three). Firms identifying access to formal finance as a serious constraint grew, on average, 6.3%. Firms identifying market access as a serious constraint grew, on average, 6.9% less between 2008 and 2010 than those businesses for which this was not a problem. Credit constraints and issues of finance have been identified as critical and binding constraints in many places throughout the developing world (Rajan and Zingales, 1998; Love and Mylenko, 2003; Banerjee and Duflo, 2004; de Mel et al., 2008). The findings presented here suggest that Kalaymyo is no different. These findings are also broadly consistent with the findings of DMN, which identified access to finance as one of the most binding constraints.

Infrastructure (electricity, telephone and roads) constraints were not identified as robustly binding in all of the models. In model 1, access to electricity was found to be negative and significant, but it was not in the other two models. Moreover, electricity cost, telephone cost, roads are significant in model 1, but with a positive sign. This means that firms complaining about these constraints are growing faster. For the cost of electricity and telephone, we introduced an interaction term to control for the fact that some firms may complain about costs even though they don't have electricity or phone. With this change, telephone cost changes sign and loses significance but cost of electricity remains positive and significant in models 1 and 2.

This finding on the infrastructure constraints may be because telephone, electricity and roads infrastructures are exogenous constraints for firms in Kalaymyo. For instance, just 2.4% of firms have access to telephone services, indicating such services are supply constrained. In the same way, poor road quality and the lack of a reliable electricity network are constraints faced by all businesses in Kalaymyo. The analytical techniques used here are limited by a lack of variation between firms with respect to these factors. To overcome this issue, a larger dataset would be needed, analyzing enterprise growth over a range of cities with variation in infrastructure provision.

We also find that land ownership uncertainty is negative and significant in model 1 but not in models 2 and 3. Corruption was significant only in the second model with the wrong sign. As discussed before, very few firms identified corruption as a relevant issue

and it may well be that non-performing firms are trying to justify their poor performance. For simplicity, the results for firm characteristics have not been presented here. The most robust findings for those are that higher education, and formalization lead to faster income growth and firms in services grow slower.

In table 9, we show the results for investment. For simplicity we don't show the results for some insignificant variables. We have already analyzed the effects of the owners and firm characteristics and found that the most important factor for making investment is obtaining a loan. Beyond these characteristics, we find that informal capital, market access, access to electricity, ownership, labor availability and corruption are all negative and significant in model 1. Some of these lose significance in models 2 and 3. Market access, labor availability and corruption remain significant with the correct sign. These results show that beyond external financing and market access that affect income growth, firms in Kalaymyo are constrained by labor availability and corruption.

It is also reasonable to think that firms in different sectors are affected by different constraints. We find that in addition to external finance and market access, firms in agriculture are affected by poor roads, tax payment procedures and labor availability in some of the models. A notable finding for firms in services is that market access is no longer significant as this constraint is not very relevant to them but ownership of land is highly significant in all models. This may be due to the difficulty of having access to a place in local markets.

6 Conclusion

This study has offered a rare glimpse into the lives of people working and living in Kalaymyo. It involved a survey developed and administered to 677 individuals (including 492 firms), capturing information on the household, business and living conditions of respondents. As far as we are aware, such a study has never been conducted in the area before.

The analysis has found that the area is alive with economic activity and a high degree

of entrepreneurship. However, businesses were generally characterized as having small earning potential, low employment and slow or stagnant growth. While there was evidence of high returns on investment, there was a general reluctance or inability to access credit markets to take advantage of these opportunities. A long-established lack of confidence in the financial sector has likely played an important role in the diminished market for loanable funds, leading to a severely underdeveloped financial system. The lack of credible and trustworthy financial institutions, together with low investment in public infrastructure, is undoubtedly constraining the growth of firms. As a result, businesses tend to be small, stagnant and undifferentiated from one another.

An analysis of the most important constraints to business showed that problems relating to credit access, electricity provision and the intensity of market competition were the most serious. Of these, access to informal finance was found to be the most binding constraint preventing business growth. Firms that identified informal finance as a major constraint to business growth earned, on average, 8.4% less than others between 2008 and 2010. Restricted access to markets and formal lines of finance were also significant constraints for enterprise income growth. Moreover, labor availability and corruption are significant constraints to investment.

The study provides some important insights for development agencies seeking to facilitate economic development in the region. It appears, for example, that the area is in need of credible financial services, including credit facilities and savings programs. The unique economic environment in Kalaymyo, along with Myanmar's turbulent financial history will mean, however, that the design and administration of such programs will need to proceed with caution, avoiding the temptation to follow a one-size-fits-all development agenda.

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Appendix: Tables and Figures

Table 1: Sector composition and Income in 2010

Sector	**% of first digit sector**	**% of all business**	**Income 2010**
Agriculture		**33.5**	**1,035,335**
Staple crop	62.2		1,020,147
Cash crop	29.3		920,104
Animal husbandry	1.8		2,266,667
Other	6.7		1,343,182
Manufacturing		**21.4**	**2,083,829**
Tailor	23.8		2,347,200
Carpenter	21.0		745,454
Builder/Brick layer	15.2		3,392,500
Other	14.3		3,526,800
Furniture	11.4		1,699,167
Wood products	9.5		830,000
Blacksmith	4.8		1,570,000
Services		**45.1**	**1,404,050**
Street vendor - food	36.7		1,086,975
Store owner - general goods	17.2		1,477,632
Street vendor - clothes	10.0		2,340,909
Transportation - goods	9.5		1,151,429
Transportation - people	8.1		1,205,556
Other	8.1		1,725,556
Business services	7.7		1,934,118
Telecommunication	2.7		796,666
No sector		**0.4**	425,000
Total		**100**	**1,422,240**

Table 2: Summary of terms for recent loans by loan provider

Lender	**Observations**	**% of last three loans**	**Real interest rate (p.a)**
State bank	12	7.0	22.2
Private bank	87	50.9	42.6
Microfinance institution	3	1.8	40.3
Pawnshop	7	4.1	52.3
Extended family	0	-	-
Community group	64	37.4	41.4
Average interest rate			**41.5**
Total	**173**	**100.0**	

Table 3: Description and Summary of Statistics of Characteristics

Variable	Description	Obs	Mean	Std. Dev.
income08	ln(income in 2008)	494	13.44	0.91
income09	ln(income in 2008)	494	13.56	0.86
income10	ln(income in 2008)	494	13.68	0.86
gender	Gender of the owner (female = 0, male = 1)	494	0.88	0.32
owner_ed	Education level of the owner (0=no primary, 1=primary, 2= secondary, 3= higher secondary)	494	1.79	0.87
young	Equal 1 if operated less than 5 years; 0 otherwise	494	0.28	0.45
mature	Equal 1 if operated between 6 and 10 years; 0 otherwise	494	0.24	0.43
service	Firm is in the service sector	494	0.45	0.5
manuf	Equal 1 if firm in manufacturing; 0 otherwise	494	0.21	0.41
formal	Firm is formally registered with the State	494	0.36	0.48
size	log(1+number of employees)	492	0.12	0.36
loan	Equal 1 if obtained a loan in the last 3 years; 0 otherwise	494	0.43	0.49
invest	Equal 1 if invested in the last 3 years; 0 otherwise	494	0.25	0.43
electricity	Equal 1 if has access to electricity; 0 otherwise	492	0.2	0.4
telephone	Equal 1 if has access to telephone; 0 otherwise	492	0.02	0.15

Table 4: Determinants of Income

	income08	income09	income10	income10
owner_ed	0.057	0.058	0.082*	0.081*
	(0.047)	(0.044)	(0.044)	(0.043)
gender	0.432***	0.456***	0.331***	0.353***
	(0.119)	(0.111)	(0.112)	(0.112)
young	-0.153*	-0.169**	-0.234***	-0.244***
	(0.091)	(0.084)	(0.084)	(0.084)
mature	0.135	0.110	0.092	0.096
	(0.092)	(0.086)	(0.088)	(0.087)
manuf	0.094	0.032	0.036	0.034
	(0.105)	(0.098)	(0.098)	(0.098)
service	0.401***	0.324***	0.189**	0.187**
	(0.087)	(0.081)	(0.081)	(0.081)
formal	0.285***	0.208***	0.298***	0.278***
	(0.080)	(0.074)	(0.075)	(0.075)
size	0.590***	0.582***	0.503***	0.509***
	(0.109)	(0.101)	(0.100)	(0.099)
invest	0.160*	0.216***	0.236***	
	(0.088)	(0.082)	(0.083)	
electricity	0.064	0.105	0.023	0.039
	(0.098)	(0.090)	(0.090)	(0.089)
telephone	0.978***	0.777***	0.747***	0.728***
	(0.284)	(0.254)	(0.246)	(0.245)
loanInvest				0.345***
				(0.093)
R-sqd	0.228	0.227	0.207	0.216
Adj. R-sqd	0.210	0.209	0.189	0.198
Obs.	476	483	490	490

Notes: standard errors are in parentheses. OLS regressions * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

Table 5: Determinants of borrowing and investment

	(loan)	(loan)	(loan)	(invest)	(invest)	(invest)
income08	0.268***			0.042		
	(0.094)			(0.087)		
income09		0.336***			0.131	
		(0.099)			(0.094)	
income10			0.284***			0.176*
			(0.094)			(0.092)
owner_ed	0.078	0.031	0.035	0.303***	0.297***	0.291***
	(0.106)	(0.105)	(0.104)	(0.086)	(0.086)	(0.086)
gender	-0.283	-0.246	-0.187	0.070	0.040	0.031
	(0.284)	(0.281)	(0.276)	(0.235)	(0.236)	(0.235)
young	0.293	0.270	0.283	-0.272	-0.294*	-0.299*
	(0.205)	(0.202)	(0.197)	(0.174)	(0.173)	(0.172)
mature	-0.243	-0.233	-0.213	0.128	0.115	0.110
	(0.213)	(0.214)	(0.212)	(0.164)	(0.165)	(0.165)
manuf	0.335	0.244	0.253	0.203	0.194	0.175
	(0.222)	(0.220)	(0.217)	(0.196)	(0.195)	(0.195)
service	0.175	0.121	0.162	0.365**	0.351**	0.361**
	(0.196)	(0.193)	(0.190)	(0.165)	(0.165)	(0.164)
formal	0.822***	0.740***	0.710***	0.140	0.122	0.106
	(0.178)	(0.173)	(0.173)	(0.147)	(0.145)	(0.146)
size	0.086	0.155	0.180	0.241	0.181	0.174
	(0.203)	(0.198)	(0.193)	(0.189)	(0.188)	(0.182)
loan				0.784***	0.776***	0.759***
				(0.146)	(0.144)	(0.141)
Pseudo. R-sqd	0.130	0.129	0.120	0.143	0.148	0.149
Obs.	347	354	361	476	483	490

Notes: standard errors are in parentheses. Probit regressions reporting marginal effects * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

Table 6: Summary of constraints to enterprise activity (%)

Obstacles to enterprise operation	N/A	Not or a minor problem	Somewhat a problem	Major problem
Electricity				
Lack of access to electricity	59.0	4.1	16.8	20.1
Power surges and black outs	63.5	4.9	13.6	18.1
Cost of electricity	56.2	11.2	6.5	26.2
Telecommunications				
Lack of access to telephone service	72.4	2.2	7.1	18.3
Poor quality of telephone service	78.1	3.2	7.7	11.0
Cost of telephone service	75.9	7.7	5.3	11.2
Transportation				
Lack of roads	90.3	3.7	4.3	1.8
Poor quality of roads	77.9	5.1	6.3	10.8
Little or no availability of transport for merchandise	84.4	5.1	5.1	5.5
Financing				
Lack of own and family capital	10.1	2.6	9.1	78.1
Lack of access to banks and other formal institutions	78.3	2.6	6.5	12.6
Lack of access to sources of informal financing	43.2	2.0	6.5	48.3
Interest rates and other transaction fees are too high	60.9	5.7	5.3	28.2
Difficult/Demanding borrowing procedures	69.4	3.2	8.5	18.9
Value of collateral is too high	90.7	2.0	1.8	5.5
Markets				
Lack of access to markets	77.7	5.1	8.9	8.3
Weak demand for goods and services	64.3	7.1	12.6	16.0
Too many sellers/ tough competition	49.5	4.3	6.7	39.6
Government				
Corruption	91.5	0.8	3.4	4.3
Restrictive laws and regulations	92.3	1.2	3.0	3.4
Difficulty with legal system and conflict resolution	97.4	0.4	1.4	0.8
Licenses and permits				
Time and cost of registering enterprise	87.8	2.0	5.9	4.3
Time and cost of obtaining licenses/ permits for enterprise	87.4	3.9	3.9	4.9
Complicated procedures for registration and licensing	91.3	1.6	3.9	3.2
Tax systems				
High tax rates	71.8	2.0	5.5	20.7
Complicated rules and procedures	89.5	2.6	4.5	3.4
Labour availability				
No skilled labour available	88.8	1.6	4.1	5.5
Land use policy				
Regulation on the use of farmland	91.3	2.4	3.9	2.4
Difficulty in obtaining construction permits	94.1	1.6	1.4	2.8
Land ownership uncertainties	79.1	1.2	4.1	15.6
Agriculture policy				
Import duties and export taxes on agricultural products	88.2	1.8	4.7	5.3
Crop restrictions	100.0	0.0	0.0	0.0
Price controls for agricultural products	87.0	0.4	4.3	8.3
Other	99.4	0.2	0.3	0.1

Table 7: Variable descriptions and summary statistics for Constraints

Variable	**Description**	**Mean**	**S.D**
Owncapital	Lack of own capital or family capital	2.55	1.05
Informalcapital	lack of access to informal sources of capital	1.60	1.49
Formalfinance	Lack of access to sources of formal finance	0.53	1.12
Marketaccess	Lack of access to markets	0.48	1.02
Competition	Market competition is intense	1.36	1.47
Interest	Interest rates and other transaction fees are too high	1.01	1.39
Electricityaccess	Lack of access to electricity	0.98	1.3
Electcostwaccess	Cost of electricity given access	0.21	0.74
Electqualwaccess	Power surges and blackouts given access	0.18	0.67
Roads	Poor quality of roads	0.50	1.07
Tax	High tax rates	0.75	1.29
Procedures	Difficult/demanding borrowing procedures	0.77	1.27
Ownership	Land ownership uncertainties	0.56	1.17
Controls	Price controls for agricultural products	0.34	0.96
Labor	No skilled labour available	0.26	0.84
Corruption	Difficulty with corruption	0.20	0.77

Table 8: Income Growth Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)	(11)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
owncapital	-0.008																0.004	
	(0.011)																(0.011)	
informalcapital		-0.035***															-0.025***	-0.028***
		(0.007)															(0.008)	(0.007)
formalcapital			-0.028***														-0.019*	-0.021**
			(0.009)														(0.010)	(0.010)
interest				0.005													0.017*	0.015*
				(0.007)													(0.010)	(0.008)
competition					-0.008												0.001	
					(0.007)												(0.008)	
marketaccess						-0.032***											-0.025**	-0.023**
						(0.010)											(0.011)	(0.010)
electricityaccess							-0.007**										-0.004	
							(0.003)										(0.003)	
electcostwaccess								0.023*									0.022	
								(0.013)									(0.019)	
electqualwaccess									0.015								0.005	
									(0.015)								(0.022)	
roads										0.017*							0.003	
										(0.010)							(0.011)	
tax											0.008						-0.001	
											(0.008)						(0.009)	
procedures												-0.012					-0.010	
												(0.008)					(0.011)	
ownership													-0.017*				-0.009	
													(0.009)				(0.010)	
controls														-0.003			0.010	
														(0.011)			(0.011)	
labour															0.010		0.004	
															(0.013)		(0.013)	
corruption																0.018	0.026*	0.026*
																(0.014)	(0.015)	(0.014)
R-sqd	0.03	0.09	0.05	0.03	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.13	0.11
Adj. R-sqd	0.02	0.07	0.03	0.02	0.02	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.08	0.09
Obs.	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476	476

Notes: standard errors are in parentheses. Probit regressions. Some nonsignificant regressions for model 1 are not reported for space reasons. The coefficients on owner and firm characteristics are included but not reported. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

Table 9: Investment in 2010 Probit Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
owncapital	0.240***														0.118	
	(0.088)														(0.101)	
informalcapital		-0.106**													-0.050	
		(0.051)													(0.065)	
formalcapital			0.057												0.014	
			(0.061)												(0.078)	
interest				0.274***											0.161**	0.266***
				(0.051)											(0.075)	(0.060)
competition					0.175***										0.082	
					(0.056)										(0.064)	
marketaccess						-0.199***									-0.199**	-0.219***
						(0.075)									(0.083)	(0.079)
electricityaccess							-0.097***								-0.033	
							(0.023)								(0.029)	
electcostwaccess								0.141							0.132	
								(0.092)							(0.151)	
tax									0.279***						0.137**	0.189***
									(0.054)						(0.064)	(0.060)
procedures										0.247***					0.112	
										(0.054)					(0.074)	
ownership											-0.110*				-0.203***	-0.188***
											(0.064)				(0.079)	(0.071)
controls												-0.027			-0.002	
												(0.073)			(0.084)	
labour													-0.335***		-0.213*	-0.269**
													(0.120)		(0.128)	(0.123)
corruption														-0.246**	-0.198	
														(0.115)	(0.139)	
Pseudo. R-sqd	0.16	0.16	0.15	0.20	0.17	0.16	0.18	0.15	0.20	0.19	0.15	0.15	0.17	0.16	0.30	0.27
Obs.	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490

Notes: standard errors are in parentheses. OLS regressions. Some nonsignificant regressions for model 1 are not reported for space reasons. The coefficients on owner and firm characteristics are included but not reported. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

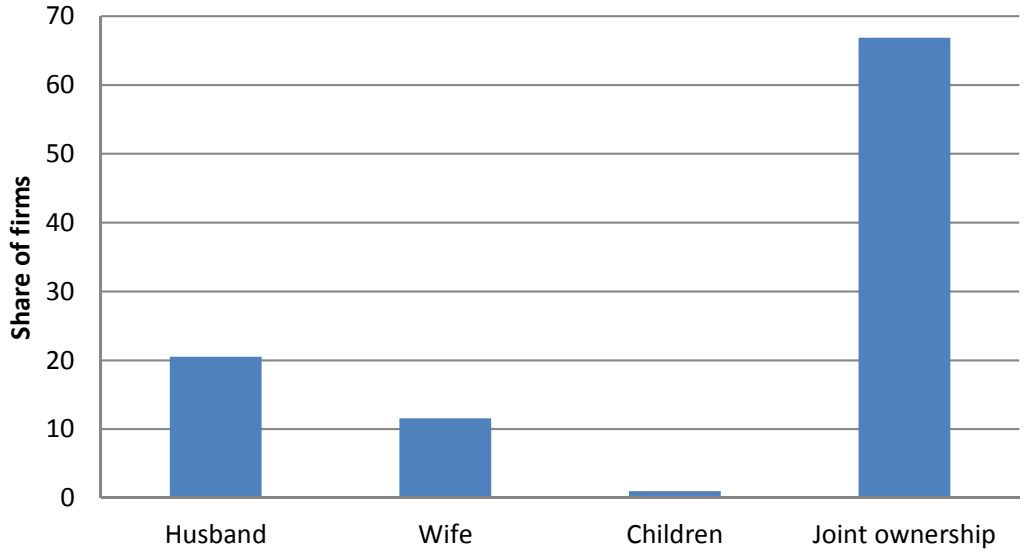

Figure 1: Firm Ownership

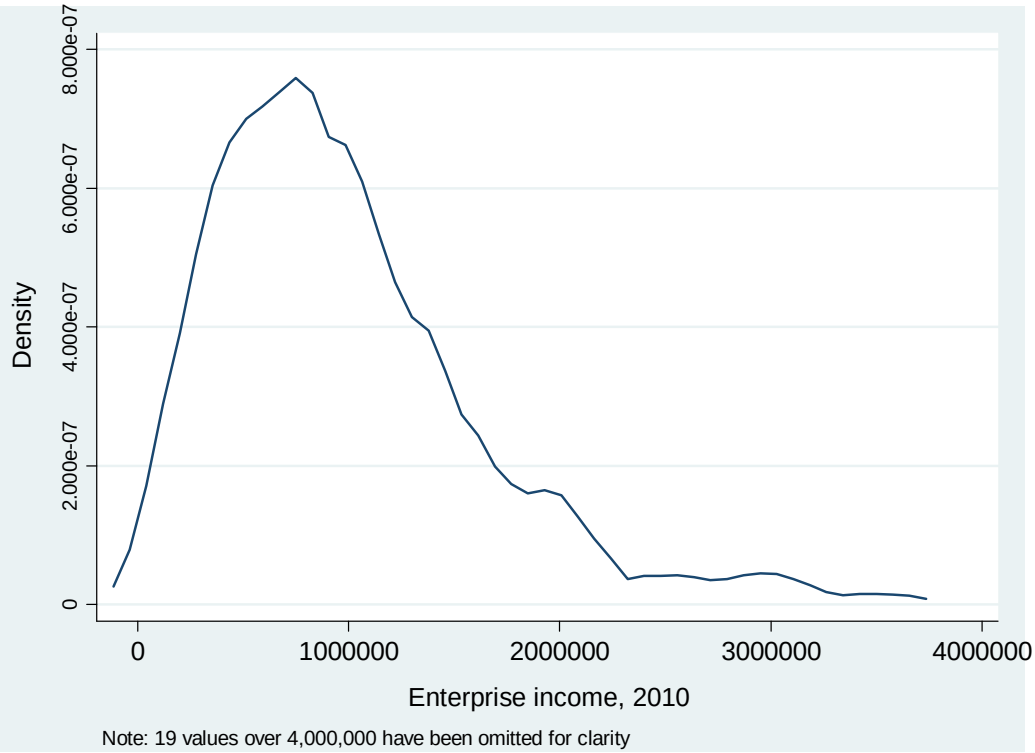

Figure 2: Kernel density distribution of enterprise income for 2010

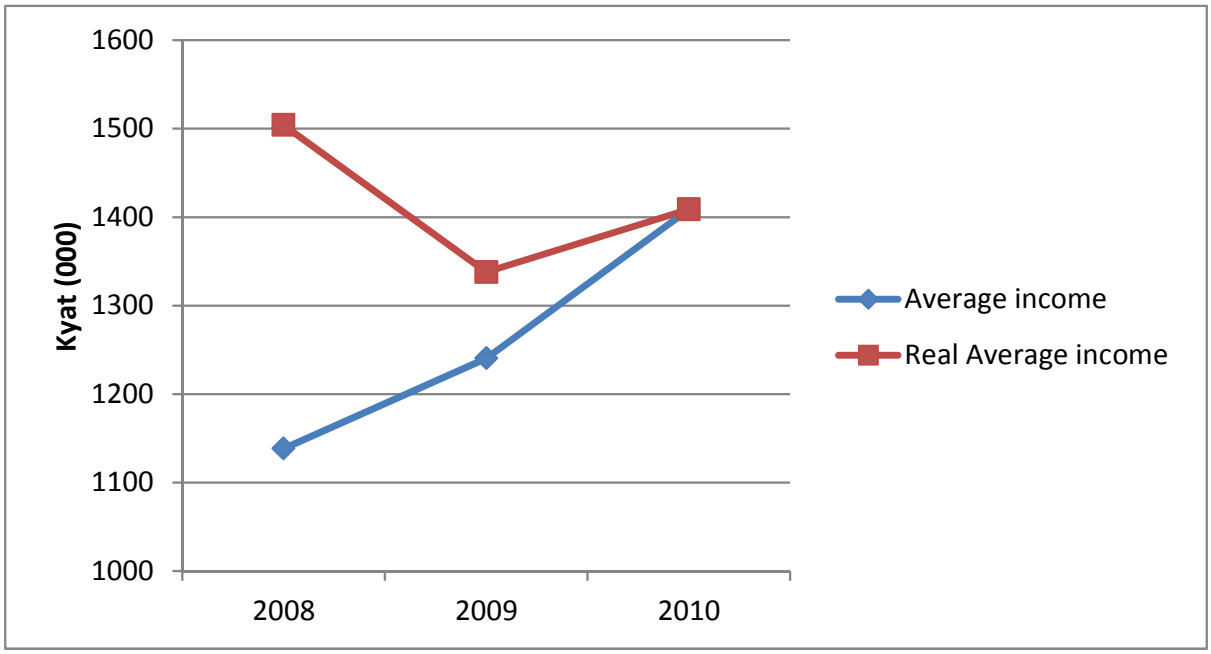

Figure 3: Average Incomes in 2008-2010

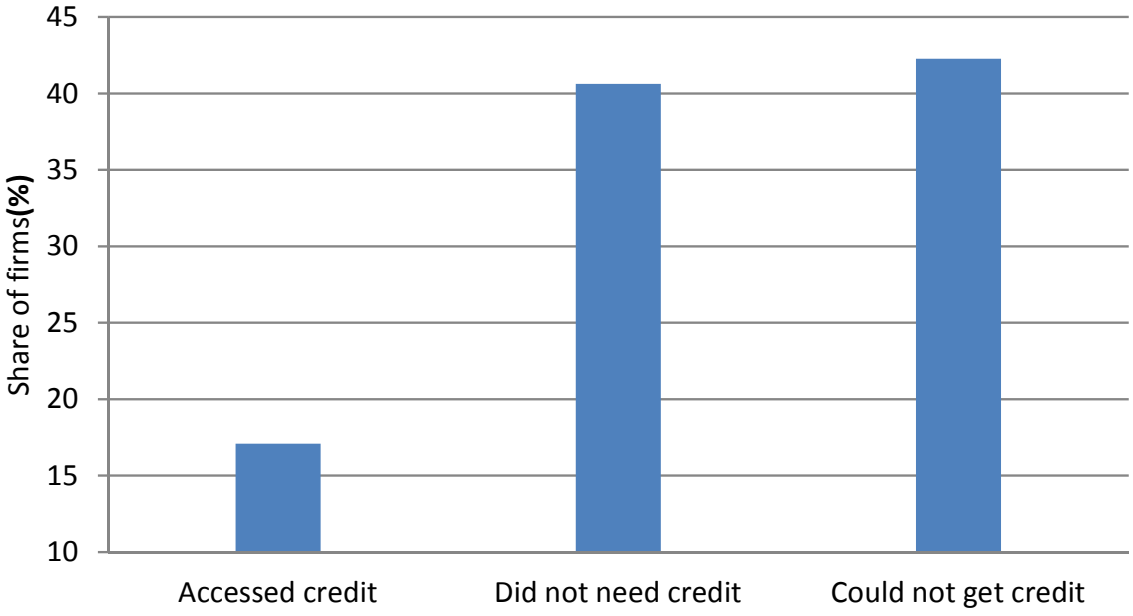

Figure 4: Access to credit over the last three years

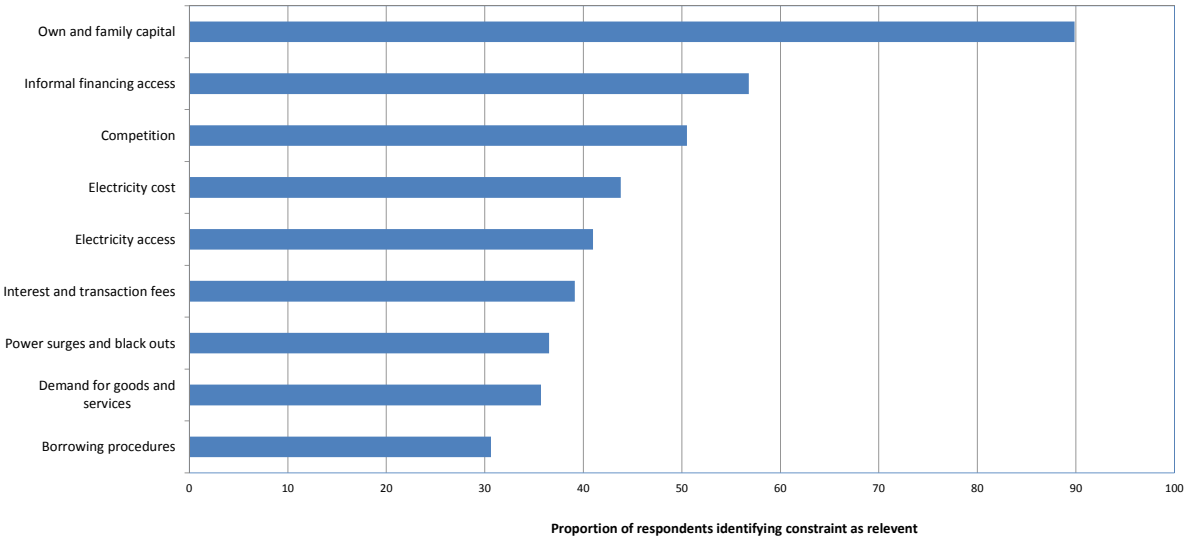

Figure 5: Relevant business constraints

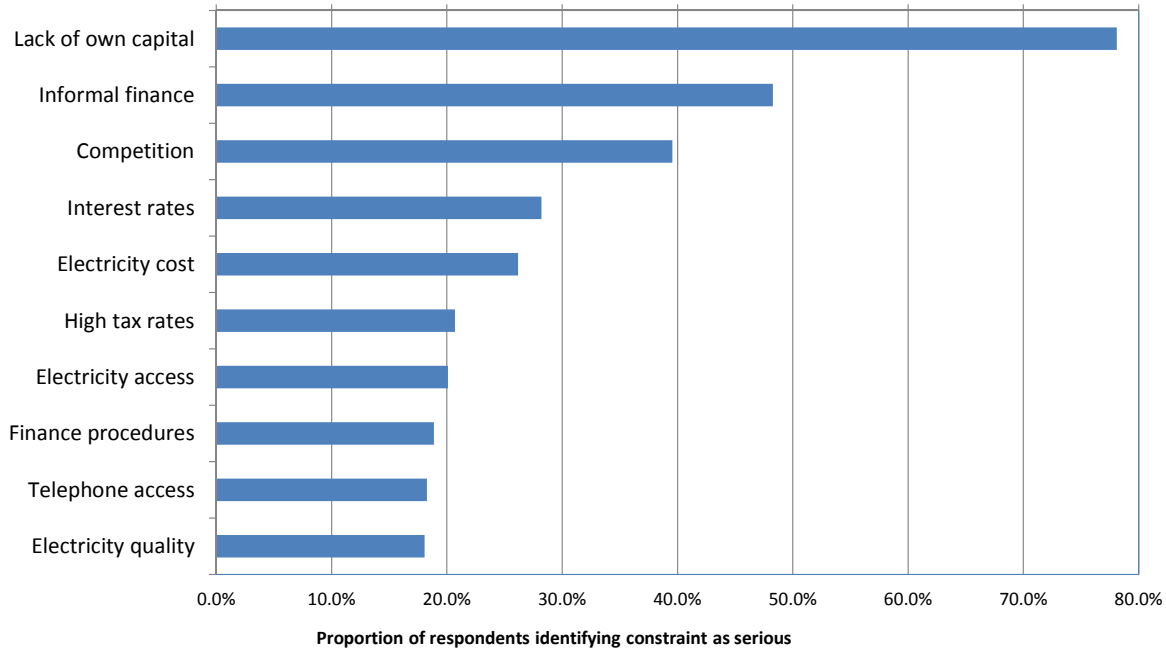

Figure 6: Most serious constraints to enterprise growth