

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 analyse business activity and determine the most binding constraints to firm growth. Most households in the region are operating informal firms with low earnings and no employees. The most binding constraints are related to external financing and competition. Firms that view access to informal credit as a major constraint are 15.3% less likely to invest and grow, on average, 5.7% less in 2008-2010. Restricted access to markets is also a major binding constraint, reducing the likelihood of investment up to 15.3% and income growth up to 6%.

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

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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”.

After independence from Great Britain in 1948, the country experienced political instability and armed conflicts. The military took power in 1962 and instituted the “Burmese Way to Socialism” which led to the nationalisation of all major industries, the rejection of democracy, and an increased military dominance. The socialist policies led to an economic decline that resulted in the country reaching the status of a Least Developed Country in 1987. Widespread protests in 1988 and the brutal crackdown on August 8, 1988 pushed the military to embark on market reforms. Accompanying political reforms started but were not completed as the military refused to give power after the victory of the National league for Democracy (NLD) during the multi-party general elections in 1990. This act and continued violations of human rights prompted most Western countries to apply economic and political sanctions to the country. Economically isolated and experiencing many armed conflicts, the market reforms started in 1990 did not lead to prosperity. However, with the new reforms of 2011, there is renewed hope for economic take-off given the country’s great potential.

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 area’s 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 evaluates 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 point 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 of this study show that informal access to credit and the intensity of market competition were the most binding constraints for firm investment and income growth. Firms that identified informal finance as a major constraint to business growth were 9.6% less likely to invest and grew, on average, 5.7% less than other firms between 2008 and 2010. Restricted access to markets is also a major binding constraint, reducing the likelihood of investment up to 15.3% and income growth up to 6%.

The prominence of access to informal financing has to be put in the context of the financial history of the country, which has widely resulted in a lack of trust in formal institutions. Since independence, the country has experienced three episodes of currency crises: 1964, 1985, and 1987. During those crises, often the government invalidates some currency notes without

exchanging them with the new currency notes. This pushes households to bartering and hoarding of goods, such as rice, as a means of storing value. The 1987 crisis resulted in the 1988 uprising and the subsequent internal military coup and, later, the start of market reforms. These new reforms had very limited success. The country experienced a severe banking crisis in 2003. There were bank runs, limits on bank withdrawals and transfers, and the cessation of other methods of payments (credit and debit cards, checks, remittance facilities, etc.). Instead of acting as a lender of last resorts for the banks, the Central Bank of Myanmar (CBM) encouraged the recall of loans from private banks. This led to huge disruptions of the economy and a crash of the real sector (Economist, 2003; Turnell, 2003).

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 analyses 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 centre 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 (United Nations Development Programme, 2007).

The design of the survey is based on the rural investment climate survey, as developed by the World Bank (World Bank, 2007). 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 startups. 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. However, given that households from the two samples have different probabilities of being selected, we will use a dummy variable to control for this unless the microfinance sample is excluded from a particular analysis. 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 affects 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 not 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 disproportionately high 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 97.4% of the head of households able to read and write. The educational attainment is also high (see Figure 1). The education levels in Myanmar are: primary (5 years), secondary (4 years) and higher secondary (2 years). Overall, 63% of our survey respondents had a secondary education or higher. The attainment levels of spouses are equally high (64.4%). The average family size is 5.3 and most children had attended or are attending school. 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 countries³. Comparing enterprise ownership by poverty status shows that the poor are equally likely to own firms as the non-poor. The firm ownership rates were 66% for the poor versus 67% for the non-poor. Therefore, the poverty status depends on the abilities of entrepreneurs to run successful businesses.

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 jointly owned by all family members, 20% are owned by only the husband and 12% owned by the wife only (see Figure 3). This ownership structure makes it hard to determine the gender and educational level of the enterprise

³ 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.

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 categorized 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%).⁴ 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 store owners account for 64% of total activity in services (equal to almost one quarter of all businesses). Within the agricultural sector, the same lack of diversity occurs, with 62% of firms producing staple 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 (for example brick layers) and service firms are more likely to have no fixed location (for example street vendors or transport businesses). It is therefore

⁴ The definitions of the sectors are as follows. Agriculture includes crop cultivation, animal husbandry, and fishing. Manufacturing includes blacksmith/metal worker, carpenter, tailor/clothing, woods and products of wood, builder/brick layer and furniture maker. Services include street vendor-food, street vendor-clothes, store owner, transportation of goods, and transportation of people, telecommunications and business services.

not surprising that most firms do not have any employee (about 90%). For the few enterprises that had employees, 80% of them had either one or two employees; only a small fraction of firms in manufacturing had more than two employees. The enterprises analysed are not only earning low incomes and hiring a 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 should be interpreted with caution, 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 analyse 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.⁵ 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 Kyat (USD\$1, 778), while the median income was just 900,000⁶. Figure 4 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 is 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

⁵ It is unlikely that respondents could recall details about their input costs.

⁶ 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.

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 5). 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.

3.3. Investment and External Financing

One of the survey questions asked firm owners if they made a fixed investment in the past three years, the type of investment and the source of funds invested. Table 2 shows the summary for all firms owners and distinction between the microfinance clients (ZMF) and non-clients. Overall, a quarter of firms responded that they made an investment in the past three years. This investment rate does not include the start of business but just an investment activity of existing enterprises. Indeed, Table 3 shows that a number of households obtained loans for starting businesses.

The majority of investments by firms were land purchases, building constructions, and equipment purchases. These three types represent 30%, 27% and 30% of all investment, respectively. Only a very few ZMF clients purchased land (5/53) while over half purchased equipment. The majority of the firms that made an investment do so out of their profits (68.54%). For the non_ZMF clients, the share of firms that invest from profits is even higher (76%). Their reported borrowing for investment is only from extended family which is somewhat inconsistent with the data in Table 3.

The businesses that made an investment in the 2008-2010 period had higher sales in every year. A sample t-test shows that the differences in means were significant at the 1% level. For instance, the sales in 2010 for firms that invested in the 3-year period were 87% higher.

We also compared the sales growth over the three-year period and found that enterprises that invested grew by 73 percentage points more than those that did not invest.⁷ This suggests that the returns to investment are positive and substantial.

The statistics shown in Table 3 indicate severe borrowing constraints in this region. Only 22% of the non ZMF clients were able to borrow in the three year period investigated.⁸ Loans were mainly used to start a business or make a fixed investment. For ZMF clients, those were the only two purposes. However, a few non ZMF clients borrowed funds for consumptions and education (30%). About half of the borrowing occurred in 2010 due to the increased activity of ZMF microfinance.

Table 4 shows interest rates of the most recent loan by provider. The real interest rates are the nominal rates minus the inflation rates, obtained from the IMF. The average real interest rate is 42% with a minimum rate of 22% charged by State banks and a maximum of 52.3% charged by pawnshops.⁹ These high rates are an additional support of high returns to investment. Intuitively, individuals would not take out loans to invest unless their return was higher than the interest rate (after accounting for risk and profit). 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).

It seems puzzling then that only a few entrepreneurs take advantage of the high

⁷ This difference in means is significant at the 10% level.

⁸ While we asked about borrowing in the previous 3 years, 7 respondents reported loan dates between 2004 and 2007.

⁹ Despite the high real interest rates, 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.

returns to capital in this region. As suggested above, this may be due to low credit access which can come from low supply or low demand. We asked firm owners if they were looking for a loan and 54% answered they were not. We asked them also if they had a need for additional funding and 39% answered yes. However, even among this group 43% will not seek a loan. The overwhelming reason for not seeking a loan is that households did not want to be in debt (78% of the 267 who answered this question). The other reasons were linked to difficulties in obtaining a loan. Such low demand may be a backlash from the history of financial crises in the country that has eroded trust in the financial sector. In particular, the loan recalls during the 2003 banking crisis led many business owners in Yangon and Mandalay (the banks were mostly in those two cities) to sell their assets in order to repay their loans. There was also a widespread disruption of production as employers were not able to pay their suppliers and employees (Economist, 2003; Turnell, 2003).

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 4). Interest rates on State bank loans are, on average, 20% p.a. (or 1.69% per month) lower than all other loan providers because of loan ceilings. 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 and real estate speculation. In any case, a 40% collateral requirement is very high for most micro-firms.¹⁰ The characteristics of firms that borrow and invest will be analysed in the next

¹⁰ 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.

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.¹¹ 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 centres 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 (for example 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 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

¹¹ 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.

presented in Table 5. Most of the variables were discussed in the previous section.

Table 6 shows that firms with owners that attained higher levels of education earned higher incomes in every year. The coefficient is positive and significant at the 5% and 1% levels. Obtaining at least a primary education is associated with a 10-14% increase in income. Firms managed by women earn more income; the coefficient is large and significant at the 1% level. This result is contrary to findings in most countries where women managed businesses consistently perform less. Firms with older owners are also associated with higher incomes although the coefficient is small.

Young firms, less than 5 years old, earn 15-22% less income than older firms. The coefficients on mature firms (5-10 years), while positive, are not significant. 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 may help to explain an insignificant coefficient on manufacturing. Another finding is that formal firms earn much higher income in all three years, between 22% and 32%. The coefficient is significant at the 1% level in all specifications. This finding is consistent with the evidence that informal firms are less profitable and less productive. We also find that size, measured as the logarithm of one plus the number of employees, have significantly higher incomes. The coefficients are significant at the 1% level and range between 54% and 62%.

In the previous section, external finance and investment decisions were discussed at length. Only a quarter of firms made a fixed investment and most non ZMF clients did so out of retained earnings. Therefore, investment can lead to high income as high income can lead to investment. We test both directions of causality since we do not have the year of investment. The coefficient for investment is large and significant for 2009 and 2010. In 2010, firms that invested in the three years earned 20% more than firms that did not invest. We used the loan

dates to infer the investment date. We tested the effect of obtaining a loan in 2008 and 2009 for the purposes of investment. We find that obtaining a loan in 2008 and investing it is associated with 25% more income in 2009 and 2010. However the loans from 2009 did not have a significant effect on income in 2010. As we saw from Table 4, only 34 firms out of 494 borrowed in 2009. Overall, the regression results confirm the descriptive analysis that returns to investment are substantial and significant in this region. Lastly, we find that ZMF clients had significantly higher incomes than the rest. This may be because ZMF microfinance is providing valuable business services beyond the provision of investment funds.

We also included two dummy variables for firms that have access to electricity and a telephone. We find that the coefficients on both are positive but not consistently significant. These results are not surprising as only a small number of firms have access to electricity and telecommunications, with a general supply constraint in the region. The R-squared of the regressions range between 0.20 and 0.23.

4.2. Determinants of financial access and investment

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 here. Probit models are estimated and we report the marginal effects in Table 7. We exclude microfinance clients for the determination of borrowing given all of them obtained a loan but we include them in the regressions for investment and with a dummy control. Some of the loans were used to start businesses but the variable *invest* measures the share of existing firms that made an investment.

The share of non_ZMF clients that obtained a loan was 17% for all years, the variable *loan* in the first column. In columns two and three, the variable represents firms that obtained a loan in 2008, and in both 2008 and 2009, respectively. Only the formal status was consistently associated with higher probability of obtaining a loan. The coefficient is significant at the 1% level. This finding confirms that one of the channels of formalization is

increased participation in the credit market.¹² As we have seen in the previous section and we'll see next, borrowing increases the likelihood of investment, which in turns increases income. Log of income in 2008 is also associated with high probability of obtaining a loan overall and in 2008-2009 period. A 1% increase in log of income in 2008 leads to a 7 percentage point increase in the probability of obtaining a loan. This means that lenders primarily give loans to the more successful firms and the poorest households are excluded from the credit market.

For investment, we control for income and credit access in each of the years of 2008-2010. The results in Table 7 show that high income in 2008 does not significantly increase the likelihood of investing, but incomes in 2009 and 2010 increase the probability by 6-7 percentage points. After controlling for the clients of ZMF, only obtaining a loan in 2008 significantly raise the probability of investing, by 24%. As discussed previously, non_ZMF clients obtained loans mostly in 2008. The level of education is a significant determinant of the decision to invest. It increases the likelihood of investing by 6-7 percentage points. Moreover, firms in the service sector are 11% more likely to invest. The gender of the head and age of the firms are marginally significant in some specifications but are not robust.

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, 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

¹² An exception is by a recent study by de Mel et al. (2012) that finds, in an experiment in Sri Lanka, formalisation does not lead to a notable increase in profits for most firms.

were asked to grade the corresponding constraint from zero (not a constraint) to three (a major constraint).

The first column of Table 8 shows the share of firms that indicated a particular constraint is not relevant to them. The following columns indicate the severity of the issues by summarizing the shares of firms that responded that: a constraint is not a problem or it is a minor problem; it is somewhat a problem; it is a major problem. 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, 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 to a large proportion of businesses in the sample (at least 20%) and have a high proportion of those businesses grading it as a serious constraint (at least 10%).

According to our criteria above, 17 issues are identified as relevant to businesses. The main categories for the issues are: financing, electricity, telecommunication, transportation, markets, tax systems and land use policy. In general, issues related to the government are not found to be relevant, which is not surprising given the majority of firms are in the informal sector. Figure 7 shows the nine most relevant issues for businesses.

5.2. Severity of constraints

The grading results, shown in Table 8, 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, and market competition. However, these issues pale in comparison to the severity of constraints created by a dysfunctional financial system (see figure 8 for the most serious constraints).

There is a range of financing issues which are cited as serious constraints in the region. Perhaps the most striking is the lack of access of 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 (for example, 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 subcategories, 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 were 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 a 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). Although this is a big issue for businesses, market competition is good for consumers and reducing such competition would not be a good course of policy action.

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 were 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 taxes. This is consistent with the finding that only 37% of firms are registered with the government. Such finding will have 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 the business owners view corruption as a conduit for business growth, rather than being a constraint. Another possibility is that businesses have very few interactions with government officials and therefore do not need to pay bribes.

Using the pre-established criteria for determining an important constraint (relevant for 20% of businesses and at least 10% identifying it as a major constraint to business growth), constraints relating to credit access, electricity provision, and the intensity of market competition appears to be the most serious for enterprise growth. As will be discussed, this is not uncommon in 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 analysed 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. As figure 8 shows, 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.¹³ 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 analysed in section 4.2. Enterprise income growth (EIG_i) is calculated between 2008 and 2010 if the firm

¹³ 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.

existed in 2008 or it is between 2009 and 2010 for those created in 2009.¹⁴ Seventeen 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 8.

Three models, adapted from DMN, were estimated using enterprise income growth (EIG_i) and investment decision ($invest$) as the dependent variables. 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 analysed separately. Model two then uses all 17 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 (that is it must be negative) and the effect must be large. For income growth, we use OLS estimations; and for investment, 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 the most 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 10. The first column reports the results for all constraints that were analysed individually. The coefficients for

¹⁴ There are several 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 relying 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.

lack of informal and formal finance, and difficulty of market access are negative and significant at the 1% and 5% levels. The coefficients remain significant in models two and three for informal finance and market access. These two constraints are the only two binding constraints to enterprise income growth. For instance, firms that identified informal finance as a minor problem experienced, on average, 1.9% 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, 6% lower (1.9 multiplied by three). Firms identifying market access as a serious constraint grew, on average, 6.0% 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, electricity issues were found to be positive and significant, but it was not in the other two models. Moreover, telephone cost is positive and significant in models 1 and 2. This means that firms complaining about these constraints are growing faster. This finding on the infrastructure constraints may be because telephone, electricity and road 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 data set would be needed, analysing enterprise growth over a range of cities with

variation in infrastructure provision.

For simplicity, the results for firm characteristics have not been presented here. The most robust findings for those are that higher education, and formal status lead to faster income growth and firms in services grow slower. In Table 11, we show the results for investment. We have already analysed the effects of the owners and firm characteristics and found that the most important factor for making investment are higher education levels and obtaining a loan. As for income growth, informal capital and market access are the most binding constraints. Lack of access to informal capital decrease the probability of investment between 3.2% and 9.6%, depending on the severity of the constraints. The lack of access to markets lead to larger declines (5.1%-153%). Land ownership uncertainty is also marginally binding as it fails to be significant only in model 3. The coefficient on access to electricity is negative and significant in model 1 but not in model 2. Telephone cost, quality of roads, availability of transports, and high tax rates are all positive and significant in model 1 but most fail to be significant in model 2. This indicates that these constraints are not robust barriers to investing in Kalaymyo.

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 the 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, and the limited access to markets were the most binding. Firms that identified informal finance as a major constraint to business growth grew, on average, 5.7% less than others between 2008 and 2010. Restricted access to markets was equally damaging to growth but decreased the likelihood of investing by a larger percentage, 5.1%-15.3% compared to 3.2%-9.6% for lack of informal credit.

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.

Appendix: Tables and Figures

Table 1: Sector composition and Income in 2010

Sector	% of first digit sector	% of all businesses	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: Investment statistics

	All	ZMF	non_ZMF
Made a fixed investment in the last 3 years			
Yes	124	53	71
No	366	75	291
Total	494	129	365
Type of investment			
Land	37	5	32
Building	33	16	17
Equipment	37	23	14
Furniture	4	3	1
Vehicles	4	2	2
Other	8	3	5
Source of investment			
Profits	85	31	54
Family income	6	4	2
Extended Family loan	18	2	16
Microfinance loan	15	15	0

Table 3: External Borrowing

	All	ZMF	non_ZMF
Obtained a loan in the last 3 years			
Yes	210	129	81
No	284	0	284
Purpose of first loan			
Start a business	49	18	31
Investment	130	111	19
Consumption	17	0	17
Education	7	0	7
Other	7	0	7
Dates for first loan			
<= 2008	48	5	43
2009	34	14	20
2010	114	107	7

Table 4: 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 5: 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 6: Determinants of Income

	income08	income09	income09	income10	income10	income10
owner_ed	0.084*	0.098**	0.112**	0.120***	0.134***	0.135***
	(0.047)	(0.043)	(0.043)	(0.046)	(0.045)	(0.045)
young	-0.154	-0.151*	-0.178**	-0.197**	-0.214**	-0.227**
	(0.097)	(0.085)	(0.086)	(0.092)	(0.092)	(0.093)
mature	0.116	0.102	0.103	0.101	0.107	0.102
	(0.103)	(0.097)	(0.097)	(0.096)	(0.096)	(0.096)
manuf	0.117	0.066	0.066	0.065	0.077	0.066
	(0.115)	(0.112)	(0.113)	(0.103)	(0.104)	(0.105)
service	0.359***	0.300***	0.315***	0.184**	0.209**	0.203**
	(0.089)	(0.081)	(0.080)	(0.081)	(0.081)	(0.080)
formal	0.279***	0.215***	0.217***	0.298***	0.316***	0.304***
	(0.077)	(0.073)	(0.074)	(0.075)	(0.076)	(0.075)
size	0.664***	0.623***	0.623***	0.533***	0.555***	0.538***
	(0.110)	(0.102)	(0.099)	(0.109)	(0.109)	(0.107)
electricity	0.123	0.138	0.152	0.046	0.050	0.058
	(0.111)	(0.104)	(0.104)	(0.108)	(0.108)	(0.108)
telephone	0.885**	0.700**	0.673*	0.667	0.663	0.659
	(0.364)	(0.354)	(0.364)	(0.421)	(0.420)	(0.419)
Ageofhead	0.040**	0.037**	0.037**	0.036**	0.036**	0.037**
	(0.017)	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)
head_gender	-0.174*	-0.159*	-0.169*	-0.142	-0.157*	-0.157*
	(0.094)	(0.092)	(0.092)	(0.086)	(0.086)	(0.086)
invest	0.089	0.165**		0.197***		
	(0.084)	(0.076)		(0.076)		
zmf	0.488***	0.329***	0.374***	0.233***	0.271***	0.281***
	(0.088)	(0.083)	(0.083)	(0.079)	(0.082)	(0.082)
loaninvest08			0.251*			0.254*
			(0.139)			(0.133)
loaninvest09					0.060	0.072
					(0.176)	(0.176)
R-sqd	0.253	0.229	0.227	0.212	0.203	0.208
Adj. R-sqd	0.232	0.207	0.206	0.191	0.182	0.185
Obs.	475	482	482	489	489	489

Note: The table reports OLS results for determinants of income. Robust standard errors are in parentheses. Statistical significance: * 0.10, ** 0.05, ***0.01.

Table 7: Determinants of Financial Access and Investment

	(loan)	(loan 08)	– (loan 0809)	– (invest)	(invest)	(invest)	(invest)
formal	0.206*** (0.045)	0.119*** (0.036)	0.161*** (0.042)	0.049 (0.039)	0.049 (0.040)	0.062 (0.039)	0.056 (0.039)
Owne_ed	0.000 (0.028)	0.002 (0.020)	0.003 (0.024)	0.075*** (0.022)	0.073*** (0.023)	0.065*** (0.023)	0.063*** (0.023)
young	0.049 (0.052)	0.034 (0.039)	0.037 (0.048)	-0.086* (0.049)	-0.073 (0.051)	-0.067 (0.049)	-0.063 (0.049)
mature	-0.084 (0.056)	-0.025 (0.044)	-0.080 (0.053)	0.034 (0.046)	0.027 (0.047)	0.023 (0.047)	0.024 (0.047)
manuf	0.078 (0.059)	0.098** (0.046)	0.049 (0.054)	0.058 (0.053)	0.060 (0.055)	0.069 (0.054)	0.064 (0.053)
service	0.043 (0.047)	0.088** (0.036)	0.039 (0.043)	0.114*** (0.043)	0.107** (0.046)	0.115** (0.045)	0.118*** (0.044)
size	0.022 (0.054)	0.054 (0.037)		0.073 (0.047)	0.050 (0.052)	0.058 (0.054)	0.057 (0.053)
Ageofhead	-0.016* (0.009)	-0.008 (0.007)	-0.013 (0.009)	0.000 (0.008)	-0.005 (0.008)	-0.007 (0.008)	-0.005 (0.008)
head	0.019 (0.050)	0.011 (0.034)	0.059 (0.044)	-0.080* (0.042)	-0.070 (0.043)	-0.071 (0.044)	-0.074* (0.043)
loan08				0.242*** (0.061)	0.213*** (0.060)		
loan09				0.122 (0.079)		0.059 (0.074)	
loan10				0.071 (0.087)			-0.041 (0.079)
zmf				0.146* (0.084)	0.183*** (0.046)	0.164*** (0.045)	0.208** (0.081)
income08	0.071*** (0.023)	0.017 (0.015)	0.037* (0.020)		0.028 (0.024)		
income09						0.058** (0.024)	
income10							0.067*** (0.023)
Pseudo. R- Obs.	0.135 346	0.161 346	0.101 348	0.137 491	0.131 475	0.118 482	0.122 489

Note: The table reports marginal probabilities of Probit regressions for obtaining a loan (0/1) and investing (0/1). Robust standard errors are in parentheses. Statistical significance: * 0.10, ** 0.05, *** 0.01.

Table 8: Summary of constraints to enterprise activity (%)

Obstacles to enterprise operation	N/A	Not a problem	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 9: 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 10: Constraints to Income Growth

	(1)	(2)	(3)
owncapital	0.005 (0.015)	0.003 (0.014)	
informalcapital	-0.021*** (0.007)	-0.016** (0.007)	-0.019** (0.008)
formalcapital	-0.016** (0.006)	-0.010 (0.007)	
interest	0.012* (0.007)	0.015 (0.010)	
borrowingprocedures	0.000 (0.008)	-0.007 (0.011)	
competition	0.014 (0.009)	0.008 (0.011)	
marketaccess	-0.023** (0.010)	-0.022** (0.010)	-0.020** (0.010)
weakdemand	0.001 (0.010)	0.000 (0.010)	
electricityaccess	0.016** (0.007)	0.005 (0.009)	
electricitycost	0.023*** (0.007)	0.007 (0.010)	
electricityquality	0.019** (0.008)	0.013 (0.011)	
telephoneaccess	0.003 (0.008)	-0.009 (0.013)	
telephonequality	0.007 (0.007)	-0.008 (0.014)	
telephonecost	0.028*** (0.01)	0.036** (0.018)	
roadsquality	0.007 (0.010)	0.005 (0.014)	
transportavailability	-0.009 (0.013)	-0.021 (0.016)	
tax	0.006 (0.008)	-0.006 (0.009)	
ownership	0.004 (0.008)	0.006 (0.010)	
R-sqd	-	0.17	0.12
Adj. R-sqd	475	475	475

Note: The table reports the OLS results for models 1-3. In column 1, each constraint was entered individually. The coefficients for firm and owner characteristics included in all models have not been reported for clarity. Robust standard errors are in parentheses. Statistical significance: * 0.10, ** 0.05, *** 0.01.

Table 11: Constraints to Investment

	(1)	(2)	(3)
owncapital	0.060*** (0.023)	0.025 (0.021)	
informalcapital	-0.038*** (0.048)	-0.025* (0.014)	-0.032** (0.015)
formalcapital	0.016 (0.0178)	0.007 (0.018)	
interest	0.070*** (0.012)	0.032* (0.018)	
borrowingprocedures	0.067*** (0.014)	0.013 (0.016)	
competition	0.063*** (0.016)	0.014 (0.016)	
marketaccess	-0.059*** (0.021)	-0.072*** (0.020)	-0.051** (0.021)
weakdemand	0.047*** (0.017)	0.029 (0.018)	
electricityaccess	-0.314*** (0.015)	-0.021 (0.020)	
electricitycost	0.028* (0.015)	0.002 (0.016)	
electricityquality	-0.013 (0.016)	0.003 (0.021)	
telephoneaccess	0.00 (0.015)	-0.015 (0.024)	
telephonequality	0.023 (0.017)	0.025 (0.028)	
telephonestat	0.062*** (0.016)	0.027 (0.023)	
roadsquality	0.075*** (0.016)	0.030* (0.018)	
transportavailability	0.048** (0.021)	-0.014 (0.020)	
tax	0.07*** (0.013)	0.033** (0.016)	
ownership	-0.032* (0.018)	-0.050*** (0.019)	-0.025 (0.018)
Pseudo. R-sqd	-	0.26	0.14
Obs.	491	491	491

Note: The table reports marginal probabilities of the Probit regressions for models 1-3. In column 1, each constraint was entered individually. The coefficients for firm and owner characteristics included in all models have not been reported for clarity. Robust standard errors are in parentheses. Statistical significance: * 0.10, ** 0.05, *** 0.01.

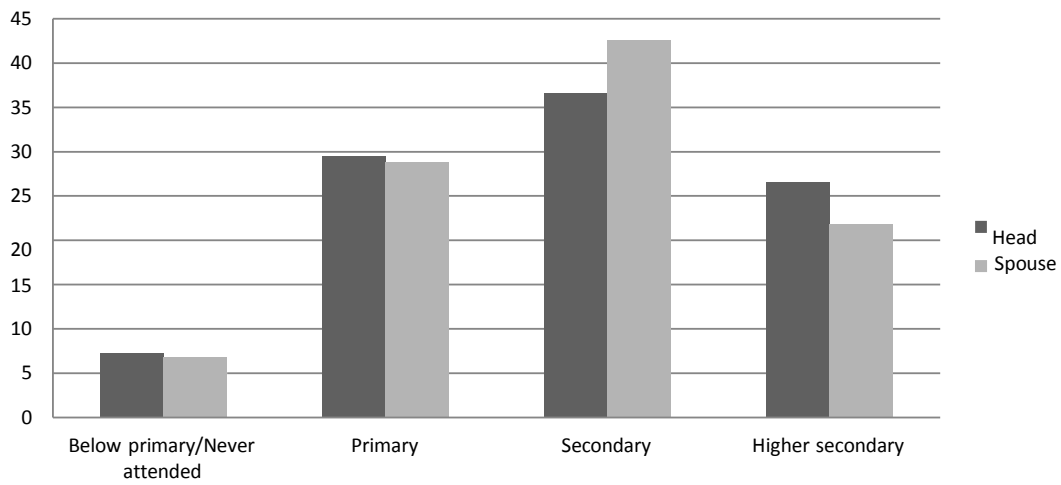


Figure 1: Educational attainment: household head and spouse

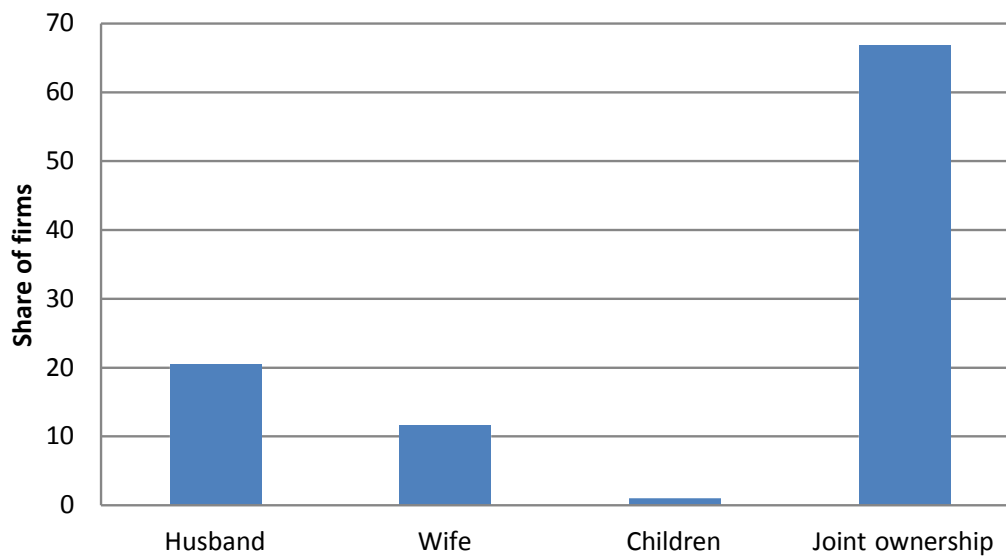


Figure 2: Firm Ownership

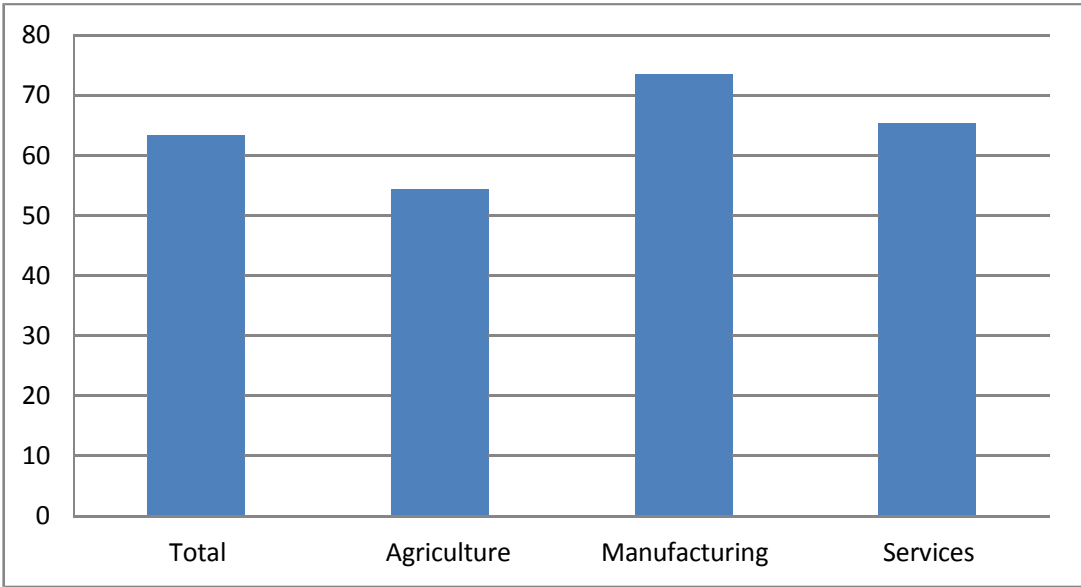


Figure 3: Share of informal firms (%)

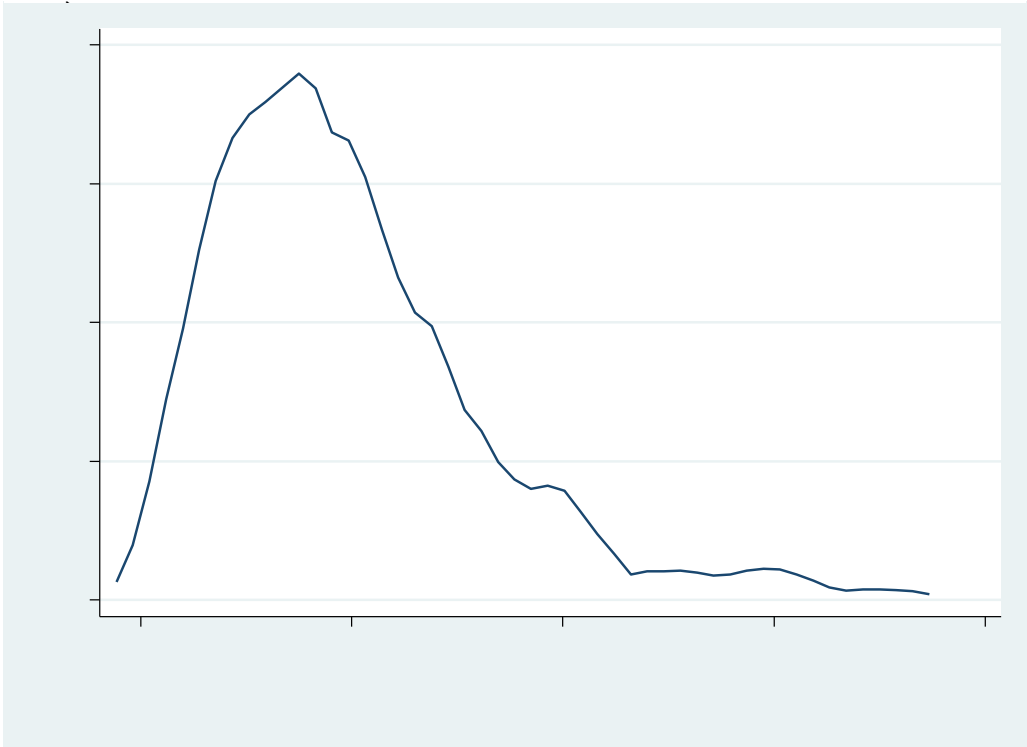


Figure 4: Kernel density distribution of enterprise income for 2010

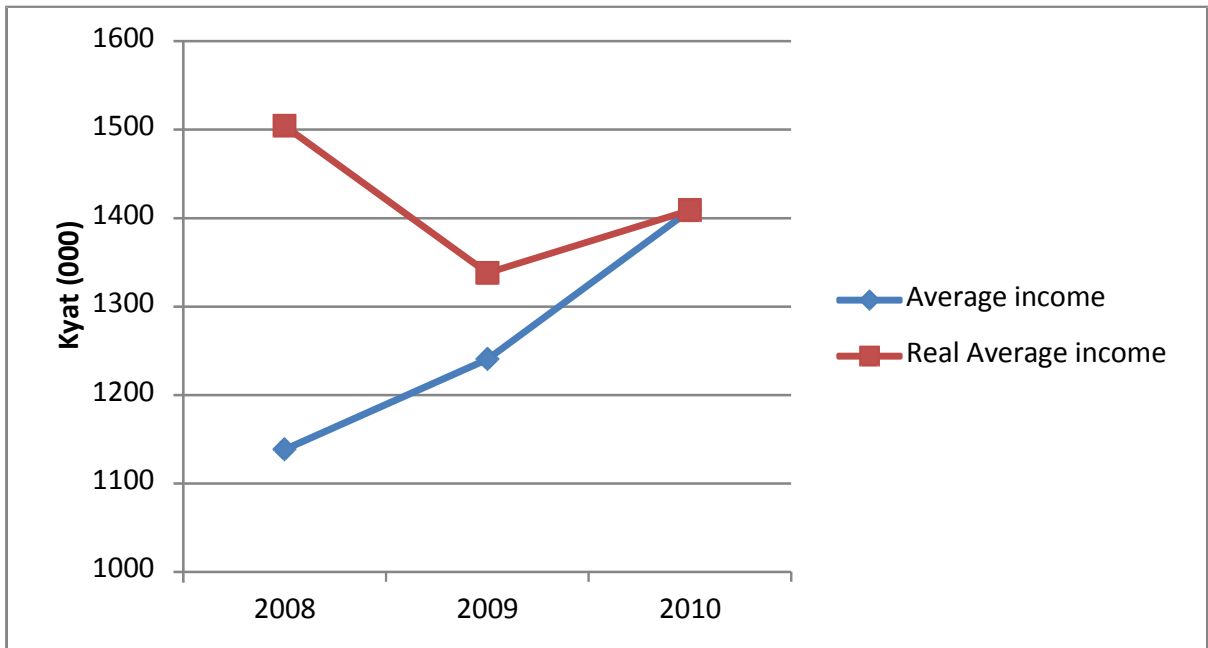


Figure 5: Average Incomes in 2008-2010

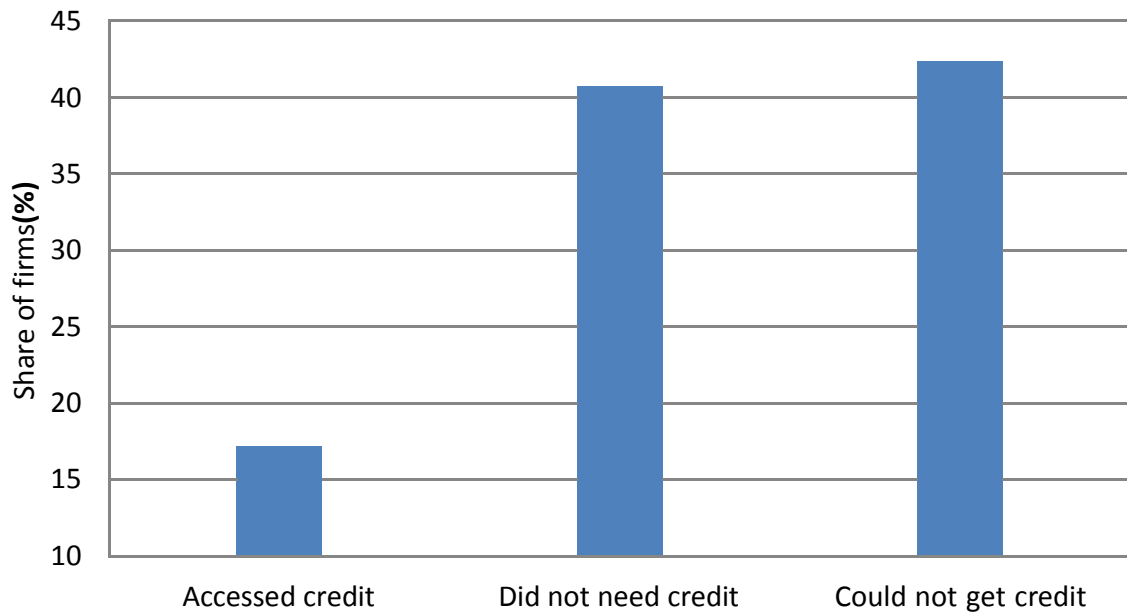


Figure 6: Access to credit

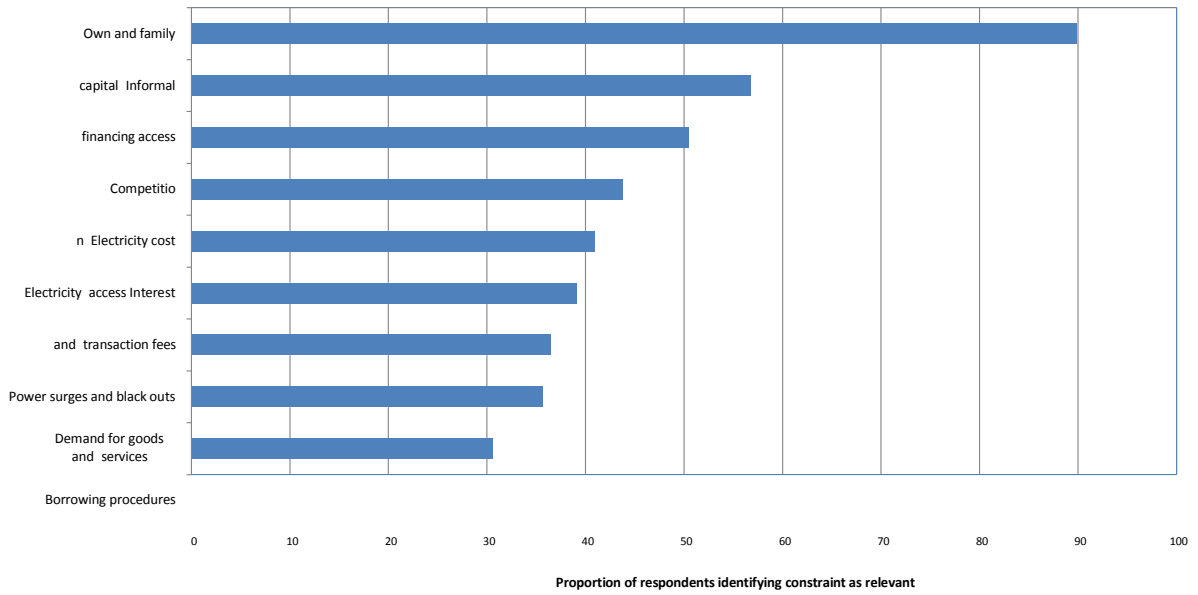


Figure 7: Most relevant business constraints

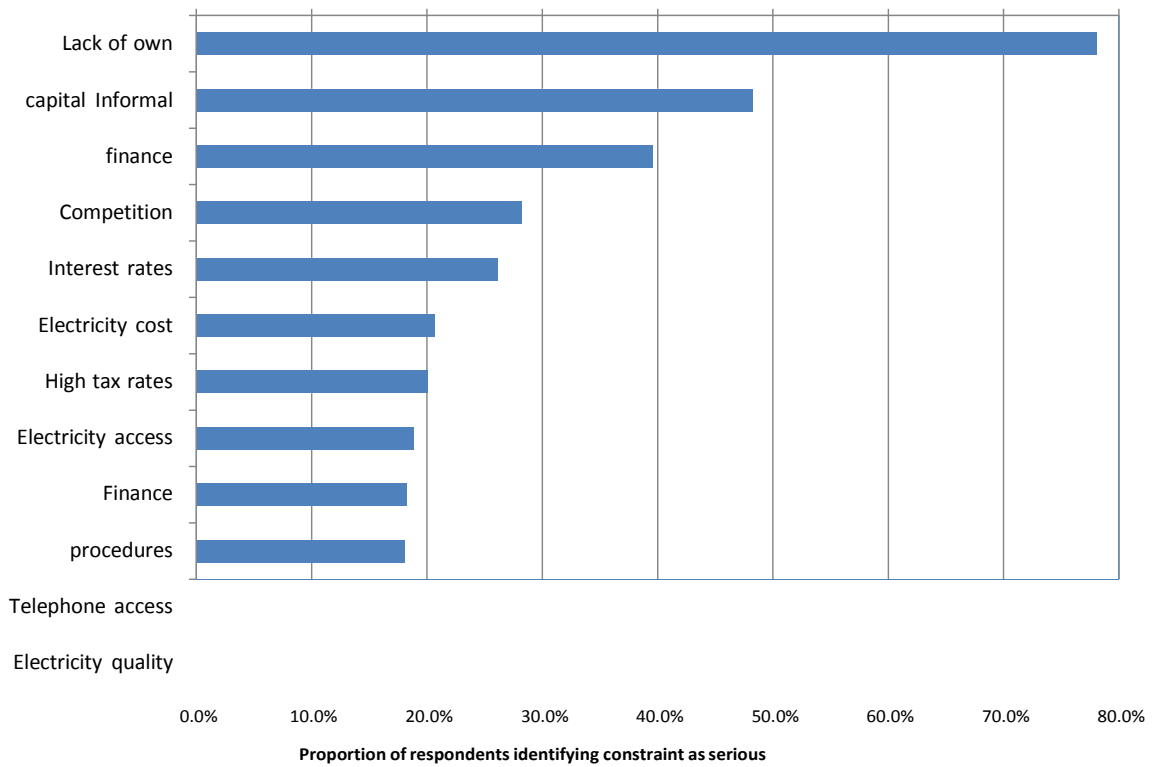


Figure 8: Most serious constraints to enterprise growth

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