The Impact of Labor Market and Other Regulations on Earnings Premiums and Penalties for Self-Employment Around the World

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Abstract

Using a comprehensive set of harmonized household surveys, the World Bank International Income Distribution Database (I2D2), this paper estimates the earnings premium or penalty associated with self-employment in 73 countries around the world over the period 1970-2011. Using these estimates, we investigate the relationship between the regulatory environment measured through business, credit, labor and trade regulations and self-employment earnings differentials at the country level. We also examine the possibility that some workers may be self-employed out of necessity, while others are self-employed because of the opportunity to become entrepreneurs, by examining the impact separately for non-professional ownaccount workers and employers and professionals. Our findings do not provide support for the traditional "exclusion" or labor market segmentation hypothesis. Specifically, we find no evidence that labor market regulations create earnings penalties for self-employed workers. In fact we find evidence that increased labor regulations is associated with an earnings premium for self-employed workers. On the other hand, results suggest that more cumbersome business regulations is associated with an increase in earnings penalties for non-professional ownaccount self-employed workers but an increase in premiums for employers and professionals. More regulated trade does is correlated with increased earnings penalties for all self-employed, while an increase in credit availability is associated with an earnings penalty for all self-employed workers. The association seems to be consistently larger and more robust for female self-employed workers compared to men. In summary we find no evidence that rigid government regulations, with the exception of trade, cause higher earnings penalties for self-employed workers. Our results are robust to different sources of regulation and various specifications.

I. Introduction

Over 35% of workers in developing economies, and the majority of workers in low income countries, are self-employed (Gindling and Newhouse, 2013). The prevalence of self-employment in developing countries has inspired a vast literature seeking to better understand its causes and determinants. Nonetheless, there is currently little consensus on the extent to which self-employed workers in developing countries voluntarily choose to be self-employed, based either on pecuniary or non-pecuniary factors, rather than being excluded from wage employment. The widespread belief that most self-employed workers earn less than comparable wage employees underpins the common view that labor regulations should be relaxed to broaden access to wage employment. Yet while many studies examine earnings differences between the informal and formal sectors in individual developing countries, there is very little comparative information on how and why the wage gaps between the self-employed and employees differ across countries.

This paper uses a comprehensive set of harmonized household surveys, the World Bank International Income Distribution Database (I2D2) to estimate the self-employment earnings premium or penalty for multiple years in 73 low, middle and high-income countries. The estimates control for basic worker characteristics such as age, education, and gender, as well as industry of work. The estimates of wage differentials are then combined with country-level data on government regulations and macroeconomic indicators from the World Bank Development Indicators, the World Bank Doing Business Surveys, and the Fraser Institute's Economic Freedom of the World indices to analyze the relationship between government policies and self-employment wage differentials. This is the first study that we know of that takes a broad view of how labor market segmentation, measured by wage differentials, depends on countries' level of development and the strength of their de-jure regulations.

We first estimate how self-employment penalties or premiums vary for different types of workers. When we compare all self-employed workers to wage and salaried employees, we find a self-employment earnings premium in low-income countries and self-employment earnings penalties in middle and high-income countries. Separating the self-employed into two types, we find that non-professional own-account workers also face an earnings premium in low-income counties and earnings penalties in middle and high-income countries. On the other hand, we find that employers and professionals earn a premium when compared to employees at all income levels.

Examining self-employment earnings penalties or premiums for different types of workers, we find that penalties are larger (and premiums are smaller) for women, compared to men, in countries at all income levels. In low-income countries, younger workers and those with low levels of education face larger self-employment earnings premiums than do self-employed workers with higher education. In other words, in low-income countries the self-employment earnings premium is largest for low skilled workers. However, differences between workers at different education and skill levels narrow as per capita GDP increases, and largely disappear in high-income countries. Looking at the self-employment earnings premium/penalty by gender, age, education urban/rural, we find substantial variation in our premium/penalty estimates across different types of worker as well as some emerging robust patterns between workers with

different characteristics.

We then combine our estimates of self-employment earnings premium/penalties with country-level macroeconomic and regulatory data to estimate how regulations relate to self-employment earnings premium/penalties. The impact of regulations on self-employment premiums/penalties depends on which regulation we consider. We find no systematic evidence that labor market regulations is associated with increases in earnings penalties for self-employed workers. On the contrary, our evidence suggests that stricter labor market regulations are associated with lower earnings penalties for non-professional ownaccount workers. This evidence is inconsistent with the labor market segmentation explanation for high levels of self-employment in developing countries.

We find that an increase in the rule of law is associated with larger penalties (or smaller premiums) for both non-professional ownaccount workers and for employers and professionals. These results might suggest that self-employed workers may be taking advantage of self-employment as a way of avoiding the costs of regulations imposed on employees, especially in an environment where the rule of law is weak. Another possible explanation is that an increase in the rule of law leads to an increase in the earnings of employees relative to the self-employed. For example, an increase in the rule of law may improve the performance and productivity of firms, allowing them to share more quasi-rents with their employees.

We find that an increase in business regulations and the cost of starting a new business is associated with higher earnings premiums for employers and professionals, but higher penalties for non-professional ownaccount workers. We further find that higher taxes on businesses, which will also increase the cost of starting and running a business, is associated with higher earnings premiums for employers and professionals but highter penalties for non-professional ownaccount workers. The increased costs of starting and running a business may reduce the number of potential employers willing to start business, but those that do start a business require higher earnings to compensate for the increased cost of starting a business. This could explain why the earnings premium for employers and professionals increases as the cost of starting a business increases. At the same time, higher costs for starting and running a business means fewer jobs for employees, forcing more workers into non-professional ownaccount. The increase in the supply of non-professional ownaccount workers may drive down their wages, causing higher penalties for these workers.

Increased credit market regulations and less credit availability are associated with increased earnings penalties for self-employment. This evidence is not consistent with the view that limited credit availability causes labor market segmentation and higher self-employment earnings penalties. It may be the increased credit that is available goes to formal firms, who earn greater rents and share more of those rents with employees.

The only evidence that we have that shows that increased regulations are associated with greater earnings penalties for non-professional ownaccount workers is related to trade regulations. Specifically, more regulated trade (more tariffs, quotas, etc.) are correlated with greater earnings penalties for non-professional ownaccount workers. Trade barriers, because they allow domestic firms that compete with imports (tradable products) to sell their product at a higher price than the

world price, create rents for these firms. These rents may be shared with the limited number of worker employed in these protected firms, which in turn would cause a wage premium for workers in these protected, tradable industries. Most self-employed workers are employed in non-tradable sectors such as service, construction and small retail; the workers in these industries, in theory, do not benefit from trade barriers. In other words, it is likely that trade barriers will cause an earnings penalty for self-employment and lowering trade barriers will cause the self-employment earnings penalty to fall, as the rents and earnings of employees in formerly protected firms decline.

We find that the qualitative impact of regulations on self-employment earnings differentials is the same for men and women, and follows the impacts outlined above. However, we find important quantitative differences. Specifically, the impact of regulations on the self-employment earnings differentials of women is always greater than the impact on men.

II.   Literature Review
A. Theoretical

In a standard neo-classical model in which labor markets are perfectly competitive, labor is free to move between sectors, and workers maximize earnings, identical workers would earn the same amount whether they are wage employees or self-employed workers. In a competitive labor market, this will be true even though firms offer facilities that boost worker productivity, such as access to capital, export markets, and the opportunity to specialize. Assuming diminishing returns to labor in wage employment, the free movement of labor will equalize earnings between wage employees and the self-employed.

What are departures from the competitive labor market model that could be associated with an observed self-employment penalty or premium? One possibility is that the model is correct, but that empirically the measures of the compensation of self-employed or wage employees are not measured properly. Absolute estimates of wage gaps are inherently imprecise due to the difficult of measuring self-reported profits and of valuing non-wage benefits. For example, self-employed workers might systematically under-report earnings, which could be associated with an observed self-employed penalty even when none exists (Hurst & Pugsley, 2010). On the other hand, the self-reported earnings of employees include only returns to labor, while the self-reported earnings of the self-employed may also include returns to capital, as well as the returns to the risk of entrepreneurship. Failing to account for this may overestimate the self-employment earnings premium. Furthermore, wage employees often do not include the value of non-wage benefits, such as firms' contribution to pensions, sick pay, severance pay, and health care, in their reported earnings. In the competitive labor market described above, self-employment earnings would include compensation for these foregone non-wage benefits (Meghir et a. 2012), which would lead the estimates to overestimate the self-employment premium.

Other explanations for a persistent earnings differential between the self-employed and employees must explain why workers fail to move from one sector to another in response to a systematic earnings difference between sectors. The traditional view of self-employment in developing economies associates self-employment with informality within a segmented or dualistic labor market where formal sector jobs are restricted by minimum wage, tax laws and

labor market regulations that limit the growth of employment in the formal sector. Key to this view is that either government regulations, especially labor market regulations, or efficiency wages, limit the availability of formal sector employment. The segmented labor market view subscribes to the notion that informality stems from an imbalance between high population growth and the slow growth of "good" formal jobs (Harris and Todaro, 1970; Fields 2005, 2009; Tokman 1978; De Mel et al. 2010). This view argues that workers unable to find adequate employment opportunities in the formal sector are forced to take employment as self-employed workers in the low paid, marginal informal sector.

One distinguishing feature of labor market segmentation is earnings differentials; an earnings gap between informal sector workers and equally-qualified formal wage and salaried employees which has often been interpreted as a measure of the degree of labor market segmentation (Schultz 1961; Becker 1962; Mincer 1962). For example, Fields (2009) notes, "The distinguishing feature used by Nobel laureates Arthur Lewis (1954) and Simon Kuznets (1955) as well as other dual economy modelers is the fact that workers earn different wages depending on the sector of the economy in which they are able to find work." In this view, self-employment is prevalent in low-income economies because the formal economy is incapable of providing enough good, high-wage jobs. As countries develop, the proportion of workers who are self-employed falls and the wage differential between the self-employed and employees should eventually disappear. Typically, in this view regulations rather than efficiency wages are the cause of labor market segmentation, and countries with more restrictive regulations (especially labor market regulations) should exhibit bigger self-employment wage penalties.

An alternative explanation for why there might be a self-employment earnings penalty that does not rely on segmented labor markets is that workers maximize utility rather than earnings, leading to systematic compensating wage differentials. For example, if self-employment is more desirable than wage employment for reasons unrelated to earnings, such as greater autonomy and flexibility, we would expect to see a self-employment earnings penalty. Unlike the labor market segmentation explanation for self-employment wage penalties, the compensating differential explanation suggests that the self-employment wage penalty will be particularly large in more developed countries and among women and better educated workers, where the opportunity cost of time is higher and therefore the flexibility of self-employment will be valued more.

A third factor that could be associated with an observed earnings differential between the self-employed and employees is self-selection (Roy, 1951; Heckman, 1979). Some workers may have a comparative advantage in self-employment and therefore choose to be self-employed, while others may have a comparative advantage in wage employment and therefore choose to be employed in firms. Our measured self-employment earnings differential compares those who selected self-employment with those who selected wage employment. However, this would be associated with an upwardly biased estimate of both the earnings of both the wage and the self-employed, and so it is unclear how this would affect the observed self-employment penalty.

High adjustment or entry costs into self-employment could also contribute to an observed self-employment premium because the future earnings of self-employed workers would need to compensate for these costs. One such adjustment cost is the initial investment needed to set up a small business, often paid for through credit. If credit markets are imperfect and it is difficult to

obtain credit, then self-employed workers must be paid more than they could get as employees in order to compensate them for the high costs of credit. On the other hand, in low-income countries much self-employment may require little capital, while searching for higher-paid wage employment may involve moving location and other expensive search costs.[1] For those facing credit constraints, starting a low-level business as a petty trader or farmer may entail less upfront cost than searching for a wage job. In this case, imperfect credit markets would create a self-employment earnings penalty.

Another adjustment cost could be associated with complying with the regulations and permits needed to start your own business. These costs can be substantial in many developing countries (de Soto, 1989). If there are regulatory and other costs to becoming self-employed that limit access to self-employment, then self-employed workers will be paid more to compensate for these additional costs, causing an observed self-employment wage premium. For example, if it is costly and time consuming to obtain all of the necessary permits and permissions to work as self-employed (i.e. a more regulated economy), or if taxes are higher for the self-employed than for employees, then self-employed workers may be paid more than they could get as employees in order to compensate them for the high costs of entry. In this case, we would expect to see an earnings premium for self-employment in more regulated economies, after controlling for other factors, especially in economies where there are costly regulations for starting a business. Note that the self-employed would need to be compensated for these regulatory costs even if they attempt to avoid them, if there are costs to violating these regulations.

A final possible reason why wage employees may earn more than similar self-employed workers is that workers may successfully bargain for a portion of the quasi-rents earned by firms. Several studies have identified non-competitive-rents as an important determinant of inter-industry wage differentials[2]. Most recently, Abowd, et al (2012) find that shared quasi-rents account for a large percentage inter-industry wage differentials in the United States and France. Based on wage bargaining models that allow for on the job search (Cahuc, et al, 2006; Mortensen, 2005), they posit that the wage firms pay employees is the sum of the opportunity cost of wage employment plus the workers' share of quasi-rents. Under the assumption that comparable workers' profits in self-employment is an approximation of wage workers' opportunity cost, the self-employment earnings penalty will be determined by the bargaining power of workers and the size of the quasi-rent. That is, the self-employment earnings penalty will increase if the relative bargaining power of employees increases or if firms' quasi-rents increase.

The bargaining power of workers, and therefore self-employment wage penalties, could be increased by labor market institutions such as unions, or the presence of efficiency wages. Van Reenen (1996) focuses on the role of innovation and increased labor productivity in generating quasi-rents, which firms can then "share" with workers as efficiency wages. That study presents strong evidence that in British firms workers in firms that adopt more innovative and more productive technologies earn more than identical workers in other firms. It argues that more productive firms allocate part of their "quasi-rents" from innovation to workers in the form of higher wages. To the extent firms share quasi-rents with workers, this would contribute to a self-

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[1]The costs of searching for wage employment include information costs. A lack of information may help to create a self-
[2] See, among others, Dickens & Katz (1987), Krueger & Summers (1988), and Mortensen (2005)

employment wage penalty. These penalties would be larger in countries where firms are more productive, and therefore have more quasi-rents to share, and/or in countries in which labor market institutions favor workers in the wage bargaining process.

In one traditional dualistic model of economic development, the formal sector in the least developed countries is small (and self-employment and informal employment are large) because lack of demand for formal sector products is not enough to allow for the necessary economies of scale (see Lewis, 1954 and La Porta and Schleifer, 2014). For this reason, formal sector firms in low income countries will be less productive. As demand increases for domestic products, the scale of production and productivity increase in the formal sector. This will be associated with an increase in the proportion of workers in formal employment. It is also likely to be associated with an increase in earnings for formal sector employees.

Since firms in low-income countries tend to be less productive than those in more developed countries, due to lack of demand for their products, lack of credit, reliable inputs, and export markets that boost worker productivity, quasi-rents and therefore self-employment penalties would likely be smaller for workers in low-income countries. As countries develop, firms not only earn more quasi-rents, but labor market institutions may also become more effective in increasing workers' bargaining power. Both of these factors could increase the self-employment penalty. In low-income countries, poorly educated workers and those in rural areas may find it particularly difficult to access firms that generate and share substantial quasi-rents. The relative abundance of such workers in low-income contexts may also reduce the benefit of offering efficiency wages for firms.

B. Empirical

This paper contributes to two broad strands in the empirical literature. The first estimates the magnitude and causes of the earnings differentials between wage and salaried employees and self-employed workers. The second strand, meanwhile, examines the impact of labor market regulations and other government policies on informality and other labor market outcomes.

The first broad strand in the literature is the estimation of the magnitudes and causes of these wage differentials between self-employed and informal sector employees relative to formal sector wage and salary employees. Many of these studies examine wages in middle-income countries and conclude that workers in the informal sector earn less than equally qualified employees in the formal sector (i.e. Heckman and Hotz 1986; Gindling, 1991; Basch and Paredes-Molina, 1996; Günther and Launov, 2006). However, not all informal sector workers are self-employed, and the self-employed may be very different from informal sector employees. In a review of the evidence from Latin America, Perry et al. (2007, p.6) concludes that the self-employed voluntarily opt out of the formal sector, while informal salaried workers are queuing for more desirable jobs in either the formal salaried sector or as self-employed workers.

When researchers estimate formal-informal wage differentials separately for informal sector employees and self-employed workers, they typically find different results for the two groups. Compared to formal sector wage and salary employees, Arias and Khamis (2009) find an earnings penalty for informal wage and salary employees but an earnings premium for self-

employed workers in Argentina. Nguyen et al. (2013) find the same thing in Vietnam. Bargain and Kwenda (2011) find similar results in Brazil and Mexico. However, for South Africa they find that both informal sector employees and self-employed workers pay an earnings penalty, relative to formal sector employees. Maloney (1999) finds that workers who transition from wage and salary employment into self-employment in Mexico benefit from higher earnings, while workers who transition into informal sector wage and salary employment experience a decline in earnings. Saavedra and Chong (1999) find an earnings penalty for informal sector employees, but no difference between the wages of informal self-employed workers and formal sector employees.

In summary, while the literature on wage differentials points to consistent earnings penalties for informal sector wage and salary employment, this is not the case for self-employment relative to wage and salaried employment. Most published studies conclude that self-employed workers do not earn less than equally qualified formal sector wage and salaried employees. However, most of these studies are from middle income and/or Latin American countries; there are few studies of self-employment earnings penalties or premiums in low-income countries outside of Latin America. In at least one African country (South Africa), a published study has shown that self-employed workers pay an earnings penalty. Our paper contributes to the literature on wage differentials between self-employment and wage and salary employment by estimating and comparing these differentials for a wider range of developing and high income countries than currently exists in the literature.

Labor market regulations, like segmentation, are a source of considerable controversy in the literature. Proponents argue that regulations protect workers from being taken advantage of by firms that have greater market power, and reduce shocks. Critics, meanwhile, claim that regulations often benefit insiders at the expense of less experienced and skilled outsiders. In addition, they point to evidence that employment protection regulations increase informal employment and reduce the gross labor mobility that is crucial for creative destruction and productivity growth (Heckman and Pagés, 2004; Freeman, 2010). In addition to these two camps, a third view is emerging that in most contexts, the effects of regulatory reform are generally mild, particularly when compared to the intensity of the debate over regulations (World Bank, 2013; Gallagher et al., 2014; Freeman, 2009; Eslava et al., 2010).

Calls to relax labor market regulation are often based on the classic two-sector model, in which stringent hiring and firing regulations ration workers out of the formal sector and increase the penalty to self-employment. In contrast, stronger barriers to starting a business would discourage workers from entering self-employment, pushing workers into wage employment and driving down returns to wage employment, thereby lowering the self-employment earnings penalty (or increasing the premium). In addition, the remaining entrepreneurs would be those who expected to earn a sufficiently high return to starting a business to make it worthwhile (Maloney 2004; de Soto 1989). This would further diminish the observed penalty to self-employment in countries with more onerous procedures for starting a business.

A substantial body of evidence, largely based on cross-country studies, documents a negative association between regulation and adverse labor market outcomes.[3] Two key studies that inspired this literature are Heckman and Pagés (2004) in Latin America and Besley and Burgess (2004) in India. Heckman and Pagés (2004) examines the impact of mandated worker benefits, payroll taxes, minimum wage, and employment protection laws on employment. They find negative consequences of regulations on employment in general, and also find that the negative effects are worse for young and unskilled workers. They conclude that in the case of Latin America, rigid labor regulations protect workers already in the system at the expense of those considered outside, promoting inequality among the latter group. Besley and Burgess (2004) explore the Industrial Disputes Act (IDA) of 1947, a set of labor and employment laws aimed at protecting workers in the organized sector and how they affect long-run manufacturing development. They find that Indian states that amended the laws in a pro-worker direction grew more slowly than states that amended the laws in a pro-employer direction. Consequently, labor regulations, originally aimed at protecting workers, resulted in higher poverty and informality and low levels of productivity, investment, and employment in formal sectors in pro-worker states.

An extensive literature examines cross-country evidence on labor market regulations and tends to confirm that regulations are associated with negative effects. Botero et al. (2004), examined the correlations between the rigidity of employment laws, collective bargaining and social security laws on the size of the unofficial economy, labor force participation rates and unemployment in a sample of 85 countries. It found that heavier labor market regulation is associated with a larger informal sector, lower labor force participation and higher unemployment, especially among youth.

Since then, a number of studies have used the same data and methodology to document adverse effects of labor market regulation on a range of other labor market outcomes. Micco and Pagés (2006), for example, find that stringent employment protection regulations are associated with reduced productivity, net firm entry, turnover, employment and value added in a sample of 69 countries. The effects of the regulations on job flows are mostly concentrated in highly volatile sectors, which require higher level of hiring flexibility. Pierre and Scarpetta (2004) suggest that countries with onerous labor regulations tend to hire less, rely more on on-the-job training and make greater use of temporary employment. Feldmann (2009) finds similar results using an alternative dataset on labor regulations for 73 countries taken from the World Economic Forum (WEF). They conclude that stricter regulations generally reduce employment and centralized collective bargaining increase female unemployment, and that the size of the effects seems to be larger for younger workers. Similarly, Djankov and Ramalho (2009) conducted a cross-country correlation analysis using data from the WEF and the Doing Business indicators as well as the Global Competitiveness Report. They use data from over 150 countries and show that developing countries with more rigid employment laws tend to have larger informal sectors and higher unemployment, especially among younger workers. They also show a large, significant and negative impact of cumbersome administrative procedures to start a business and the tax costs associated with operating a formal business on the size of the formal sector. Finally, Freund and Rijkers (2014) conclude that countries with weaker regulation are more likely to experience

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3 See Djankov and Ramalho (2009) for a detailed review.

"unemployment miracles," defined as swift, substantial and sustained reductions in unemployment rates.

Another recent strand of literature find a positive relationship between labor regulation and the size of the informal economy, where most own-account workers operate. Schneider et al. (2010), find that an increased burden of taxation, combined with inflexible labor market regulations and the quality of public institutions and services are the leading causes of the existence and growth of the shadow economy. Using the same shadow economy variable, Lehmann and Muravyev (2012) find similar results. Using country-level panel data from transition economies and Latin America, they find that higher employment protection legislation and larger tax wedge increase the size of the informal economy. Sabirianova Peter (2009) a longer-time span panel data to measure the effect of a global transition to flatter taxes on the size and growth of the shadow economy. She finds that flatter and simpler taxes reduce the size of the informal economy in the short run and that the effects are significantly larger with improved government institutions, low corruption and strong legal system.

Several papers find mixed results on the relationship between labor market regulations and entrepreneurship. Van Stel et al. (2007) combine data on individuals from the Global Entrepreneurship Monitor (GEM) with the Doing Business (DB) dataset to examine the relationship between regulations and entrepreneurship. They find no relationship between administrative barriers such as the time, the cost, or the number of procedures needed to start a business on the rate of entrepreneurship, although labor market regulations that strongly influence the rate on entrepreneurship amongst young and potential entrepreneurs. They analyze similar data and arrive at similar conclusions, rigid labor regulations, through working status, social network and business skills, play a detrimental role in entrepreneurship, especially for those pursuing business opportunities. In particular they find that tougher entry regulations, contract enforcement and labor regulations reduce the likelihood to engage in new entrepreneurship activity for existing entrepreneurs.

Our paper contributes to this literature by using a country-level panel data set to examine the impact of economic development and labor market and other regulations on a measure of labor market segmentation, namely the self-employment penalty/premium. We examine the sensitivity of our results to different measures of regulations across countries that come from several sources: the World Bank's Doing Business Surveys and the Economic Freedom of the World Index from the Frazer Institute.

III.   Data

One objective of this research is to estimate self-employment earnings penalties or premiums, as well as the distribution of those premiums/penalties among workers, for countries throughout the world and within countries over time. A second objective is to estimate the relationship between labor market and other regulations and the magnitude and distribution of the self-employment earnings premium/penalty. This section describes the data to pursue each objective.

A. *International Income Distribution Database used to estimate the self-employment earnings penalty/premium*

The first and main data source is micro-level household surveys harmonized by the Development Economics Research Group of the World Bank, the International Income Distribution Database (I2D2).[4] This database consists of nationally representative labor force surveys, budget surveys or living standards measurement surveys. The main advantage of these household surveys is that they provide information on the earnings of the self-employed as well as of wage and salary employees, in addition to other relevant information on individual socioeconomic characteristics. The data include three sets of consistently defined and coded variables: (i) demographic variables, (ii) education variables, (iii) labor force variables. In the first stage of our analysis, we use these data sets to estimate a self-employment premium/penalty for each worker in each survey for which sufficient data are available.

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 self-employed or a wage and salary employee, and also where data is collected on the earnings of both the self-employed and wage and salaried workers[5]. In most countries, data are available for multiple years. Our full sample consists of 347 surveys (country/year combinations), representing 73 countries, from 1970 to 2011. Within each country, we limit our samples to the working age population, 15-65 years old. The full country–year combinations available for our analysis, as well as the mean estimated self-employment earnings premium(+)/penalty(-) by type of self-employment for each country/year observation, are listed in the appendix in Table A7.

B. <u>Data sources for the macroeconomic, regulatory and institutional variables</u>

In the second stage of the research, we construct a country/year-level panel data set of mean estimated self-employment premiums/penalties, both for workers overall and for different demographic groups. The data set of the estimated self-employment premiums/penalties for each year and country are merged with data on individual country and year macroeconomic, regulatory and institutional characteristics. We then use random effects and fixed effects models to analyze the relationship between the self-employment premiums/penalties and country-level characteristics such as measures/indices of labor market regulations, the rule of law, credit market regulations, regulations on starting a business, trade, taxes, GDP per capita and other macroeconomic variables. This sub-section describes these country-level variables.

i)   Regulations and institutions: World Bank Doing Business Surveys (DB)
One source of data on labor and business regulations is the World Bank Doing Business (DB) project. This dataset is one of the first to measure business regulations in a comparable way across multiple countries including a large number of developing and transitioning economies. The data is available for 185 economies and according to the DB website "… provides objective measures of business regulations" and an opportunity to study the effect of such regulations on a

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4 The database is an updated version of that described in Montenegro & Hirn (2009) Version 4 of the I2D2, which was released in October 2013, was used.
5 Self-employed workers include those who self-identify as either an own account worker or an owner/employer. We use the ILO definition of own account workers as "workers who, working on their own account or with one or more partners, hold the type of job defined as a self- employed job, and have not engaged on a continuous basis any employees to work for them during the reference period".

host of economic factors (World Bank, 2013). The Doing Business project collects information on labor laws through questionnaires administered to local business experts (this includes business consultants, accountants as well as labor lawyers and government officials).

A key variable of the DB database is the Rigidity of Employment Index (REI), which measures the cost and inflexibility of employment regulations. The doing business index is modeled after the Employment Laws Index of Botero et al. (2004) which ranks economies based how their labor laws hamper doing business. The REI is a key policy variable in the growing literature on the relationship between labor market regulations, economic growth, and informality (Ardagna and Lusardi, 2008; Freund and Bolaky, 2008; Djankov and Ramalho 2009; Cuñat and Melitz 2011; and Helpman and Itskhoki 2010).

The Rigidity of Employment index is the average of three sub-indices; 1) difficulty of hiring, 2) rigidity of working hours and 3) difficulty of redundancy. REI takes a score between 0 and 100, with higher scores indicating larger barriers to employment. Using the availability of fixed-term contacts and minimum wage regulations (ratio of minimum wage to the average wage), the first sub-index measures the flexibility of small to mid-size firms to hire new workers. The second sub-index measures the flexibility of working nights and weekends, the length of a workweek and the number of paid vacation days. The third sub-index, difficulty of redundancy, is a measure of the firm's cost to dismiss workers, in weeks of salary, due to redundancy. It includes length of notice requirements, penalties and severance pay for terminating a redundant worker[6]. Lower scores for all three sub-indices indicate reduced restrictions on employment regulations.

Other Doing Business Survey variables include Procedures to Start a Business and Total Tax Rate). The Procedures to Start a Business variable is a measure of the number of procedures, time and cost officially required to legally start and operate a new business. A growing body of literature has shown that higher entry barriers are associated with low levels of entrepreneurship, legally registered businesses, higher levels of corruption and higher levels of informality (Djankov et al., 2002; Ardagna and Lusardi, 2010b). The Total Tax Rate documents the tax burden on new businesses. These are taxes born by a business in the second year of operation as a percent of commercial profit before taxes are applied. Djankov et al. (2008) found that a high corporate tax burden had large and negative impact on investment, entrepreneurial activities, and growth. They also found a large impact on the size of the informal sector as firms facing higher tax burden choose to opt out of the formal sector.

The 'employing workers' component of the World Bank's Doing Business Indicators has had a significant influence on labor research and subsequently on policy reform recommendations especially in developing and transitioning economies. However this widely used set of indicators has in recent year been subject to severe criticism. The Employing Workers Indicator has suffered particular criticism on methodological and conceptual grounds[7]. The index captures the

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6The data collected refer to businesses in the economy's largest business city (which in some economies differs from the capital) and may not be representative of regulation in other parts of the economy. It should be noted that the measure favors flexible employment regulations. The index has also been subject to strong criticism; it assumes that rigid labor regulation is the result of rent seeking behaviors from those already in the system at the expense of those who are out.

7The weakness of Employing Workers Indicator was made public in several reports by internal and external consultative groups along with extensive recommendations. As a result, Employing Workers indicator is excluded from the calculation of the ease of

de jure notion of the labor law, which often differs from the de facto laws and regulations on the ground. The index is also widely believed to carry one-sided view of labor market regulations, that of employers, and ignore social objectives set forth to protect workers rights and improving work environment standards. This in turn, is argued, could encourage governments to engage in major deregulatory reforms disregarding much of the legislation set forth in the International Labor Conventions of the International Labor Organization (ILO). For a comprehensive review of the criticism see S. Lee, McCann, and Torm (2009).

A further limitation of the DB data is that it is not available for many of the country/years for which we have estimates of self-employment premiums/penalties; the Doing Business Survey variables are available only from 2006 through 2011. Of the 338 surveys for which we have estimates of self-employment premiums/penalties, we can match data on regulations from the Doing Business survey for only 113.

To address the limitations of the Doing Business Indicators we consider another source of data on government institutions and regulations which report variables for a larger set of countries and years than the Doing Business data: the Economic Freedom of World (EFW) Indices from the Fraser Institute (FI). Like the Doing Business indicators, the FI Economic Freedom of the World indices varies over time so can be included in our fixed-effects regressions.

ii) Regulations and Institutions: Fraser Institute Economic Freedom of the World Index (FI)

The Frasier Institute Economic Freedom of the World Indices "measure the degree to which the policies and institutions of countries are supportive of economic freedom" (Fraser Institute, 2013). The EFW indices include the following broad areas of economic freedom: size of government, legal system and property rights, freedom to trade internationally, sound money, labor market regulations, credit market regulations and business regulations.

We examine the impact of more specific indicators of labor market and other regulations that are comparable to the indicators from the doing business data: the labor regulation index (a higher score indicates more rigid labor market regulations); the business regulation index (a higher score indicates more rigid regulations on businesses); trade freedom (a higher score indicates fewer trade barriers); credit market freedom (a higher score indicates a less regulated credit market); the rule of law index (a higher score indicates greater rule of law and property rights); and an index of government size (taking into account government expenditures). These components are described in more detail in Table A1 in the appendix.

The EFW indices are available for 1995 and 2000 through 2010. Combining our estimates of self-employment earnings penalties/premiums with the EFW indicators results in a sample with 179 country/year observations in the main specification. In interpreting the results of the

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doing business ranking.

regressions we place the greatest confidence on results that are consistent and robust for both the DB and EFW specifications[8].

iii)   Macroeconomic and other control variables

Finally, we add a set of key macroeconomic variables commonly used in labor and growth regressions. Most variables come the World Bank's World Development Indicators (WDI) and the International Labor organization (ILO). These variables include: inflation, ILO estimates of the employment to population ratio, and gross domestic income per capita (PPP 2005 U.S. dollars) as a measure of development of living standards between countries and over time.

IV.   Methodology

Estimating the Self-employment Earnings penalty/Premium

We estimate the earnings premium/penalty in each country/year using individual worker (i) level data to estimate the following earnings equation for each country(c)/year(t):

$$LnY_{ict} = \alpha + EP_{ct} * SE_{ict} + \beta X_{ict} + \mu_{ict} \qquad [1]$$

Where

- Y_{ict} is the dependent variable, self-reported monthly earnings of worker i.
- EP_{ct} is the average self-employment earnings premium, estimated separately for each survey (country/year).
- SE_{ict} is a dummy variable indicating whether the worker is self-employed (1) or a wage and salary worker (0);
- X_{ict} is a vector of eight worker-specific variables. These are: Years of education, years of education squared, age, age squared, a gender dummy variable, an urban/rural dummy variable, a set of dummy variables for one-digit industry code, and a set of dummy variables representing the frequency of wage payments[9].
- μ_{ict} is the error term.

Equation [1] is estimated separately for every county (c) and year (t) for which we have the appropriate variables in the I2D2 data set. These estimates result in an estimate of the earnings premium for each country (c) and year (t) combination in the I2D2 data set, EP_{CT}. EP_{CT} is the percent by which the earnings of the self-employed differ from the earnings of wage and salary workers. If EP_{CT} is positive, that indicates that there is an earnings premium for self-employment; if EP_{CT} is negative, that indicates an earnings penalty for self-employment.

8We also considered using the Heritage Foundation's Economic Freedom Index, but prefer the FI Economic Freedom of the World indicators for the following reasons. First, the labor freedom component of the Heritage Foundation's Economic Freedom Index includes six subcomponents based on data collected from the World Bank's doing Business report. The index uses identical components and methodology used to create the Rigidity of Employment Index, and as such does not add any additional information beyond what we obtain from the Doing Business specification. Second, the Frazier Institutes indexes allow us to use 30 more observations from our earnings differential data set than the Heritage Foundation indexes.
9The frequency of wage payments is included as a control in order to guard against errors in the coding of wage payment frequencies across surveys, which could otherwise severely distort the results.

To estimate the earnings premiums/penalties of employers and professional ownaccount as well as non-professional ownaccount workers separately we re-estimate equation 1 and include two self-employment dummy variables identifying the two groups. The reference category in both cases remains all employees. We further include dummy variables to identify various demographic breakdowns within self-employed workers such gender, age groups, education breakdowns and rural/urban.

Estimating the Impact of Regulations on the Earnings premium

To estimate the impact of regulations, institutions, GDP per capita and other macroeconomic variables level of development on the earnings premium/penalty we use country-level panel data, where the dependent variable is a measure of the estimated self-employment earnings premium/penalty and the independent variables include measures of regulations and institutions, GDP per capita and macroeconomic variables. Because our data consist of multiple years of observations for many countries, this will allow us to control for time-invariant country-level fixed effects and also variables that change over time but not across countries. We estimate the following equation:

$$EP_{ct} = BX_{jt} + \gamma_c Z_c + T_t + U_{ct} \qquad [2]$$

Where

o EP_{ct} is the dependent variable, a measure of the self-employment log earnings premium/penalty, where c = country and t = year. We estimate equation 4 using several summary measures of the self-employment premium/penalty for each county/year data point. The dependent variables that we use include: the earnings premium(+)/penalty(-) for all self-employed workers vs. employees, the earnings premium for non-professional own-account workers vs. employees and the earnings premium for employers and professionals vs. employees.. We also estimate versions of equation 1 using the self-employment penalty/premium for male and female, urban/rural, agriculture/nonagricultural, by four education levels and three age groups.

o Z_c is a vector of covariates that vary across countries but not over time. In the fixed effects estimates, these are country-level fixed effects. In the random effects estimates these are dummies indicating the region of the country; γ_c are the coefficients on these variables.

o T_t (t=1…t) is a vector of year dummy variables. These capture the year fixed effects, which capture shocks common across countries in a given year (such as an international financial crisis).

o U_{ct} is the error term for country c at time t.

o X_{ct} is a vector of country-specific time-varying variables; β is a vector of coefficients on these variables. X_{ct} can include four types of variables:
  ▪ *Macroeconomic and other control variables*: all regressions include the following variables: GDP per capita (ppp 2005 U.S. $); GDP per capita squared; the inflation rate; the employment to population ratio.
  ▪ *Regulation and Institution variables*: We then estimate 2 separate regressions that include 2 different specifications capturing regulations and institutions:
    1. Economic Freedom of the World (EFW) indicators measuring specific types of regulations and institutions: rule of law; labor market regulations; business regulation; credit market freedom; trade freedom; and government size,

2. Measures of specific types of regulations from the World Bank's Doing Business Surveys (DB): the Rigidity of Employment Index, the Total Tax Rate faced by new businesses, and the number of Procedures to Start a Business.

o All country-specific time-varying variables are logged. Thus coefficients can be interpreted as elasticities. For example, the coefficient on the labor regulations variable will be interpreted as the percent increase in the self-employment earnings differential given a one percent increase in labor regulations.

o All regulation variables, with the exception of credit and trade, are scaled so that an increase indicates a more-regulated economy.

The sample includes variables from multiple datasets, which report different years of data. Therefore each regression specification uses a different sample of countries and years. The smallest sample used to estimate the regulation regressions is for the DB specification, 113 observations. The largest sample is for specification where the regulatory and institution environment is proxied by the EFW specification, 179 observations. Table 2A of the appendix presents summary statistics for the explanatory variables used in the regulatory regressions as well as the mean estimated self-employment earnings premium(+)/penalty(-) and the share of self-employed workers.

A potential issue with the methods described above is the endogeneity of regulatory policies, which have the potential to bias the results. For example, labor and business institutions are derived from historical factors in a country that may also affect self-employment earnings penalties. In addition, the level of regulations may depend on labor market conditions. Although country fixed effects are included to control for time-invariant country characteristics, regulatory reforms themselves may partly be influenced by labor market outcomes. In the absence of an exogenous source of identification, we examine both random and fixed effects models and interpret the results as conditional correlations.

V. Results and Discussion

a. Self-Employment Earnings Penalties/Premiums around the World.

In Tables 1a through 1c we report the mean earnings penalties (-) and premiums (+) of the all self-employed workers, employers and professional ownaccount, and non-professional ownaccount self-employed workers in countries of different regions and income levels respectively[10]. We report the shares of workers who are self-employed and the mean self-employment penalty (-) or premium (+) derived from the OLS regressions in equation [1] along with the standard errors. All statistics are weighted by working population and therefore countries with large working populations can have a large influence on the regional and income group means. We also weight by the inverse of the variance to correct for heteroskedasticity. In addition, we also weight by the inverse of the number of surveys to take into account for the number of years each country appears in the survey. This is to give countries equal weights no matter how often they appear in the survey.

10Table A7 presents the mean wage penalty/premium for each survey (i.e. each country each year) in our sample.

Almost 92% of our estimates of earnings premiums/penalties come from either Latin America & the Caribbean (63%) or Europe & Central Asia (29%). Most Latin American and European & Central Asian countries are middle income, and over 71% of our estimates of earnings penalties/premiums are from middle-income countries. 19% of the sample is from high-income countries, and only 9% from low-income countries.

The working population-weighted mean earnings penalty across the entire sample is approximately 10 percent for all (Table 1a) and non-professional ownaccount self-employed (Table 1b) while it is a large premium of 28 percent for employers and professional ownaccount workers (Table 1c). As noted above, the sample of countries with available data is not a representative sample of the countries of the world, but is disproportionately Latin American and middle-income. The most robust result of the descriptive analysis is that workers in high-income countries are much more likely to face the largest self-employment earnings penalty in the case of non-professional ownaccount self-employed and the smallest premium in the case of employers and professional ownaccount self-employed than are other workers in low- and middle-income countries.

Self-employed workers in low-income countries in our sample face an earnings premium. In upper-middle and high-income countries, non-professional ownaccount workers face a self-employment earnings penalty (Table 1b). Earnings penalties for non-professional ownaccount workers are largest, and statistically significant, in lower-middle and high-income countries. On the other hand, employers and professionals face an earnings premium in countries at all income levels (although the premium is not statistically significant in high-income countries).

By region, we find an earnings penalty for all self-employed workers except in MENA (although our sample of Djibouti and Yemen are not representative of the region). The most robust result is that workers in high-income European and Central Asian countries (which are almost all Western Europe) are most likely to face a self-employment earnings penalty. Also robust are the earnings differentials of non-professional ownaccount self-employed in North American and Europe (both developing and high income) consistently earning large penalties ranging from 23 to 40 percent (Table 1 b).

Self-employed workers in Latin America are in the middle range of our estimates: the mean self-employment earnings penalty/premium in Latin America is statistically insignificant. Workers in Eastern European & Central Asian countries are likely to face large self-employment earnings premiums. However, this last result is partly because Europe and Central Asia is dominated by populous Russia, where there is a large estimated self-employment earnings premium. For most (60%) of the countries in Europe and Central Asia, the average worker faces a self-employment earnings penalty (see appendix Table A7).

There are relatively few countries from other regions of the world in our sample. For example, East Asia and the Pacific are represented only by two observations: one survey from China and one from Timor-Leste[11]. The Middle East and North Africa is represented only by Djibouti and

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11 Some countries, like Indonesia, are excluded because the labor force survey does not collect earnings information for all self-employed workers.

the Republic of Yemen, and South Asia is also represented by only two countries: Pakistan and Bangladesh. North America is represented by three surveys from the United States. The number of countries from Africa in our sample is also small, with only fifteen observations covering 13 countries. For the full list of country/year surveys in our sample, and the median earnings premium estimate in each, see appendix Table A7.

Table 2 shows the estimated earnings premium/penalty for all self-employed workers by gender, urban/rural and agriculture/non-agriculture, education level, and age groups. We also present the results for non-professional ownaccount self-employed and employers and professionals ownaccount in the Tables A3 and A4 respectively of the appendix.

We find robust systematic patterns in the self-employment earnings premium/penalty for different demographic groups. For example, the global average earnings penalty for women is 18 percent while only 5 percent for men. Women consistently earn a self-employment penalty across all income groups and regions, which vary from 8 to 40 percent[12]. This extends further to women employers and professionals self-employed in all income groups and regions. Men on the other hand, especially non-professional ownaccount, experience a premium in low-income countries. Employer and professional self-employed men earn a premium for the most part (except in low-income countries where they earn a substantial penalty, 30 percent) and a larger premium in LAC (50 percent premium) and MENA (79 percent premium).

On average across all observation we find a small self-employment premium in agriculture (but not in rural areas, in fact we find a large penalty in rural areas) but a small self-employment earnings penalty in non-agricultural sectors and urban areas. Once we control for regions of the world by looking at differences within regions (the bottom panel of Table 2), we find systematic differences between urban and rural self-employed workers. Overall, we find a consistent penalty for both urban and rural workers, except in South Asia, but the penalty is always bigger for rural self-employed workers. This pattern is consistent and very similar for agricultural and non-agricultural workers. [13]

Table 2 also presents some evidence that the self-employment earnings penalty differs for workers at different education levels for a sub-set of countries in different regions. For low-income countries the wages of the self-employed relative to employees decreases with education; the wages of the self-employed relative to employees are highest for those with the least education (primary incomplete) and lowest for secondary and university graduates. This again suggests that, for low-income countries, it is low-skilled workers who could benefit more (in terms of pay) from self-employment, while high-skilled workers are likely to be paid more as employees. This relationship is reversed as countries developed. For middle and higher-income countries we observe a decrease in the self-employment penalty with higher level of education. Again, providing evidence against the exclusion view of self-employment during the process of development. It should be noted that this holds only for non-professional ownaccount self-

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12 One exception is MENA (Djibouti and Yemen) where non-professional self-employed women earn a 10 percent self-employment earnings premium. Conversely, professional women earning in the same region earn a whopping 80 percent penalty compared to their salaried counterpart.

13 Most of the descriptive results are robust to excluding industry dummies from the specification. The most notable exception is the size of the self-employment premium for agricultural workers.

employed. For employers and professional and self-employed workers (Tables A3-A4) we observe the opposite; self-employed workers with lower levels of education in low-income countries experience the largest penalties which decrease with education but remain negative and large while similar workers in middle and higher-income countries experience a self-employment premium which decreases with higher level of education.

To further examine the traditional "exclusion" view of self-employment in developing countries (or lack thereof) whereby self-employed workers are those who have been excluded from formal sector employment in firms and are forced to accept lower-paid self-employment, especially younger and least skilled workers, we compute the mean self-employment wage premium/penalty by 3 age groups; 15 to 14, 24 to 44 and 45 to 64, in Table 2 column 11-13. Here we find some support for the exclusion view; younger self-employed workers earn a self-employment penalty, which decreases with age. This is the case for both young non-professional ownaccount (14 percent penalty) and employers and professional self-employed who earn a larger penalty, approximately 92 percent. Once we control for income level by examining differences across age groups within the same income level we find that the "exclusion" view only holds in low-income countries; although we observe an earning premium for younger self-employed workers (8 percent) in low-income countries, this premium is small and increases with age. In high-income countries, younger self-employed workers earn a large self-employment premium (32 percent), which turns into a large penalty (36 percent) with age.

b. Labor market regulations and the size of the self-employment earnings premium/penalty

To examine the impact of labor market regulations and other macroeconomic variables on the self-employment earnings premium/penalty we estimate equation (2) using our constructed country-level panel data set. We estimate this equation using country-level random effects and country-level fixed effects. Each of our five theoretical predictions—which can be characterized as theories of neo-classical model, labor market segmentation, self-selection or comparative advantage, regulatory avoidance and quasi-rent/dualism theory—offers different predictions about the impact of regulations on earnings differentials among different groups.

We begin by estimating our main specification, all self-employed workers, which include urban and rural workers (column 1 of Tables 3a and 3b). We follow the labor market segmentation literature, which implicitly focus on urban workers and look at the impact excluding rural (Tables 5a and 5b of the Appendix) and agricultural self-employment[14]. We do this because we believe that labor market conditions might influence self-employment decisions; individuals in rural areas where there are fewer formal or wage employment may be pushed into self-employment. We further differentiate between employers and professional ownaccount and non-professional ownaccount self-employed workers (columns 2-3 and 5-6 of Tables 3a and 3b). We than examine the impact separately by gender (female and male), followed by three age groups

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[14] We summarize the results of non-agricultural self-employed worker but do not list the regression results as they are identical to urban self-employed workers.

(15 to 24, 25 to 44 and 45 to 64 years of age) and finally by four levels of education (less than 5 years, 6 to 11 years, 12 to 15 years and 16 or more years of education).

I.   Main Specifications

Labor Regulations and Rigidity of Employment Index

Figure 1[15]: Labor Regulations & REI Regression Results Summary

Labor Regulations/Rigidity of Employment Index	All				Urban				Non-Agriculture			
	EFW		DB		EFW		DB		EFW		DB	
Self-employed	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE
All	+	+	+	+	+	+	+	+	+	+	+	+
Employers/Professionals	-	-	+	+	-	-	+	+	-	-	+	+
Non-Professional Ownaccount	+	+	-	-	+	+	-	-	+	+	+	+

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in labor regulations or REI is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

Figure 1 above summarizes the regression results of 36 specifications (Tables 3a-3b and Tables 5a-5b of the Appendix) for labor regulations and self-employment wage premiums and penalties. Inconsistent with the traditional labor market segmentation view of why there are high levels of self-employment in developing economies, we find no evidence that increases in labor regulations, which include restrictions on hiring and firing, relatively higher minimum wages and severance requirements, are associated with bigger penalties for self-employed workers. On the contrary, our results provide evidence that stricter labor regulations tend to reduce the penalty for self-employed workers compared to wage and salaried employees.

The estimates are consistent across the Economic Freedom of the World (EFW) index and Doing Business (DB) specifications. The interpretation of the positive coefficient is that more regulated labor markets are associated with a bigger earnings premium for self-employed workers (or smaller earnings penalty).

Using the EFW specification for example, a 10% increase in labor regulations is associated with a 1.2% reduction in self-employment premiums (Table 3a – column 1) while it is correlated with a .95% reduction in self-employment premiums in the DB specifications (Table 3b – column 1). The results are consistent in both the fixed and random effects model suggesting weak evidence in support of more excessive labor regulations unfavorably affects self-employment premiums.

This is further supported when examining the effects of stricter labor regulations on urban and non-agricultural self-employment. Using the EFW specification, the results suggest that an increase in labor regulations is associated with consistent and significant increase in earnings premiums (or a decrease in penalty) for urban and non-agricultural workers across both the fixed and random effects.

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[15]Figure1 summarizes the regression results of Tables 3a, 3b and similar (but unlisted) Tables for urban and non-agricultural self-employed workers.

When attempting to disentangle the effects by employers and professional workers (called henceforth "professionals") vs. non-professional own account workers (called henceforth "non-professionals") we do not find strong evidence that labor regulations affects professionals differently than non-professionals. While we find that stricter labor regulations is associated with a significant increase in earnings' premium for non-professional urban and non-agricultural self-employed workers using the EFW specification, using the DB specification yields mixed results[16] (Tables 3a & b– columns 2-3 and 5-6).

In sum, we find no evidence that the stricter labor regulations adversely affect self-employed earnings' premiums, in fact we find strong evidence of positive and significant association between rigid labor regulation and self-employed earnings premiums. We further find 'minor' evidence that non-professional self-employed are favorably effected by a more regulated environment compared to professional workers.

Rule of Law

Figure 2: Rule of Law Regression Results Summary

Rule of Law	All		Urban		Non-Agriculture	
	EFW		EFW		EFW	
Self-employed	RE	FE	RE	FE	RE	FE
All	-	-	+	+	-	-
Employers/Professionals	-	-	-	-	-	-
Non-Professional Ownaccount	-	-	-	-	-	-

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in Rule of Law is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

The coefficients on the rule of law index, which measures judicial independence, impartial courts, protection of property rights, military interference, contract enforcement, reliability of policy and cost of crime, are negative and statistically significant for the non-professional own-account workers (Table 3a and A5a, columns 3 & 6) and negative and insignificant for employers and professionals. These results imply that an improvement in the rule of law is associated with a fall in the self-employment earnings premium (or an increase in self-employment earnings penalties) for non-professional own-account workers and possibly for employers and professionals.

The impact is across specifications, especially urban and non-agricultural, for whom an improvement in the rule of law decreases earnings premiums 7% and 5% respectively. The impact is only statistically significant for non-professional own-account workers, and is statistically insignificant for employers and professionals. These results might suggest that non-professional own-workers of last resort may be taking advantage of self-employment as a way of avoiding the costs of regulations imposed on employees, especially in an environment where the rule of law is weak. Another possible explanation is that an increase in the rule of law leads to an increase in the earnings of employees relative to the self-employed. For example, an increase in

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[16]The results in the DB specification are insignificant for all except for professional urban/non-agriculture.

the rule of law improves the performance of firms, allowing them to share more quasi-rents with their employees.

Business Regulations/Procedures to Start a Business

Figure 3: Business Regulations/procedures to start a Business Regression Results Summary

Business Regulations/Procedures to Start a Business	All				Urban				Non-Agriculture			
	EFW		DB		EFW		DB		EFW		DB	
Self-employed	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE
All	-	-	-	-	-	-	-	-	-	-	-	-
Employers/Professionals	+	+	+	+	+	+	+	+	+	+	+	+
Non-Professional Ownaccount	-	+	-	-	-	+	-	-	-	+	-	-

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in business regulations or the number of procedures to start a business is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

The effect of regulations that make it more difficult to start and run a business have a different impact on the earnings of employers and professionals compared to non-professional own-account workers. Tighter business regulations and administrative procedures to start a new business appear to be unfavorably correlated with the self-employment earnings premium for non-professional own-account workers. The effect of burdensome business regulation is opposite for employers and professionals. For employers and professionals we find consistent evidence that stricter business regulations are associated with as much as a 9% increase in earnings' premiums for professionals self-employed.

In fact, the estimates are consistent across all our specifications including for urban and non-agricultural self-employed workers. The estimates are also consistent in the DB specifications, where business regulation is simply measured by the number of procedures required to start a business.[17] The increased costs of starting a business may reduce the number of potential employers willing to start business, but those that do start a business require higher earnings to compensate for the increased cost of starting a business. This could explain why the earnings premium for employers and professionals increases as the cost of starting a business increases. . At the same time, higher costs for starting and running a business means fewer jobs for employees, forcing more workers into non-professional ownaccount. The increase in the supply of non-professional ownaccount workers may drive down their wages, causing higher penalties for these workers.

Credit Markets

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[17]Although the estimates are consistent in sign across specifications (except for non-professionals in the FE/EFW specification), they are only significant (in the right direction) in 9 out of 36 specifications.

Figure 4: Credit freedom/Credit Availability Regression Results Summary

Credit Freedom/Credit	All				Urban				Non-Agriculture			
	EFW		DB		EFW		DB		EFW		DB	
Self-employed	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE
All	-	-	-	-	-	-	-	-	-	-	-	-
Employers/Professionals	-	+	-	-	-	+	-	-	-	+	-	-
Non-Professional Ownaccount	-	-	-	-	-	-	-	+	-	-	-	+

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in credit freedom or credit availability is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

Credit market regulation in the EFW specification includes three components; private ownership of banks measured as the percent of deposits held in privately owned banks, the second component measures governments' fiscal deficit as percent of total saving as well as the percentage of credit extended to the private sector (crowding out effect), and finally interest rate controls and regulations that is associated with negative real interest rates and controls on bank deposits.

The coefficients on the 'credit market freedom' index in the EFW specification are consistently negative in our main regression (All self-employed workers) suggesting a negative correlation between credit market regulations and self-employment earnings premium. In other words, a decrease in credit market regulations is associated with a fall in the self-employment earnings premium and an increase in self-employment earnings penalties[18] consistent across both fixed and random effects models and for both employers and professionals and non-professional own-account workers (where the coefficients are statistically significant, they are always negative).

When examining the effects of credit markets using the DB specification measured by the availability of domestic credit to the private sector as a percent of GDP on self-employment earnings, we find that an increase in the availability of credit is associated with a decrease in self-employment premiums. If we assume that more credit market freedom (fewer regulations) leads to more credit availability, then this result is consistent with the result using the EFW specification. That is, reduced regulation of credit markets, which should is associated with more credit availability, reduces the earnings of the self-employed relative to employers. These results are and the same for both employers and professionals and for non-professional own-account workers; for both groups the only statistically significant coefficients on this credit variable are negative.

In summary, our results provide no support for the hypothesis that more credit availability and fewer credit market regulations will help either professionals or own-account workers. On the contrary, we find evidence that increased credit availability and fewer credit market regulations hurt the self-employed relative to employees.

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[18] It should be noted that in a 2011 IMF study, countries with more liberal credit market regulation (i.e. countries who received higher ratings and therefore favor liberalization in credit markets) suffered more in output growth during the late-2000s financial crisis and global recession. Also, a reduction in regulation does not translate to availability of credit to individuals, especially self-employed and small businesses.

Trade

Figure 5: Trade freedom/Openness Regression Results Summary

Trade Freedom/Openess	All				Urban				Non–Agriculture			
	EFW		DB		EFW		DB		EFW		DB	
Self-employed	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE
All	+	+	+	+	-	-	+	+	+	+	-	-
Employers/Professionals	+	-	+	+	+	-	+	+	+	-	+	+
Non-Professional Ownaccount	+	+	-	-	+	+	-	+	+	+	-	+

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in trade freedom/openness is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

Trade barriers (tariffs, quotas, etc.), because they allow domestic firms that compete with imports (tradable products) to sell their product at a higher price than the world price, create rents for these firms. These rents may be shared with the limited number of worker employed in these protected firms, which in turn would cause a wage premium for workers in these protected, tradable industries. Most self-employed workers are employed in non-tradable sectors such as service, construction and small retail; the workers in these industries, in theory, do not benefit from trade barriers. In other words, it is likely that trade barriers will cause an earnings penalty for self-employment. If true, then lowering trade barriers will cause the self-employment earnings penalty to fall, as the rents and earnings of employees in formerly protected firms decline.

According to our estimates for the variable 'Trade Regulations' in the EFW specification, which measures restrains that can effect international exchange such as tariffs, quotas and exchange rates control; higher barriers to trading are significantly more likely to increase self-employment earnings penalties (decrease self-employment earnings premiums) especially for non-professional own-account workers. The results are consistent in the fixed and random effects model where a 10 percent increase in 'trade regulations' decreases all self-employment earnings premiums by 3% and own-account self-employment by 7%. We find no evidence of a statistically significant effect of trade regulations on professional self-employed workers. The results are consistent for urban and non-agricultural workers where a 10% increase in trade regulations decreases non-professional own-account workers' earnings premiums by as much as 9 to 14 percent depending on the specification.

When using the DB specification, defined simply as the sum of exports and imports as a share of GDP, we find that the increased trade 'openness'[19] is insignificant for all specification. It should be noted that the trade index in the EFW specification includes 12 sub-components 5 of which are tariff related while the rest pertain to foreign firm ownership, movement of people and capital and non-tariff trade barriers. As such, the DB and EFW specifications may not be comparable.

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[19]The term "openness" and the variable itself may be somewhat misleading and not comparable to the EFW trade index. A low ratio does not necessarily imply high barriers, tariff or non-tariff, to foreign trade. It might be due to other factors such as size of the economy and geographic location relative to potential trading partners.

Figure 6: Taxes Regression Results Summary

Taxes	All		Urban		Non-Agriculture	
	DB		DB		DB	
Self-employed	RE	FE	RE	FE	RE	FE
All	-	-	-	-	-	-
Employers/Professionals	-	-	-	-	-	-
Non-Professional Ownaccount	+	+	+	-	-	+

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in taxes is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

In the DB specification we use the tax burden on new businesses as a percent of commercial profit to measure the effects on self-employment premiums. Previous research found that high tax burden had a large and negative impact on investment, entrepreneurial activities, and growth (cite). More importantly, higher taxes are found to have a large impact on the size of the informal sector as firms facing higher tax burden choose to opt out of the formal sector. This in turn can increase the number of workers entering the informal sectors including self-employed and therefore depressing wages in this sector. Our results support this hypothesis. We find that higher taxes consistently increase self-employment penalties for all urban and non-agricultural workers. The effect is particularly large although statistically insignificant for professional workers and inconsistent for own-account workers. For example, a 10 percent increase in the taxes as a percent of profits increases self-employment penalties by 2 percent while it increases the penalty for non-agricultural workers by 2.5 percent.

II. Other specifications
Gender

Figure 7: Regulation Regression Results Summary by Gender[20]

Self-Employed (all)	All				Female				Male			
	EFW		DB		EFW		DB		EFW		DB	
	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE
Labor Regulation/REI	+	+	+	+	+	+	+	+	+	+	+	+
Business Regulations/PSB	-	-	-	-	-	-	-	-	-	-	-	-
Credit Market Freedom/Credit	-	-	-	-	-	-	+	+	-	-	+	-
Trade Freedom/Trade	+	+	+	+	+	+	+	+	+	+	-	-
Rule of law/Property Rights	-	-	NA		-	-	NA		-	-	NA	
Total Tax Rate (% profit)	NA		-	-	NA		-	-	NA		-	-

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in regulations is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

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[20]Figure7 summarizes the regression results of Tables 3a (columns 1) and Tables 4a-4b.

When looking at the impact of regulations by gender (Tables 4a and 4b), the results are consistent with those for all self-employed workers but the magnitude of the effects varies between women and men. In fact, we find the effects are much larger and often more significant for women compared to men. For example, in the previous section we find that stricter labor regulations do not is associated with increased earnings penalties and in fact are associated with an increase in premiums (reduction in penalties) that is significant and consistent across different specifications. This is also the case across gender where more rigid labor regulations is associated with a decrease in self-employment premiums.

This reduction is particularly large for women compared to men. For example, a 10 percent increase in labor regulations is associated with a 2 to 3 percent reduction in self-employment penalties. The results are consistently positive and significant for women in the DB and EFW specifications and across the random and fixed effects regressions. The effects are also positive for men albeit much smaller (.4 to 1 percent) and insignificant in all of our specifications. We also compare the effects of stricter labor regulations across professional and non-professional self-employed female and male workers (Tables A6a and A6b of the appendix) and find no consistent evidence that labor regulations affects non-professional self-employed any differently than professional self-employed workers.

When examining the impact of the rule of law on self-employment earnings by gender, again, the results are consistent with the main specifications, whereby improvements in the rule of law is associated with an increase in self-employment earnings' penalty for all self-employed workers. The penalty is particularly large for women – a 10 percent improvement in the rule of law is associated with a 3 to 4 percent increase in women's earnings' penalty compared to a 1.2 percent for men– and an even larger penalty for non-professional female self-employed, 12 percent, compared to 4 percent increase in penalty for non-professional male self-employed.

Increasing trade barriers is more likely to increase self-employment earnings penalties for self-employed women. In the EFW specification, a 10 percent increase in 'trade regulations' is associated with a 5 percent increase in penalties. The results are significant in the random and fixed effect models and remain consistent in the DB specifications. When comparing professional and non-professional self-employed female workers, we find the effect is particularly large for the later group where a 10 percent increase in 'trade regulations' is associated with a 12 percent reduction in premiums. We also find that stricter trade regulations are also associated with a significant albeit smaller (5 to 8 percent) reduction in premiums for non-professional self-employed male workers. Decreased credit regulations and increased credit availability are associated with a significant fall in self-employment penalties, but only for female non-professional own-account workers. This is not consistent with the results that combine men and women.

Consistent with the results for all self-employed workers, we find that stricter business regulation is associated with a decrease in the earnings of male and female self-employed workers and the decrease is close to twice as large for women compare to men. The results are consistent across DB and EFW specifications and in both fixed and random effect regressions. A 10 percent increase in business regulation for example is associated with 5 to 6 percent decrease in female self-employed workers and 3 percent for men.

Next we examine non-professional ownaccount and employers and professional male and female self-employed (Tables A6a and A6b of the appendix). We find that while both female and male non-professional self-employed workers experience a decrease in earnings premiums, non-professional self-employed women experience the largest decrease in earnings (a 10 percent increase in business regulation is associated with a 10 percent decrease in earnings compared to 3 to 7 decrease for men).

The impact of higher taxes remains negative and consistent across gender although only significant for self-employed male workers. In other words, higher taxes is associated with consistent increases in self-employment earnings penalty for both men and women. We also find that higher taxes impact non-professional female and male self- employed differently. While a 10 percent increase in taxes is associated with a significant and large reduction (18 percent) in premiums for male self-employed higher taxes is associated with an increase in premiums (though insignificant) for female self-employed worker.

Education

Figure 8: Regulation Regression Results Summary by Education[21]

Self-Employed (all)	Education1 (0-5years)				Education2 (6-11years)				Education3 (12-15years)				Education4 (16 or more years)			
	EFW		DB		EFW		DB		EFW		DB		EFW		DB	
	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE
Labor Regulation/REI	+	+	+	+	+	+	+	+	+	+	-	-	+	+	-	-
Business Regulations/PSB	-	-	-	-	-	-	-	-	+	+	+	+	-	-	+	+
Credit Market Freedom/Credit	-	-	+	+	-	-	+	+	+	+	-	-	-	-	-	-
Trade Freedom/Trade	+	+	-	-	+	+	-	-	-	+	+	+	-	-	+	+
Rule of law/Property Rights	-	-	NA		-	-	NA		+	+	NA		+	+	NA	
Total Tax Rate (% profit)	NA		-	-	NA		-	-	NA		-	-	NA		+	+

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in regulations is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

According to the regression results (Tables 5a and 5b), stricter labor regulations generally appear to increase self-employment earnings premiums for least skilled workers (less than 11 years of education) as well medium skilled workers but decreases the earnings premiums for skilled workers (16 or more years of education). For example, a 10 percent increase in the rigidity of employment increases self-employment earnings premium between 2 to 5 percent for worker with fewer than 15 years of education while decreases the earnings premium for workers with 16 or more years of education by 1.3 percent. Our results are robust to variations in specification.

Tight business regulations most clearly seem to have adverse effects on least skilled workers (11 or fewer years of education) and favorably effects medium and highly skilled workers (12 or more years of education). Our results are significant and consistent across both the DB and EFW specifications.

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[21]Figure 7 summarizes the regression results of Tables 3a (columns 1) and Tables 5a-5b.

While increased availability of credit to the private sector has a positive impact on the earnings premiums of least skilled self-employed workers (fewer than 12 years of education), fewer credit market regulations (EFW specifications) seem to have the opposite effect on the same workers leading to inconclusive evidence that stricter credit market regulations have adverse effects on the earnings premiums for self-employed workers. One exception is the impact of credit market on highly skilled self-employed workers. Here we find that a 10 percent improvement in credit market regulations (i.e. fewer constraints on borrowing) or a 10 percent increase in availability of credits to the private sector decreases the earnings highly skilled workers by as much as 5 percent. The results are consistent across different specifications.

We also find that higher taxes consistently increase self-employment penalties for least skilled self-employed workers but decrease the penalty (or increase the premium for highly skilled self-employed workers. The effect is particularly large and statistically significant for all workers. For example, a 10 percent increase in the taxes as a percent of profits increases self-employment penalties by 2 to 3 percent for less skilled self-employed workers while it increases the premium by 3.5 to 5 percent for highly self-employed workers.

Rule of law has similar impact, where an improvement in the rule of law has a negative impact on the earnings of least skilled workers and a positive impact on the earnings of highly skilled self-employed workers. Finally, we find inconclusive evidence of the impact of lower trade barriers on self-employment earnings premiums or penalties.

Age

Figure 9: Regulation Regression Results Summary by Age[22]

Self-Employed (all)	Age 1 (15-24 years)				Age 2 (25-44 years)				Age 3 (45-64 years)			
	EFW		DB		EFW		DB		EFW		DB	
	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE
Labor Regulation/REI	+	+	+	+	+	+	+	+	-	-	+	-
Business Regulations/PSB	-	-	+	-	-	-	-	-	+	+	-	+
Credit Market Freedom/Credit	-	-	+	-	-	-	+	+	-	-	+	+
Trade Freedom/Trade	+	+	+	-	+	+	-	-	-	-	-	-
Rule of law/Property Rights	-	-	NA		-	-	NA		+	+	NA	
Total Tax Rate (% profit)	NA		-	-	NA		-	-	NA		+	+

Note: Highlighted cells indicate statistical significance at the 10% level or less. The + sign indicates that an increase in regulations is associated with an increase in self-employment premiums while a – sign indicates an increase in penalty. RE refer to the random effect models while FE refer to the fixed effect models.

Overall, we find the effects of regulations differ across age groups, especially between self-employed workers age 15 to 44 and those age 45 to 64. For example, we find that stricter labor regulations are associated with consistent and significant increases in the self-employment earnings premium for workers under the age of 45 and an increase in penalty (although only significant in one specification) for older workers (45 and older) (Tables 6a and 6b). Similarly, an improvement in trade regulations is also associated with an increase in earnings premiums for

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[22] Figure7 summarizes the regression results of Tables 3a (columns 1) and Tables 6a-6b.

self-employed workers under the age of 45 and an increase in earnings penalties for self-employed workers above the age of 45.

When examining the effects of business regulations on the earnings differentials of self-employed workers by age groups, we find two divergent trends when comparing older and younger workers. Stricter business regulations and bureaucratic red tape that restricts starting, operating or closing a business appear to unfavorably affect the self-employment earnings premium of worker under the age of 45 increasing their earnings penalty by as much as 6 percent for every 10 percent increase in regulations. The effect of burdensome business regulations is opposite for older self-employed workers. Here we find consistent evidence that stricter business regulations are associated with a 4 to 5.5 percent increase in earnings' premiums.

Improvement in credit markets regulations (or increase in availability of credit) has a negative effect on the earnings of workers age 15 to 44 and a positive effect on the earning of older workers (age 45 to 64). That is older self-employed workers face an increase in their earnings premiums with an increase in credit market regulations while younger self-employed workers face an increase in earnings penalty.

The effects of increased taxes and improvements in the rule of law are also consistent across age groups. In other words, improvements in the rule of law, similar to less skilled workers, are associated with increases in the self-employment earnings penalty for youth and younger workers while it is associated with an increase in earnings premium for older (45-64 years) workers. Similarly, higher taxes are also associated with increases in the self-employment earnings penalty (or a decrease in premiums) for youth and younger workers while it is associated with an increase in earnings premium for older workers. The results are consistent across various specifications but only significant for the rule of law.

In summary, when looking at the impact of regulations by age and education level, we find qualitative differences between older, skilled self-employed (12 or more years of education) and younger and least skilled workers (less than 12 years of education). In particular we find that increased labor regulations is associated with increases in earnings premiums for younger workers and worker with less education while increases in the rule of law is associated with bigger earnings penalty for the same workers. For more-educated workers the impact of increased rule of law and business regulations is the opposite. That is, an increase in the rule of law and business regulation is associated with increased earnings premiums for more-educated and older self-employed workers.

c. **Implication of Theory and Findings**

We next consider the implications of various theories and how they relate to the empirical results discussed in the previous section. We start by examining the implications of labor market segmentation model (insider-outsider), which implies that both the self-employment earnings penalty and the proportion of workers who are self-employed should fall with GDP per capita. According to the theory, labor regulations should cause both an increase in self-employment and higher earnings penalties for the self-employed. This will be true if regulations are enforced in the formal sector but not in the informal sector, which according to this view will include both informal employees and the self-employed. Thus, as countries develop and labor regulations become enforced among

the self-employed, penalties should fall. This suggests that the impact of an increase in the rule of law on self-employment earnings penalties is ambiguous. On the one hand, if the increased rule of law applies only to the formal sector, it should increase the self-employment earnings penalty. If the increased rule of law is in both the formal and informal sector, it should decrease the self-employment penalties. Regulations that make it harder to start a business should reduce formal sector employment, increase self-employment and cause higher self-employment earnings penalties. Higher taxes on formal businesses should reduce formal sector employment, increase self-employment and increase the self-employment earnings penalty. The lack of credit is one reason why the formal sector does not grow, so an increase in credit availability (and reduced credit market regulations) should increase formal sector employment, reduce self-employment and reduce the self-employment earnings penalty (or increase the earnings premium). All of this is likely to be true for less skilled, non-professional own account workers and not for professional own account workers and employers[23]. The empirical results in this paper do not find support for the labor market segmentation theory with the exception of the effects of increased business regulations.

Next we consider Levy's argument in "Good Intentions, Bad Results" (2010) that workers are self-employed to avoid paying taxes, labor benefits and other costs of formality. This view implies an earnings premium for self-employed workers which is a positive compensating earnings differential for self-employment for a loss of employee non-wage benefits and because self-employed and informal sector employers have lower total labor costs. Therefore, anything that increases the cost of being in the formal sector and employing workers in the formal sector will be associated with both increased self-employment and an increased self-employment earnings premium. For example, stricter (and costly) labor market regulations, increased taxes on businesses, increased regulations to start a formal business all should cause more self-employment and cause an increase in self-employment earnings premiums. Once again, an increase in the Rule of Law has ambiguous effects. If an increase in the rule of law means that laws are enforced more in the formal sector only, then an increase in the rule of law will increase the costs of formality and is associated with an increase in self-employment earnings premiums. If an increase in the rule of law means that laws are now enforced in the informal sector/self-employment, then this will increase the costs of informality and self-employment, reduce the number of self-employed, and either reduce or increase self-employment premiums. Our strongest finding and perhaps most consistent results supports Levy's argument, where an increase in labor regulations is consistently associated with an increase in earnings premiums for all self-employed workers. We do not however find support for the argument that taxes and cumbersome business regulations, which increase the cost of formality, should increase the self-employment earnings premiums.

Workers may also choose self-employment because they have a comparative advantage (i.e. are entrepreneurs) (Maloney, 2004). This view, which our results find support for among employers and professionals, implies a self-employment earnings premium, to compensate for risk, the costs of starting up a business (capital, permits, etc.) and for the loss of non-wage benefits of formal sector employment. Regulations that make it more costly to start a new business will reduce the number of self-employed (entrepreneurs) but increase the earnings premiums to

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[23] These last are part of the formal sector in most views of the informal sector--even in the ILO definitions

compensate for the additional cost, as will anything that increases the costs of being self-employed compared to an employee. Increased businesses regulations and those that increase the fixed cost of hiring workers will reduce self-employment and increase the self-employment earnings premium, consistent with our regression results. Increased credit regulations will increase the cost of starting a business, and will therefore decrease the number of self-employed (entrepreneurs). This will then increase the earnings premiums to compensate for the additional cost, also consistent with our findings. All of this is more likely to affect employers and professionals than non-professional own-account workers, because they are the potential "entrepreneurs".

Another view is one where self-employment is largely voluntary because workers value non-pecuniary benefits and flexibility associated with self-employment (that is missing in the formal and informal sector). This view implies a self-employment earnings penalty—which is a negative compensating earnings differential for self-employment, self-employed workers are willing to accept lower earnings in exchange for the flexibility of working as self-employed. Self-employment earnings penalties will be higher for women than men because of the role of women providing childcare and unpaid domestic work (the opportunity cost of their time is higher). Self-employment earnings penalties will increase as GDP increases because the opportunity cost increases. Anything that decreases the flexibility of employment in the formal sector will be associated with an increase in self-employment and an increase in the self-employment earnings penalty. Increased regulation of formal sector labor markets (i.e. increased rigidity of employment) will reduce flexibility in the formal sector, pushing more who want flexibility into self-employment, increasing the earnings penalty. Our finding that women face bigger self-employment earnings penalties, especially in high-income countries, supports this view. However, our finding of a consistent relationship between increased labor market regulations and self-employment earnings premium, an effect that is stronger for women, does not support this view.

In one traditional dualistic model of economic development, the formal sector in the least developed countries is small (and self-employment and informal employment are large) because lack of demand for formal sector products is not enough to allow for the necessary economies of scale (see Lewis, 1954 and La Porta and Shleifer, 2014). Firms in low-income countries will be less productive, and have fewer quasi-rents to share with employees. As countries develop, firm productivity increases, quasi-rents increase and the bargaining power of workers increases. Employees capture a share of the increasing quasi-rents, and employee earnings premiums increase while self-employment earnings penalty decline. Therefore, any regulation that increases quasi-rents to firms will be associated with a larger self-employment wage penalty (because it will increase the earnings of employees). Trade restrictions (tariffs, quotas, etc.) result in rents for firms. Therefore, trade liberalization (more trade freedom/openness) should be associated with an increase in self-employment earnings penalties. Conversely, trade liberalization will result in smaller rents for firm, smaller premiums for formal employees and decreased penalties for self-employed workers. Put another way, trade restrictions will than result in increased premiums for formal salaried workers (increased penalties for self-employed). Regulations that limit competition in the formal sector will also is associated with more rents for formal sector firms. These could include regulations that make it difficult to start a business. Therefore, increased regulation of business should is associated with an increase in the self-

employment penalty. Otherwise, we would expect regulations to have no impact on self-employment earnings differentials. Interestingly our regression results on both trade and business regulations support the quasi-rent hypothesis; we find that an increase in trade regulations is strongly associated with an increase in earnings penalty for all self-employed workers while an increase in business regulations is mainly correlated with an increase in self-employment penalty for the non-professional and least skilled self-employed workers.

Finally, self-employed may simply miss-report income. In this case, the effect on self-employment earnings differentials is ambiguous. On the one hand, self-employed workers may under-report earnings, leading to a self-employment penalty. On the other hand, self-employed workers may include returns to capital, which will be associated with a self-employment earnings premium. Either way, we should not see any impact of regulations on earnings differentials.

V. Conclusion

In this paper we calculate self-employment earnings differentials (premiums/penalties) across 73 countries and examined how they are correlated with the institutional quality measured through rule of law and regulatory environment measured through business, credit, labor and trade regulations at the country level. We analyze the effects separately for employers/professionals and non-professional ownaccount to distinguish between "necessity" and "opportunity" self-employment. We further examine the effects separately by gender, urban/rural, education and age.

Our research is an extension of the growing body of literature using the Doing Business surveys and other cross-country indices of regulations to examine the impact of regulations, especially labor market regulations, on various employment outcomes and economic development. The conclusion from this research has been that labor market regulations reduce hiring in the formal sector and increase the size of the informal sector and self-employment (for example, see Pierre and Scarpetta, 2004; Djankov and Ramalho, 2009; Feldmann, 2009; Schneider et al., 2010 and Lehmann and Muravyev, 2012). This research highlighted the importance of reducing or doing away with labor regulations in particular and other regulations in general as a tool to promote economic growth and development in transitioning economies. The consensus was that regulations in general are bad for development and particularly bad for entrepreneurs and employment levels. Our results are at odds with this consensus.

We found no evidence that stricter regulations are correlated with systematic and widespread wage penalties for self-employed workers in developing economies, in fact we found some evidence of the opposite. For example, we found that increases in labor regulations is associated with a decrease in self-employment penalties, especially for less skilled workers and younger workers, which is inconsistent with the traditional labor market segmentation theory. We find that the effect is larger for women and find no effect on older and more educated self-employed workers.

On the other hand, we found that an increase in the rule of law and business regulation is associated with increases in the earnings premiums of more-educated and older self-employed

employers and professionals, while it is associated with a bigger earnings penalties for less skilled non-professional own-account workers, especially for young workers and less educated workers. One interesting finding that emerges is that the effect is the same by gender that is qualitatively the results are the same sign for men and women but the magnitude is always larger for women.

The only evidence we find in support of a correlation between stricter regulations and an increase in wage penalties for self-employed workers is trade barriers where increasing trade barriers is associated with an increase in self-employment earnings penalties for the least-skilled workers: that is for non-professional own-account workers and younger workers. However, we do not find a negative effect for more educated and older self-employed workers

Overall, the results clearly do not support the traditional "exclusion" or labor market segmentation hypothesis, which implies that less skilled should face a self-employment earnings penalty. In the labor market segmentation view, poorly educated, less-skilled and non-professional self-employed workers (out of necessity) are most likely to have been rationed out of more productive wage employment opportunities. Yet our results indicate that the self-employment premium in low-income countries is largest for these groups. Finally, the traditional view holds that labor market segmentation exists because labor market and other regulations limit the opportunities available for formal sector employment. However, we find no evidence from the regressions that government regulations, especially labor market regulations, create earnings penalties for self-employed workers.

However, two interesting conclusions emerge from our analysis; the first is that our results partially support the 'comparative advantage' theory where the expected value of self-employment exceeds the excepted values of wage employment, which implies a self-employment earnings premium for employers and professionals to compensate for risk, costs of starting up a business (capital, permits, etc.) and for the loss of non-pecuniary benefits of formal sector employment. Second, the results also lend credence to the quasi-rent theory where at lower levels of development, countries' formal sectors tends to be small and formal sector employees capture a smaller share of the quasi-rent while leading to a wage differential in favor of self-employed workers. Consistent with our regression results, regulations that increase quasi-rents to firms, such as trade liberalization, and those that limit competition in the formal sector such as increased business regulations, will be associated with a larger self-employment wage penalty (because it will increase the earnings of employees).

These results have important policy implications. Reforming labor and other regulations is politically challenging in almost every setting and in some cases regulations can help compensate for imperfect or incomplete markets. Before investing large amounts of political capital in uncertain efforts to loosen labor regulations, it is important to be confident that these regulations are in fact major causes of segmented labor markets. We find no evidence that regulations are an important cause of segmented labor markets in developing economies. Instead, ensuring appropriate levels of regulation, particularly with respect to labor regulations, property rights, business and trade regulations, can help more workers benefit from the productivity advantages provided by firms.

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Table 1a: Self-Employment vs. Salaried Employment Wage Premiums & Penalties, by Income Group and Regions of the World

	Self-employment Shares	Standard Error	Mean Premium(+)/Penalty(-) (OLS)	Standard Error	Number of Countries	Number of Surveys
Total sample	0.267	(0.089)	-0.095	(0.076)	**73**	**347**
Income Group						
Low Income	0.546	(0.061)	0.236	(0.055)	20	32
Low Middle Income	0.441	(0.026)	-0.168	(0.080)	23	134
Upper Middle Income	0.274	(0.026)	-0.027	(0.118)	16	114
High Income	0.115	(0.003)	-0.238	(0.023)	14	67
Region						
Latin America & Caribbean	0.321	(0.005)	-0.017	(0.099)	20	217
Europe & Central Asia (High-Income)	0.108	(0.007)	-0.226	(0.060)	13	58
Europe & Central Asia (Developing)	0.055	(0.009)	-0.212	(0.146)	19	43
Other	*0.272*	*(0.034)*	-0.169	(0.073)	21	29
East Asia & Pacific	0.467	(0.002)	-0.278	(0.000)	3	3
Middle East & North Africa	0.493	(0.014)	0.379	(0.006)	2	3
North America	0.116	(0.015)	-0.243	(0.000)	1	3
South Asia	0.455	(0.020)	0.269	(0.044)	2	3
Sub-Saharan Africa	0.521	(0.077)	-0.248	(0.068)	13	17

Notes: Total sample, income group and region averages are weighted by working population, the inverse of the variance and the inverse of the number of surveys. Developing ECA include mainly countries from Eastern Europe. High Income ECA countries include countries from Western Europe. The 'Number of of surveys' include country/year observation.

Table 1b: Non-Professional Own Account vs. Salaried Employment Wage Premiums & Penalties, by Income Group and Regions of the World

	Non-Professional Ownaccount Share	Standard Error	Mean Premium(+)/Penalty(-) (OLS)	Standard Error	Number of Countries	Number of Surveys
Total sample	0.225	(0.104)	-0.096	(0.067)	42	152
Income Group			0.000			
Low Income	0.501	(0.076)	0.286	(0.021)	7	9
Low Middle Income	0.436	(0.030)	-0.167	(0.079)	8	29
Upper Middle Income	0.203	(0.025)	0.035	(0.043)	14	52
High Income	0.070	(0.003)	-0.243	(0.018)	13	62
Region						
Latin America & Caribbean	0.235	(0.007)	0.049	(0.027)	7	9
Europe & Central Asia (High-Income)	0.051	(0.025)	-0.398	(0.118)	8	29
Europe & Central Asia (Developing)	0.053	(0.011)	-0.325	(0.057)	9	52
Other	*0.240*	*(0.134)*	-0.173	(0.061)	13	62
East Asia & Pacific	0.460	(0.000)	-0.252	(0.000)	2	2
Middle East & North Africa	0.469	(0.002)	0.389	(0.004)	2	2
North America	0.072	(0.000)	-0.225	(0.000)	1	3
South Asia	0.437	(0.000)	0.270	(0.000)	1	2
Sub-Saharan Africa	0.323	(0.183)	-0.364	(0.006)	5	5

Notes: Total sample, income group and region averages are weighted by working population, the inverse of the variance and the inverse of the number of surveys. Developing ECA include mainly countries from Eastern Europe. High Income ECA countries include countries from Western Europe. The 'Number of of surveys' include country/year observation.

Table 1c: Employers & Professional Self-Employed vs. Salaried Employment Wage Premiums & Penalties, by Income Group and Regions of the World

	Employers & Professionals Share	Standard Error	Mean Premium(+)/Penalty(-) (OLS)	Standard Error	Number of Countries	Number of Surveys
Total sample	0.033	(0.010)	0.284	(0.095)	**42**	**152**
Income Group						
Low Income	0.020	(0.001)	0.590	(0.030)	7	9
Low Middle Income	0.013	(0.007)	0.223	(0.131)	8	29
Upper Middle Income	0.049	(0.004)	0.563	(0.028)	14	52
High Income	0.045	(0.002)	0.076	(0.030)	13	62
Region						
Latin America & Caribbean	0.056	(0.002)	0.495	(0.059)	7	9
Europe & Central Asia (High-Income)	0.021	(0.010)	0.103	(0.110)	8	29
Europe & Central Asia (Developing)	0.056	(0.010)	-0.039	(0.046)	14	52
Other	*0.028*	*(0.013)*	0.076	(0.049)	13	62
East Asia & Pacific	0.007	(0.000)	-0.024	(0.000)	2	2
Middle East & North Africa	0.025	(0.000)	0.702	(0.005)	2	2
North America	0.044	(0.000)	0.109	(0.000)	1	3
South Asia	0.020	(0.000)	0.565	(0.000)	1	2
Sub-Saharan Africa	0.021	(0.002)	0.420	(0.016)	5	5

Notes: Total sample, income group and region averages are weighted by working population, the inverse of the variance and the inverse of the number of surveys. Developing ECA include mainly countries from Eastern Europe. High Income ECA countries include countries from Western Europe. The 'Number of of surveys' include country/year observation.

Table 2: Mean Self-Employment Wage Premiums (+) and Penalties (-), By Population Subgroups, Income Group and Regions of the World

	Female	Male	Urban	Rural	Non-Agri-Culture	Agriculture Sector	Education 1 (less than 5 years)	Education 2 (6 to 11 years)	Education 3 (12 to 15 years)	Education 4 (16 or more years)	Age (15-24)	Age (25-44)	Age (45-64)
Total sample	**-0.177**	**-0.053**	**-0.046**	**-0.370**	**-0.060**	**0.049**	**-0.042**	**-0.099**	**-0.004**	**0.004**	**-0.075**	**-0.080**	**-0.056**
	(0.080)	(0.067)	(0.065)	(0.053)	(0.086)	(0.075)	(0.060)	(0.104)	(0.025)	(0.007)	(0.107)	(0.066)	(0.027)
Income group													
Low Income	-0.145	0.310	0.248	0.194	0.166	0.315	0.239	0.168	-0.013	0.001	0.077	0.208	0.205
	(0.084)	(0.036)	(0.050)	(0.081)	(0.045)	(0.134)	(0.089)	(0.076)	(0.014)	(0.006)	(0.101)	(0.062)	(0.052)
Low Middle Income	-0.142	-0.224	-0.053	-0.304	-0.150	0.089	-0.128	-0.238	-0.027	0.032	-0.250	-0.128	-0.068
	(0.028)	(0.106)	(0.046)	(0.073)	(0.123)	(0.152)	(0.034)	(0.077)	(0.074)	(0.091)	(0.045)	(0.057)	(0.010)
Upper Middle Income	-0.084	-0.002	-0.010	-0.398	0.027	0.007	-0.037	0.012	0.077	0.034	0.037	-0.008	-0.051
	(0.118)	(0.106)	(0.090)	(0.040)	(0.116)	(0.102)	(0.089)	(0.134)	(0.023)	(0.022)	(0.095)	(0.088)	(0.011)
High Income	-0.400	-0.072	-0.224	-0.282	-0.208	-0.072	-0.167	-0.143	-0.168	-0.014	0.317	-0.248	-0.356
	(0.054)	(0.037)	(0.022)	(0.012)	(0.024)	(0.039)	(0.049)	(0.026)	(0.029)	(0.011)	(0.469)	(0.025)	(0.306)
Region													
Latin America & Caribbean	*-0.091*	*0.011*	*0.006*	*-0.389*	*0.026*	*-0.016*	*-0.050*	*0.018*	*0.073*	*0.084*	*-0.001*	*-0.005*	*-0.019*
	(0.099)	*(0.086)*	*(0.075)*	*(0.046)*	*(0.098)*	*(0.084)*	*(0.077)*	*(0.115)*	*(0.028)*	*(0.029)*	*(0.088)*	*(0.076)*	*(0.036)*
Europe & Central Asia (High-Income)	*-0.254*	*-0.202*	*-0.213*	*-0.275*	*-0.201*	*-0.192*	*-0.199*	*-0.151*	*-0.163*	*-0.017*	*1.095*	*-0.213*	*-1.072*
	(0.054)	*(0.062)*	*(0.061)*	*(0.051)*	*(0.065)*	*(0.063)*	*(0.057)*	*(0.047)*	*(0.060)*	*(0.018)*	*(0.427)*	*(0.055)*	*(0.568)*
Europe & Central Asia (Developing)	*-0.162*	*-0.256*	*-0.221*	*-0.394*	*0.005*	*-0.650*	*-0.296*	*-0.466*	*0.008*	*0.001*	*-0.102*	*-0.192*	*-0.083*
	(0.041)	*(0.131)*	*(0.110)*	*(0.138)*	*(0.110)*	*(0.162)*	*(0.254)*	*(0.152)*	*(0.009)*	*(0.001)*	*(0.069)*	*(0.120)*	*(0.104)*
Other	*-0.300*	*-0.075*	*-0.122*	*-0.213*	*-0.182*	*0.283*	*0.027*	*-0.222*	*-0.148*	*-0.243*	*-0.206*	*-0.163*	*-0.051*
	(0.099)	*(0.099)*	*(0.077)*	*(0.066)*	*(0.082)*	*(0.107)*	*(0.114)*	*(0.085)*	*(0.009)*	*(0.084)*	*(0.076)*	*(0.064)*	*(0.026)*
East Asia & Pacific	-0.153	-0.359	-0.174	-0.335	-0.448	0.387	-0.128	-0.321	-0.140	-0.406	-0.292	-0.207	-0.080
	(0.000)	*(0.000)*	*(0.000)*	*(0.010)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.030)*	*(0.000)*	*(0.000)*	*(0.000)*
Middle East & North Africa	0.082	0.401	0.178	0.416	0.379	0.451	0.078	-0.128	-0.630	0.276	0.218	0.402	0.184
	(0.053)	*(0.006)*	*(0.135)*	*(0.003)*	*(0.004)*	*(0.001)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.043)*	*(0.006)*	*(0.007)*
North America	-0.459	-0.028	-0.229	-0.284	-0.212	-0.026	-0.105	-0.131	-0.174	-0.145	-0.179	-0.264	-0.079
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
South Asia	-0.106	0.349	0.301	0.255	0.194	0.530	0.330	0.254	-0.183	-0.624	0.186	0.250	0.137
	(0.123)	*(0.008)*	*(0.008)*	*(0.065)*	*(0.017)*	*(0.094)*	*(0.056)*	*(0.029)*	*(0.023)*	*(0.038)*	*(0.067)*	*(0.045)*	*(0.031)*
Sub-Saharan Africa	-0.379	-0.114	-0.083	-0.278	-0.309	-0.263	-0.135	-0.237	-0.071	0.011	-0.200	-0.239	0.159
	(0.123)	*(0.075)*	*(0.174)*	*(0.011)*	*(0.064)*	*(0.224)*	*(0.054)*	*(0.124)*	*(0.058)*	*(0.037)*	*(0.168)*	*(0.060)*	*(0.128)*

Notes: *Total sample, income group and region averages are weighted by working population, the inverse of the variance and the inverse of the number of surveys. Developing ECA include mainly countries from Eastern Europe. High Income ECA countries include countries from Western Europe. The 'Number of of surveys' include country/year observation.*

Table 3a: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-), Economic Freedom of the World Specification

	Random Effects			Fixed Effects		
	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account
	(1)	(2)	(3)	(4)	(5)	(6)
Rule of law/Property Rights	-0.161**	-0.118	-0.412**	-0.168	-0.576	-0.437
	(0.079)	(0.252)	(0.162)	(0.114)	(0.523)	(0.341)
Labor Regulations	0.122*	-0.041	0.022	0.129	-0.002	0.269**
	(0.071)	(0.149)	(0.090)	(0.083)	(0.210)	(0.115)
Business Regulations	-0.259***	0.266	-0.363*	-0.280**	0.225	0.172
	(0.094)	(0.288)	(0.197)	(0.114)	(0.359)	(0.321)
Credit Market Freedom	-0.227***	-0.154	-0.314*	-0.227***	0.049	-0.548**
	(0.078)	(0.219)	(0.169)	(0.084)	(0.314)	(0.221)
Trade Freedom	0.234**	0.073	0.694***	0.220**	-0.445	0.649*
	(0.105)	(0.305)	(0.239)	(0.094)	(0.550)	(0.366)
Government Size	-0.010	0.033	0.165**	-0.018	-0.015	0.116
	(0.047)	(0.105)	(0.077)	(0.068)	(0.202)	(0.124)
GDP per capita	3.179	9.215**	1.451	2.779	7.844	0.256
	(2.094)	(4.325)	(1.817)	(3.188)	(7.121)	(3.203)
GDP^2 per capita	-0.154	-0.457*	-0.061	-0.131	-0.319	0.023
	(0.115)	(0.237)	(0.095)	(0.180)	(0.409)	(0.185)
Inflation	0.045	1.208**	1.099***	0.015	0.676	1.330**
	(0.168)	(0.604)	(0.421)	(0.150)	(1.243)	(0.524)
Employment to Population Ratio	0.355	-0.404	-0.696**	0.416	-1.734	0.118
	(0.277)	(0.682)	(0.299)	(0.338)	(1.238)	(0.633)
Observations	179	99	99	179	99	99
R2 (within)	0.457	0.703	0.714	36	25	25
Number of Countries	36	25	25	0.968	0.990	0.984
Year Dummies	YES	YES	YES	YES	YES	YES
Region Dummies	YES	YES	YES	--	--	--

Note: The R2 reported refer to variation within countries. Regression are weighted by each country's working population, the inverse of the number of surveys and the inverse of the variance. Standard errors in parentheses * p<0.10, ** p<0.05, ***p<0.01

Table 3b: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-), Doing Business Specification

	Random Effects			Fixed Effects		
	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account
	(1)	(2)	(3)	(4)	(5)	(6)
Rigidity of Employment Index	0.095***	0.342*	-0.098	0.108**	0.228	-0.103
	(0.037)	(0.176)	(0.107)	(0.047)	(0.252)	(0.151)
Procedures to start a business (number)	-0.203*	0.102	-0.120	-0.169	0.588**	-0.209
	(0.119)	(0.181)	(0.136)	(0.149)	(0.248)	(0.192)
Credit to Private Sector (% of GDP)(WDI)	-0.129	-0.621**	-0.176	-0.096	-1.383	-0.234
	(0.098)	(0.263)	(0.190)	(0.133)	(0.842)	(0.413)
Total Tax Rate (% profit)	-0.196*	-0.664	0.229	-0.198	-1.284	0.224
	(0.107)	(0.487)	(0.333)	(0.126)	(0.908)	(0.730)
Trade (WDI)	0.139	0.279	-0.242	0.164	0.714	-0.317
	(0.132)	(0.406)	(0.290)	(0.201)	(0.863)	(0.774)
GDP per capita	5.388*	17.533***	3.710	10.458**	34.931***	3.500
	(2.894)	(5.578)	(3.965)	(4.347)	(12.359)	(7.429)
GDP^2 per capita	-0.290*	-0.956***	-0.195	-0.578**	-1.986**	-0.204
	(0.157)	(0.300)	(0.210)	(0.240)	(0.711)	(0.417)
Inflation	0.880**	0.343	0.872*	0.919**	1.329	0.959
	(0.402)	(0.860)	(0.472)	(0.432)	(1.493)	(0.670)
Employment to Population Ratio	-0.078	-1.267*	-0.517	0.543	-0.156	-0.172
	(0.395)	(0.699)	(0.450)	(0.650)	(1.184)	(0.844)
Observations	113	59	59	113	59	59
Number of Countries	36	22	22	36	22	22
R2 (within)	0.451	0.714	0.273	0.980	0.991	0.987
Year Dummies	YES	YES	YES	YES	YES	YES
Region Dummies	YES	YES	YES	--	--	--

Note: The R2 reported refer to variation within countries. Regression are weighted by each country's working population, the inverse of the number of surveys and the inverse of the variance. Standard errors in parentheses * p<0.10, ** p<0.05,

Table 4a: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-) by Gender, Economic Freedom of the World Specification

	Random Effects		Fixed Effects	
	Female	Male	Female	Male
ALL	(1)	(2)	(3)	(4)
Rule of law/Property Rights	-0.299**	-0.122*	-0.358**	-0.114
	(0.117)	(0.073)	(0.173)	(0.092)
Labor Regulation	0.258***	0.045	0.285*	0.045
	(0.093)	(0.069)	(0.145)	(0.077)
Business Regulations	-0.488***	-0.139	-0.555***	-0.142
	(0.116)	(0.093)	(0.207)	(0.112)
Credit Market Freedom	-0.243**	-0.255***	-0.260**	-0.254***
	(0.096)	(0.082)	(0.122)	(0.085)
Trade Freedom	0.509***	0.088	0.479***	0.073
	(0.159)	(0.095)	(0.159)	(0.094)
Government Size	0.024	-0.014	0.002	-0.012
	(0.066)	(0.045)	(0.071)	(0.083)
GDP per capita	-2.176	5.839***	-4.557	6.498*
	(2.339)	(2.162)	(2.972)	(3.380)
GDP^2 per capita	0.126	-0.296**	0.263	-0.333*
	(0.130)	(0.118)	(0.164)	(0.188)
Inflation	0.046	0.038	-0.034	0.015
	(0.245)	(0.154)	(0.217)	(0.142)
Employment to Population Ratio	-0.012	0.581**	-0.023	0.684**
	(0.325)	(0.280)	(0.430)	(0.301)
Observations	179	179	179	179
R2 (within)	36	36	36	36
Number of Countries	0.442	0.429	0.958	0.966
Year Dummies	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	--	--

Table 4b: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-) by Gender, Doing Business Specification

	Random Effects		Fixed Effects	
	Female	Male	Female	Male
ALL	(1)	(2)	(3)	(4)
Rigidity of Employment Index	0.073**	0.062	0.113	0.109
	(0.035)	(0.041)	(0.069)	(0.080)
Procedures to start a business (number)	-0.012	-0.338**	-0.103	-0.308
	(0.117)	(0.135)	(0.163)	(0.244)
Credit to Private Sector (% of GDP)(WDI)	0.163*	0.056	0.081	-0.028
	(0.097)	(0.114)	(0.102)	(0.189)
Total Tax Rate (% profit)	-0.106	-0.326***	-0.074	-0.287
	(0.112)	(0.124)	(0.107)	(0.177)
Trade (WDI)	0.076	-0.320**	0.065	-0.285
	(0.120)	(0.152)	(0.200)	(0.228)
GDP per capita	-0.478	6.287**	-6.178	20.664***
	(3.426)	(3.130)	(5.515)	(5.397)
GDP^2 per capita	0.029	-0.342**	0.331	-1.147***
	(0.187)	(0.169)	(0.294)	(0.293)
Inflation	0.840**	0.978**	0.746	0.950
	(0.421)	(0.485)	(0.477)	(0.604)
Employment to Population Ratio	0.619	-1.029**	1.120	0.233
	(0.411)	(0.431)	(0.784)	(0.685)
Observations	113	113	113	113
Number of Countries	36	36	36	36
R2 (within)	0.323	0.410	0.972	0.977
Year Dummies	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	--	--

Table 5a: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-) by Education, Economic Freedom of the World Specification

	Random Effects				Fixed Effects			
All	Education 1	Education 2	Education 3	Education 4	Education 1	Education 2	Education 3	Education 4
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of law/Property Rights	-0.083	-0.183**	0.110	0.173	-0.178	-0.181	0.177	0.297*
	(0.125)	(0.084)	(0.129)	(0.116)	(0.205)	(0.135)	(0.179)	(0.172)
Labor Regulation	0.135	0.081	0.214*	0.046	0.152	0.077	0.181	0.077
	(0.116)	(0.068)	(0.129)	(0.084)	(0.175)	(0.067)	(0.163)	(0.086)
Business Regulations	-0.323**	-0.189*	0.148	-0.060	-0.333**	-0.202*	0.067	-0.105
	(0.142)	(0.097)	(0.150)	(0.127)	(0.163)	(0.105)	(0.217)	(0.161)
Credit Market Freedom	-0.123	-0.201**	0.004	-0.074	-0.116	-0.186**	-0.000	-0.071
	(0.128)	(0.088)	(0.130)	(0.146)	(0.173)	(0.087)	(0.222)	(0.180)
Trade Freedom	0.148	0.185*	-0.017	-0.070	0.074	0.177*	0.069	-0.061
	(0.170)	(0.105)	(0.187)	(0.170)	(0.185)	(0.092)	(0.252)	(0.251)
Government Size	-0.080	-0.088	0.148	0.203*	-0.131	-0.082	0.132	0.319
	(0.122)	(0.059)	(0.118)	(0.111)	(0.161)	(0.059)	(0.171)	(0.196)
GDP per capita	1.646	-0.189	-0.265	-4.685**	2.738	0.571	-7.358	-4.495*
	(2.902)	(2.367)	(2.294)	(1.923)	(4.742)	(3.792)	(4.566)	(2.574)
GDP^2 per capita	-0.047	0.035	-0.014	0.234**	-0.093	-0.011	0.360	0.213
	(0.160)	(0.130)	(0.123)	(0.098)	(0.265)	(0.215)	(0.253)	(0.146)
Inflation	0.609***	-0.048	-0.383	-0.777***	0.571**	-0.092	-0.395	-0.808***
	(0.225)	(0.181)	(0.283)	(0.195)	(0.250)	(0.160)	(0.413)	(0.222)
Employment to Population Ratio	-0.194	0.487	0.373	0.596**	-0.416	0.604*	0.915	1.160*
	(0.354)	(0.318)	(0.402)	(0.285)	(0.454)	(0.356)	(0.715)	(0.667)
Observations	178	178	178	178	178	178	178	178
Number of Countries	35	35	35	35	0.912	0.969	0.885	0.863
R2 (within)	0.502	0.536	0.470	0.352				
Year Dummies	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	*YES*	*YES*	--	--	--	--

Table 5b: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-) by Education, Doing Business Specification

	Random Effects				Fixed Effects			
All	Education 1	Education 2	Education 3	Education 4	Education 1	Education 2	Education 3	Education 4
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rigidity of Employment Index	0.152***	0.105**	-0.070	-0.079	0.202**	0.112**	-0.198	-0.127*
	(0.039)	(0.042)	(0.044)	(0.053)	(0.084)	(0.055)	(0.120)	(0.070)
Procedures to start a business (number)	-0.323**	-0.285**	0.295*	0.270**	-0.480**	-0.289*	0.608	0.483***
	(0.142)	(0.130)	(0.151)	(0.109)	(0.222)	(0.166)	(0.407)	(0.148)
Credit to Private Sector (% of GDP)(WDI)	0.289**	0.193**	-0.075	-0.357***	0.330*	0.124	-0.331	-0.513*
	(0.130)	(0.092)	(0.106)	(0.138)	(0.171)	(0.146)	(0.213)	(0.277)
Total Tax Rate (% profit)	-0.284*	-0.230**	-0.120	0.339*	-0.349**	-0.220*	-0.035	0.450*
	(0.165)	(0.102)	(0.164)	(0.188)	(0.167)	(0.122)	(0.268)	(0.250)
Trade (WDI)	-0.306*	-0.211	0.175	0.111	-0.405	-0.192	0.579**	0.153
	(0.177)	(0.140)	(0.145)	(0.083)	(0.281)	(0.238)	(0.255)	(0.104)
GDP per capita	2.649	0.929	4.242	-0.542	8.012	6.065	2.926	0.551
	(3.683)	(3.393)	(3.170)	(2.992)	(7.898)	(5.736)	(11.289)	(5.358)
GDP^2 per capita	-0.125	-0.048	-0.245	0.031	-0.425	-0.342	-0.185	-0.052
	(0.202)	(0.183)	(0.171)	(0.155)	(0.446)	(0.314)	(0.617)	(0.308)
Inflation	0.572	0.174	-0.160	0.353	0.365	0.210	0.362	0.803
	(0.508)	(0.442)	(0.609)	(0.304)	(0.495)	(0.475)	(0.716)	(0.756)
Employment to Population Ratio	-0.625	-0.471	0.535	2.898***	-0.745	-0.083	1.436	4.101***
	(0.566)	(0.459)	(0.514)	(0.655)	(0.920)	(0.738)	(1.252)	(1.123)
Observations	109	109	109	109	109	109	109	109
Number of Countries	35	35	35	35	0.953	0.981	0.922	0.947
R2 (within)	0.420	0.340	0.210	0.294				
Year Dummies	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	*YES*	*YES*	--	--	--	--

Table 6a: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-) by Age (Economic Freedom of the World Specification)

	Random Effects			Fixed Effects		
	Age 1 (15-24 years)	Age 2 (25-44 years)	Age 3 (45-64 years)	Age 1 (15-24 years)	Age 2 (25-44 years)	Age 3 (45-64 years)
	(1)	(2)	(3)	(4)	(5)	(6)
Rule of law/Property Rights	-0.337***	-0.179***	0.193*	-0.395**	-0.193**	0.261***
	(0.125)	(0.068)	(0.110)	(0.172)	(0.090)	(0.096)
Labor Regulation	0.270**	0.108*	-0.358***	0.163	0.116*	-0.123
	(0.129)	(0.063)	(0.119)	(0.122)	(0.062)	(0.107)
Business Regulations	-0.588***	-0.266***	0.548***	-0.520***	-0.295***	0.372*
	(0.163)	(0.085)	(0.153)	(0.182)	(0.097)	(0.188)
Credit Market Freedom	-0.211	-0.240***	-0.004	-0.154	-0.248***	-0.180
	(0.141)	(0.073)	(0.135)	(0.139)	(0.080)	(0.110)
Trade Freedom	0.333*	0.180**	-0.314**	0.318*	0.165**	-0.281*
	(0.173)	(0.086)	(0.151)	(0.171)	(0.080)	(0.143)
Government Size	0.194*	0.016	-0.100	0.175	0.002	-0.119
	(0.112)	(0.046)	(0.111)	(0.112)	(0.067)	(0.112)
GDP per capita	-9.660**	0.803	11.762***	-7.600	-0.674	7.110
	(4.522)	(2.032)	(4.009)	(5.050)	(3.011)	(5.552)
GDP^2 per capita	0.566**	-0.019	-0.645***	0.447	0.066	-0.369
	(0.251)	(0.112)	(0.222)	(0.282)	(0.170)	(0.305)
Inflation	0.280	0.008	-0.097	0.217	-0.012	0.036
	(0.257)	(0.142)	(0.228)	(0.221)	(0.129)	(0.197)
Employment to Population Ratio	-0.701	0.526**	0.518	-0.814	0.604*	0.856**
	(0.518)	(0.266)	(0.425)	(0.561)	(0.353)	(0.392)
Observations	179	179	179	179	179	179
R2 (within)	36	36	36	36	36	36
Number of Countries	0.273	0.500	0.311	0.987	0.971	0.976
Year Dummies	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	*YES*	*--*	*--*	*--*

Table 6b: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty(-) by Age (Doing Business Specification)

	Random Effects			Fixed Effects		
	Age 1 (15-24 years)	Age 2 (25-44 years)	Age 3 (45-64 years)	Age 1 (15-24 years)	Age 2 (25-44 years)	Age 3 (45-64 years)
	(1)	(2)	(3)	(4)	(5)	(6)
Rigidity of Employment Index	0.025	0.089**	0.096	0.262*	0.124**	-0.155
	(0.063)	(0.037)	(0.065)	(0.153)	(0.047)	(0.141)
Procedures to start a business (number)	0.234	-0.188	-0.345	-0.604	-0.211	0.615
	(0.228)	(0.119)	(0.230)	(0.493)	(0.151)	(0.478)
Credit to Private Sector (% of GDP)(WDI)	0.006	0.106	0.365**	-0.463**	0.018	0.755***
	(0.162)	(0.096)	(0.156)	(0.208)	(0.127)	(0.203)
Total Tax Rate (% profit)	-0.212	-0.131	0.178	-0.285	-0.110	0.183
	(0.199)	(0.101)	(0.216)	(0.215)	(0.112)	(0.258)
Trade (WDI)	0.288	-0.068	-0.210	0.303	-0.047	-0.370
	(0.182)	(0.126)	(0.202)	(0.386)	(0.210)	(0.280)
GDP per capita	-1.063	3.293	8.497	-12.082	4.507	32.447*
	(5.658)	(3.112)	(6.197)	(15.463)	(4.258)	(16.560)
GDP^2 per capita	0.060	-0.178	-0.444	0.600	-0.256	-1.709*
	(0.311)	(0.169)	(0.339)	(0.851)	(0.233)	(0.913)
Inflation	-0.105	1.001**	1.291*	-0.560	0.974**	1.460**
	(0.777)	(0.404)	(0.713)	(0.705)	(0.415)	(0.617)
Employment to Population Ratio	0.193	0.531	-0.132	0.895	1.304*	-0.138
	(0.773)	(0.412)	(0.755)	(1.511)	(0.776)	(1.368)
Observations	113	113	113	113	113	113
R2 (within)	36	36	36	36	36	36
Number of Countries	0.181	0.442	0.359	0.953	0.979	0.824
Year Dummies	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	*YES*	*--*	*--*	*--*

APPENDIX

Table A1. Variables Definitions and Data Sources

Variable	Description	Source
Economic Freedom of The World Indicators (EFW)		
Economic Freedom of the World Index; Frasier Institute (FI)	"Measures the degree to which the policies and institutions of countries are supportive of economic freedom" (Fraser Institute, 2013). The composite index includes 24 components measured on a scale between 0 and 10. a higher value for the overall index implies that government policies and institutions lead to a less regulated /constrained economic environment.	Economic Freedom of the World, Frasier Institute (www.freetheworld .com)
Labor Regulation Freedom	The labor market regulation index measures the extent to which there are labor regulation restrictions on an economy. The index is defined on a scale from 0 to 10, with higher scores indicating the "least regulations". In order to earn high marks, a country must allow market forces to determine wages and establish the conditions of hiring and firing, and refrain from the use of conscription.	Economic Freedom of the World, Frasier Institute (www.freetheworld .com)
Rule of law/Property Rights	Measures the effectiveness of the legal system in a country. The index includes security of property rights protected by the rule of law, independent and impartial judiciary system, effective law enforcement, regulatory restrictions on sale of real property and business cost of crime. A higher score indicates greater rule of law.	Economic Freedom of the World, Frasier Institute (www.freetheworld .com)
Business Regulation Freedom	Measures the extent to which regulations and bureaucratic procedures restrict business creation. The index includes administrative and bureaucratic costs, starting a business, bribes, licensing and tax compliance costs. A higher score indicates less rigid business regulations.	Economic Freedom of the World, Frasier Institute (www.freetheworld .com)
Government Size	Measures four components of central government's involvement in the economy. The first two components measure government consumption as a share of total consumption and transfers and subsidies as a share of GDP. The third component measures the extent to which countries use private investment and enterprises while the final component measures the top marginal income tax rate.	Economic Freedom of the World, Frasier Institute (www.freetheworld .com)
Trade Freedom	Measures restraints, which can affect international exchange. These include tariffs, quotas, administrative restraints, and controls on exchange rates and capital. A higher score indicates fewer trade barriers.	Economic Freedom of the World, Frasier Institute (www.freetheworld .com)
Credit Market Freedom	The credit market regulation index measures private ownership of banks, private sector credit (government crowding out private borrowing), and market determined interest rates. A higher score indicates a less regulated credit market.	Economic Freedom of the World, Frasier Institute (www.freetheworld .com)
Doing Business Indicators (DB)		
Rigidity of Employment Index	Measures the regulation of employment, specifically the hiring and firing of workers and the rigidity of working hours (0=less rigid to 100=more rigid)	World Bank, Doing Business project (www.doingbusine ss.org)
Procedures to start a business (number)	The number of procedures required to start a business in a given year.	World Bank, Doing Business project (www.doingbusine ss.org)

Credit to Private Sector (% of GDP)	Domestic credit to private sector measures the availability of domestic credit and financial resources, provided by financial corporations, to the private sector as a percent of GDP. This includes loans, purchases of non-equity and trade credits that establish a claim for repayment. In some countries, credit is extended to public enterprises.	World Development Indicators
Total Tax Rate (% profit)	The amount of taxes and mandatory contributions payable by businesses after accounting for allowable deductions and exemptions as a share of commercial profits.	World Bank, Doing Business project (www.doingbusiness.org)
Trade	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	World Development Indicators
Other Control Variables		
GDP per capita	Gross domestic product converted to international dollars using purchasing power parity rates. Data are in constant 2005 international dollars.	World Development Indicators
Inflation	Inflation as measured by the annual growth rate of the GDP implicit deflator.	World Development Indicators
Employment to Population Ratio	The proportion of a country's population, ages 15 and older, that is employed.	World Development Indicators

Table A2: Cross Country Summary Statistics by Income Group and Region

	Percent Self-employed	Mean Wage premium(+)/ penalty(-)	GDP per capita	Total tax rate	Inflation	Employ-ment to population ratio	Legal System & Property Rights (EFW)
Total sample	26.70	-0.10	$13,957	70.58	150.46	60.69	5.55
Income group							
Low Income	54.61	0.24	$1,855	--	7.78	53.14	2.77
Low Middle Income	44.05	-0.17	$4,980	53.05	68.32	68.33	4.42
Upper Middle Income	27.40	-0.03	$8,303	72.91	315.21	59.61	4.51
High Income	11.49	-0.24	$35,962	67.79	2.85	56.73	7.45
Region							
Latin America & Caribbean	32.13	-0.02	$7,892	73.01	286.21	60.70	4.38
Europe & Central Asia (Developing)	5.53	-0.21	$10,637	44.44	10.09	49.10	5.94
Europe & Central Asia (High Income)	10.85	-0.23	$29,055	67.92	2.33	51.14	6.84
Other	27.22	-0.17	$19,009	45.49	2.58	64.16	6.65

	Labor Market Regulations		Trade		Credit Market regulations		Business Regulations	
	Rigidity of Employment Index (DB)	*Labor market regulations Index (EFW)*	*Freedom to Trade Internationally (EFW)*	Trade in services (% of GDP) (WDI)	*Credit Market Regulations (EFW)*	*Credit to private sector (% of GDP)*	Procedures to start a business (number)	Business regulations (EFW)
Total sample	19.41	5.98	7.12	32.95	8.07	79.34	9.97	6.02
Income group								
Low Income	--	6.39	4.17	46.10	7.25	21.87	11.00	4.67
Low Middle Income	32.04	4.35	6.92	37.69	6.36	84.51	15.09	5.06
Upper Middle Income	11.90	5.61	6.51	27.42	7.76	46.78	9.82	5.99
High Income	39.27	6.90	8.33	33.32	9.12	142.58	7.55	6.52
Region								
Latin America & Caribbean	12.62	5.25	6.58	28.25	7.27	44.37	11.66	5.67
Europe & Central Asia (Developing)	21.97	5.90	7.29	86.15	8.61	31.43	9.08	5.83
Europe & Central Asia (High Income)	39.25	5.18	8.08	57.26	8.80	118.05	8.64	6.16
Other	51.54	7.99	7.44	31.70	8.88	118.28	7.17	6.97

Table A3: Mean Non -Professional Own Account Self-Employment vs. Salaried Employment Wage Premiums (+) and Penalties (-), By Population Subgroups, Income Group and Regions of the World

	Female	Male	Urban	Rural	Non-Agri-Culture	Agriculture Sector	Education 1 (less than 5 years)	Education 2 (6 to 11 years)	Education 3 (12 to 15 years)	Education 4 (16 or more years)	Age (15-24)	Age (25-44)	Age (45-64)
Total sample	-0.218	-0.114	-0.126	-0.400	-0.134	-0.020	0.033	-0.138	-0.267	-0.369	-0.137	-0.153	-0.202
	(0.090)	(0.072)	(0.072)	(0.028)	(0.079)	(0.147)	(0.052)	(0.096)	(0.031)	(0.060)	(0.084)	(0.057)	(0.073)
Income group													
Low Income	-0.116	0.347	0.272	0.255	0.190	0.510	0.328	0.237	0.102	-0.257	0.193	0.255	0.302
	(0.099)	(0.007)	(0.020)	(0.059)	(0.019)	(0.080)	(0.053)	(0.021)	(0.021)	(0.046)	(0.055)	(0.039)	(0.029)
Low Middle Income	-0.147	-0.313	-0.173	-0.356	-0.291	0.221	-0.103	-0.288	-0.313	-0.709	-0.247	-0.200	-0.205
	(0.018)	(0.082)	(0.047)	(0.064)	(0.134)	(0.137)	(0.030)	(0.044)	(0.014)	(0.196)	(0.035)	(0.028)	(0.117)
Upper Middle Income	-0.070	-0.006	-0.040	-0.418	0.000	-0.269	0.078	0.029	-0.220	-0.261	0.031	-0.059	-0.080
	(0.071)	(0.046)	(0.077)	(0.015)	(0.068)	(0.185)	(0.051)	(0.043)	(0.021)	(0.073)	(0.048)	(0.045)	(0.053)
High Income	-0.487	-0.134	-0.305	-0.339	-0.289	-0.082	-0.227	-0.228	-0.338	-0.326	-0.235	-0.319	-0.332
	(0.014)	(0.037)	(0.017)	(0.014)	(0.016)	(0.054)	(0.059)	(0.031)	(0.011)	(0.024)	(0.049)	(0.012)	(0.020)
Region													
Latin America & Caribbean	-0.059	0.000	-0.021	-0.417	-0.003	-0.224	0.063	0.030	-0.210	-0.358	0.023	-0.057	-0.052
	(0.056)	(0.029)	(0.057)	(0.016)	(0.051)	(0.176)	(0.052)	(0.024)	(0.017)	(0.102)	(0.037)	(0.034)	(0.027)
Europe & Central Asia (High-Income)	-0.433	-0.322	-0.361	-0.407	-0.334	-0.286	-0.316	-0.282	-0.348	-0.515	-0.298	-0.330	-0.451
	(0.057)	(0.059)	(0.063)	(0.035)	(0.066)	(0.058)	(0.058)	(0.044)	(0.061)	(0.070)	(0.158)	(0.060)	(0.052)
Europe & Central Asia (Developing)	-0.634	-0.368	-0.560	-0.630	-0.080	-0.841	-0.449	-0.656	-0.505	-0.250	-0.043	-0.457	-0.518
	(0.178)	(0.123)	(0.044)	(0.095)	(0.069)	(0.154)	(0.359)	(0.116)	(0.136)	(0.288)	(0.142)	(0.154)	(0.067)
Other	-0.328	-0.130	-0.181	-0.227	-0.232	0.283	0.018	-0.238	-0.313	-0.361	-0.208	-0.203	-0.313
	(0.119)	(0.102)	(0.086)	(0.080)	(0.083)	(0.108)	(0.112)	(0.081)	(0.022)	(0.077)	(0.067)	(0.070)	(0.047)
East Asia & Pacific	-0.136	-0.409	-0.207	-0.341	-0.516	0.386	-0.131	-0.328	-0.327	-1.632	-0.278	-0.225	-0.412
	(0.000)	(0.000)	(0.000)	(0.009)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)
Middle East & North Africa	0.106	0.375	0.227	0.401	0.343	0.435	0.067	0.037	-0.652	0.364	0.260	0.370	0.393
	(0.014)	(0.001)	(0.002)	(0.000)	(0.003)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)	(0.002)
North America	-0.497	-0.095	-0.290	-0.325	-0.276	-0.019	-0.133	-0.181	-0.335	-0.304	-0.211	-0.316	-0.311
	(0.000)	(0.000)	(0.000)	0.000	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
South Asia	-0.134	0.346	0.288	0.249	0.176	0.533	0.324	0.237	0.109	-0.270	0.185	0.242	0.298
	(0.109)	(0.005)	(0.017)	(0.063)	(0.010)	(0.097)	(0.054)	(0.021)	(0.017)	(0.034)	(0.063)	(0.042)	(0.029)
Sub-Saharan Africa	-0.615	-0.346	-0.413	-0.350	-0.520	-0.206	-0.261	-0.418	-0.585	-0.664	-0.688	-0.428	-0.450
	(0.011)	(0.031)	(0.092)	(0.004)	(0.021)	(0.256)	(0.000)	(0.062)	(0.003)	(0.055)	(0.086)	(0.011)	(0.018)

Notes: Total sample, income group and region averages are weighted by working population, the inverse of the variance and the inverse of the number of surveys. Developing ECA include mainly countries from Eastern Europe. High Income ECA countries include countries from Western Europe. The 'Number of of surveys' include country/year observation.

Table A4: Mean Employer & Professional Own Account Self-Employment vs. Salaried Employment Wage Premiums (+) and Penalties (-), By Population Subgroups, Income Group and Regions of the World

	Female	Male	Urban	Rural	Non-Agri-Culture	Agriculture Sector	Education 1 (less than 5 years)	Education 2 (6 to 11 years)	Education 3 (12 to 15 years)	Education 4 (16 or more years)	Age (15-24)	Age (25-44)	Age (45-64)
Total sample	-0.190	0.184	0.234	0.186	0.207	-0.148	-0.108	0.144	0.082	0.093	-0.917	0.187	0.277
	(0.075)	(0.156)	(0.125)	(0.121)	(0.130)	(0.740)	(0.763)	(0.225)	(0.093)	(0.031)	(1.287)	(0.152)	(0.123)
Income group													
Low Income	-0.441	-3.567	-3.556	-4.519	-3.568	-4.397	-5.075	-3.089	-2.826	-0.771	-5.436	-2.718	-2.588
	(0.195)	(2.003)	(1.933)	(1.529)	(2.072)	(1.417)	(1.310)	(2.373)	(2.079)	(0.769)	(0.850)	(2.077)	(2.216)
Low Middle Income	-0.186	0.266	0.216	0.458	0.170	0.251	0.452	-0.058	0.030	0.127	0.114	0.143	0.465
	(0.106)	(0.146)	(0.161)	(0.136)	(0.172)	(0.379)	(0.140)	(0.163)	(0.106)	(0.059)	(0.310)	(0.158)	(0.055)
Upper Middle Income	-0.035	0.584	0.456	0.292	0.472	0.774	0.766	0.576	0.341	0.174	0.537	0.522	0.554
	(0.025)	(0.037)	(0.095)	(0.012)	(0.036)	(0.132)	(0.062)	(0.043)	(0.025)	(0.030)	(0.045)	(0.057)	(0.074)
High Income	-0.279	0.196	0.079	0.002	0.075	0.365	0.072	0.070	0.071	0.037	0.889	0.025	0.106
	(0.068)	(0.070)	(0.052)	(0.038)	(0.060)	(0.116)	(0.111)	(0.052)	(0.048)	(0.057)	(0.471)	(0.044)	(0.051)
Region													
Latin America & Caribbean	-0.069	0.498	0.520	0.292	0.441	0.751	0.748	0.583	0.330	0.179	0.579	0.524	0.536
	(0.043)	(0.050)	(0.026)	(0.014)	(0.036)	(0.185)	(0.065)	(0.044)	(0.023)	(0.034)	(0.023)	(0.049)	(0.031)
Europe & Central Asia (High-Income)	0.001	-0.074	-0.065	-0.129	-0.078	0.131	0.011	0.029	-0.096	-0.174	1.191	-0.100	-0.067
	(0.036)	(0.064)	(0.055)	(0.067)	(0.060)	(0.039)	(0.092)	(0.051)	(0.045)	(0.065)	(0.395)	(0.047)	(0.081)
Europe & Central Asia (Developing)	0.030	-0.027	0.023	0.013	0.013	0.197	0.158	0.138	0.199	-0.108	-0.097	-0.001	-0.051
	(0.026)	(0.075)	(0.007)	(0.037)	(0.097)	(0.166)	(0.119)	(0.088)	(0.105)	(0.151)	(0.163)	(0.089)	(0.053)
Other	-0.429	-0.102	-0.185	-0.393	-0.245	-1.940	-2.012	-0.422	-0.066	0.071	-3.239	-0.153	-0.014
	(0.090)	(0.316)	(0.280)	(0.731)	(0.285)	(1.719)	(1.895)	(0.333)	(0.162)	(0.032)	(1.805)	(0.250)	(0.236)
East Asia & Pacific	-0.952	-0.018	-0.087	0.660	-0.176	-0.570	0.274	-0.204	-0.105	-0.027	-0.353	-0.051	0.078
	(0.000)	(0.000)	(0.000)	(0.030)	(0.000)	(0.007)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Middle East & North Africa	-0.794	0.787	0.655	0.821	0.687	1.039	0.156	-0.696	-0.506	0.453	0.037	0.762	0.976
	(0.007)	(0.003)	(0.007)	(0.000)	(0.003)	(0.003)	0.000	0.000	0.000	0.000	(0.039)	(0.002)	(0.000)
North America	-0.355	0.277	0.146	0.043	0.153	0.550	0.393	0.230	0.128	0.102	0.172	0.080	0.166
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	0.000	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
South Asia	-0.453	-3.902	-3.936	-4.907	-3.850	-4.867	-5.090	-3.157	-3.877	-0.799	-5.529	-3.249	-2.876
	(0.201)	(2.050)	(1.987)	(1.434)	(2.134)	(1.224)	(1.306)	(2.413)	(2.231)	(0.824)	(0.805)	(2.288)	(2.375)
Sub-Saharan Africa	0.002	0.530	0.427	0.517	0.424	1.320	0.763	0.547	0.318	0.406	0.497	0.448	0.437
	(0.172)	(0.063)	(0.054)	(0.144)	(0.040)	(0.100)	(0.015)	(0.010)	(0.002)	(0.049)	(0.085)	(0.068)	(0.030)

Notes: *Total sample, income group and region averages are weighted by working population, the inverse of the variance and the inverse of the number of surveys. Developing ECA include mainly countries from Eastern Europe. High Income ECA countries include countries from Western Europe. The 'Number of of surveys' include country/year observation.*

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Table A5a: Impact of Regulations on the Urban Self-Employment Wages Premium(+)/ Penalty(-) by Type of Self-employment (EFW Specification)

	Random Effects			Fixed Effects		
	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account
	(1)	(2)	(3)	(4)	(5)	(6)
Rule of law/Property Rights	0.018	-0.098	-0.675***	0.009	-0.438	-0.568*
	(0.052)	(0.246)	(0.197)	(0.079)	(0.486)	(0.324)
Labor Regulations	0.118**	-0.050	0.153	0.122**	-0.169	0.248**
	(0.059)	(0.144)	(0.109)	(0.060)	(0.214)	(0.112)
Business Regulations	-0.116	0.221	-0.004	-0.126	0.126	0.289
	(0.075)	(0.265)	(0.194)	(0.089)	(0.330)	(0.303)
Credit Market Freedom	-0.086	-0.332	-0.316*	-0.086	0.036	-0.382**
	(0.076)	(0.218)	(0.171)	(0.083)	(0.372)	(0.172)
Trade Freedom	-0.08	0.41	1.360***	-0.094	-0.022	1.212***
	(0.084)	(0.309)	(0.270)	(0.099)	(0.605)	(0.368)
Government Size	-0.068	0.038	0.188**	-0.079	-0.061	0.072
	(0.043)	(0.103)	(0.091)	(0.056)	(0.223)	(0.141)
GDP per capita	-0.940	4.362	0.189	-1.650	1.338	-4.998
	(1.937)	(3.858)	(2.249)	(2.195)	(6.797)	(4.286)
GDP^2 per capita	0.068	-0.218	0.013	0.111	0.017	0.326
	(0.108)	(0.213)	(0.123)	(0.122)	(0.393)	(0.249)
Inflation	-0.178	0.310	1.471***	-0.172	-0.253	1.574***
	(0.121)	(0.495)	(0.392)	(0.127)	(0.902)	(0.485)
Employment to Population Ratio	0.807***	-0.119	-0.832**	0.811**	-1.464	-0.343
	(0.262)	(0.652)	(0.375)	(0.320)	(1.305)	(0.725)
Observations	175	99	99	175	99	99
Number of Countries	34	25	25		25	25
R2 (within)	0.643	0.841	0.873	0.970	0.989	0.986
Year Dummies	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	*YES*	--	--	--

*Note: The R2 reported refer to variation within countries. Regression are weighted by each country's working population, the inverse of the number of surveys and the inverse of the variance. Standard errors in parentheses * p<0.10, ** p<0.05, ***p<0.01*

Table A5b: Impact of Regulations and Economic Growth on the Urban Self-Employment Wages Premium(+)/Penalty(-) by Type of Self-employment (DB Specification)

	Random Effects			Fixed Effects		
	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account	Self-Employed (all)	Employers & Professionals own-account	Non-Professional own-account
	(1)	(2)	(3)	(4)	(5)	(6)
Rigidity of Employment Index	0.081**	0.324*	-0.169	0.086*	0.238	-0.390
	(0.037)	(0.196)	(0.177)	(0.046)	(0.323)	(0.322)
Procedures to start a business (number)	-0.080	0.191	-0.256*	-0.039	0.886**	-0.288
	(0.115)	(0.223)	(0.131)	(0.134)	(0.346)	(0.368)
Credit to Private Sector (% of GDP)(WDI)	0.055	0.565**	0.183	0.007	1.744*	-0.484
	(0.089)	(0.269)	(0.216)	(0.114)	(0.961)	(0.936)
Total Tax Rate (% profit)	-0.040	-0.268	0.070	-0.108	-0.972	-0.272
	(0.106)	(0.431)	(0.386)	(0.183)	(1.017)	(1.284)
Trade (WDI)	-0.168	-0.546	0.093	-0.162	-1.452	-0.850
	(0.118)	(0.538)	(0.487)	(0.134)	(1.043)	(1.796)
GDP per capita	5.435	16.956***	3.711	8.361	39.953***	-2.786
	(3.603)	(6.115)	(5.122)	(5.250)	(13.156)	(14.937)
GDP^2 per capita	-0.301	-0.925***	-0.208	-0.475	-2.329***	0.190
	(0.196)	(0.328)	(0.281)	(0.289)	(0.760)	(0.864)
Inflation	0.494	-0.137	1.127*	0.602	1.050	0.333
	(0.405)	(0.908)	(0.606)	(0.412)	(1.533)	(1.447)
Employment to Population Ratio	0.587	-0.952	-0.850	1.252*	1.256	-0.462
	(0.430)	(0.763)	(0.527)	(0.741)	(1.506)	(1.101)
Observations	105	59	59	105	59	59
Number of Countries	33	22	22	33	22	22
R2 (within)	0.400	0.585	0.331	0.983	0.992	0.982
Year Dummies	*YES*	*YES*	*YES*	*YES*	*YES*	*YES*
Region Dummies	*YES*	*YES*	*YES*	--	--	--

*Note: The R2 reported refer to variation within countries. Regression are weighted by each country's working population, the inverse of the number of surveys and the inverse of the variance. Standard errors in parentheses * p<0.10, ** p<0.05, ***p<0.01*

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Table A6a: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty (-) by Gender and Type of Self-employment (EFW Specification)

	Random Effects				Fixed Effects			
	Employers & Professional own-account		Non-Professional own-account		Employers & Professional own-account		Non-Professional own-account	
	Female	Male	Female	Male	Female	Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rule of law/Property Rights	0.028	-0.008	0.046	-0.395**	-0.211	-0.363	-1.171**	-0.063
	(0.130)	(0.217)	(0.286)	(0.169)	(0.520)	(0.425)	(0.501)	(0.345)
Labor Regulations	0.160**	-0.013	0.202	-0.050	-0.299	0.090	0.664***	0.146
	(0.070)	(0.135)	(0.180)	(0.099)	(0.193)	(0.193)	(0.175)	(0.125)
Business Regulations	-0.211	0.309	-0.998**	-0.353	-0.278	0.334	0.561	0.011
	(0.211)	(0.260)	(0.429)	(0.216)	(0.285)	(0.316)	(0.535)	(0.299)
Credit Market Freedom	0.147	-0.294	-1.008***	-0.197	0.289	-0.215	-0.683**	-0.440*
	(0.113)	(0.201)	(0.295)	(0.184)	(0.290)	(0.282)	(0.302)	(0.245)
Trade Freedom	0.102	0.059	1.240**	0.549**	0.187	-0.438	0.862	0.796*
	(0.219)	(0.287)	(0.618)	(0.255)	(0.665)	(0.520)	(0.628)	(0.412)
Government Size	0.040	-0.035	0.239	0.133	0.032	-0.043	0.162	0.065
	(0.096)	(0.090)	(0.250)	(0.087)	(0.197)	(0.170)	(0.204)	(0.169)
GDP per capita	-1.960*	8.245**	-5.811***	1.807	2.147	7.533	-5.526	-0.060
	(1.187)	(3.739)	(1.977)	(1.862)	(5.988)	(5.912)	(6.182)	(3.660)
GDP^2 per capita	0.093	-0.407**	0.292***	-0.071	-0.134	-0.324	0.427	0.027
	(0.063)	(0.206)	(0.108)	(0.098)	(0.332)	(0.338)	(0.347)	(0.215)
Inflation	-0.187	0.704	-0.407	0.956**	-0.273	0.145	1.676***	1.900**
	(0.229)	(0.520)	(0.685)	(0.406)	(0.702)	(0.935)	(0.511)	(0.716)
Employment to Population Ratio	0.651***	0.434	-1.955***	-0.856***	0.150	-0.456	-0.960	0.033
	(0.184)	(0.644)	(0.388)	(0.291)	(1.654)	(1.300)	(1.033)	(0.780)
Observations	99	99	99	99	99	99	99	99
R2 (within)	0.543	0.654	0.572	0.611	0.942	0.991	0.984	0.973
Number of Countries	25	25	25	25	25	25	25	25
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Region Dummies	YES	YES	YES	YES	--	--	--	--

*Note: The R2 reported refer to variation within countries. Regression are weighted by each country's working population, the inverse of the number of surveys and the inverse of the variance. Standard errors in parentheses * p<0.10, ** p<0.05, ***p<0.01*

Table A6b: Impact of Regulations and Economic Growth on the Self-Employment Wages Premium(+)/Penalty (-) by Gender and Type of Self-employment (DB Specification)

	Random Effects				Fixed Effects			
	Employers & Professional own-account		Non-Professional own-account		Employers & Professional own-account		Non-Professional own-account	
	Female	Male	Female	Male	Female	Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rigidity of Employment Index	0.120	0.088	-0.102	-0.084	0.365	0.025	-0.399*	0.123
	(0.132)	(0.159)	(0.142)	(0.132)	(0.535)	(0.215)	(0.204)	(0.263)
Procedures to start a business (number)	-0.055	0.131	-0.096	-0.293*	-0.062	0.923	-0.017	-0.696**
	(0.191)	(0.209)	(0.136)	(0.155)	(0.799)	(0.582)	(0.243)	(0.327)
Credit to Private Sector (% of GDP)(WDI)	0.113	0.117	0.416**	0.085	0.895	0.555	0.315	-0.271
	(0.140)	(0.250)	(0.196)	(0.186)	(1.073)	(0.604)	(0.490)	(0.799)
Total Tax Rate (% profit)	0.073	-0.704	0.159	-0.109	1.903	-1.832*	-0.182	0.144
	(0.351)	(0.449)	(0.396)	(0.393)	(2.042)	(0.936)	(0.737)	(1.302)
Trade (WDI)	0.079	-0.496	0.297	-0.159	0.345	-1.162	0.249	0.791
	(0.289)	(0.361)	(0.296)	(0.317)	(1.699)	(0.990)	(0.706)	(1.060)
GDP per capita	1.766	17.005***	0.511	2.782	-33.953	52.272***	-2.542	2.392
	(4.272)	(5.531)	(3.803)	(4.285)	(19.879)	(10.529)	(8.446)	(12.323)
GDP^2 per capita	-0.092	-0.913***	-0.037	-0.139	1.861	-2.929***	0.134	-0.067
	(0.226)	(0.296)	(0.210)	(0.226)	(1.129)	(0.611)	(0.491)	(0.708)
Inflation	0.825	-1.114	1.069**	1.244**	1.881	-0.801	1.071	0.961
	(0.936)	(0.784)	(0.486)	(0.603)	(1.833)	(1.084)	(0.710)	(1.214)
Employment to Population Ratio	1.261**	-1.538**	-0.157	-1.390***	1.878	1.009	0.135	-2.132*
	(0.564)	(0.691)	(0.438)	(0.522)	(3.142)	(2.008)	(0.634)	(1.113)
Observations	59	59	59	59	59	59	59	59
Number of Countries	22	22	22	22	22	22	22	22
R2 (within)	0.282	0.612	0.407	0.346	0.792	0.994	0.989	0.973
Year Dummies	YES	YES	YES	YES	YES		YES	YES
Region Dummies	YES	YES	YES	YES		--	--	--

*Note: The R2 reported refer to variation within countries. Regression are weighted by each country's working population, the inverse of the number of surveys and the inverse of the variance. Standard errors in parentheses * p<0.10, ** p<0.05, ***p<0.01*

Table A7: Earnings Differentials for various workers by country, year and region of the world

Latin America & Caribbean

Country	Year	Self-employed vs. employees	Non-professional own-account vs. employees	Employers and professionals vs. employees	Formal vs. self-employed employees	informal vs. self-employed employees	Formal vs. informal employees
Bolivia	1997	-0.03	--	--	0.17	-0.04	0.21
Bolivia	1999	-0.47	--	--	0.57	0.41	0.16
Bolivia	2000	-0.19	0.23	0.24	0.33	0.08	0.25
Bolivia	2001	-0.51	--	--	0.56	0.47	0.09
Bolivia	2002	-0.51	--	--	0.6	0.44	0.16
Bolivia	2003	-0.25	--	--	0.37	0.17	0.2
Bolivia	2005	0.01	0.03	0.4	0.15	-0.15	0.3
Bolivia	2007	-0.17	0.24	0.33	0.32	0	0.32
Bolivia	2008	-0.3	--	--	0.43	0.16	0.27
Brazil	1981	0.03	0.01	0.65	0.12	-0.33	0.45
Brazil	1982	0.07	-0.04	0.5	0.08	-0.39	0.47
Brazil	1983	0.09	-0.06	0.58	0.07	-0.38	0.45
Brazil	1984	0.12	-0.08	0.59	0.06	-0.44	0.5
Brazil	1985	0.09	-0.06	0.55	0.08	-0.39	0.48
Brazil	1986	0.26	--	--	-0.16	-0.45	0.28
Brazil	1988	0.04	-0.03	0.5	0.12	-0.4	0.53
Brazil	1989	0.21	-0.16	0.67	-0.08	-0.5	0.42
Brazil	1990	0.21	-0.16	0.63	-0.08	-0.47	0.39
Brazil	1993	0.1	-0.07	0.53	0.06	-0.43	0.49
Brazil	1995	0.16	-0.13	0.63	-0.07	-0.36	0.3
Brazil	1996	0.16	-0.13	0.61	-0.07	-0.34	0.27
Brazil	1997	0.1	--	--	0	-0.29	0.29
Brazil	1998	0.06	--	--	0.05	-0.27	0.32
Brazil	1999	0.06	--	--	0.05	-0.27	0.32
Brazil	2001	0.03	--	--	0.08	-0.25	0.33
Brazil	2002	0.02	0.03	0.55	0.08	-0.24	0.33
Brazil	2003	-0.02	--	--	0.14	-0.22	0.35
Brazil	2004	0	0.05	0.54	0.12	-0.23	0.35
Brazil	2005	-0.01	0.07	0.52	0.12	-0.22	0.34
Brazil	2006	0	0.06	0.51	0.1	-0.23	0.33
Brazil	2007	0.01	0.04	0.66	0.1	-0.25	0.35
Brazil	2008	0	--	--	0.1	-0.25	0.35
Brazil	2009	-0.03	0.08	0.62	0.14	-0.23	0.36
Chile	1990	0.44	-0.44	0.05	-0.42	-0.6	0.18
Chile	1992	0.57	--	--	-0.55	-0.8	0.25
Chile	1994	0.41	--	--	-0.38	-0.56	0.18
Chile	1996	0.67	-0.58	1.11	-0.64	-0.88	0.24
Chile	1998	0.69	--	--	-0.66	-0.88	0.21
Chile	2000	0.54	-0.43	0.9	-0.5	-0.81	0.31
Chile	2003	0.63	-0.53	0.93	-0.6	-0.83	0.23
Chile	2006	0.58	-0.51	0.88	-0.55	-0.81	0.26
Chile	2009	0.53	-0.48	1.03	-0.51	-0.71	0.21
Colombia	2001	-0.4	--	--	--	--	--
Colombia	2002	-0.39	--	--	--	--	--
Colombia	2003	-0.37	--	--	--	--	--
Colombia	2004	-0.39	--	--	--	--	--
Colombia	2005	-0.38	--	--	--	--	--
Colombia	2006	-0.32	--	--	0.51	0.07	0.43
Colombia	2007	-0.3	--	--	0.46	0.07	0.39
Colombia	2008	-0.31	--	--	0.45	0.09	0.36
Colombia	2009	-0.36	--	--	0.5	0.16	0.34
Colombia	2010	-0.37	--	--	0.51	0.17	0.34
Costa Rica	1990	-0.04	--	--	0.14	-0.18	0.32
Costa Rica	1991	-0.08	--	--	--	--	--
Costa Rica	1992	-0.08	--	--	0.17	-0.13	0.3
Costa Rica	1993	0.02	--	--	0.06	-0.23	0.29
Costa Rica	1994	0.03	--	--	0.05	-0.2	0.25
Costa Rica	1995	0.05	--	--	0.03	-0.25	0.28
Costa Rica	1996	-0.11	--	--	0.2	-0.09	0.29
Costa Rica	1997	0.04	--	--	0.06	-0.26	0.31
Costa Rica	1998	0.05	--	--	0.04	-0.23	0.27
Costa Rica	1999	0.01	--	--	0.08	-0.21	0.29
Costa Rica	2000	0	--	--	0.06	-0.13	0.19
Costa Rica	2001	0.03	--	--	0.03	-0.19	0.22
Costa Rica	2002	0.01	--	--	0.07	-0.2	0.27
Costa Rica	2003	0.04	--	--	0.04	-0.21	0.25
Costa Rica	2004	-0.01	--	--	0.07	-0.17	0.24
Costa Rica	2005	0.01	--	--	0.08	-0.2	0.28
Costa Rica	2006	0.03	--	--	0.05	-0.21	0.25
Costa Rica	2007	0.11	--	--	-0.04	-0.28	0.24
Costa Rica	2008	0.06	--	--	0	-0.24	0.24
Costa Rica	2009	0.04	--	--	0.03	-0.22	0.25
Dominican R.	1996	0.36	--	--	--	--	--
Dominican R.	1997	0.15	--	--	--	--	--
Dominican R.	2000	0.31	--	--	--	--	--
Dominican R.	2001	0.26	--	--	--	--	--
Dominican R.	2002	0.23	--	--	-0.06	-0.2	0.14
Dominican R.	2003	0.24	--	--	-0.11	-0.22	0.11
Dominican R.	2004	0.34	--	--	-0.16	-0.31	0.15
Dominican R.	2005	0.27	--	--	-0.15	-0.3	0.16
Dominican R.	2006	0.29	--	--	-0.17	-0.36	0.19
Dominican R.	2007	0.25	--	--	-0.17	-0.3	0.14
Dominican R.	2008	0.33	--	--	-0.23	-0.38	0.15
Dominican R.	2009	0.31	--	--	-0.21	-0.37	0.16
Dominican R.	2010	0.26	--	--	-0.17	-0.35	0.18
Ecuador	1994	-0.09	--	--	0.18	0.02	0.17
Ecuador	1995	-0.12	--	--	0.24	-0.01	0.26
Ecuador	1998	-0.22	--	--	0.37	0.12	0.25
Ecuador	1999	-0.3	--	--	0.51	0.11	0.39
Ecuador	2000	0.14	--	--	-0.06	-0.34	0.29
Ecuador	2003	-0.06	--	--	0.19	-0.05	0.24
Ecuador	2004	-0.04	--	--	0.14	-0.05	0.19
Ecuador	2005	-0.07	--	--	0.21	-0.04	0.25
Ecuador	2006	-0.03	--	--	0.15	-0.07	0.22
Ecuador	2007	-0.11	--	--	0.13	0.07	0.06
Ecuador	2008	-0.15	--	--	0.17	0.09	0.08
Ecuador	2009	-0.26	--	--	0.31	0.12	0.19
Ecuador	2010	-0.29	--	--	0.34	0.13	0.21
El Salvador	1991	-0.13	--	--	0.34	0.01	0.33
El Salvador	1995	0.07	--	--	0.19	-0.27	0.46
El Salvador	1996	-0.14	--	--	0.29	0.04	0.25
El Salvador	1998	-0.07	--	--	0.26	-0.14	0.4
El Salvador	1999	0.02	--	--	0.2	-0.25	0.46
El Salvador	2000	0.05	--	--	0.16	-0.28	0.44
El Salvador	2001	0.1	--	--	0.08	-0.28	0.37
El Salvador	2002	0.06	--	--	0.14	-0.27	0.41
El Salvador	2003	0.15	--	--	0.01	-0.29	0.3
El Salvador	2004	0.18	--	--	-0.01	-0.33	0.32
El Salvador	2005	-0.01	--	--	0.18	-0.17	0.35
El Salvador	2006	-0.06	--	--	0.13	0	0.13
El Salvador	2007	0.09	--	--	0.08	-0.24	0.31
El Salvador	2008	0.29	--	--	-0.19	-0.49	0.3
El Salvador	2009	-0.01	--	--	0.19	-0.19	0.38
Guatemala	2000	-0.53	--	--	0.72	0.4	0.32
Guatemala	2002	-0.25	--	--	0.37	0.15	0.22
Guatemala	2003	-0.3	--	--	0.49	0.14	0.35
Guatemala	2004	-0.46	--	--	0.59	0.36	0.23
Guatemala	2006	-0.2	--	--	0.29	0.13	0.16
Haiti	2001	-0.24	--	--	0.86	0.21	0.65
Honduras	1991	-0.14	--	--	--	--	--
Honduras	1992	-0.12	--	--	--	--	--
Honduras	1993	0.02	--	--	--	--	--
Honduras	1994	0.08	--	--	--	--	--
Honduras	1995	-0.06	--	--	--	--	--
Honduras	1996	-0.07	--	--	--	--	--
Honduras	1997	-0.02	--	--	--	--	--
Honduras	1998	0.02	--	--	--	--	--
Honduras	1999	-0.09	--	--	--	--	--
Honduras	2001	-0.22	--	--	--	--	--
Honduras	2002	-0.16	--	--	--	--	--
Honduras	2003	0.01	--	--	--	--	--
Honduras	2004	-0.31	--	--	--	--	--
Honduras	2005	-0.39	--	--	--	--	--
Honduras	2006	-0.38	--	--	0.51	0.26	0.25
Honduras	2007	-0.33	--	--	0.48	0.18	0.3
Honduras	2008	-0.13	--	--	0.33	-0.07	0.4
Honduras	2009	-0.06	--	--	0.27	-0.18	0.46
Mexico	1989	-0.02	--	--	0.06	-0.09	0.15
Mexico	1992	-0.08	--	--	--	--	--
Mexico	1994	-0.1	--	--	--	--	--
Mexico	1996	-0.08	0.19	0.49	0.21	-0.11	0.32
Mexico	1998	-0.01	0.09	0.5	0.15	-0.19	0.34
Mexico	2000	0.04	0.07	0.57	0.12	-0.28	0.4
Mexico	2002	-0.06	0.13	0.49	0.16	-0.09	0.25
Mexico	2004	-0.4	0.44	0.15	0.52	0.17	0.34
Mexico	2005	-0.39	0.45	0.18	0.5	0.18	0.32
Mexico	2006	-0.48	0.53	0.1	0.6	0.27	0.33
Mexico	2008	-0.24	--	--	0.34	0.12	0.22
Mexico	2010	-0.34	--	--	0.43	0.23	0.2
Nicaragua	1993	0.04	--	--	0.04	-0.09	0.13
Nicaragua	1998	-0.1	--	--	0.22	0.03	0.2
Nicaragua	2001	-0.02	--	--	0.11	-0.03	0.14
Nicaragua	2005	-0.17	--	--	0.27	0.12	0.15
Panama	1989	-0.27	--	--	--	--	--
Panama	1991	-0.29	--	--	--	--	--
Panama	1995	-0.09	--	--	--	--	--
Panama	1997	-0.18	--	--	--	--	--
Panama	1998	-0.07	--	--	--	--	--
Panama	2001	0.18	--	--	-0.24	-0.11	-0.13
Panama	2002	-0.31	--	--	0.35	0.26	0.09
Panama	2003	-0.31	--	--	0.34	0.28	0.05
Panama	2004	-0.3	--	--	0.34	0.26	0.08
Panama	2005	-0.3	--	--	0.33	0.27	0.06
Panama	2006	-0.28	--	--	0.34	0.22	0.11
Panama	2009	0.3	--	--	-0.38	-0.21	-0.16
Panama	2010	-0.2	--	--	0.23	0.16	0.07
Paraguay	1990	0.18	--	--	--	--	--
Paraguay	1995	-0.09	--	--	0.22	0.02	0.2
Paraguay	1997	-0.19	--	--	0.3	0.13	0.17
Paraguay	1999	-0.21	--	--	0.33	0.14	0.19
Paraguay	2001	-0.29	--	--	0.47	0.2	0.28
Paraguay	2002	-0.51	--	--	0.76	0.42	0.34
Paraguay	2003	-0.28	--	--	0.52	0.18	0.34
Paraguay	2004	-0.19	--	--	0.42	0.12	0.3
Paraguay	2005	-0.22	--	--	0.44	0.13	0.32
Paraguay	2006	-0.25	--	--	0.52	0.17	0.35
Paraguay	2007	-0.23	--	--	0.4	0.12	0.28
Paraguay	2008	-0.24	--	--	0.41	0.11	0.31
Paraguay	2009	-0.27	--	--	0.44	0.14	0.3
Paraguay	2010	-0.18	--	--	0.19	0.12	0.07
Peru	1997	-0.26	0.29	0.18	--	--	--
Peru	1998	-0.27	0.31	0.24	--	--	--
Peru	1999	-0.27	0.29	0.1	0.44	0.22	0.22
Peru	2000	-0.27	0.28	0.12	0.46	0.23	0.23
Peru	2001	-0.34	0.37	0.18	0.48	0.28	0.2
Peru	2002	-0.28	0.3	0.19	0.44	0.2	0.24
Peru	2003	-0.24	0.28	0.24	0.44	0.15	0.29
Peru	2004	-0.25	0.3	0.25	0.46	0.14	0.32
Peru	2005	-0.21	0.25	0.35	0.4	0.06	0.34
Peru	2006	-0.2	0.24	0.33	0.38	0.05	0.33
Peru	2007	-0.18	0.23	0.34	0.33	0.04	0.29
Peru	2008	-0.15	0.19	0.35	0.27	0.03	0.24
Peru	2009	-0.15	0.2	0.35	0.27	0.03	0.24
Peru	2010	-0.12	0.17	0.4	0.23	0	0.23
Puerto Rico	1970	0.27	--	--	--	--	--
Puerto Rico	1980	-0.12	--	--	--	--	--
Puerto Rico	1990	-0.1	--	--	--	--	--
Puerto Rico	2000	0.01	--	--	--	--	--
Puerto Rico	2005	0.1	--	--	--	--	--
Trinidad & Tobago	1992	-0.59	0.67	-0.01	--	--	--
Uruguay	2006	-0.05	--	--	0.1	-0.17	0.27
Uruguay	2007	-0.06	--	--	0.11	-0.19	0.3
Uruguay	2008	-0.01	--	--	0.05	-0.21	0.26
Uruguay	2009	-0.09	--	--	0.14	-0.24	0.38
Uruguay	2010	-0.05	--	--	0.09	-0.19	0.28
Venezuela	1989	0.06	0	0.45	--	--	--
Venezuela	1992	0.28	-0.19	0.5	--	--	--
Venezuela	1995	0.05	-0.02	0.38	-0.05	-0.31	0.27
Venezuela	1998	0.06	-0.04	0.4	-0.06	-0.55	0.49
Venezuela	1999	0.04	--	--	0.04	-0.18	0.22
Venezuela	2000	-0.01	--	--	0.09	-0.16	0.25
Venezuela	2001	-0.04	--	--	0.13	-0.12	0.25
Venezuela	2002	-0.08	--	--	0.2	-0.09	0.3
Venezuela	2003	-0.1	--	--	0.23	-0.07	0.29
Venezuela	2004	-0.18	--	--	--	--	--
Venezuela	2005	-0.12	--	--	--	--	--
Venezuela	2006	-0.12	--	--	--	--	--

Table A7 (cont.):

Country	Year	Self-employed vs. employees	Non-professional own-account vs. employees	Employers and professionals vs. employees	Formal vs. self-employed employees	informal vs. self-employed employees	Formal vs. informal employees	Country	Year	Self-employed vs. employees	Non-professional own-account vs. employees	Employers and professionals vs. employees	Formal vs. self-employed employees	informal vs. self-employed employees	Formal vs. informal employees
Europe & Central Asia (Developing)								**Europe & Central Asia (High Income) (Cont.)**							
Albania	2005	-0.21	--	--	0.17	0.25	-0.08	Ireland	2005	0	0.05	0.11	--	--	--
Azerbaijan	1995	0.51	--	--	-0.4	-0.53	0.13	Ireland	2006	0.02	0.13	0.31	--	--	--
Azerbaijan	2002	0.24	--	--	--	--	--	Ireland	2007	-0.21	0.32	0	--	--	--
Belarus	1998	0.11	--	--	--	--	--	Ireland	2008	-0.23	0.37	-0.01	--	--	--
Belarus	2005	-0.31	--	--	0.02	0.34	-0.33	Ireland	2009	-0.18	0.24	0	--	--	--
Bosnia & Herzegovina	2001	0.17	-0.05	0.3	-0.09	-0.38	0.29	Italy	2004	-0.14	0.22	-0.02	--	--	--
Bulgaria	2007	0.41	-0.37	0.48	--	--	--	Italy	2005	-0.13	0.23	0.02	--	--	--
Bulgaria	2008	0.38	-0.32	0.49	--	--	--	Italy	2006	-0.16	0.26	0	--	--	--
Croatia	2004	-0.4	0.84	0.04	0.42	0.24	0.18	Italy	2007	-0.13	0.22	0	--	--	--
Estonia	2004	-1.94	2.01	-1.62	--	--	--	Italy	2008	-0.11	0.23	0.07	--	--	--
Estonia	2005	-1.64	1.63	-1.64	--	--	--	Luxembourg	2004	-0.97	0.95	-0.98	--	--	--
Estonia	2006	-2.11	2.15	-1.7	--	--	--	Luxembourg	2005	-0.91	1.07	-0.71	--	--	--
Estonia	2007	-1.43	1.41	-1.15	--	--	--	Luxembourg	2006	-0.72	0.91	-0.48	--	--	--
Estonia	2008	-1.73	1.76	-1.55	--	--	--	Luxembourg	2007	-0.71	0.84	-0.53	--	--	--
Kosovo	2003	0.17	--	--	--	--	--	Luxembourg	2008	-0.64	0.7	-0.55	--	--	--
Kyrgyz R.	1997	0.09	--	--	--	--	--	Montenegro	2005	-0.12	--	--	--	--	--
Latvia	2005	-0.13	0.23	0.18	--	--	--	Montenegro	2006	-0.01	--	--	--	--	--
Latvia	2006	-0.18	0.25	0.15	--	--	--	Portugal	2004	-0.68	0.79	-0.53	--	--	--
Latvia	2007	-0.23	0.31	0.25	--	--	--	Portugal	2005	-0.49	0.61	-0.25	--	--	--
Latvia	2008	-0.58	0.57	-0.36	--	--	--	Portugal	2006	-0.39	0.52	-0.19	--	--	--
Lithuania	2005	-0.25	0.26	0.02	--	--	--	Portugal	2007	-0.33	0.46	-0.05	--	--	--
Lithuania	2006	-0.08	0.13	0.37	--	--	--	Portugal	2008	-0.57	0.75	-0.25	--	--	--
Lithuania	2007	-0.19	0.21	0.19	--	--	--	Spain	2004	-0.36	0.46	-0.18	--	--	--
Lithuania	2008	0	0.03	0.17	--	--	--	Spain	2005	-0.43	0.52	-0.28	--	--	--
Macedonia	2003	-0.14	0.21	-0.02	0.13	0.26	-0.13	Spain	2006	-0.35	0.45	-0.15	--	--	--
Macedonia	2004	-0.19	0.27	-0.01	0.2	0.17	0.03	Spain	2007	-0.38	0.48	-0.2	--	--	--
Macedonia	2005	-0.1	0.19	0.04	0.11	-0.09	0.2	Spain	2008	-0.39	0.47	-0.26	--	--	--
Moldova	2002	-0.4	0.42	-0.17	0.23	0.44	-0.21	Spain	2009	-0.36	0.46	-0.22	--	--	--
Moldova	2005	-0.58	0.57	-0.51	--	--	--	Sweden	2004	-0.97	1.1	-0.8	--	--	--
Poland	2005	-0.56	0.58	-0.15	--	--	--	Sweden	2005	-1	1.05	-0.94	--	--	--
Poland	2006	-0.53	0.6	-0.01	--	--	--	Sweden	2006	-0.93	0.93	-0.91	--	--	--
Poland	2007	-0.47	0.5	-0.04	--	--	--	Sweden	2007	-1.04	1.06	-0.97	--	--	--
Poland	2008	-0.52	0.57	-0.02	--	--	--	Sweden	2008	-1.24	1.29	-1.03	--	--	--
Romania	2007	-0.24	0.28	0.29	--	--	--	Sweden	2009	-1.13	1.14	-1.01	--	--	--
Romania	2008	-0.16	0.16	0.03	--	--	--	United Kingdom	2005	-0.28	0.32	0.14	--	--	--
Slovak R.	2003	-0.02	0.07	0.09	0.02	0.07	-0.05	United Kingdom	2006	-0.33	0.36	-0.03	--	--	--
Slovenia	2005	-0.74	--	--	--	--	--	**Other**							
Slovenia	2006	-0.7	--	--	--	--	--	Bangladesh	1999	0.16	--	--	--	--	--
Slovenia	2007	-0.86	--	--	--	--	--	Chad	2002	0.42	--	--	--	--	--
Slovenia	2008	-0.68	--	--	--	--	--	China	2002	-0.28	0.25	-0.02	--	--	--
Tajikistan	1999	0.75	-0.73	0.93	--	--	--	Comoros	2004	-0.24	0.25	-0.07	0.36	0.17	0.19
Tajikistan	2003	0.7	-0.7	0.52	-0.72	-0.69	-0.02	Djibouti	1996	-0.08	0.07	-0.15	--	--	--
Turkmenistan	1998	0.36	--	--	--	--	--	Djibouti	2002	-0.4	--	--	0.19	0.43	-0.24
Europe & Central Asia (High Income)								Gabon	2005	-0.46	--	--	--	--	--
Austria	2004	-0.--	0.92	-1.03	--	--	--	Gambia	2010	-0.33	--	--	0.78	0.05	0.73
Austria	2005	-0.42	0.44	-0.4	--	--	--	Guinea	1994	0.31	--	--	--	--	--
Austria	2006	-0.27	0.48	-0.11	--	--	--	Madagascar	2010	0.19	--	--	0.21	-0.34	0.54
Austria	2007	-0.39	0.48	-0.23	--	--	--	Mali	1994	-0.76	0.67	-0.3	0.95	0.56	0.39
Austria	2008	-0.5	0.59	-0.2	--	--	--	Mauritius	1999	-0.16	0.2	0.46	--	--	--
Belgium	2004	-0.38	0.4	-0.31	--	--	--	Mauritius	2008	-0.26	--	--	--	--	--
Belgium	2005	-0.4	0.51	-0.18	--	--	--	Mauritius	2009	-0.26	--	--	--	--	--
Belgium	2006	-0.84	0.94	-0.7	--	--	--	Mauritius	2010	-0.32	--	--	--	--	--
Belgium	2007	-0.75	0.75	-0.81	--	--	--	Mauritius	2011	-0.46	--	--	--	--	--
Belgium	2008	-0.49	0.6	-0.2	--	--	--	Namibia	1993	0.09	0	0.37	--	--	--
Belgium	2009	-0.44	0.54	-0.31	--	--	--	Pakistan	2001	0.3	-0.25	0.5	--	--	--
France	2005	-0.26	0.42	-0.02	--	--	--	Pakistan	2004	0.32	-0.29	0.63	--	--	--
France	2006	-0.19	0.35	0.06	--	--	--	Palau	2000	-0.27	--	--	--	--	--
France	2007	-0.05	0.11	0.05	--	--	--	Senegal	2011	-0.29	--	--	0.63	0.04	0.59
France	2008	-0.31	0.36	-0.23	--	--	--	South Africa	2000	-0.32	0.36	0.43	0.52	-0.15	0.67
Germany	2005	-0.41	0.52	-0.1	--	--	--	Timor-Leste	2001	-1.81	1.73	-1.14	--	--	--
Greece	2004	0.01	0.1	0.16	--	--	--	Uganda	1992	0.44	--	--	--	--	--
Greece	2005	0.05	0.13	0.21	--	--	--	United States	1990	-0.26	0.23	0.1	--	--	--
Greece	2006	0	0.13	0.21	--	--	--	United States	2000	-0.19	0.18	0.13	--	--	--
Greece	2007	-0.07	0.2	0.16	--	--	--	United States	2005	-0.28	0.25	0.11	--	--	--
Greece	2008	-0.12	0.27	0.1	--	--	--	Yemen	1998	0.38	-0.39	0.71	--	--	--
Ireland	2004	-0.1	0.24	0.23	--	--	--	Zambia	1998	-0.18	--	--	--	--	--

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