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Self-Employment in the Developing World

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Abstract

This paper analyzes heterogeneity among the self-employed in 74 developing countries, representing two-thirds of the population of the developing world. After profiling how worker characteristics vary by employment status, it classifies self-employed workers outside agriculture as "successful" or "unsuccessful" entrepreneurs, based on two measures of success: whether the worker is an employer, and whether the worker resides in a non-poor household. Four main findings emerge. First, jobs exhibit a clear pecking order, with household welfare and worker education highest for employers, followed by wage and salaried employees, non-agricultural own-account workers, non-agricultural unpaid family workers, and finally agricultural workers. Second, a substantial minority of own-account workers reside in non-poor households, suggesting that their profits are often a secondary source of household income. Third, as per capita income increases, the structure of employment shifts rapidly, first out of agriculture into unsuccessful non-agricultural self-employment, and then mainly into non-agricultural wage employment. Finally, roughly one-third of the unsuccessful entrepreneurs share similar characteristics with their successful counterparts, suggesting they have the potential to be successful but face constraints to growth. The authors conclude that although interventions such as access to credit can benefit a substantial portion of the self-employed, effectively targeting the minority of self-employed with higher growth potential is important, particularly in low-income contexts. The results also highlight the potential benefits of policies that facilitate shifts in the nature of work, first from agricultural labor into non-agricultural self-employment, and then into wage and salaried jobs.

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Self-Employment in the Developing World

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I. Introduction

Although most workers in developing counties are self-employed, relatively little is known at a broader level about their characteristics and prospects, and how types of employment evolve as economic development occurs. This paper uses a comprehensive set of household surveys to document the heterogeneity of the self-employed, by which we mean both employers and own-account workers. In developing countries, self-employed workers are often classified according to their perceived prospects for growth. A small minority of self-employed are innovative, successful entrepreneurs with further growth potential and ambition (de Soto, 1989; Bennet and Estrin, 2007). On the other hand, the majority of the self-employed work for themselves and earn little, either because they are rationed out of wage jobs (Fields, 1975; Tokman, 2007, de Mel, et al, 2010) or because they prefer the autonomy and flexibility of self-employment (Maloney, 2004).

These less successful self-employed workers, whether self-employed by choice or not, are also heterogeneous. For example, Grimm, Knorringa and Lay (2011) distinguish between two types of unsuccessful entrepreneurs in several West African cities. The first type has the profile, in terms of age, education, and sector of work, of more successful entrepreneurs, but has yet to acquire significant capital. Although it is impossible to know exactly why these entrepreneurs' enterprises have failed to grow, the authors assume that their lack of success is partly attributable to personal and environmental constraints, such as inadequate skills and experience, access to capital, or physical infrastructure. The second group of unsuccessful self-employed, on the other hand, does not share the same characteristics as successful entrepreneurs, and are therefore assumed to be more likely to be constrained by their age, education, and sector of work than unobserved features of their skill set or external environment.

In this paper, using data from nationally representative micro-level household surveys from almost 100 countries, we examine the characteristics of the self-employed throughout much of the developing world. Building on our profile of the self-employed, we use two admittedly coarse but nonetheless meaningful measures to classify the self-employed as successful: whether a self-employed worker is an employer as opposed to an own-account worker, and whether the self-employed worker lives in a non-poor household. Given data limitations, the analysis is unable to isolate which characteristics or factors cause some self-employed to be successful along these measures. Nonetheless, we can characterize the extent to which the currently unsuccessful self-employed possess basic traits that are correlated with success, which may lead them to have greater potential to become successful.

We first examine the characteristics associated with agricultural workers, and of non-agricultural employers, own account workers, non-paid employees and wage and salary

employees. Employers and own-account workers are classified as successful or unsuccessful, based on two coarse measures of entrepreneurial success that are present in the data: (i) whether the self-employed are employers (vs. own account workers) and (ii) whether the worker lives in a household with per capita consumption above the $2/day poverty line. While these measures, particularly household per capita consumption, are rough and imperfect measures of the entrepreneur's success, they convey meaningful information about the economic position of the self-employed. We then measure the percent of the self-employed that are successful, according to these criteria, in each country, and describe the characteristics associated with successful self-employment. Finally, we estimate the percentage of unsuccessful self-employed that share the basic characteristics of their successful counterparts, and therefore can be considered to have greater to become successful.

Throughout the analysis, we are particularly concerned with how the characteristics of the self-employed change as countries develop. We examine this issue by comparing the profile of the self-employed in countries at different levels of per capita GDP. For example, as per capita income increases, how does the proportion of successful, lower-potential, and higher-potential self-employed change? As per capita GDP increases, do more lower-potential self-employed become high-potential or successful entrepreneurs, or are they absorbed into wage employment?

Our results have implications for labor market strategies at different stages of countries' development. For example, if a high proportion of workers are unsuccessful self-employed with little potential to become innovative and successful, policies to promote entrepreneurship, such as microlending or extension services, may be more effective if they are targeted to the narrow set of entrepreneurs with greater potential. Furthermore, if the unsuccessful self-employed are absorbed into wage employment as countries develop, this suggests that the growth of the private wage and salary sector is a key priority for development. On the other hand, if countries develop by creating a larger share of higher-potential or successful entrepreneurs, then broadly targeted investments in human capital and access to finance may be more important. Although there has been research investigating the heterogeneity of the self-employed in several countries (i.e. Djankov, Qian, Roland and Zhuravskaya, 2005 and 2006; de Mel, McKenzie and Woodruff, 2010; Grimm, Knorringa and Lay (2011), this is to our knowledge the first analysis that takes a more global perspective on the nature of self-employment across a wide set of middle and low income countries.

II. Previous literature

Our analysis is inspired by three strands of the literature. The first strand compares the characteristic of entrepreneurs in developing countries to those of wage and salary employees and other workers. The second strand attempts to measure the extent to which the self-employed are self-employed by necessity (and would rather be wage and salary employees) or are potentially successful entrepreneurs, while the third attempts to identify and measure the characteristics of those self-employed who have the potential to be successful but are constrained by lack of access to capital or other reasons.

A recent and growing literature studies the characteristics of entrepreneurs in developing countries. Djankov, Qian, Roland and Zhuravskaya (2005) collected data on the personal, family and business characteristics of approximately 1500 entrepreneurs and non-entrepreneurs in 2004 in China. Djankov, Qian, Roland and Zhuravskaya (2006) use similar data (from 2003-2004) to examine the characteristics of entrepreneurs in Russia.[1] They find that compared to non-entrepreneurs, entrepreneurs in China and Russia are more mobile, more willing to accept risk, have parents who are more educated, are more likely to have parents and other family members who were entrepreneurs, and are more willing to trade away leisure for more money. Djankov, Qian, Roland and Zhuravskaya (2005 and 2006) further distinguish between entrepreneurs and "failed entrepreneurs" (who at one point were entrepreneurs but are not now). Failed entrepreneurs score worse on aptitude tests compared to entrepreneurs, but have the best self-reported performance in school.

De Mel, McKenzie and Woodruff (2008) perform a similar analysis using data from surveys carried out in Sri Lanka between 2005 and 2007 of employers in small and medium sized firms, own account workers and wage and salary employees. Although they do not find that entrepreneurs are more willing to accept risk, they do confirm other patterns from China and Russia. Compared to own account workers and wage and salary employees, employers are older, more educated, have parents who are more educated, and lived in wealthier households as children. Employers and own account workers are more likely than wage and salary workers to have parents who were self-employed. Years of schooling is highest for employers, followed by wage and salary workers, and lowest for own account workers. Finally, own-account workers score lower on measures of cognitive "ability" than both employers and wage and salary employees.

In part, this literature examining the characteristics of entrepreneurs in developing countries stems from a recent debate about the extent to which self-employment reflects voluntary exit versus involuntary exclusion from the wage sector. For several years, the dominant view was that the large numbers of self-employed workers in developing countries reflected the

[1] Non-entrepreneurs are wage and salary employees. Djankov, Qian, Roland and Zhuravskaya (2005 and 2006) do not consider own account workers.

rationing of employment opportunities in the wage sector, due to regulations or efficiency wages that pushed wages above their market clearing level. This consensus was challenged by a series of studies of job mobility from Mexico and Brazil, which found high rates of mobility into self-employed jobs as well as several self-employed who report moving by choice (Maloney, 2004, Bosch and Maloney, 2007).

The current consensus is that types of self-employed are present in developing countries, and subsequent research has tried to assess their relative prevalence. De Mel, McKenzie and Woodruff (2008), for example, use discriminant analysis to discover whether the characteristics of own account workers are more similar to the characteristics of employers or wage and salary employees. They find that roughly two-thirds of own account worker have characteristics that make them more similar to wage and salary employees than to the employers of small and medium firms. This is consistent with relatively low rates of mobility from wage work into own-account work, as over half of own-account workers reported being self-employed throughout their entire working lives. On the other hand, the remaining more dynamic entrepreneurs were in many cases able to grow, as nearly 10 percent of own account workers in the sample hired a full-time employee less than three years. The authors conclude that the self-employed should be viewed on two levels. The bottom level contains the majority of self-employed who lack the potential to grow, while interventions should be focused on identifying those entrepreneurs in the top level and addressing their constraints to growth.

Grimm, Knorringa and Lay (2011) investigate similar questions among urban informal sector firms in the capital cities of seven West African countries (Benin, Burkina Faso, Cote d'Ivoire, Mali, Niger, Senegal and Togo). They identify 10 percent of their sample as successful entrepreneurs, based on a firm size and productivity criteria. Specifically, they first select those who are in the top quartile of the capital distribution of their respective country, and from this sub-sample classify the most profitable 40 percent as successful. They then identify unsuccessful entrepreneurs with a high potential as those with characteristics similar to the characteristics of successful entrepreneurs. These "constrained gazelles" are potentially successful entrepreneurs who are constrained by lack of access to credit or other constraints. Although the stock of capital in the "constrained gazelle" firms is low, measured returns to capital are high. The estimated share of entrepreneurs who fall into the "constrained gazelle" category ranges from 19% to 58%, depending on the country and the specific set of characteristics used to make the comparison. They also confirm that successful entrepreneurs, and those with a high potential to be successful, are different than the majority of unsuccessful enterprenurs. Namely, successful entrepreneurs are more likely to be older, have more education, are more likely to speak French, own firms that are "older," show more "entrepreneurial spirit," are less likely to be internal or return (international) migrants, come from wealthier households, and work longer hours. Like De Mel, McKenzie and Woodruff

(2008), Grimm, Knorringa and Lay (2011) find no evidence that successful and unsuccessful entrepreneurs differ in their aversion to risk.

III. Data

Like De Mel, et al (2010) and Grimm, et al (2011), we measure the proportion of own account workers who have characteristics similar to employers. Like Grimm, Knorringa and Lay (2011), we measure the proportion of unsuccessful self-employed who have a high potential to be successful, based on selected observable characteristics. Our measures of success, however, are different from that used by Grimm, Knorringa and Lay (2011). Grimm, Knorringa and Lay (2011) use a two-part measure of success based on reported capital and profit. In contrast, we use two alternative measures success: (1) whether the self-employed worker is an employer (vs. an own account worker) and (2) whether the self-employed worker belongs to a family with per capita consumption above the $2/day poverty line. Although the latter is a meaningful measure of economic position of the household, it overstates the percentage of enterprises that have the potential to grow and create jobs. Attributing household poverty to an individual member's enterprise is challenging, and a substantial proportion of enterprises with little potential for growth or job creation are likely to be run by households that have escaped poverty due to the presence of a wage earner or non-wage income. Therefore, we consider the second measure of success as a robustness test of our results, while the first measure is our primary measure of success.

The data that we use comes from micro-level household surveys collected by the Development Economics Group (DEC) of the World Bank, the International Income Distribution Database (I2D2). This data base consists of already existing data sets that have been collected and standardized. Most original country datasets are labor force surveys, budget surveys or living standards measurement surveys, and all are nationally representative. The data are an updated version of the dataset described in Montenegro and Hirn (2009).[2] These data include four sets of consistently defined and coded variables: (i) demographic variables, (ii) education variables, (iii) labor force variables, and (iv) household per capita consumption.

Not all variables are available in all countries and years. In our analysis, we only use surveys where we can identify whether the worker is an own account worker, owner or wage and salary employee. Most countries datasets are available for multiple years from the period 1984 to 2010. We only use the most recently available survey in each country in this analysis. We further limit our analysis to countries with a 2010 population of 1 million or more. Within each country, we limit our samples to the working age population, 15-65 years old. The countries

[2] The datasets for India and Sri Lanka in the I2D2 did not allow us to separate own account workers from employers. We therefore used labor force survey data from India and Sri Lanka to supplement the I2D2 data.

that we use in our analysis, and the year each survey was conducted, are listed in table 1. We report results using data sets from 98 countries: 74 of which are low and middle income countries (by the World Bank definitions). The countries for which we have data represent 63% of the population of all low and middle income countries, and 46% of the population of high income countries. Unfortunately, the data base does not include a data set from the most populous country in the world, China, but the countries in our data represent 83% of the non-Chinese population of low and middle income countries. All of the results presented in this paper are weighted by the sample frequency weights in each survey. Summary statistics for the regional and income group aggregations are weighted by the number of 15-65 year old workers in each country.[3]

IV. Characteristics of employers, own account workers, wage and salary employees, non-paid employees

Proportion of workers in each employment category

Table 2 presents the distribution of workers between wage and salaried employment, non-paid employees, employers and own account workers, by region of the world and level of per capita GNI. We use the World Bank definition and divide countries into low income (less than 1006 U.S. 2010 PPP dollars), lower middle income countries (1,006-3,975 dollars), upper middle income countries (3,976-12,275 dollars) and high income countries (greater than 12,275 dollars).

Table 2 shows that self employment is very common in developing countries. In low and middle income countries fewer than half of all workers are wage and salary employees, compared to over 85% in high income countries. As the GNI per capita of the country increases the percent of workers who are wage and salaried employees or employers increases, while the percent of workers who are own account or non-paid employees falls. In low income countries over 70% of workers are own account or non-paid employees, while in high income countries these workers make up only about 10% of workers.

In low and middle income countries more than 40% of workers are in agriculture (table 3). Because the meaning of self employment, own account, employer and non-paid employee may be different in agriculture than in non-agricultural employment, in table 3 we distinguish agricultural workers as a separate category. Most non-agricultural workers in low and middle

[3] For most countries this is also done by using the sample frequency weights available in each survey. In those surveys that did not include frequency weights, we constructed our own weights using the total number of 15-65 year old workers in each country as reported by the ILO on their LABORSTAT web site. These countries are: Egypt, Mauritius, Syria, Turkey and Turkmenistan.

income countries are wage and salaried employees; non-agricultural wage and salaried employees represent, on average, 38% of all workers, own account workers represent 15% of all workers and employers represent 2% of all workers.

As per capita GNI increases, agricultural workers are absorbed into non-agricultural wage and salary employment; the proportion of non-agricultural wage and salaried employees increases from 18.6% of workers of workers in Low Income to 84% in high income countries. All other changes among non-agricultural workers are small by comparison. Among these smaller changes: the proportion of employers increases as countries move from low to high income, although the increase is significant only between lower middle income and upper middle income countries—from 1.3% to 3.5% of all workers. The change in the proportion of workers who are employers between low and lower middle income countries, and between upper middle income and high income countries, is essentially zero.

Panel A of figure 1 shows how the proportion of workers in each non-agricultural employment category changes as the per capita GDP of a country increases. Panel B of figure 1 separates agricultural workers into non-paid employees, small farmers (own account workers and employers) and wage and salaried employees. Within agriculture, most workers are own account workers or non-paid employees, which together account for more than 70% of agricultural workers in low and middle income countries. This is especially true in Sub-Saharan Africa, where only 5% of agricultural workers are wage and salaried employees.

Figure 1 suggests that the evolution of the labor market differs depending on the level of development. At very low GDP per capita (within the low income country group), as per capita GDP rises (to about 600 2005 PPP US dollars) workers transition out of non-paid employment and own account in agriculture and into non-agricultural own account. This suggests that as countries grow from very low levels of GDP, unpaid family workers transition from one type of informal employment in agriculture to informal employment in non-agriculture. As GDP per capita continues to increase, and countries move from low to lower middle income, there is a status evolution into wage and salaried work (within both agriculture and non-agriculture). Finally, as countries move from lower middle to upper middle and high income there is a structural transformation out of agriculture and into non-agricultural wage and salary employment and, to a lesser extent, non-agricultural employers.

In comparing the characteristics of workers by category, in addition to distinguishing agricultural workers from non-agricultural own account, employer, non-paid employee and wage and salary employee, we compare the characteristics of workers with the characteristics of those who are not employed (unemployed plus those not in the labor force). On average, approximately 42% of the 15-65 year old population in low and middle income countries is not employed (see table 4).

Education

Non-agricultural employers and non-agricultural wage and salaried employees are the most educated, and agricultural workers are the least educated (table 5). In the middle are the non-agricultural own account workers and non-agricultural non-paid employees. These patterns are similar for countries in all regions and income groups. In particular, as per capita GNI increases employers do not become more educated relative to the own account workers or wage and salaried employees.

Position in the distribution of per capita household consumption

Non-agricultural employers are much more likely to be in the richest tercile in the distribution of per capita household consumption, and much less likely to be in the poorest tercile, than are own account workers or any other employment category (figure 2). Agricultural workers are most likely to be in the poorest tercile. In the middle are the non-agricultural self-employed, non-paid employees and wage and salaried employees. These patterns are similar for all regions and in all income groups. This pattern is different from the ranking when one looks at education levels of workers.

Gender

For countries in all regions and income groups, women are more likely to be non-employed or agricultural non-paid employees, and men are more likely to be in any other employment category (figure 3). Of particular interest to this study, in all regions men are more likely than women to be self-employed (employers or own account workers). The biggest differences between men and women are in the Middle East and North Africa and in South Asia.

Age

As both men and women age from 15 to 49 years old, there is an increase in the proportion who are employed as agricultural workers, non-agricultural own account, and non-agricultural wage and salaried employees (figure 4). The proportion of both men and women who are employers increases with age from 15 until about 40 years old, and then remains relatively constant until around 65--retirement age--when the proportion of workers in all employment categories falls (figure 5). The proportion of both men and women who are own account workers increases sharply with age until the late 30s, levels off, and then begins to fall from 40 on. For men, the proportion working as non-paid employees is high for teenagers, then falls sharply from after men reach 20 years old. For women, the proportion of working as non-paid employees remains high until they are about 40 years old, after which it begins to fall slowly.

Industry Sector

The self-employed (employers, own account workers) and non-paid employees are most likely to be in retail, with a smaller yet significant percentage in manufacturing (figure 6). This is true for all regions and income groups. In general, wage and salaried employees are much more likely to be in services than are employers or own account workers, with a smaller yet significant proportion in manufacturing. However, there are some exceptions: in East Asia and the Pacific and South Asia wage and salaried workers are more likely to be in manufacturing than services (figure 7), while in lower middle income countries wage and salaried workers are more likely to be in manufacturing than services (figure 8).

Household head status

Non-agricultural employers and own account workers are more likely to be household heads than are wage and salary employees or workers in agriculture (figure 9).[4]

Summary of Characteristics: Employers are successful self-employed

In general, non-agricultural employers can be thought of as successful, while own account workers and non-paid employees are not. When we look only at non-agricultural workers, we find that there is a clear order: employers are better off than wage and salary employees, who in turn are better off than own account workers, who in turn are better off than non-paid employees. Employers are the most educated, the least likely to live in poor households, the oldest, the most likely to be men, the most likely to be a household head, the least likely to work in agriculture, and work the most hours. Non-paid employees are the least educated, the most likely to live in poor households, the youngest, the most likely to be women, the least likely to be a household head, the most likely to work in agriculture, and work the fewest hours. Own account workers and wage and salary employees are in between employers and non-paid family workers on all of these characteristics. Compared to any category of non-agricultural worker, agricultural workers are in many ways worse off. For example, they are less educated and more likely to live in poor households.

V. Successful vs. unsuccessful self-employed

In the last section we presented evidence that being an employer is one way to characterize the successful self-employed. By this definition, on average 7% of the self-employed (or 2.7% of all

[4] In general, non-agricultural non-paid employees report consistently different characteristics from those who report being own account workers. Compared to own account workers, non-paid employees are: more likely to live in poorer households, more likely to be female, more likely to be young (especially teenagers), less likely to be household heads, and work fewer hours.

workers) in developing countries are successful; 10% of non-agricultural self-employed and 5% of agricultural self-employed (table 6). The regions with the highest percent of employers are the Middle East and North Africa (9.8% of all workers; 4.0% in agriculture and 5.8% in agriculture) and Latin America and the Caribbean (5.0% of all workers; 3.8% in non-agriculture and 1.2% in agriculture).

It is reasonable to assume that some self-employed have no desire to become employers. That is, some self-employed may be happy working for and by themselves, and consider themselves successful if they earn enough to provide for themselves and their family. To capture this possibility, we also consider as successful those self-employed who live in a household with a per capita consumption above the $2/day poverty line. [5] The proportion of workers who are successful and unsuccessful by this definition is presented in table 7. By this definition, on average 34% of self-employed (or 12% of all workers) in developing countries are successful (46% of non-agricultural and 23% of agricultural self-employed).

By both definitions of success, as per capita GNI increases, there is a net decline in unsuccessful self-employed and a net increase in successful non-agricultural self-employed.

The successful self-employed are slightly older, much more educated, more likely to work in retail and services, and much less likely to work in agriculture, compared to the unsuccessful self-employed (table 8). Men and women who are self-employed are equally likely to be successful, while self-employed who identify themselves as head of household are less likely to be successful than are spouses and other family members (table 9).

What happens to the unsuccessful self-employed as countries develop? As the per capita GNI of a country increases, the proportion of unsuccessful self-employed in both agriculture and non-agriculture falls, as the unsuccessful self-employed are absorbed into non-agricultural wage and salary employment and, to a lesser extent, as successful non-agricultural self-employed (figure 10).

Finally, we identify those self-employed who are unsuccessful, but who have characteristics that are similar to the characteristics of successful entrepreneurs and therefore can be thought of as having a high potential to become successful entrepreneurs. In identifying the unsuccessful self-employed with a high or lower potential to be successful, we consider only non-agricultural workers.

[5] Households were identified as falling below the $2/day poverty line if the position in the distribution of per capita household consumption was less than the $2/day poverty rate reported by the POVCAL network of the World Bank. Where possible, we matched the reported poverty rate to the reported year of the survey. Where this was not possible, we used the poverty rate calculated for the year before or year after. Where there was a poverty rate reported in the POVCAL data for both the year after and the year before the reported year of the survey, we used the mean.

To identify the unsuccessful self-employed with a high potential to be successful, we follow the methodology developed in Grimm, Knorringa and Lay (2011)[6]. Specifically, we first create a dummy variable with a value of one if the individual is a successful self-employed. Then, for each country, we use the Probit technique to regress this dummy variable on a set of predetermined variables that are correlated with being successful. Our explanatory variables are: gender, education level and gender/age interactions, an urban/rural dummy variable and dummy variables that indicate the industrial sector of the worker (manufacturing, construction, retail, and services). [7][8] Using the results of these Probit assignment equations, we calculate the predicted probability that a worker in the data set is likely to be successful. We do this by determining a cut-off point for the predicted probability of success. For those workers classified as non-successful, anyone above this cut-off is identified as having a high potential to be successful, while anyone below this cut-off is identified as having a low potential to be successful. We chose the cut-off point for the predicted probability such that the mean value of the predicted probability is the same in the group of successful entrepreneurs and the group of those non-successful self-employed who have a high potential of success.

The results of the probit regressions for each country are summarized in tables A1 to A4 in the appendix. The mean pseudo R-square for these Probits is 0.0834 for definition 1, and 0.1231 for definition 2.[9] The results of the Probit regressions are consistent with the characteristics of successful self-employed that we identified in the last section. Using either definition, the probability of being a successful self-employed is higher for workers in urban areas than rural areas, is lowest in manufacturing, is higher for men than women, increases with education, and increases with age (at least until 50 years old).

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[6] Michael Grimm, Peter Knoringa and Jann Lay (2011), "Informal Entrepreneurs in Western Africa: Constrained gazelles in the lower tier," International Institute of Social Studies, Erasmus University Rotterdam, May. The measure of success used in Grimm, et. al. (2011) is a relative one: is the firm in the top 10% of performers among informal sector firms. Our measures of success are two absolute measures: (1) Employer (vs. Own Account) and (2) lives in a household with per capita consumption above the $2/day poverty line.

[7] As a sensitivity test, we also estimate this equation including additional explanatory variables: dummy variables indicating the region of the country (urban or rural) and dummy variables indicating industry sector. Where available, an additional specification that includes membership in the majority social group is also be estimated. The results of these sensitivity tests are reported in the appendix.

[8] Grimm, Knoringa and Lay (2011) use the following variables in the assignment equations: age, age sqared, education dummies, whether the employer speaks French, the age of the firm, industry sector and country fixed effects. De Mel, McKenzie and Woodruff (2008) use the following types of variables in the assignment equations: years of education, ability, risk aversion, height, ability measures, family contacts, measures of family wealth, and several variables that measure motivation.

[9] The pseudo R-square for the assignment equation (pooled for all countries) estimated in Grimm, et. al. (2001) was 0.094. The pseudo R-square for the Logit assignment equations estimated in deMel, et. al. (2008) ranged from 0.22 to 0.35. As a sensitivity test, we also estimated this equation using the Linear Probability Model and full interactions among the explanatory variables. The results of this sensitivity test were similar to the Probit estimates.

Among unsuccessful non-agricultural self-employed, our estimates suggest that an average of 36% to 37% have characteristics similar to successful self-employed, and therefore can be thought of as having a high potential to become successful

Table 10 presents our estimates of high and lower potential self-employed using definition 1 (employer vs. own account). On average, in low and middle income countries 36% of the non-agricultural own account workers have a high potential to become employers (successful). As per capita GNI increases, the percent of own account workers with a high potential to become employers remains at 34% in both low income and lower middle income countries, increases to 42% in upper middle income countries and then increases dramatically for high income countries (to 72%). This suggests that there may be something different about the self-employed in high income countries compared to developing countries.

Table 11 presents our estimates of high and low potential self-employed using definition 2, which is based on whether per capita household income is above or below $2/day. On average, according to this definition, 37 percent of unsuccessful self-employed have a high potential to become successful. This is very similar to the proportion using our first definition. As per capita GNI increases, the percent of own account workers with a high potential to become employers falls and then increases. The proportion of self-employed with high potential in South Asia is much lower than any other region. However, there are also only two countries in the sample from South Asia: Bangladesh and India.

VII. Conclusions

We began our analysis of the heterogeneity of labor markets in developing countries by examining the distribution between own account workers, employers, non-paid employees and wage and salary employees, further divided into agriculture and non-agriculture. In terms of characteristics correlated with the "quality" of jobs, such as household per capita consumption and workers' education, there is a clear order among different employment categories. Employers are better off than wage and salary employees, who in turn are better off than the own account workers, who in turn are better off than non-paid employees. All categories of non-agricultural workers are better off than agricultural workers.

Self-employed workers make up the overwhelming majority of workers in low income countries; in low income countries only about 25% of workers are wage and salary employees (non-agricultural wage and salary employees are only 19% of workers). As per capita GDP increases, workers transition out of agriculture and self employment. Within the low income country group, increases in per capita GDP lead to net shifts out of agricultural non-paid employment and own account work and into non-agricultural own account jobs. Then, as countries move

from low to lower middle income, employment status evolves as workers shift into wage and salaried work (within both agriculture and non-agriculture). Finally, as countries move from lower middle to upper middle income status, the structural transformation continues as most remaining agriculture workers become non-agricultural wage and salary employees and, to a lesser extent, non-agricultural employers.

A key goal of this analysis is to explore the heterogeneity of the self-employed throughout the developing world with respect to their growth potential. One group of self-employed are those with limited growth prospects who are either self-employed by necessity, due to the lack of wage employment opportunities, or have voluntarily chosen to be self-employment over wage employment. In contrast, a higher tier of self-employed consists of innovative, successful entrepreneurs with greater potential and ambition for growth. Measuring the "success" of existing entrepreneurs provides an indirect measure of the prevalence of these two groups in different contexts. We present estimates of the proportion of the self-employed that are successful using two objective definitions of success: (i) successful self-employed are employers (vs. own account) and (ii) successful self-employed live in households with per capita consumption above the $2/day poverty line. Using the first definition, we estimate that 7% of self-employed workers (3% of all workers) in low and middle income countries are successful. Since many self-employed live in non-poor households, however, many more of the self-employed are successful according to the second definition; using the second definition, therefore, we estimate that 34% of self-employed workers (12% of all workers) are successful.

Compared to their less successful counterparts, the successful self-employed are slightly older, much more educated, more likely to work in retail and services, and much less likely to work in agriculture. Men and women who are self-employed are equally likely to be successful, while self-employed who identify themselves as head of household are less likely to be successful than are spouses and other family members.

Of the unsuccessful non-agricultural self-employed, approximately 36% have characteristics similar to successful entrepreneurs, and may therefore have high potential to become successful entrepreneurs. This percentage is strikingly similar for both definitions of success, and is consistent with existing studies from specific contexts.[10] Added together, the self-employed who are successful plus the unsuccessful who have a high potential to be successful represent, on average, represent between 40% (definition i) and 65% (definition ii) of non-

[10] For example, de Mel, McKenzie and Woodruff (2008) estimate that between 23% and 30% of employees in small and micro firms in Sri Lanka have characteristics more similar to owners than with formal wage and salaried workers. Grimm, Knorringa and Lay (2011) estimate that between 20% and 60% of unsuccessful self-employed in 7 West African countries have similar characteristics to the successful, top-performing, self-employed.

agricultural self-employed workers in low and middle income countries.[11] As the per capita income of a country rises, the proportion of the self-employed who are either successful or have high potential for success increases rapidly. For example, while the proportion of the self-employed who are either successful or have high potential for success in low income countries is between 17% and 33% (using definition i and ii, respectively), for upper middle income countries the proportion in this group increases to between 66% and 94% (again, using definition i and ii, respectively).

As per capita incomes and levels of education rise, some of the unsuccessful self-employed become successful entrepreneurs. However, most of the unsuccessful self-employed are absorbed into wage and salary work. This suggests that while there is a role for policies that help to remove constraints from a select group of high potential but unsuccessful self-employed, the growth of the private wage and salary sector remains the dominant engine of growth and better jobs.

This paper presents descriptive findings on the current state of the self-employed in developing countries, and how that evolves as per capita GDP increases. These findings are intended to provide context for ongoing research that seeks to understand the factors and interventions that can promote entrepreneurial success. While education is strongly correlated with success in our data, better educated entrepreneurs may be successful for a variety of reasons unrelated to education, such as access to capital, infrastructure, greater wealth, and safety from crime, to name a few. While evaluations of specific interventions related to microfinance, entrepreneurial training, and other potential constraints have contributed important evidence on the relative importance of different constraints to self-employment growth, no consensus has emerged regarding which policy measures should be prioritized. An important open question is the extent to which the disappointing performance of the large numbers of "high-potential" entrepreneurs can be remedied by interventions that provide training, infrastructure improvements, or credit. In other words, to what extent can policies and programs help these entrepreneurs realize the success of their more successful counterparts? Preliminary evidence that entrepreneurship training is more effective for better educated entrepreneurs is merely suggestive.[12] If particular interventions are especially effective in relaxing the constraints to these "high-potential entrepreneurs", these policies could be more broadly targeted in middle-income countries where these types of self-employed are plentiful. Conversely, in this case, targeting entrepreneurship interventions carefully would be more important in low and lower-

[11] Calculated by adding the proportion of self-employed who are successful plus (the proportion of self-employed who are not successful multiplied by the proportion of the unsuccessful self-employed who have a high potential to be successful).

[12] See Cho and Honorati (forthcoming). Their analysis also finds that training tends to be more effective for younger than older entrepreneurs, suggesting that high-potential entrepreneurs do not necessarily benefit more from all types of interventions.

middle income contexts. Future research can complement this ongoing evaluation agenda, with the help of observational data that combines data on entrepreneurs' outcomes with data on constraints to their growth such as access to credit, infrastructure, governance, and ambition, to better understand the relative importance of different constraints to entrepreneurial success.

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Table1: Countries and surveys

	Year	Income Group	2010 Pop (millions)	Population of sample countries as % of regional population		Year	Income Group	2010 Pop (millions)	Population of sample countries as % of regional population
East Asia and Pacific			**412.2**	**21%**	**Sub-Saharan Africa**			**613.9**	**71%**
Cambodia	2004	LIC	14.1		Angola	1999	LMIC	19.0	
Indonesia	2002	LMIC	232.5		Burundi	1998	LIC	8.5	
Mongolia	2002	LMIC	2.7		Cameroon*	2007	LMIC	20.0	
Philippines	2006	LMIC	93.6		Chad	2002	LIC	11.5	
Thailand	2009	LMIC	68.1		Congo, Republic of	2006	LMIC	3.8	
Timor Leste	2001	LMIC	1.1		Cote d'Ivoire*	2002	LMIC	21.6	
Europe and Central Asia (not High Income)			**350.8**	**86%**	Congo, Democratic R	2005	LIC	67.8	
Albania	2005	UMIC	3.2		Ethiopia*	2004	LIC	85.0	
Belarus*	2005	UMIC	9.6		Gabon	2005	UMIC	1.5	
Bosnia & Herzegovina	2004	UMIC	3.8		Gambia, The	1998	LIC	1.8	
Bulgaria	2008	UMIC	7.6		Ghana	2005	LIC	24.3	
Georgia	2005	LMIC	4.5		Kenya	2005	LIC	40.9	
Kazakhstan*	2003	UMIC	16.3		Liberia	2007	LIC	4.1	
Lithuania	2008	UMIC	3.3		Malawi	2005	LIC	14.9	
Macedonia, FYR	2005	UMIC	2.1		Mauritius	2008	UMIC	1.3	
Moldova	2005	LMIC	3.6		Namibia	1993	UMIC	2.2	
Romania	2008	UMIC	21.4		Niger*	2002	LIC	15.9	
Russian Federation	2003	UMIC	141.8		Nigeria	2003	LMIC	158.3	
Tajikistan	2003	LIC	7.1		Senegal	2001	LMIC	12.9	
Turkey	2005	UMIC	75.7		Sierra Leone	2003	LIC	5.8	
Turkmenistan	1998	LMIC	5.2		Swaziland	2000	LMIC	1.2	
Ukraine	2005	LMIC	45.8		Tanzania, United Rep	2006	LIC	45.0	
Latin America and Caribbean			**564.6**	**98%**	Uganda	2005	LIC	33.8	
Argentina***	2006	UMIC	40.7		Zambia	2003	LIC	12.9	
Bolivia	2005	LMIC	10.0		**HIGH INCOME COUNTRIES**			**511.4**	**46%**
Brazil	2008	UMIC	194.9		Austria	2008	HIC	8.4	
Chile	2009	UMIC	17.1		Belgium	2008	HIC	10.9	
Colombia	2000	UMIC	46.3		Canada	2001	HIC	34.2	
Costa Rica	2006	UMIC	4.6		Croatia	2004	HIC	4.4	
Dominican Republic	2004	UMIC	10.2		Czech Republic	2008	HIC	10.5	
Ecuador	2004	LMIC	13.8		Denmark	2007	HIC	5.6	
El Salvador	2005	LMIC	6.2		Estonia	2008	HIC	1.3	
Guatemala	2006	LMIC	14.4		Finland	2007	HIC	5.4	
Haiti	2001	LIC	10.0		France	2007	HIC	64.9	
Honduras	2003	LMIC	7.6		Germany	2007	HIC	81.6	
Jamaica	2002	UMIC	2.7		Greece	2008	HIC	11.3	
Mexico	2008	UMIC	108.5		Hungary	2007	HIC	10.0	
Nicaragua*	2005	LMIC	5.8		Ireland	2008	HIC	4.5	
Panama	2003	UMIC	3.5		Italy	2008	HIC	60.6	
Paraguay	2006	LMIC	6.5		Latvia	2008	HIC	2.2	
Peru	2002	UMIC	29.5		Netherlands	2007	HIC	16.6	
Uruguay*	2006	UMIC	3.4		Norway	2007	HIC	4.9	
Venezuela, Rep. Bol.	2004	UMIC	28.8		Poland	2008	HIC	38.2	
Middle East and North Africa			**155.1**	**46%**	Portugal	2008	HIC	10.6	
Egypt	2005	LMIC	84.5		Slovak Republic	2007	HIC	5.4	
Jordan	2002	LMIC	6.1		Slovenia	2008	HIC	2.1	
Morocco	1998	LMIC	32.4		Spain	2008	HIC	46.2	
Syrian Arab Rep*	2004	LMIC	21.6		Sweden	2008	HIC	9.4	
Tunisia	2001	LMIC	10.5		United Kingdom	2007	HIC	62.2	
South Asia			**1529.2**	**96%**					
Bangladesh	2005	LIC	164.4						
India**	2008	LMIC	1170.9						
Pakistan	2008	LMIC	173.4		**LOW AND MIDDLE INCOME COUNTRIES**			**3625.7**	**63%**
Sri Lanka**	2005	LMIC	20.5		**ALL COUNTRIES**			**4137.1**	**60%**
* Cannot separate agriculture from non-agriculture									
** Data for India and Sri Lanka from World Bank/LMMD Data Warehouse									
*** Argentine data for urban and non-agricultural only.									

Table 2: Percent of workers in each employment category; by country, region and income group

Region and Income Level (number of countries in sample)	wage and salary employee	non-paid employee	employer	own account
All Countries (98)	**55.0**	**13.2**	**2.9**	**29.0**
Low and Middle Income Countries (74)	**49.3**	**15.4**	**2.7**	**32.7**
Region (Low and Middle Income Countries)				
East Asia and Pacific (6)	43.6	17.4	3.3	35.7
Europe and Central Asia (15)	82.2	5.0	2.6	10.2
Latin America and the Caribbean (20)	67.0	4.5	4.7	23.8
Middle East and North Africa (5)	53.8	17.3	9.4	19.5
South Asia (4)	47.2	18.3	1.2	33.4
Sub-Saharan Africa (24)	17.0	25.1	2.3	55.6
Per Capita GNI				
Low Income (18)	25.2	21.6	1.6	51.6
Lower Middle Income (31)	46.0	18.2	2.4	33.5
Upper Middle Income (25)	73.1	4.2	4.2	18.6
High Income (24)	85.9	1.0	3.7	9.3

Note: Low Income less than 1,006 2010 dollars, Lower Middle Income 1,006-3,975 dollars; Upper Middle Income 3,976-12,275 dollars; High Income greater than 12,275 dollars.

Table 3: Percent of workers in each employment category; by country, region and income group

Region and Income Level (number of countries in sample)	NON-AGRICULTURE				AGRICULTURE
	wage and salary employee	non-paid employee	employer	own account	
All Countries (90)	**45.2**	**2.6**	**2.1**	**14.4**	**35.8**
Low and Middle Income Countries (68)	**37.9**	**3.0**	**1.8**	**15.7**	**41.7**
Region (Low and Middle Income Countries)					
East Asia and Pacific (6)	35.7	4.1	1.8	17.2	41.2
Europe and Central Asia (13)	74.3	0.6	2.6	5.0	17.5
Latin America and the Caribbean (18)	59.2	2.2	3.8	18.5	16.3
Middle East and North Africa (4)	48.0	2.3	4.0	8.7	37.1
South Asia (4)	28.7	3.8	0.7	15.6	51.2
Sub-Saharan Africa (21)	13.4	2.4	1.4	19.0	63.7
Per Capita GNI					
Low Income (17)	18.6	2.1	1.0	17.9	60.4
Lower Middle Income (27)	32.2	3.8	1.3	15.6	47.1
Upper Middle Income (22)	65.2	1.7	3.6	14.3	15.1
High Income (24)	84.0	0.4	3.5	7.5	4.6

Table 4: Percent of workers in each employment category; by country, region and income group						
Region and Income Level	**NON-AGRICULTURE**				**AGRICULTURE**	**NON-EMPLOYMENT**
(number of countries in sample)	**wage and salary employee**	**non-paid employee**	**employer**	**own account**		
All Countries (90)	**26.7**	**1.6**	**1.2**	**8.5**	**21.2**	**40.8**
Low and Middle Income Countries (67)	**22.0**	**1.8**	**1.0**	**9.1**	**25.2**	**41.8**
Region (Low and Middle Income Countries)						
East Asia and Pacific (6)	23.3	2.7	1.2	11.2	26.9	34.7
Europe and Central Asia (13)	37.8	0.3	1.3	2.5	8.9	49.1
(18)	37.3	1.4	2.4	11.7	10.3	36.9
Middle East and North Africa (4)	24.6	1.2	2.0	4.5	19.1	48.6
South Asia (4)	15.6	2.1	0.4	8.5	27.8	45.7
Sub-Saharan Africa (20)	8.8	1.6	0.9	12.5	41.9	34.2
Per Capita GNI						
Low Income (17)	11.5	1.3	0.6	11.0	37.1	38.5
Lower Middle Income (27)	18.4	2.2	0.7	9.0	27.0	42.7
Upper Middle Income (22)	38.2	1.0	2.1	8.4	8.9	41.4
High Income (24)	54.4	0.3	2.3	4.8	3.0	35.3

Table 5: Mean years of education completed by education category, by region and income group

	Non-agriculture					
	Wage and Salaried Worker	Non-paid Employees	Employer	Own Account	Agriculture	Not Employed
All Countries	9.4	7.1	10.4	6.9	4.2	6.7
East Asia and Pacific	10.3	8.3	9.8	7.5	5.7	8.5
Europe and Central Asia	13.0	10.5	12.8	10.5	10.0	10.2
Latin America and Caribbean	9.8	8.5	10.4	7.7	4.8	7.7
Middle East and North Africa	9.3	6.8	10.2	7.2	5.7	8.4
South Asia	7.0	6.4	10.3	6.2	3.4	5.3
Sub-Saharan Africa	9.6	5.7	8.3	6.2	4.2	6.3
Low Income	6.7	6.0	7.8	5.3	3.9	4.9
Lower Middle Income	8.5	6.9	10.1	6.8	4.1	6.2
Upper Middle Income	10.9	8.9	11.0	8.2	6.5	8.8

Note: the following countries were excluded from the analysis of education because the surveys did not report education level: Georgia, Namibia, Paraguay, and Romania.

Table 6: Successful and unsuccessful self-employed, as a percent of all workers; by country, region and income group

Region and Income Level	NON-AGRICULTURE		AGRICULTURE	
(number of countries in sample)	Successful	Unsuccessful	Successful	Unsuccessful
DEFINITION 1: Success=employer				
All Countries (89)	2.1	14.4	0.8	15.4
Low and Middle Income Countries (66)	1.8	15.7	0.9	18.2
Region (Low and Middle Income Countries)				
East Asia and Pacific (6)	1.8	17.2	1.5	18.5
Europe and Central Asia (13)	2.6	5.0	0.3	4.7
Latin America and the Caribbean (17)	3.8	18.5	1.2	7.3
Middle East and North Africa (4)	4.0	8.7	5.8	10.2
South Asia (4)	0.7	15.6	0.5	17.8
Sub-Saharan Africa (21)	1.4	19.0	1.0	37.1
Per Capita GNI				
Low Income (19)	1.0	17.9	0.6	33.7
Lower Middle Income (27)	1.3	15.6	1.1	17.6
Upper Middle Income (22)	3.6	14.3	0.8	5.4
High Income (24)	3.5	7.5	0.2	1.8

Table 7: Successful and unsuccessful self-employed, as a percent of all workers; by country, region and income group

Region and Income Level	NON-AGRICULTURE		AGRICULTURE	
(number of countries in sample)	Successful	Unsuccessful	Successful	Unsuccessful
DEFINITION 2: Success= Per capita consumption above $2/day				
All countries (45)	7.7	9.3	4.3	14.1
Region				
East Asia and Pacific (6)	10.3	8.7	6.1	13.9
Europe and Central Asia (7)	4.6	0.3	2.0	0.8
Latin America and the Caribbean (10)	19.0	2.9	4.3	3.6
Middle East and North Africa (3)	10.0	2.4	11.9	4.9
South Asia (2)	5.1	10.8	3.4	15.1
Sub-Saharan Africa (17)	5.2	18.3	4.9	31.1
Per Capita GNI				
Low Income (13)	5.7	15.0	4.9	25.3
Lower Middle Income (20)	6.8	9.9	4.4	14.6
Upper Middle Income (12)	13.2	1.7	3.2	1.9

Note: All High Income Countries were also excluded because the proportion of households earning below $2/day was essentially zero in all categories. Other countries were excluded because the surveys did not report per capita consumption. For the full list our countries included in this table, see the appendix.

Table 8: Characteristics of successful and non-successful entrepreneurs,

	Non-agricultural self-employed		Agricultural self-employed	
	Successful (above $2/day)	Unsuccessful (below $2/day)	Successful (above $2/day)	Unsuccessful (below $2/day)
EDUCATION AND AGE (MEAN)				
years of education	8.9	5.6	5.9	4.1
age	40.7	37.5	44.1	42.1
HOURS WORKED (MEAN)				
hours worked	48.3	47.4	41.1	42.2
INDUSTRY SECTOR				
manufacturing	15%	27%	na	na
construction	6%	5%	na	na
retail	48%	39%	na	na
services	14%	8%	na	na
other	17%	21%	na	na
Total	100%	100%		

Table9: Characteristics of successful and non-successful entrepreneurs,

	Non-agricultural self-employed		Agricultural self-employed	
	Successful (above $2/day)	Unsuccessful (below $2/day)	Successful (above $2/day)	Unsuccessful (below $2/day)
EDUCATION AND AGE (MEAN)				
years of education	8.9	5.6	5.9	4.1
age	40.7	37.5	44.1	42.1
HOURS WORKED (MEAN)				
hours worked	48.3	47.4	41.1	42.2
INDUSTRY SECTOR				
manufacturing	15%	27%	na	na
construction	6%	5%	na	na
retail	48%	39%	na	na
services	14%	8%	na	na
other	17%	21%	na	na
Total	100%	100%		

Table 10: Percent of unsuccessful self-employed with the potential to be successful,

by region and income group

Region and Income Level	NON-AGRICULTURE UNSUCCESSFUL SELF-EMPLOYED	
(number of countries in sample)	Lower Potential	High Potential
DEFINITION 1: unsuccessful=own account		
All Low and Middle Income Countries (50)	64%	36%
Region (Low and Middle Income)		
East Asia and Pacific (6)	66%	34%
Europe and Central Asia (6)	45%	55%
Latin America and the Caribbean (15)	60%	40%
Middle East and North Africa (4)	59%	41%
South Asia (3)	64%	36%
Sub-Saharan Africa (16)	73%	27%
Per Capita GNI		
Low Income (15)	66%	34%
Lower Middle Income (21)	66%	34%
Upper Middle Income (14)	58%	42%
High Income (23)	28%	72%

Notes: For the countries used to construct this table, by region, see the appendix.
Regressions for High Income Countries do not include the urban/rural dummy (unavailable).

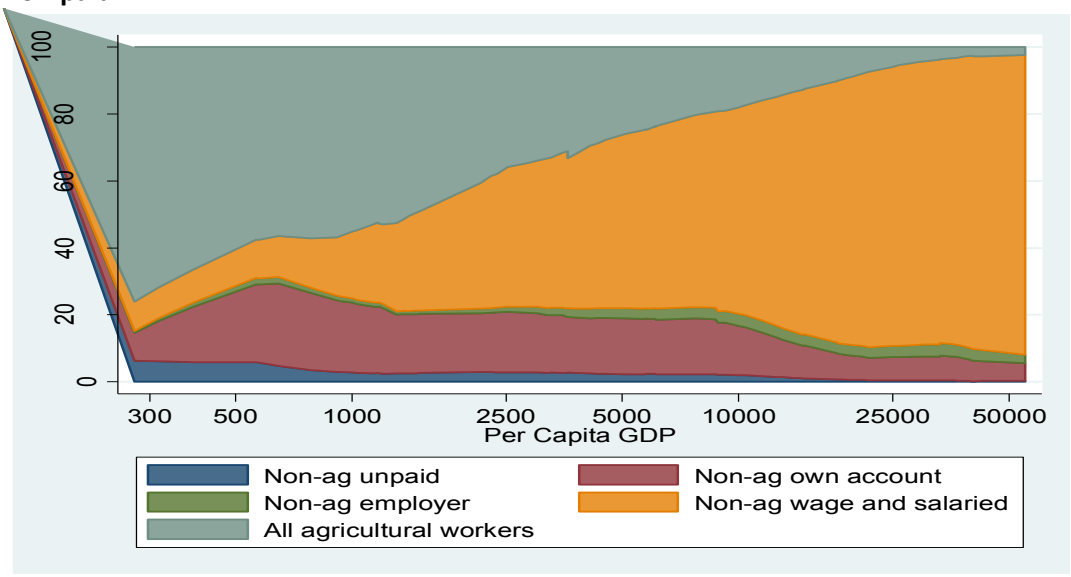
Table 11: Percent of unsuccessful self-employed with the potential to be successful, by region and income group

Region and Income Level	NON-AGRICULTURE UNSUCCESSFUL SELF-EMPLOYED	
(number of countries in sample)	Lower Potential	High Potential
DEFINITION 2: Success= Per capita consumption above $2/day		
All Low and Middle Income Countries (38)	63%	37%
Region (Low and Middle Income)		
East Asia and Pacific (6)	57%	43%
Europe and Central Asia (2)	36%	63%
Latin America and the Caribbean (10)	53%	47%
Middle East and North Africa (3)	50%	50%
South Asia (2)	71%	29%
Sub-Saharan Africa (15)	48%	52%
Per Capita GNI		
Low Income (12)	58%	42%
Lower Middle Income (17)	65%	35%
Upper Middle Income (9)	53%	47%

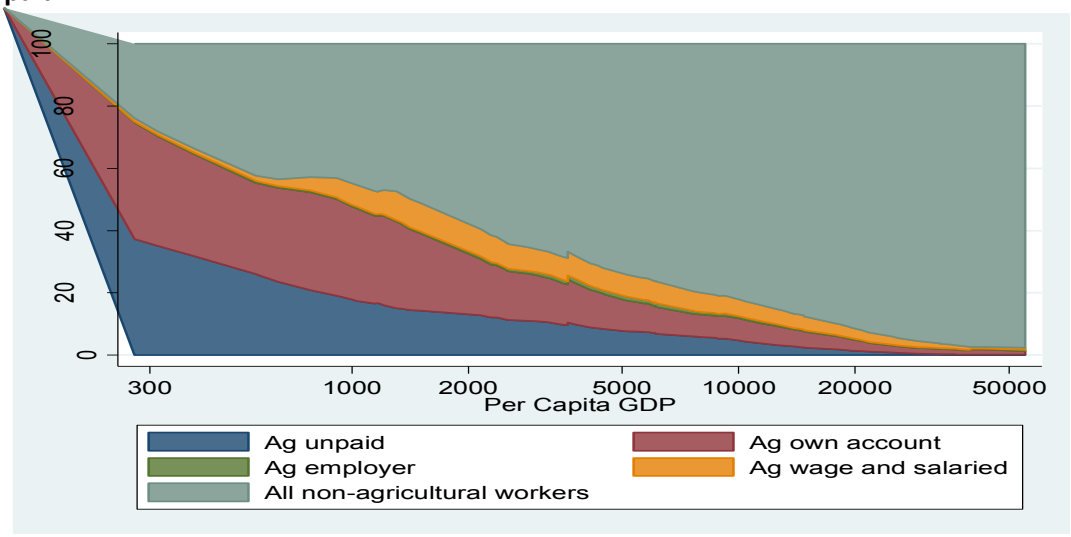
Note: For the countries used to construct this table, by region, see the appendix

Figure 1: Evolution of the distribution of self-employed, employers, non-paid employees, and wage and salaried workers

Panel A: Separating Non-agricultural workers into wage and salary, employer, own account and non-paid



Panel B: Separating Agricultural workers into wage and salary, employer, own account and non-paid



Note: Graphs created using lowess smoothing against log GDP with a bandwidth of 0.3.

Figure 2: Position in the distribution of per capita household consumption

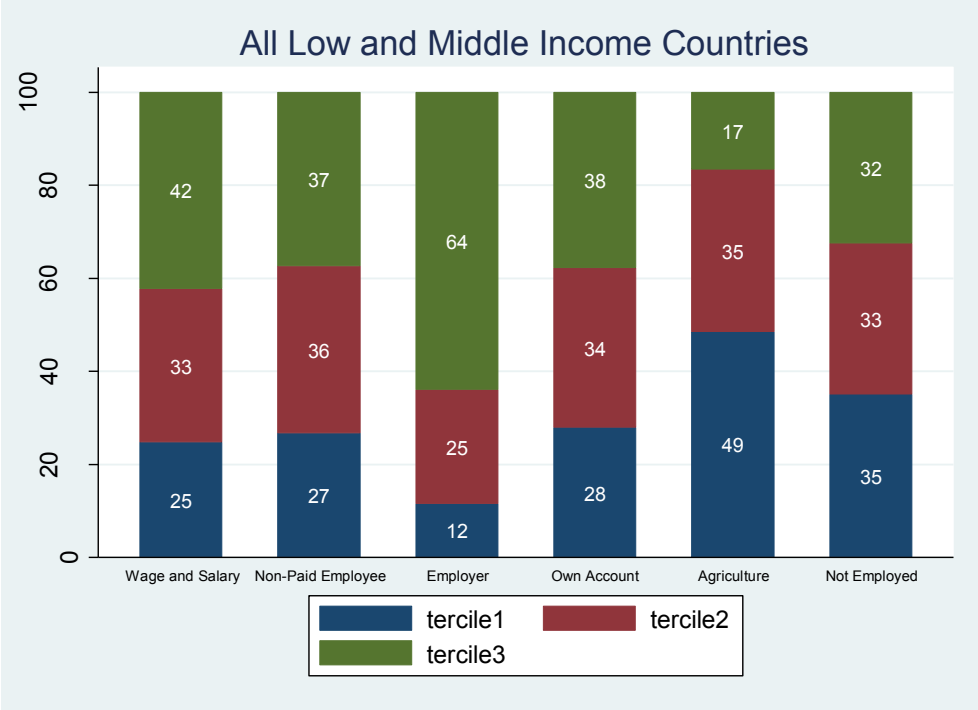


Figure 3: Percent of men and women in each employment category

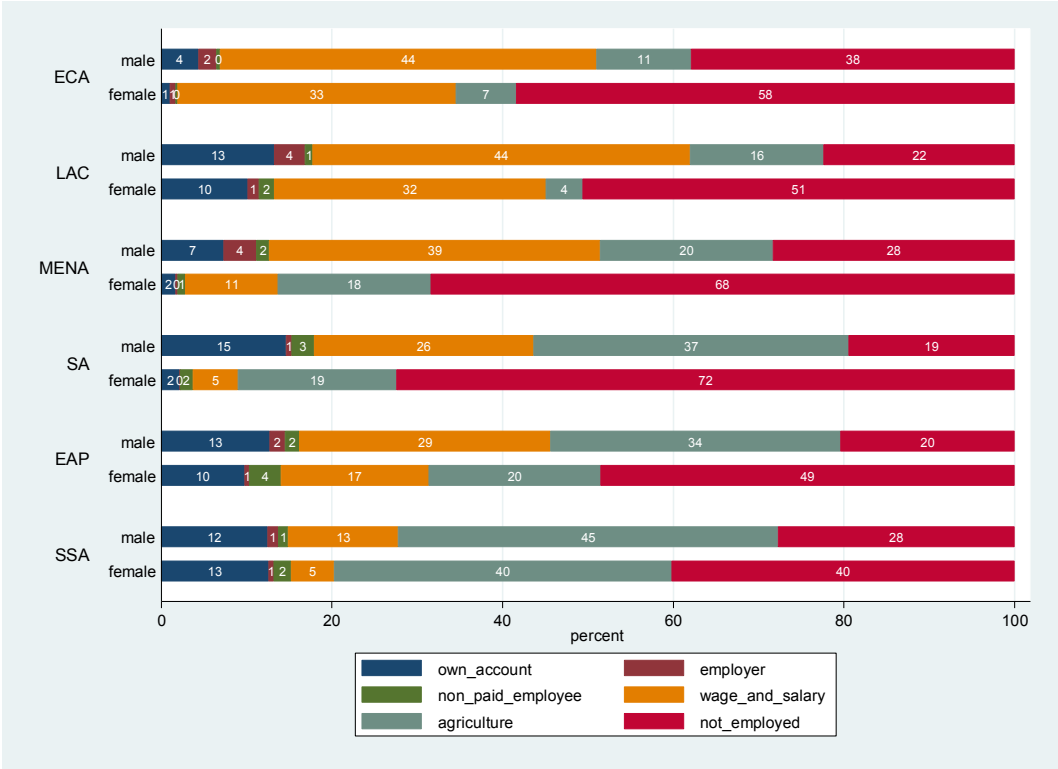
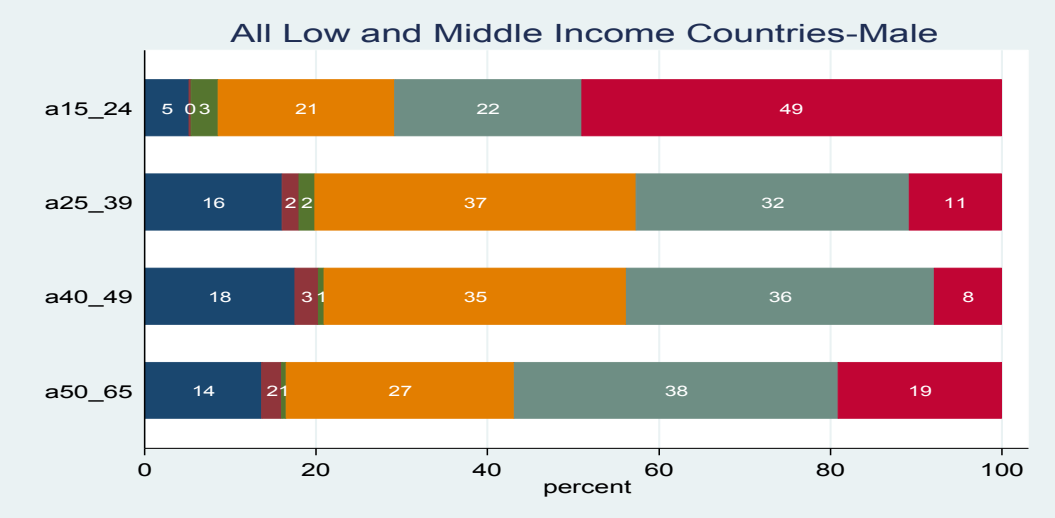


Figure 4: Distribution of age by employment category



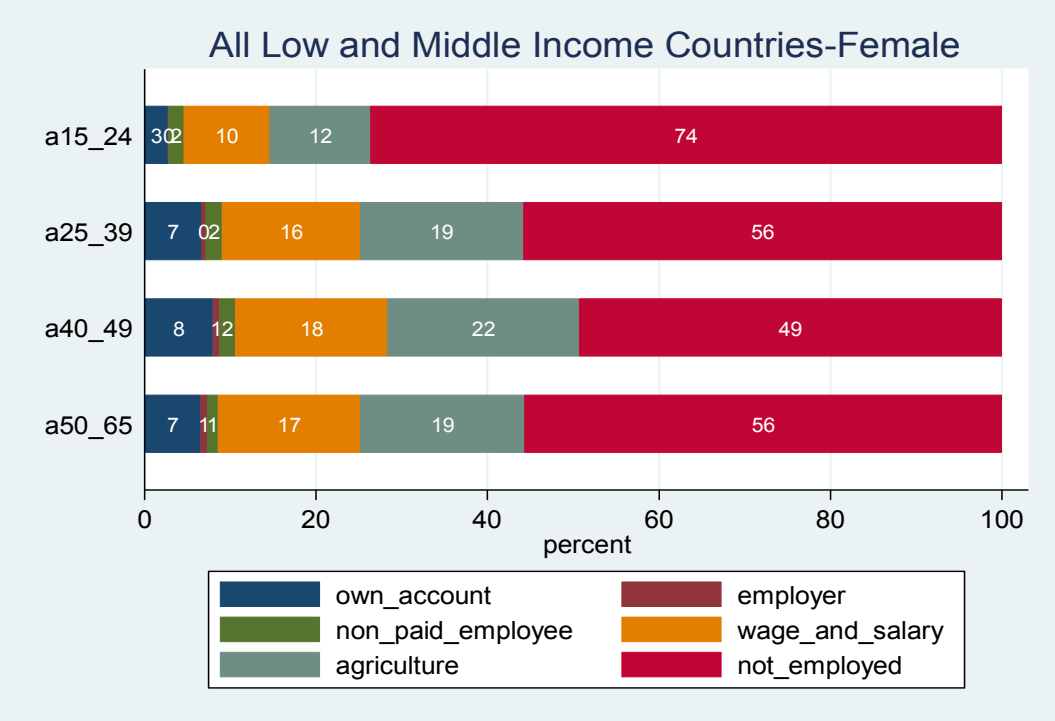
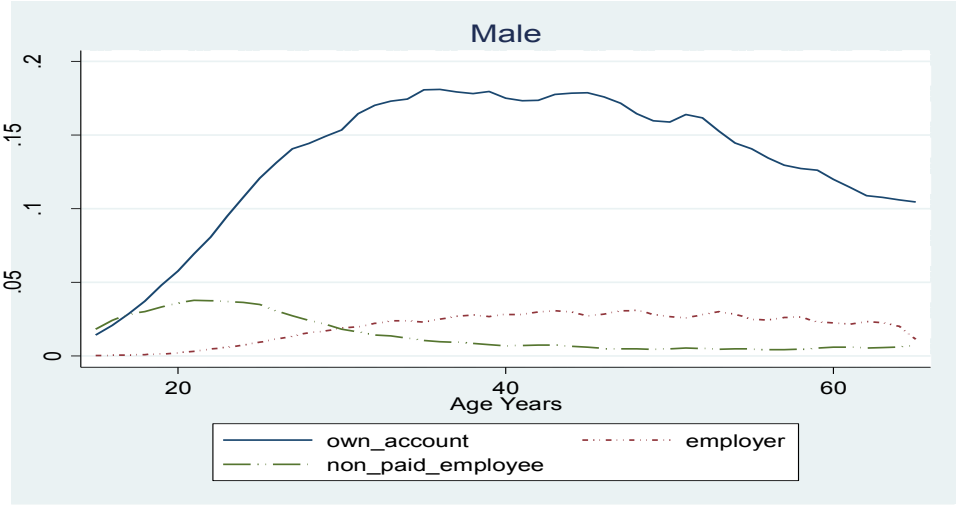


Figure 5: By age, the proportion of working age population who are own account workers, non-paid employment and employers (graphs use lowess smoothing).



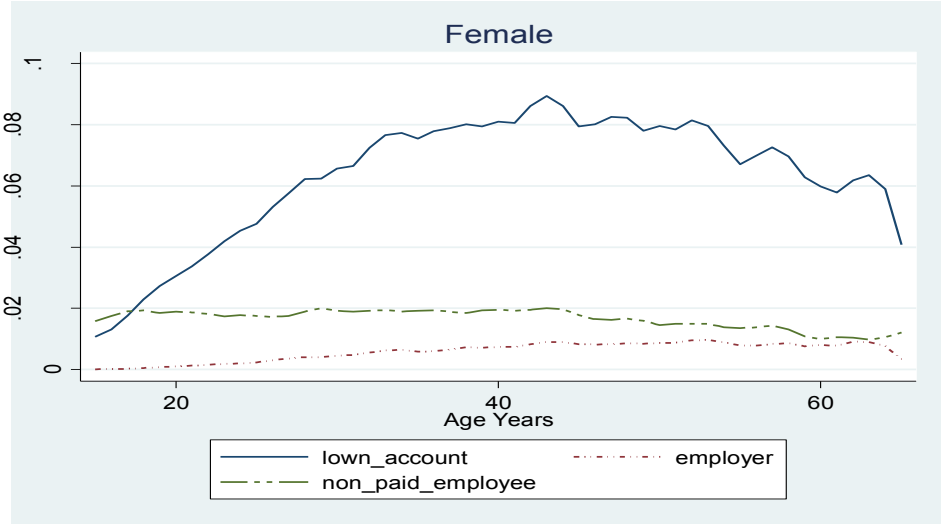


Figure 6: Industry sector for non-agricultural workers

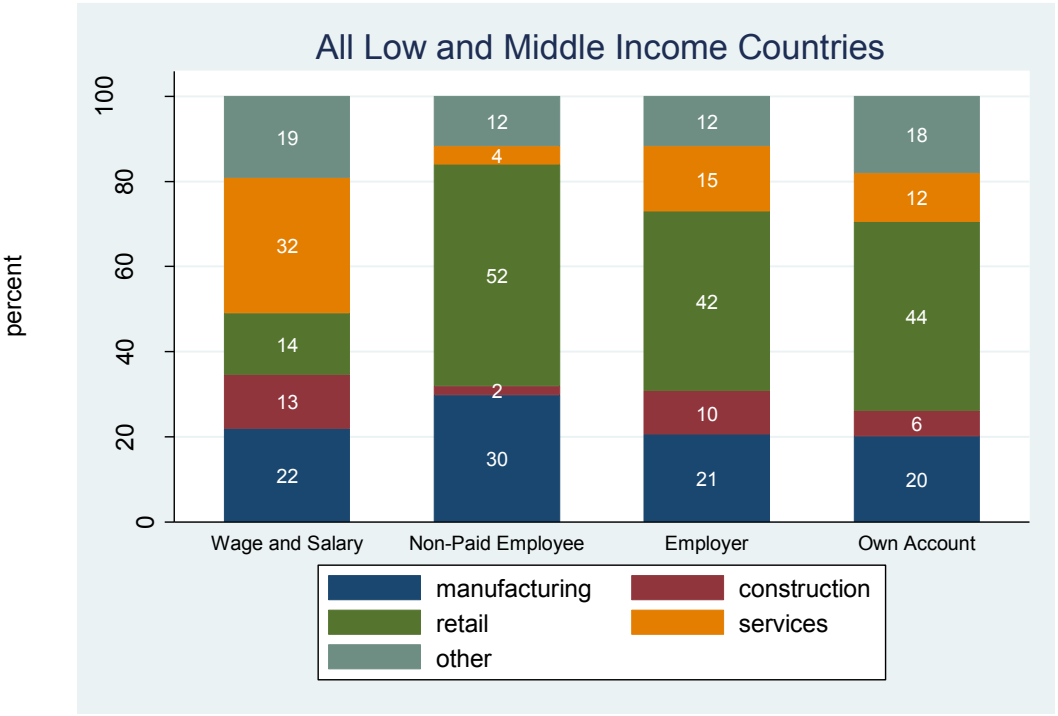


Figure 7: Industry sector for non-agricultural workers, by region of the world

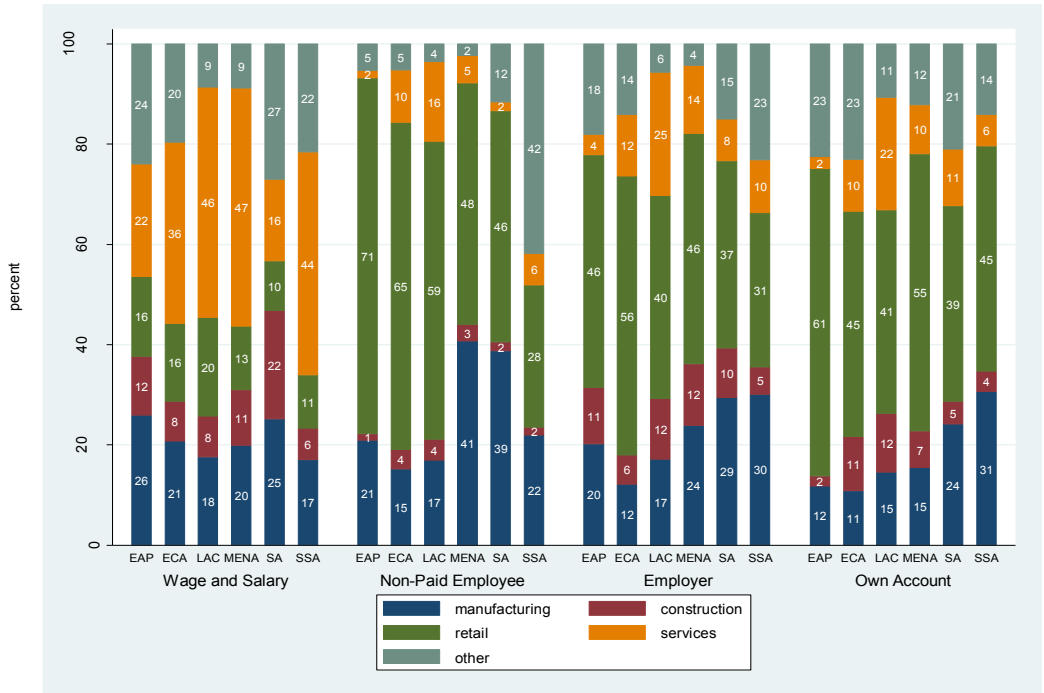


Figure 8: Industry sector for non-agricultural workers, by income group

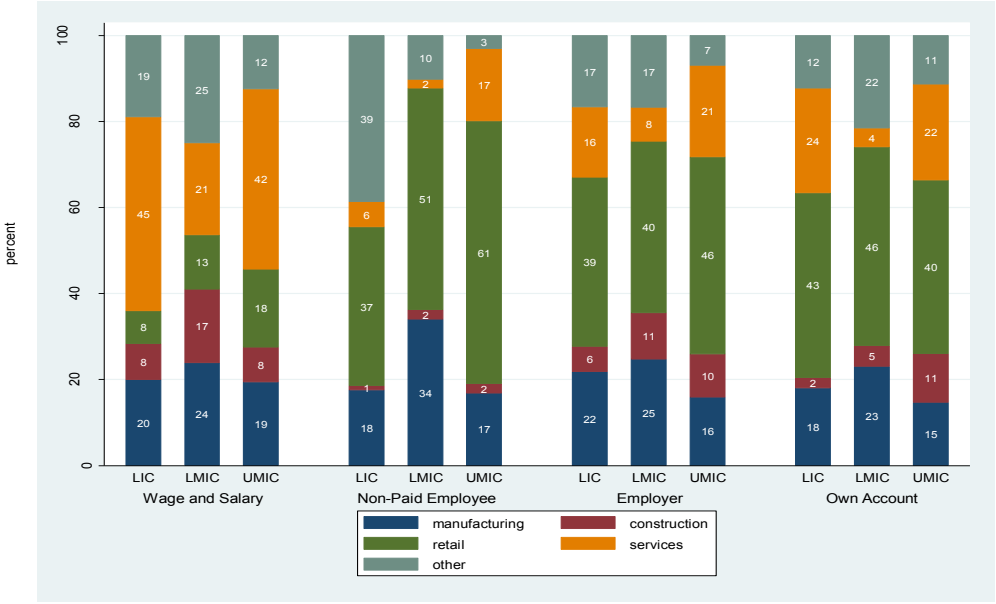


Figure 9: Household head status, by employment category

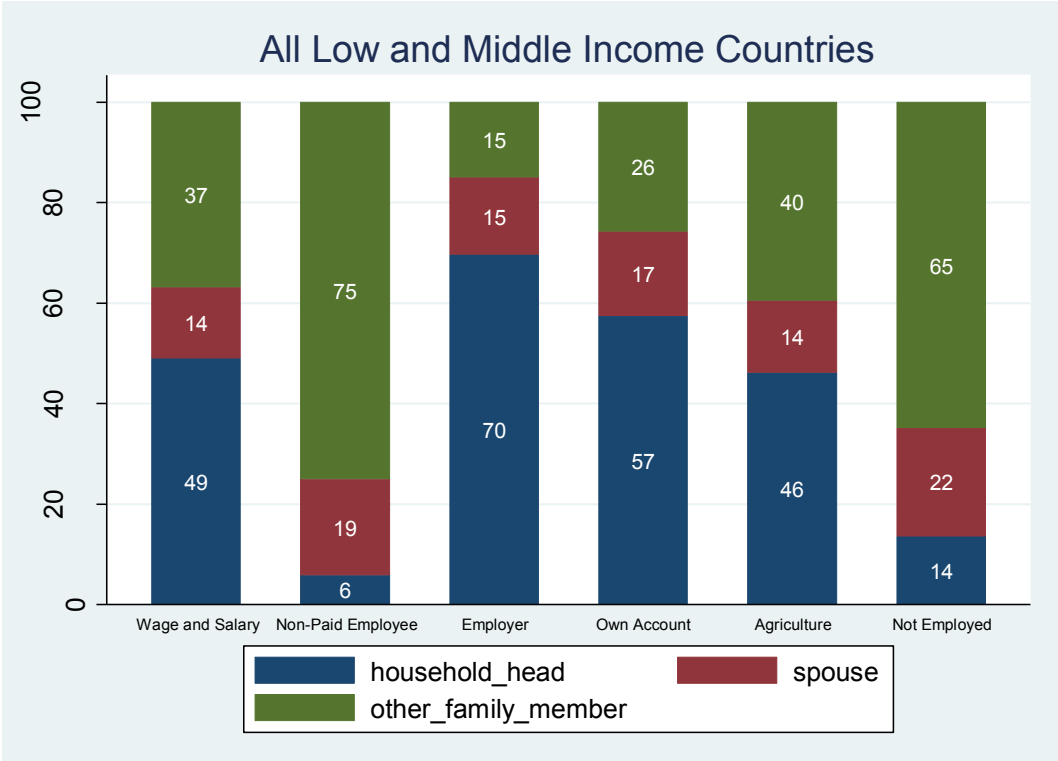
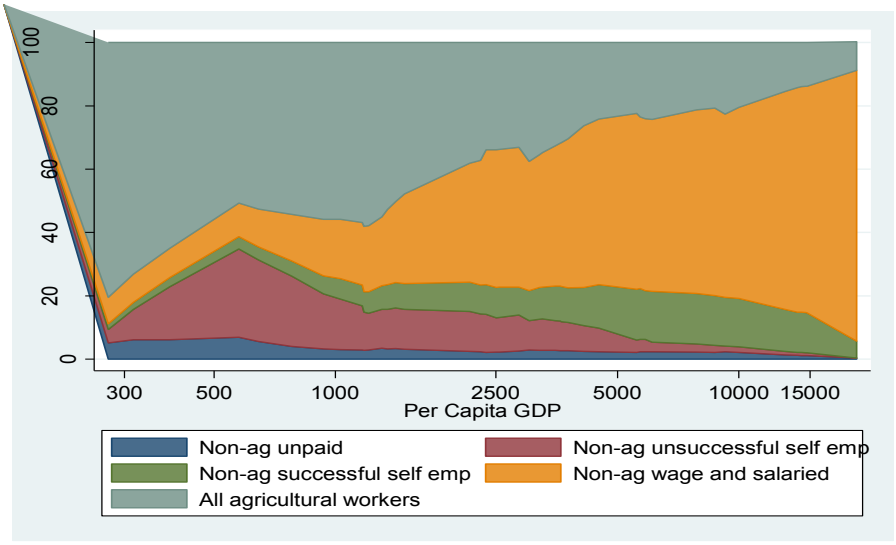
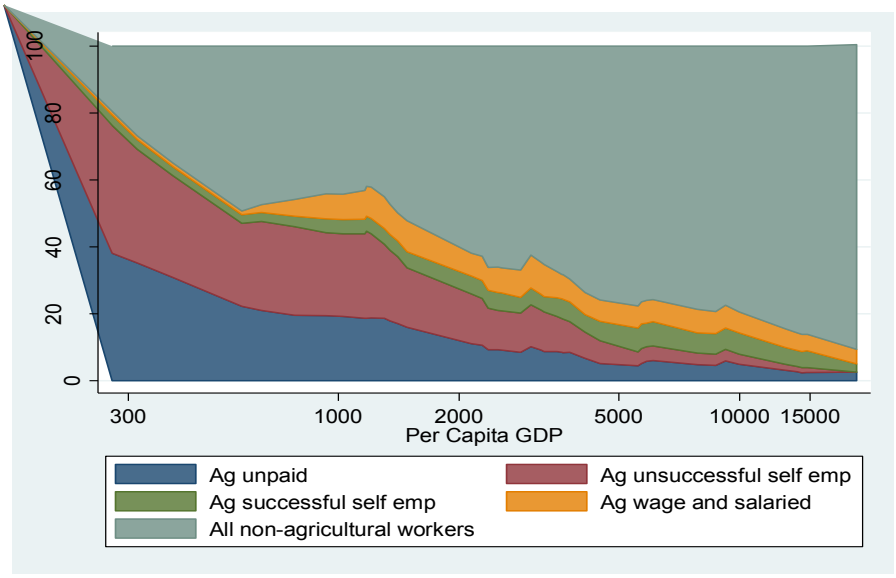


Figure 10: The distribution of successful and unsuccessful self-employed ($2/day definition) by per capita GDP

Panel A: Separating non-agricultural successful and unsuccessful self-employed ($2/day definition)



Panel B: Separating agricultural successful and unsuccessful self-employed ($2/day definition)



Note: Graphs created using lowess smoothing against log GDP with a bandwidth of 0.3.

Table A1: Marginal Effects of each explanatory variable on the probability that an unsuccessful self-employed worker could be a successful self-employed worker, by region and income group.

Definition 1: Unsuccessful = Own Account

	rural	construct.	retail	services	male	no education	secondary incomplete	secondary complete	post secondary	Male 15_24	Male 40_49	Male 50_65	Female 15_24	Female 40_49	Female 50_65
Region															
East Asia and Pacific	-0.02	0.11	-0.03	0.00	0.05	-0.08	0.06	0.07	0.14	-0.04	0.03	0.03	-0.03	0.02	0.03
Europe and Central As	-0.08	-0.05	-0.01	-0.02	0.15	-0.25	-0.02	0.10	0.23	-0.12	0.06	0.06	-0.08	0.07	0.10
Latin America and the	-0.03	0.01	0.02	-0.03	0.10	-0.08	0.08	0.13	0.21	-0.11	0.02	0.00	-0.09	0.03	0.03
Middle East and	-0.10	0.04	-0.06	-0.03	0.16	-0.11	0.01	0.03	0.25	-0.15	0.07	0.11	-0.08	0.05	0.03
South Asia	-0.03	0.02	-0.01	-0.01	0.05	-0.02	0.03	0.04	0.05	-0.03	0.01	0.01	-0.04	0.02	0.04
Sub-Saharan Africa	0.00	-0.02	-0.05	0.01	0.03	-0.02	0.02	0.05	0.11	-0.03	0.02	0.02	-0.02	0.00	0.01
Per Capita GNI															
Low Income	-0.01	0.01	-0.02	0.02	0.03	-0.01	0.01	0.03	0.07	-0.03	0.02	0.01	-0.02	0.00	0.00
Lower Middle Income	-0.03	0.04	-0.03	-0.01	0.05	-0.04	0.04	0.06	0.10	-0.04	0.02	0.02	-0.04	0.02	0.03
Upper Middle Income	-0.04	0.01	0.02	-0.03	0.11	-0.10	0.08	0.13	0.21	-0.12	0.02	0.01	-0.09	0.04	0.03

Table A2: Marginal Effects of each explanatory variable on the probability that an unsuccessful self-employed worker could be a successful self-employed worker, by region and income group.

Definition 2: Unsuccessful = Poor

	rural	construct.	retail	services	male	no education	secondary incomplete	secondary complete	post secondary	Male 15_24	Male 40_49	Male 50_65	Female 15_24	Female 40_49	Female 50_65
Region															
East Asia and Pacific	-0.20	0.01	0.05	0.10	0.01	-0.11	0.18	0.21	0.40	-0.04	0.05	0.10	-0.06	0.07	0.12
Europe and Central As	-0.03	-0.26	-0.07	-0.01	-0.02	0.00	0.03	0.10	0.19	0.02	0.04	-0.04	-0.05	0.07	0.03
Latin America and the	-0.11	-0.01	0.02	-0.01	0.01	-0.09	0.10	0.19	0.27	-0.01	0.04	0.09	-0.02	0.06	0.12
Middle East and	-0.11	0.03	-0.02	-0.02	0.03	-0.17	0.09	0.01	0.18	-0.10	-0.05	0.03	-0.08	0.09	0.11
South Asia	-0.21	0.05	0.03	0.07	0.02	-0.06	0.12	0.20	0.25	-0.01	0.04	0.06	-0.03	0.10	0.11
Sub-Saharan Africa	-0.01	0.04	0.03	-0.01	0.06	-0.04	0.03	0.07	0.11	-0.04	-0.07	-0.04	-0.01	-0.01	0.01
Per Capita GNI															
Low Income	-0.07	0.07	0.03	0.03	0.07	0.00	0.07	0.12	0.22	-0.04	-0.03	-0.02	-0.03	-0.01	-0.01
Lower Middle Income	-0.19	0.03	0.03	0.06	0.02	-0.08	0.13	0.19	0.26	-0.02	0.03	0.06	-0.04	0.09	0.10
Upper Middle Income	-0.11	-0.01	0.01	0.00	0.02	-0.09	0.10	0.19	0.26	-0.01	0.05	0.09	-0.01	0.05	0.11

Table A3: Marginal Effects of each explanatory variable on the probability that an unsuccessful self-employed worker could be a successful self-employed worker, by region and income group.

Definition 1: Unsuccessful = Own Account

Country	rural	construct.	retail	services	male	no education	secondary incomplete	secondary complete	post secondary	Male 15_24	Male 40_49	Male 50_65	Female 15_24	Female 40_49	Female 50_65
Albania	-0.056	0.035	-0.039	-0.036	0.135	0.109	0.153	0.150	0.236	0.000	-0.089	0.013	0.000	0.044	0.000
Angola	0.058	-0.015	-0.039	-0.024	0.037	-0.014	0.022	0.057	0.000	-0.041	0.014	0.059	-0.040	0.007	0.005
Bangladesh	-0.006	-0.008	-0.001	-0.006	0.000	-0.002	-0.002	-0.009	0.009	0.001	0.002	0.000	0.000	0.000	0.000
Bolivia	-0.005	-0.058	-0.118	-0.016	0.135	-0.127	0.058	0.072	0.114	-0.161	0.044	-0.012	-0.050	0.064	-0.005
Brazil	-0.057	-0.055	0.068	-0.045	0.097	-0.117	0.117	0.175	0.276	-0.124	0.007	-0.002	-0.128	0.025	0.010
Burundi	-0.019	0.014	-0.010	0.036	0.044	0.030	-0.008	0.051	0.078	-0.042	-0.031	-0.032	-0.003	0.038	0.000
Cambodia	-0.003	0.013	-0.001	0.005	0.004	0.006	0.003	0.006	0.000	0.003	-0.003	-0.003	0.000	0.003	0.000
Chad	-0.069	0.026	0.031	0.014	0.058	-0.002	0.045	-0.023	0.087	-0.103	0.015	0.004	-0.054	-0.052	0.001
Chile	0.003	0.015	-0.004	0.004	0.056	-0.001	0.028	0.093	0.203	-0.030	-0.006	0.044	0.025	0.057	0.029
Colombia	-0.009	-0.012	0.007	-0.047	0.056	-0.031	0.043	0.000	0.137	-0.078	0.026	0.036	-0.063	0.042	0.046
Congo, Democratic Re	-0.002	-0.041	-0.030	0.030	0.013	0.005	0.005	0.048	0.088	-0.016	0.036	0.028	-0.022	0.007	-0.027
Congo, Republic of	-0.009	-0.124	0.010	0.031	0.017	0.019	0.011	-0.032	0.033	0.044	-0.031	0.001	-0.033	-0.028	0.000
Costa Rica	0.006	0.028	0.102	-0.189	0.070	-0.008	0.021	0.140	0.258	-0.086	0.004	0.034	-0.106	-0.071	0.013
Dominican Republic	-0.020	-0.014	0.004	0.011	0.059	-0.003	0.022	0.049	0.077	-0.038	0.023	0.018	-0.001	0.020	0.025
Ecuador	-0.015	0.002	-0.019	-0.055	0.074	-0.089	0.040	0.092	0.206	-0.041	0.047	0.023	0.017	0.022	0.061
Egypt	-0.052	0.036	-0.027	-0.078	0.177	-0.105	0.000	-0.008	0.272	-0.180	0.090	0.138	-0.052	-0.032	0.013
El Salvador	-0.069	0.021	-0.068	-0.083	0.107	-0.065	-0.031	0.076	0.167	-0.080	-0.002	-0.001	-0.225	0.000	0.037
Gabon	-0.040	-0.040	-0.119	-0.010	-0.023	0.000	0.000	0.070	0.061	0.000	0.022	0.033	-0.050	0.011	0.080
Gambia, The	0.023	-0.028	-0.021	0.062	0.066	-0.045	-0.003	0.008	0.016	0.040	0.011	0.012	0.000	0.000	0.000
Ghana	-0.030	0.023	-0.070	-0.040	0.079	-0.020	0.059	0.120	0.131	-0.093	0.009	-0.013	-0.061	-0.011	0.027
Guatemala	-0.033	0.076	0.028	0.025	0.150	-0.100	0.069	0.129	0.206	-0.152	-0.035	-0.029	-0.144	0.007	-0.021
Haiti	0.019	0.076	0.000	0.069	0.020	0.000	0.000	0.009	0.000	-0.022	-0.027	-0.047	0.057	0.007	0.024
Honduras	-0.078	-0.041	0.001	-0.028	0.094	0.005	0.030	0.125	0.217	-0.061	0.013	0.005	0.025	0.006	0.002
India	-0.031	0.017	-0.017	-0.013	0.046	-0.017	0.031	0.049	0.058	-0.034	0.008	0.008	-0.043	0.021	0.037
Indonesia	-0.017	0.113	-0.047	-0.009	0.056	-0.047	0.035	0.076	0.147	-0.029	0.024	0.024	0.003	0.020	0.028
Jamaica	-0.031	0.072	0.037	0.080	0.079	0.061	0.001	0.077	0.072	-0.143	0.067	0.077	0.024	0.003	0.065
Jordan	-0.119	0.005	0.098	0.197	0.253	0.000	0.043	0.061	0.161	0.003	0.110	0.124	-0.401	0.160	0.097
Kenya	-0.056	0.014	-0.020	0.042	0.017	-0.018	-0.019	0.000	0.066	-0.072	0.071	0.065	-0.035	-0.007	-0.010
Liberia	0.001	-0.026	-0.038	0.012	0.031	0.023	0.044	0.125	0.210	-0.109	0.017	0.051	0.055	-0.009	0.021
Macedonia, FYR	-0.064	-0.039	0.109	0.101	-0.070	0.000	0.000	0.339	0.506	0.008	0.072	0.071	-0.332	-0.135	-0.067
Malawi	-0.189	-0.029	0.015	0.004	-0.031	0.021	-0.038	0.022	0.007	0.019	-0.031	-0.072	0.021	-0.080	0.008
Mexico	0.004	0.114	-0.052	0.016	0.195	-0.097	0.077	0.092	0.200	-0.170	0.012	-0.038	-0.053	0.063	0.088
Mongolia	0.022	-0.010	-0.068	0.017	-0.026	0.000	0.000	-0.004	0.083	0.000	0.058	0.027	0.063	-0.007	0.000
Morocco	-0.146	0.050	-0.111	-0.010	0.135	0.000	0.009	0.063	0.181	-0.137	0.044	0.087	0.000	0.155	0.000
Nigeria	0.024	-0.056	-0.083	-0.003	0.023	-0.029	0.005	0.029	0.125	-0.017	0.026	0.002	-0.023	-0.001	0.027
Peru	-0.047	0.195	0.001	-0.035	0.058	-0.027	0.029	0.055	0.093	-0.099	0.060	0.001	-0.102	-0.002	-0.022
Philippines	-0.039	0.038	0.008	0.008	0.041	-0.143	0.139	0.037	0.103	-0.079	0.026	0.058	-0.035	0.028	0.024
Russian Federation	0.051	-0.025	0.180	0.039	0.107	0.000	-0.082	0.089	0.233	0.000	0.351	0.348	0.000	0.428	0.465
Senegal	-0.018	0.012	-0.019	0.001	0.012	0.008	0.014	0.000	0.020	-0.010	-0.005	-0.014	-0.014	-0.006	-0.008
Sri Lanka	-0.063	0.136	-0.005	-0.044	0.149	-0.136	0.064	0.142	0.205	-0.104	0.019	0.004	0.000	0.017	-0.044
Swaziland	-0.017	0.000	-0.019	-0.029	-0.187	0.032	0.034	0.070	0.046	0.257	0.225	0.247	0.000	0.045	0.000
Tajikistan	0.001	0.046	-0.097	0.121	0.036	0.000	0.013	-0.018	0.044	0.008	0.026	0.008	0.010	0.015	0.027
Tanzania, United Repu	-0.002	0.123	-0.044	0.050	0.049	-0.073	0.085	0.155	0.243	-0.083	0.012	0.006	-0.029	0.002	0.030
Thailand	-0.033	0.191	-0.013	0.022	0.059	-0.117	0.053	0.096	0.151	-0.046	0.035	0.019	-0.145	0.025	0.020
Timor Leste	0.033	0.137	0.040	0.159	-0.083	-0.013	0.078	0.048	0.000	0.176	0.118	-0.051	-0.048	0.064	0.126
Tunisia	-0.155	0.008	-0.090	0.088	0.173	-0.128	0.000	0.105	0.394	-0.123	0.042	0.027	-0.116	0.082	0.117
Turkey	-0.106	-0.063	-0.046	-0.040	0.165	-0.268	0.000	0.108	0.239	-0.129	0.014	0.013	-0.083	0.008	0.031
Uganda	-0.006	0.033	-0.018	0.019	0.016	0.019	0.008	-0.006	0.027	0.000	0.003	0.014	0.011	0.010	0.007
Uruguay	0.063	-0.130	-0.005	-0.106	0.086	-0.124	0.110	0.218	0.238	-0.136	0.037	0.065	-0.071	0.051	0.058

Table A4: Marginal Effects of each explanatory variable on the probability that an unsuccessful self-employed worker could be a successful self-employed worker, by region and income group.

Definition 2: Unsuccessful = Poor

Country	rural	construct.	retail	services	male	no education	secondary incomplete	secondary complete	post secondary	Male 15_24	Male 40_49	Male 50_65	Female 15_24	Female 40_49	Female 50_65
Angola	-0.179	-0.018	0.016	-0.005	0.003	-0.046	0.166	0.370	0.000	-0.007	0.014	0.050	0.024	-0.010	0.107
Bangladesh	-0.155	0.102	0.064	0.055	0.077	0.065	0.129	0.148	0.317	-0.020	0.011	0.007	-0.057	0.007	0.000
Bolivia	-0.119	-0.028	0.106	-0.081	-0.041	-0.170	0.087	0.056	0.307	-0.030	0.055	0.143	-0.058	0.101	0.117
Brazil	-0.080	0.002	0.005	0.033	0.023	-0.092	0.100	0.237	0.230	-0.018	0.030	0.078	-0.018	0.057	0.117
Burundi	-0.065	0.000	0.037	-0.015	0.042	-0.028	0.026	0.076	0.100	-0.021	-0.012	-0.064	-0.024	0.016	0.014
Cambodia	-0.290	0.030	0.064	0.123	0.012	-0.105	0.101	0.208	0.588	-0.065	0.005	-0.001	-0.022	0.013	0.049
Chad	-0.084	0.077	0.065	0.020	0.083	-0.010	-0.014	0.065	0.149	0.028	-0.016	-0.080	-0.032	0.043	-0.012
Chile	-0.005	-0.004	0.007	0.009	0.000	-0.010	-0.005	0.012	0.019	0.008	0.012	0.016	-0.003	0.002	0.016
Colombia	-0.154	-0.043	-0.012	-0.068	0.027	-0.111	0.143	0.198	0.372	-0.033	0.060	0.091	-0.010	0.064	0.131
Congo, Democratic Re	0.112	0.000	-0.001	-0.014	0.077	0.002	0.003	0.061	0.095	-0.092	-0.087	-0.046	-0.003	-0.022	-0.048
Congo, Republic of	-0.060	-0.002	0.056	0.051	0.059	0.007	0.079	0.119	0.180	-0.033	0.029	0.040	-0.006	-0.009	0.022
Costa Rica	-0.039	0.021	-0.020	-0.021	0.004	-0.056	0.077	0.136	0.162	0.034	0.023	0.032	0.065	0.041	0.019
Egypt	-0.091	0.038	-0.014	0.021	-0.014	-0.174	0.000	0.009	0.246	-0.050	0.003	0.081	-0.022	0.019	0.106
El Salvador	-0.117	0.038	0.021	-0.083	0.012	-0.092	0.083	0.117	0.251	0.065	0.028	0.139	-0.022	0.076	0.145
Gabon	-0.030	0.008	0.144	0.132	0.141	0.178	0.039	-0.002	0.122	-0.111	0.005	-0.029	0.096	-0.022	0.058
Gambia, The	-0.124	0.050	0.021	-0.015	-0.021	-0.066	0.014	0.163	0.092	0.021	-0.001	0.003	-0.155	0.002	0.006
Ghana	-0.200	0.022	0.021	0.007	0.073	-0.115	0.096	0.188	0.202	-0.030	-0.088	-0.124	-0.032	-0.038	0.054
Honduras	-0.219	0.032	0.037	-0.042	0.076	-0.172	0.135	0.293	0.460	0.199	-0.028	0.037	-0.094	-0.001	0.061
India	-0.214	0.040	0.023	0.072	0.009	-0.075	0.123	0.207	0.245	-0.007	0.047	0.063	-0.028	0.109	0.106
Indonesia	-0.199	0.033	0.052	0.076	0.007	-0.087	0.124	0.222	0.413	-0.028	0.039	0.092	-0.067	0.077	0.117
Jamaica	0.012	-0.038	0.025	-0.010	0.052	0.062	0.000	0.061	0.009	-0.052	0.021	0.046	-0.005	0.039	0.027
Jordan	-0.021	0.018	0.005	0.115	-0.029	0.000	0.095	0.151	0.173	-0.051	-0.050	0.036	-0.325	-0.072	0.000
Kenya	-0.314	0.045	0.037	0.206	-0.019	-0.180	0.121	0.000	0.201	-0.011	0.038	0.012	0.037	-0.003	0.052
Liberia	-0.074	0.024	-0.006	0.002	0.015	0.007	0.014	0.041	0.068	-0.031	-0.006	0.037	-0.061	-0.034	0.016
Malawi	-0.125	0.002	0.018	0.008	-0.021	-0.012	0.036	0.055	0.080	0.004	-0.039	-0.016	-0.024	-0.006	0.016
Mexico	-0.075	-0.002	0.036	0.011	-0.031	-0.061	0.079	0.131	0.210	-0.007	0.067	0.109	-0.042	0.032	0.073
Mongolia	-0.158	-0.130	-0.015	0.002	0.041	0.000	0.239	0.110	0.293	0.193	-0.025	0.130	0.062	0.016	0.181
Morocco	-0.145	0.015	-0.037	-0.079	0.077	0.000	0.093	0.000	0.096	-0.169	-0.107	-0.039	-0.128	0.168	0.000
Nigeria	0.005	0.053	0.051	-0.049	0.068	-0.062	0.011	0.016	0.081	-0.012	-0.083	-0.067	-0.006	-0.010	0.026
Peru	-0.152	0.043	0.050	-0.007	0.021	-0.051	0.055	0.124	0.187	0.035	0.045	0.127	0.005	0.056	0.142
Philippines	-0.216	-0.066	0.063	0.192	0.023	-0.176	0.488	0.206	0.362	-0.088	0.077	0.172	-0.058	0.060	0.150
Russian Federation	-0.041	-0.080	0.010	0.023	-0.052	0.000	-0.068	0.005	0.057	0.000	0.049	-0.005	0.000	0.014	-0.053
Senegal	-0.343	-0.023	0.034	-0.067	0.061	-0.077	0.000	0.000	0.116	-0.034	-0.005	-0.019	0.008	0.001	-0.015
Sierra Leone	-0.073	0.077	0.054	0.116	0.042	-0.132	0.054	0.156	-0.017	0.133	-0.052	0.171	-0.005	0.061	0.071
Swaziland	-0.045	-0.052	0.040	0.030	0.033	-0.033	0.055	0.039	0.220	-0.057	0.036	0.048	0.043	0.038	0.067
Tajikistan	-0.021	-0.437	-0.149	-0.052	0.011	0.000	0.136	0.206	0.317	0.022	0.039	-0.069	-0.051	0.137	0.121
Thailand	-0.159	-0.049	0.045	0.053	0.011	-0.167	0.077	0.116	0.223	-0.055	0.130	0.057	-0.086	0.097	0.082
Timor Leste	-0.194	0.000	0.025	-0.053	-0.002	-0.199	0.068	0.052	-0.022	0.162	0.228	0.000	0.074	0.113	0.130