

Gindling, T. H.; Mossaad, Nadwa; Newhouse, David

Working Paper

Earnings Premiums and Penalties for Self-Employment and Informal Employees around the World

IZA Discussion Papers, No. 9723

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Gindling, T. H.; Mossaad, Nadwa; Newhouse, David (2016) : Earnings Premiums and Penalties for Self-Employment and Informal Employees around the World, IZA Discussion Papers, No. 9723, Institute for the Study of Labor (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/141482>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

IZA DP No. 9723

Earnings Premiums and Penalties for Self-Employment and Informal Employees around the World

T. H. Gindling
Nadwa Mossaad
David Newhouse

February 2016

Earnings Premiums and Penalties for Self-Employment and Informal Employees around the World

T. H. Gindling

UMBC and IZA

Nadwa Mossaad

UMBC

David Newhouse

World Bank and IZA

Discussion Paper No. 9723

February 2016

IZA

P.O. Box 7240

53072 Bonn

Germany

Phone: +49-228-3894-0

Fax: +49-228-3894-180

E-mail: iza@iza.org

Any opinions expressed here are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but the institute itself takes no institutional policy positions. The IZA research network is committed to the IZA Guiding Principles of Research Integrity.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post Foundation. The center is associated with the University of Bonn and offers a stimulating research environment through its international network, workshops and conferences, data service, project support, research visits and doctoral program. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

ABSTRACT

Earnings Premiums and Penalties for Self-Employment and Informal Employees around the World

This paper examines the earnings premiums associated with different types of employment in 73 countries. Workers are divided into four categories: Non-professional own-account workers, employers and own-account professionals, informal wage employees, and formal wage employees. Approximately half of the workers in low income countries are nonprofessional own-account workers and the majority of the rest are informal employees. Fewer than 10% are formal employees, and only 2% of workers in low income countries are employers or own-account professionals. As per capita GDP increases, there are large net shifts from non-professional own account work into formal wage employment. Across all regions and income levels, non-professional own-account workers and informal wage employees face an earnings penalty compared to formal wage employees. But in low income countries, this earnings penalty is small, and non-professional own-account workers earn a positive premium relative to all wage employees. Earnings penalties for non-professional own account workers tend to increase with GDP and are largest for female workers in high income countries. Men earn greater premiums than women for being employers or own-account professionals. These results are consistent with compensating wage differentials and firm quasi-rents playing important roles in explaining cross-country variation in earnings penalties, and raise questions about the extent to which the unskilled self-employed are rationed out of formal wage work in low-income countries.

JEL Classification: 017, J31, J46

Keywords: self-employment, informal sector, earnings differentials, development

Corresponding author:

T. H. Gindling
University of Maryland Baltimore County
1000 Hilltop Circle
Baltimore, MD 21250
USA
E-mail: gindling@umbc.edu

I. Introduction

A defining characteristic of labor markets in developing countries is the high proportion of workers who are self-employed or work in the informal sector. Despite a vast literature, there is still little consensus on the extent to which self-employed and informal sector workers are in those sectors because they are excluded from formal sector employment or because, based on pecuniary or non-pecuniary factors, they choose to be in those sectors. Earnings penalties for self-employment and informal employment are often interpreted as evidence of exclusion from higher-paid formal employment. Many studies have examined earnings differences between informal and formal employment and self-employment and wage employment for individual countries or for some regions of the world such as Latin America. However, there is very little comparative literature on how and why these earnings gaps differ across countries around the world.

This paper contributes to the ongoing discussion on self-employment, informality, labor market segmentation and earnings differentials. It uses data from 73 countries and multiple years from a comprehensive set of harmonized household surveys, the World Bank International Income Distribution Database (I2D2), to estimate the proportion and wage differentials of self-employed, informal, formal and salaried workers from around the world. The first contribution is to provide new comprehensive estimates of the proportion of workers who are non-professional own-account workers (interpreted broadly as a measure of unskilled self-employment), employers and own-account professionals (a measure of skilled self-employment), informal sector employees and formal sector employees. Our second major contribution is an estimate of the wage penalties or premiums for each of these groups in countries around the world. The estimated premiums/penalties for each country/year are from Ordinary Least Squares estimates of wage equations and control for worker characteristics such as age, education, gender, as well as industry of work.

This study address the following eight questions: What proportion of workers fall into the following categories: non-professional own-account workers, employers and own-account professionals (referred to henceforth as employers and professionals), informal employees and formal employees? How does the proportion of workers in each category change as countries develop? How does the proportion of workers in each category differ across countries and regions? Do workers appear to earn an earnings premium or pay an earnings penalty for self-employment and informal sector employment? Is there a difference between the self-employed who are employers and professionals vs. non-professional own-account workers? How does the estimated self-employment earnings penalty or premium change as per capita GDP increases? How do estimates of this premium or penalty vary across countries and regions? And finally, how do these penalties or premiums differ between types of workers within countries?

We find that approximately half of the workers in low income countries are non-professional own-account workers. Fewer than 10% are formal employees, and only 2% of workers in low income countries are employers or professionals. As per capita GDP

increases, the proportion of workers who are formal employees, employers and professional own-account workers increases, while the proportion of workers who are non-professional own-account workers falls.

Across all regions and income levels, non-professional own-account workers and informal sector workers face an earnings penalty compared to formal employees. Both the non-professional own-account and informal earnings penalties are small (and often insignificant) in low income countries. Furthermore, in a larger sample of 20 low-income countries, self-employed workers earn a statistically significant wage premium compared to the average (informal plus formal) wage employees. The earnings penalties faced by non-professional own-account and informal employees tend to increase as a country's GDP increases. The earnings penalties for informal employees are largest in middle income countries, while the earnings penalties for non-professional own-account workers are largest in high income countries.

On average across all countries in the sample, employers and professionals workers earn a premium compared to employees, although there are important differences across countries and between men and women. Gender differences are particularly strong when examining earnings premium for employers and professionals. Overall, male employers and professionals earn an 18 percent premium compared with all employees, while women face a penalty of roughly the same magnitude. In terms of regional differences, earnings premiums for employers and professionals are largest for men in middle income Latin American countries. On the other hand, in no region of the world do women employers and professionals earn a statistically significant premium compared to employees. In addition, neither male nor female employers and professionals earn premiums in either high income or developing countries in Europe and Central Asia. Conditions appear to be favorable for employers and professionals in Latin America, as there are more of them and they earn greater premiums versus formal employees. On the other hand, conditions seem to be less favorable for the same group in Europe and Central Asia, where there are fewer of them and they do not earn premiums vs. formal employees. Variations in regulations and laws in the two regions may explain some of these regional differences.

The rest of the paper is organized as follows. Section II summarizes the theoretical literature on wage differentials and labor market segmentation as well as the latest empirical findings across countries. Section III briefly describes the data while section IV describes the methodology used to estimate wage differentials for self-employed and informal workers across various groups. In sections V, we present estimates of the proportion of self-employed, informal, formal and salaried workers from around the world. In section VI, the main section of the paper, we examine the wage differentials for self-employed, informal, formal and salaried workers by country income level and regions of the world. In particular, we empirically test the hypothesis that the informal and self-employment sectors are heterogeneous by dividing self-employment into professional and non-professional and by further examining the two group by various education level, experience (measured by age) and examine gender and urban/rural differences. Section VII concludes.

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 self-employed, employees in small firms or employees in large firms. In a competitive labor market, this will be true even though larger firms may 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 in different firms and the self-employed.

What are departures from the competitive labor market model that could lead to an observed earnings penalty or premium for self-employed workers vs. employees or for employees in different types of firms? Most explanations of persistent earnings differentials between the self-employed and employees are based on barriers to movement in response to a systematic earnings difference between sectors. A traditional view of labor markets in developing economies is that they are segmented or dualistic, where formal sector jobs are restricted by minimum wage, tax laws and labor market regulations that limit 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 and make it difficult for non-formal sector workers to compete for formal sector jobs. That is, some workers are “excluded” from the formal sector by labor market regulations or efficiency wages. This view argues that workers unable to find adequate employment opportunities in the formal sector are forced to take employment as self-employed workers or employees in the low paid, marginal informal sector firms. In this view, both self-employed workers and informal employees are “excluded” from the formal sector. Limiting competition from these “excluded” workers keeps the wages of formal sector workers above the market-clearing wage in the excluded sectors, resulting in wage penalties for the excluded workers. The dualistic 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;).

One distinguishing feature of labor market segmentation is earnings differentials; earnings gaps between informal sector workers (both self-employed and employees) and equally-qualified formal wage and salaried employees 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 and informal wage employment are 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 and informal employees should fall, and the wage differential

between the self-employed and informal employees vs. formal employees should eventually disappear.

An alternative explanation for why there might be a self-employment or informal employee 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 and informal sector earnings penalties, the compensating differential explanation suggests that the earnings penalty will be particularly large in more developed countries and among better educated workers, where the opportunity cost of time is higher and therefore the flexibility of self-employment will be valued more.

A third possibility is that the standard neo-classical labor market model is correct, but that empirically the compensation of self-employed workers, informal employees or formal employees are not measured properly. Absolute estimates of wage gaps are inherently imprecise due to the difficulty of measuring self-reported profits and of valuing non-wage benefits. For example, self-employed workers might systematically under-report earnings, which could lead to an observed self-employed penalty even when none exists (Hurst, Li and 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, formal sector 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, while self-employed workers and informal sector workers, who do not receive these non-wage benefits, may receive higher paid wages as compensating differentials. In the competitive labor market described above, self-employment earnings and informal sector employees would include compensation for these foregone non-wage benefits (Meghir et al. 2012), which would lead the estimates to overestimate self-employment and informal sector earnings (and may even lead to a measured premium for self-employment and informality).

When examining earnings premiums, it is useful to distinguish between low-skilled self-employment, more entrepreneurial self-employment, and informal wage employees. While many have identified self-employment in developing countries with the informal sector, others identify self-employment with entrepreneurship (Bennett and Estrin, 2007; DeSoto, 1989). Higher skilled, more entrepreneurial self-employed may earn a wage premium compared to formal employment. This could arise if the most motivated and productive workers became entrepreneurs, or if there are compensating earnings differentials for entrepreneurs that compensate for increased risk and volatility, or if wage employees' compensation is underestimated in the data.

High adjustment or entry costs into entrepreneurship could also contribute to an observed self-employment premium because the future earnings of entrepreneurs 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 entrepreneurs 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 of self-employment and entrepreneurship 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. 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 formal sector wage employees may earn more than similar self-employed workers is that formal sector employees 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 of 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, Mortenson, 2003), they posit that the wage formal sector 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 or the informal sector is an approximation of formal sector wage workers' opportunity cost, the self-employment and informal employment earnings penalties will be determined by the bargaining power of workers and the size of the quasi-rent. That is, the self-employment and informal sector earnings penalty will increase if the relative bargaining power of formal sector employees increases or if firms' quasi-rents increase.

The bargaining power of workers, and therefore self-employment and informal sector wage penalties, could be increased by labor market institutions such as unions, or the presence

¹ The costs of searching for wage employment include information costs. A lack of information may help to create a self-employment wage penalty. For example, self-employed farmers in rural areas in developing countries may not be aware that they could earn more in urban areas (Bryan, Chaudhuri, and Mobarak, 2012, Jensen 2012).

² See, among others, Dickens and Katz (1987), Krueger and Summers (1988), and Mortenson (2003)

of efficiency wages. Van Reenan (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 formal sector firms share quasi-rents with workers, this would contribute to a self-employment and informal sector 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, lack of credit, reliable inputs, and export markets keep scale and productivity low for formal sector products (see Lewis, 1954 and La Porta and Schleifer, 2014). For this reason, formal sector firms in low income countries will be less productive. Since firms in low income countries tend to be less productive than those in more developed countries, quasi-rents and therefore self-employment penalties would likely be smaller for workers in low income countries. As demand increases for domestic products and credit, input and export markets expand, the scale of production and productivity increase in the formal sector. 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 will lead to increased earnings for formal sector employees relative to the self-employed and informal sector workers.

B. Empirical

This paper contributes to the literature on the estimation of the magnitudes of earnings differentials between self-employed and informal sector employees relative to formal sector and salary employees in developing economies. Many of these studies are based on data from Latin America and the Caribbean and most focus on middle income countries. Almost universally, these studies find 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; Launov, 2006; and Günther & Launov, 2012) . 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 result in Vietnam. Using quantile regressions, Nguyen et al. (2013) further find that both informal

employees and the self-employed are likely to face an earnings penalty at the bottom of the earnings distribution and an earnings premium at the top. In Peru, 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. 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.

The studies we have reviewed so far are from developing economies. Astebro and Chen (2014) review estimates from OECD and other developed economies. They conclude that “these studies confirm that the estimated average returns to self-employment are negative, or at least not positive.” Astebro and Chen (2014) show that, at least for the United States, the self-employment penalty may exist because entrepreneurs systematically underrepresent their earnings. Most studies indicate that the distribution of earnings among the self-employed (entrepreneurs) is more skewed than that of employees, with a somewhat thicker and longer tail at the upper end of earnings. This suggests that there may be a self-employment wage penalty at the bottom of the distribution but a premium at the top. Sorgner, Fritsch and Kritikos (2014) show that this is true in Germany. This study further distinguishes the self-employed in Germany between those who have employees and those without employees, and find that, on average, there is a wage premium for those with employees and a wage penalty for those without.

We know of very few studies that use comparable data and techniques to compare informal or self-employment earnings differentials across a large set of countries from different regions of the world and for a wide range of income groups. Gasparini and Tornarolli (2007) present estimates for 19 Latin American countries and conclude that formal salaried workers earn substantially more than informal salaried workers but that there are no statistically significant differences on wages between self-employed and salaried workers. The only study that we know of to compare estimates from countries in different regions of the world is Bargain and Kwenda (2011), who compare estimates from two Latin American countries (Brazil and Mexico) and South Africa. They find an average wage penalty for informal employees in all three countries. However, using quantile regressions (and controlling for individual fixed effects), they show that the informal sector wage penalty is larger in the lower part of the conditional distribution and tends to disappear at the top. For self-employed workers, the premium differs by country. In Mexico, there is a wage premium for self-employment, especially at the top of the distribution; in Brazil, there is no significant difference in earnings between the self-employed and employees; while in South Africa, both informal sector employees and self-employed workers pay an earnings penalty at most points in the distribution, relative to formal sector employees.

In summary, while the literature on wage differentials points to consistent earnings penalties for wage and salary employment in the informal sector, relative to the formal sector, 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. Our paper contributes to the literature on informal and self-employment wage penalties or premiums by estimating and comparing these earnings differentials for a wider range of developing and high income countries than currently exists in the literature.

III. Data

The data source for this paper is a database of micro-level household surveys harmonized by the Development Economics Research Group of the World Bank, the International Income Distribution Database (I2D2).³ This database consists of nationally representative labor force surveys, budget surveys or living standards measurement surveys. In many cases, the surveys 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.

Not all variables are available in all countries and years. We limit our analysis, to surveys where we can identify whether the worker is self-employed or a wage and salary employee, also where data is collected on the earnings of both the self-employed and wage and salaried workers.⁴ In most countries, data are available for multiple years. Our full sample consists of 347 surveys (country/year combinations), representing 73 countries, from 1980 to 2013. 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 estimated earnings premiums(+)/penalties(-) for each country/year observation, are listed in the appendix in table A1.

We begin by examining the earnings differentials between self-employed workers and all wage and salaried employees. Self-employed workers include both own-account workers and employers. We are able to examine differences between self-employed workers and employees using 347 household surveys from 73 countries. 62% of these surveys are from Latin America, and over 90% of these surveys are from either Latin America or Europe and Central Asia.

We recognize that within the self-employed there may be large differences between employers, professional or technical own-account workers (i.e. lawyers, doctors, accountants, etc.) and non-professional own-account workers (unskilled self-employed). Therefore, where possible, we separate self-employed workers into two categories: (i) non-professional own-account workers and (ii) employers and professionals. We are able to examine earnings differences between these two types of self-employed workers vs.

³ The database is an updated version of that described in Montenegro and Hirn (2009). Version 4 of the I2D2, which was released in October 2013, was used for this study.

⁴ 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”

employees in 152 surveys and 42 countries. Over 50% of these surveys are from Europe and Central Asia (33% from high income countries ECA countries, 18% from developing ECA countries) and 34% are from Latin America.

There may also be substantial differences between formal and informal employees, especially in developing countries. We identify formal employees as those who exhibit one or more of the following characteristics: union membership, employer pays for social security or health insurance, or has a formal work contract. Employees who are not identified as formal are classified as informal. We are able to examine differences between formal and informal employees, and between self-employed workers vs. informal or formal employees in 34 countries (190 surveys). The sample of countries where we can identify formal from informal employees is dominated by Latin America (90% of all surveys).

IV. Methodology: Estimating the Self-employment Earnings Penalty/Premium

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

$$\ln Y_{ict} = \alpha + EP_{ct} * SE_{ict} + \beta_{ct} X_{ict} + \mu_{ict} \quad [1]$$

Where

- Y_{ict} is self-reported monthly earnings of worker i in country c in year t .
- X_{ict} is a vector of eight variables that partially control for observed differences between workers and industries. 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.⁵
- μ_{ict} is the error term
- SE_{ict} is a dummy variable indicating whether the worker is self-employed (1) or a wage and salary worker (0)
- EP_{ct} is the average self-employment earnings premium, estimated separately for each survey (country(c)/year(t) combination).

The first set of earnings differential estimates that we present use this specification to estimate the earnings premium or penalty between self-employed workers and all employees. In a second set of estimates we re-estimate equation 1 and include two self-employment dummy variables: one that identifies non-professional own-account workers and the other that identifies employers and professionals (the reference category is all employees). From this regression we obtain estimates of the earnings differentials between non-professional own-account workers vs. employees, employers and professionals vs. employees, and non-professional own-account workers vs. employers and professionals.

⁵ The 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.

In a third set of estimates we separate employees into formal and informal sector employees and estimate the earnings differentials between formal vs. informal sector employees, all self-employed workers vs. informal employees, and all self-employed workers vs. formal employees. Finally, we re-estimate equation 1 and interact the two self-employed and formal/informal dummy variables to obtain estimates of the earnings differentials between non-professional own-account workers vs. formal sector workers, non-professional own-account workers vs. informal employees, and employers and professionals vs. non-professional own-account workers.

Equation 1 is estimated separately for every county (c) and year (t) for which we have the appropriate variables in the I2D2 data set. This results in estimates 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. A positive EP_{ct} indicates that there is an earnings premium for self-employment while a negative EP_{ct} indicates an earnings penalty for self-employment.

Tables 3 and Tables 4 summarize the results of these estimations for all countries in our sample by income level and regions. In calculating these means across surveys we weight the estimates in three ways. First, in calculating means across countries, the estimates of the earnings differentials in each country are weighted by total employment for that country and year. In addition, because the number of surveys in the data base for each country are different, the results from each survey (country/year combination) are weighted by the inverse of the number of surveys for each country. Weighted this way, each country is effectively counted once even if there are more than one survey for that country. Finally, to take into account that the earnings differentials estimated in each country are estimates with different standard errors due to varying sample sizes, we also weight the results from each survey by the inverse of the estimated standard error on EP_{ct} .

V. The Extent of Self-employment and Informal Employment Around the World

Table 1 presents the mean proportion of workers in each employment category across all surveys in the sample and for countries at different income levels. Specifically, Table 1 presents the proportion of workers who are: self-employed (divided between non-professional own-account vs. employers and professionals) and employees (divided between informal employees and formal employees).⁶ Approximately 50% of workers in low income countries are non-professional own account workers (Table 1b). As per capita income increases, the proportion of non-professional own-account falls, to 20% in upper middle income countries and 7% in high income countries. At the same time, as per capita income increases from low to upper-middle income countries the proportion of employers

⁶ To calculate the means across countries, the proportion of workers in each employment category from each survey (country/year combination) are weighted by total employment for that country and year. In addition, because the number of surveys in the data base for each country are different, the results from each survey (country/year combination) are weighted by the inverse of the number of surveys for that country. Weighted this way, each country is effectively counted only once even if there is more than one survey for that country.

and professionals increases from 2% in low income countries to over 4.5% in upper middle income and high income countries.

Fewer than half of workers in low income countries are wage and salaried employees (See Table 1a). This proportion increases as the per capita income of a country grows, and almost 90% of workers in high income countries are wage and salaried employees. In addition, as countries develop the proportion of employees in the formal sector increases, from less than 10% of workers in low income countries to almost half of all workers in upper middle income countries (Table 1c). We do not have direct estimates of informal and formal sector employees for high income countries, but we expect that most wage employees are formal in high-income OECD countries.

Table 2 presents the proportion of workers in each category by region of the world. For most regions, the proportion of workers in each category follows the existing patterns by income group. For example, in regions characterized by low and lower-middle income countries (East Asia and the Pacific, Middle East and North Africa (MENA), South Asia and Sub-Saharan Africa)⁷ the proportion of formal sector employees is relatively small and the proportion of non-professional own account worker is relatively large (Table 2b and 2c). At the other end of the income scale, in high income countries of Europe and North America, the proportion of formal sector employees is relatively large and the proportion of non-professional own account worker is relatively small. In Latin America, composed mostly of middle income countries, the proportion of workers in each category is between the low income and high income countries.

Middle income countries in Europe and Central Asia combine elements of high income European and Central Asian countries with middle income Latin American countries. For example, the proportion of self-employed workers in developing European and Central Asian countries is very low, 5%, compared to 11% in high income Europe and Central Asia and 32% in middle income Latin America. On the other hand, the proportion of informal employees in the developing economies of Europe and Central Asia is high, 45%, compared to 23% in Latin America and almost zero in high income Europe and Central Asia.

VI. Earnings Penalties and Premiums for the Self-employment and Informal Employees Around the World

In Table 3 we report the results of the estimation of wage penalties (-) and premiums (+) for all self-employed workers vs. all employees, non-professional-own account workers vs. formal and informal employees, employers and professionals vs. formal and informal employees, and informal vs. formal employees.

On average across countries a clear ordering emerges; after controlling for education, age, gender, region of residence and industry sector, self-employed employers and professionals earn the most. In particular, employers and professionals earn more than formal and

⁷ It should be noted that our MENA sample is limited to only Yemen and Djibouti while our South Asia sample is represented by Bangladesh and Pakistan which might not be representative of the entire regions.

informal employees, and more than self-employed non-professional own-account workers. After employers and professionals come formal sector employees, who earn more than non-professional own-account workers and informal employees. Finally, non-professional own-account workers earn more than the lowest-paid category, informal employees.

By Level of Development (GDP per Capita)

Table 3 also presents earnings differentials separately for countries by income level. These figures show substantial differences between low, middle and high income countries.

Non-professional own-account workers face an earnings penalty compared to employees in countries of all income levels, but the estimated premiums vary significantly and are largest in low-income countries (see table 3b). In these countries, non-professional own account workers are estimated to earn a substantial premium of 27 percent relative to employees, while in high-income countries they face a penalty of 24 percent. Disaggregating employees into formal and informal employees is informative but comes at a major cost, as the sample is reduced from 42 to 15 countries. In that small sample, the estimated penalty faced by non-professional own account workers relative to formal employees is similar across country income groups. Specifically, the estimated penalty is 15 percent (and not statistically significant) in low-income countries, and 23 and 12 percent in lower and upper middle-income countries, respectively (See Table 3d). Figure 1a and 1b, which present the distribution of self-employment earnings penalties and premiums by a country's income level, further illustrate this pattern. Most (but not all) low income countries exhibit a self-employment earnings premium, for middle income countries the earnings differentials between self-employed workers and employees cluster around zero (although most are negative/penalties), while almost all high income countries exhibit earnings penalties for self-employment. This pattern of increasing earnings penalties for self-employed workers is maintained whether we examine earnings differentials between the self-employed vs. employees (Figure 1a) or non-professional own-account vs. employees (Figure 1b). Moreover, the same pattern shows up for all demographic sub-groups we consider: urban, rural, male, female, by age group and by education level.

Informal employees face an earnings penalty compared to formal employees in developing countries in each income group. As with the earnings penalty for non-professional own-account workers, the informal earnings penalty is small and not significantly different from zero in low income countries. Informal employees' earnings penalty increases with GDP per capita, however, to over 30% in middle and higher income countries (Table 1c).

Employers and professionals earn a statistically significant premium in low and middle income countries. This premium disappears in high income countries. Figure 1c presents earnings differentials between employers and professionals vs. employees for the each country in our sample. In most low and middle income countries employers and professionals earn a premium compared to employees. On the other hand, in many high income country employers and professionals face a penalty compared to employees, and in high income countries where employers and professionals earn a premium compared to employees, the premium is small.

By Region of the World

In Table 4 we report the results of the estimates of penalties (-) and premiums (+) by region of the world. As we have noted earlier, over 90% of our sample of surveys comes from either Latin America or Europe and Central Asia. Outside of Latin America and Europe and Central Asia, the largest group of surveys in our sample comes from Sub-Saharan Africa. We therefore focus on these regions in our regional analysis. We find some similarities between regions, but also some interesting differences, which suggest that care should be taken when generalizing the results from studies in Latin America to other regions of the world.

In all regions for which we have data (Latin America, developing Europe and East Asia, and Sub-Saharan Africa), non-professional own-account workers pay an earnings penalty compared to formal employees. On the other hand, while employers and professionals earn statistically significant premiums compared to employees in Latin America and Sub-Saharan Africa, this is not true in Europe and Central Asia. In both high income and developing economies of Europe and Central Asia there is no statistically significant difference in the earnings of employers and professionals compared to formal employees. Similarly, informal employees earn significantly less than formal employees in Latin America, but not in the developing middle income European and Central Asian economies. Taken together, these results suggest that informal employees are particularly disadvantaged in Latin America (but not in the developing economies of Europe and Central Asia), while employers and professional own-account workers do much better in Latin America and Sub-Saharan Africa than in Europe and Central Asia. As Latin American and the developing countries of Europe and Central Asia have similar GDP per capita, it is not likely that level of development explains these regional differences. Regional differences may be due to different legal and regulatory environments, an issue we examine in more detail in a companion paper (Gindling, Mossaad and Newhouse, 2015).

For Urban Workers Only

Many analyses of self-employment and labor market segmentation focus on urban and non-agricultural labor markets. Therefore, it is useful to examine the results for only urban workers and see if they are consistent with results found using data for all workers (urban plus rural).⁸ Table 5 replicates Table 3 using data for only urban workers.

There are no noticeable differences between tables 3 (urban plus rural) and tables 5 (urban only). The results for urban workers are similar to the results for all workers together. Specifically, across countries of all income levels a clear ordering emerges. After controlling for education, age, gender, region of residence and industry sector, employers and professional own-account workers earn the most. Employers and professionals earn more than formal and informal employees, and more than non-professional own-account workers. After employers and professionals come formal sector employees, who earn more

⁸ Results for non-agricultural workers only are similar to those presented for urban workers only.

than non-professional own-account workers and informal employees. Finally, non-professional own-account workers earn more than the lowest-paid category, informal employees.

In low income countries penalties for non-professional own-account workers vs. formal employees and for informal vs. formal employees are small and not statistically significant. In middle income countries penalties for non-professional own-account workers vs. formal employees and for informal vs. formal employees are larger than in low income countries and are statistically different from zero. Penalties for non-professional own-account workers are largest and highly statistically significant in high income countries. Panels a and b in figure 2, which presents the distribution of self-employment earnings penalties and premiums by a country's income level, further illustrate this pattern. Most (but not all) low income countries exhibit a self-employment earnings premium, for middle income countries the earnings differentials between self-employed workers and employees cluster around zero (although most are negative/penalties), while almost all high income countries exhibit penalties for self-employment.

Figure 2c presents earnings differentials between employers and professionals vs. employees. In most low and middle income countries employers and professionals earn a premium compared to employees. In no high income country, do employers and professionals earn a premium compared to employees, and in many high income countries employers and professionals pay a penalty.

For Men and Women

In most countries represented in the sample, women are primarily responsible for unpaid family responsibilities such as child care, housework and elder care. This suggests that women may value the flexibility of self-employment more than men, and therefore may be willing to accept lower earnings to compensate for the greater flexibility in hours and location of work (motherhood wage gap). It is possible, therefore, that self-employment and informal earnings penalties/premiums may differ between men and women. It is also possible that women's work tend to be undervalued and, in return, the wage structure within such countries might reflect that sentiment. To examine this possibility, we re-estimate the entire set of earnings differentials separately for men and women. The results are presented in Table 6.

The results presented show that both non-professional own-account men and women workers face earnings penalties, but the penalties faced by women tend to be larger than those faced by men. The additional penalty faced by female non-professional own-account workers increases as the per-capita income of a country increases. For example, the difference between men and women in the earnings penalty for non-professional own-account vs. formal employees are not significantly different from zero for low income countries, but is large and statistically significant in middle income countries. From middle income to high income countries, the gap between men and women increases further. The difference in non-professional own-account compared to employees earnings penalties between men and women is largest in high income countries.

Differences between male and female employers and professionals is even more striking. In middle and upper income countries, male employers and professionals earn a premium compared to employees, while women pay a penalty. These results suggest that women may be more willing than men to accept a negative compensating earnings differential for self-employment, and that this phenomenon is more pronounced in high income countries.

On the other hand, the earnings penalties paid for informal employment (vs. formal employment) are similar for men and women. This suggests that the differences between men and women in self-employment penalties/premiums may be because of compensating differentials for the flexibility of self-employment, while no similar flexibility exists for informal sector employees.

Table 7 presents earnings penalties/premiums, separately for men and women, for different regions of the world. In all regions women pay a higher penalty than men for non-professional own account compared to formal employment. On the other hand, in all regions the earnings penalties for informal employment vs. formal employment are similar for men and women.

The most noticeable regional difference is in the earnings differences between employers and professionals vs. employees. In Latin America men earn a premium as employers and professionals but women do not, while in Europe and Central Asia neither men nor women earn a significant premium or penalty as employers and professionals.

Figures 3 and 4 present the distribution of earnings premiums/penalties for men and women by countries' GDP per capita. Patterns for each gender are similar to the overall patterns. Earnings penalties for both non-professional own-account workers and informal employees are small in low income countries and increase with GDP per capita.

By Education Level

Table 8 presents self-employment and informal/formal earnings penalties/premiums for workers at four education levels: primary incomplete, primary graduate, secondary graduate/university incomplete and university graduate.⁹ In general, there are statistically significant self-employment earnings premiums for less educated workers in low income countries, but statistically significant earnings penalties for this group in middle and high income countries. Self-employment earnings premiums/penalties are not significantly different from zero for the most part for self-employed secondary and university graduates.

At all education levels, informal employees face earnings penalties compared to formal employees. Also at all levels of education, earnings penalties faced by informal employees increase as a countries' GDP per capita increases. Informal earnings penalties are small

⁹ Because professional own-account workers are almost surely university graduates, it does not make sense to report earnings differentials by education level separately for employers and professionals and non-professional own-account workers.

and often insignificant in low income countries and increase and become statistically significant in middle income countries.

By Age

Previous research suggests that successful self-employed workers tend to be older, mid-career workers. This suggests that we might find earnings premiums for the older self-employed but earnings penalties for the younger self-employed. To examine this issue, Table 9 presents earnings differentials for self-employed vs. employees, non-professional own-account vs. employees and employers and professionals vs. employees for three age groups: 15-24, 25-44 and 45-64. Neither earnings penalties for non-professional own-account workers nor earnings premiums for employers and professionals show any clear pattern between age groups; for some income groups they are bigger for older workers and for other income groups they are smaller for older workers compared to younger workers.

For all age levels, informal employees face earnings penalties compared to formal employees. Also at all age levels, earnings penalties faced by informal employees increase as a country's GDP per capita increases. Informal earnings penalties are small and often insignificant in low income countries and increase and become statistically significant in middle income countries.

Discussion and Interpretation of Results

Whether self-employed workers pay a penalty or earn a premium depends on a variety of factors, including their country's level of development, where it is located, the worker's gender, and whether those self-employed workers are employers (entrepreneurs) and skilled own-account professionals or are (presumably unskilled) non-professional own-account workers. On this last point, employers and professionals tend to earn greater premiums, which is consistent with the hypothesis that their earnings reflect not only their greater productivity, but also returns to capital and risk. In other words, employers and professionals likely receive a positive earnings compensating differential to make up for the additional costs or risks involved in starting their own business.

Male employers and professional own-account workers in many developing countries enjoy a particularly large earnings premium compared to formal employees, while female employers and professionals do not. In fact, our estimates suggest that female employers and professionals in low and high income countries pay a statistically significant penalty compared to employees, while in middle income countries estimated penalties are statistically insignificant. These gender differences are consistent with the hypothesis that women are more willing to accept lower wages as compensating earnings differentials for the flexibility of self-employment.

The premiums earned by employers and professionals also vary by region. These workers earn large and statistically significant premiums compared to employees in Latin America. But in high income and developing economies in Europe and Central Asia, there is no significant difference in the earnings of employers and professionals compared to formal

employees. This suggests that either employers and professionals face disadvantages in Europe and Central Asia that they do not face in Latin America or Sub-Saharan Africa, or that Latin American employers require greater profits to enter or maintain their business than those in Europe.

The evidence on labor market segmentation is mixed, and much stronger for middle-income countries than for low-income countries. In developing countries, non-professional self-employed workers face earnings penalties compared to formal employees. This result is consistent with the hypothesis of labor market segmentation in developing countries and can explain the high levels of non-professional own-account self-employment. However, we also find evidence that as the per capita GDP of a country increases the earnings of the self-employed fall relative to the earnings of formal employees. This is true for both non-professional own-account workers and employers and professional own-account workers. This finding is not consistent with the hypothesis that labor market segmentation is causing penalties for self-employment and informal employment. Instead, it is more consistent with the hypothesis that earnings differentials are due to compensating differentials where self-employed and informal employees are willing to pay an earnings penalty in exchange for the flexibility of self-employment or informal employment.

The evidence on segmentation for informal wage employees follows a similar pattern. Informal workers in developing countries tend to face earnings penalties relative to formal employees, which is consistent with labor market segmentation between the formal and informal employment sectors in developing countries caused by the exclusion of informal employees from the formal sector. However, earnings penalties faced by informal sector employees are low and insignificant in low income countries and large and statistically significant in middle income countries. This suggests that labor market segmentation between formal and informal employment is more prominent in middle income countries than in low income countries.

Looked at differently, the increase in the self-employment penalty as GDP increases indicates that as countries develop the earnings of formal employees increases faster than those of the self-employed. This suggests that the focus should be on what happens to formal employees rather than on the self-employed and informal employees. This is true in one traditional dualistic model of economic development where 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 insufficient 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 lead to an increase in the proportion of workers in formal employment. It is also likely to lead to an increase in earnings for formal sector employees.

Our evidence is consistent with the view that earnings gaps between the self-employed and employees are due to efficiency wages and the sharing of quasi-rents. Because it is likely that firms in low income countries are less productive, compared to those in more developed countries, and offer fewer resources that boost worker productivity, these firms

earn fewer rents that can be shared with workers. As countries develop and firms gain access to innovative technologies, the productivity of employees in firms increases and they are able to share more of their quasi-rents with workers, increasing the wages of employees relative to the self-employed. It is also reasonable to expect that the bargaining power of employees will increase as countries develop, due to the increasing prevalence of unions and the better enforcement of labor regulations. If the bargaining power of workers is positively correlated with level of development and labor productivity, then the relationship between the worker's share of quasi-rents with development and productivity will be even stronger.

VII. Conclusion

This paper uses data from 73 countries and multiple years from a comprehensive set of harmonized household surveys to estimate the proportion and wage differentials for self-employed, informal, formal and salaried workers from around the world.

We find that approximately half of all workers in low income countries are non-professional own-account workers, while only 9% are formal employees, and only 2% of workers in low income countries are employers or professionals. As countries develop, the proportion of workers who are formal employees, employers and professional own-account workers increases, while the proportion of workers who are non-professional own-account workers falls. In high income countries, non-professional own-account workers make up 7 percent of all workers, less than 5 percent are employers and professionals, and almost 90 percent are employees.

Regionally, the proportion of self-employed is smallest in the developing economies of Europe and Central Asia. Our most comprehensive estimate is that approximately 95% of workers in Europe and Central Asia are wage and salaried employees, although half of these are informal employees. This is even higher than the proportion of workers who are employees in high income European countries, and compares to a much lower 68% of workers who are employees in Latin American and the Caribbean.

Across all regions and income levels, non-professional own-account workers and informal employees face an earnings penalty compared to formal employees. This penalty is statistically significant in all regions except for the developing economies of Europe and Central Asia, where the penalty is small and often not statistically significant. However, both the non-professional own-account and informal earnings penalties are small (and often not statistically significant) in low income countries, and in a larger sample of countries, non-professional own-account workers in low-income countries earn a premium relative to all (informal plus formal) wage employees. The penalties to being self-employed or informal increase as a country's GDP increases. The earnings penalties for informal employees are largest in middle income countries, and the earnings penalties for non-professional own-account workers are largest in high income countries.

Across all countries, on average, we find that employers and professionals enjoy an earnings premium compared to employees, with major differences between men and women. While earnings premiums for employers and professionals are largest for men in

middle income and Latin American countries compared to employees, their female counterpart consistently earn a penalty in all countries (or an insignificant premium). Further, we find that neither male nor female employers and professionals earn premiums in Europe and Central Asia. This we believe might be due to fundamental differences in labor market and other regulations and laws, which can directly affect earnings premiums/penalties, between Latin America where employers and professionals are favored and Europe and Central Asia where employers and professionals are penalized. We explore this hypothesis in a companion paper where we examine the relationship between rigid labor market and other regulations and wage premiums/penalties of workers (Gindling, Mossaad and Newhouse, 2015).

Gender differences are particularly striking for employers and professionals. Statistically significant measured earnings premiums for male employers and professionals are consistent with the hypothesis that men in these categories have a comparative advantage in self-employment, or are being compensated for the higher costs and risks of self-employment compared to wage and salaried employees. The sizeable average penalties for female employers and professionals suggests that men and women make different calculations when deciding to become and remain employers or professional workers. One possibility is that because women are primarily responsible for unpaid domestic work, women are more willing to accept lower earnings as employers and professional own-account workers in compensation for the flexibility in hours and location of work.

In general, the findings are not consistent with high rates of labor market segmentation in low-income countries. In these countries, we find small earnings penalties for own-account non-professional workers relative to formal employees, and in a larger sample of countries, own-account non-professional workers earn an earnings premium relative to all wage employees. Furthermore, the self-employment premium in low-income countries is largest for less educated workers. As countries develop, these premiums decline and become substantial penalties in high-income countries. This evidence runs counter to the standard labor market segmentation view, in which self-employment is prevalent in the poorest economies because most workers are excluded from the formal economy, and the formal economy is incapable of providing sufficient high-wage jobs for everyone who wants them. According to this standard view, the proportion of workers who are self-employed falls as countries develop and the wage differential between the self-employed and employees should eventually disappear.

Instead, evidence of moderate amounts of segmentation appears to be stronger in middle and high-income countries than low-income countries. In particular, as the GDP per capita of a country increases, the earnings of formal employees increases relative to employers and professionals, non-professional own-account workers and informal employees. We highlight two other hypotheses that are consistent with the trend that the earnings of formal employees relative to self-employed and informal employees increases with GDP per capita. One is a dualistic economy model where formal sector firms in low income countries have low productivity because a lack of credit, lack of reliable inputs, lack of export markets and a lack of demand does not allow them to take advantage of economies of scale. For these reasons, formal sector firms in low income countries will be less

productive and employee wages will be low. As countries develop, demand increases, credit and export markets develop, and therefore the productivity of formal sector firms increases. The increase in productivity allows firms to share rents with workers, driving up the earnings of formal employees relative to informal employees and self-employed workers.

The second hypothesis is that self-employed workers may be willing to accept lower earnings as compensation for increased flexibility in terms of hours and location of work. This is likely to especially be true for women who are responsible for the majority of unpaid domestic work such as child care or elder care. Self-employment may be valued because it provides the flexibility that allows for both domestic work and paid employment, whereas wage and salaried employment with inflexible working hours does not. The compensating differential explanation suggests that the self-employment earnings penalty will be particularly large in more developed countries, where the opportunity cost of time is higher and therefore the flexibility of self-employment will be valued more. Evidence supporting this last hypothesis is that penalties for self-employment are larger for women than for men, and that the additional penalty that women pay for self-employment, compared to men increases as GDP per capita increases.

References:

- Abowd, John, Francis Kramarz, Paul Lengermann, Kevin McKinney and Sebastien Roux (2012), "Persistent inter-industry wage differences: rent sharing and opportunity costs," *IZA Journal of Labor Economics*, 1:7.
- Aleksynska, M., and M. Schindler. 2011. "Labor Market Institutions in Advanced and Developing Countries: A New Panel Database." *IMF Working Paper No. 11/154*.
- Ardagna, Silvia, and Annamaria Lusardi. 2008. "Explaining International Differences in Entrepreneurship: The Role of Individual Characteristics and Regulatory Constraints." *NBER Working Paper No. 14012*.
- . 2010. "Heterogeneity in the Effect of Regulation on Entrepreneurship and Entry Size." *Journal of the European Economic Association* 8 (2-3): 594–605.
- Arias, Omar, and Melanie Khamis. 2009. "Comparative Advantage, Segmentation and Informal Earnings: A Marginal Treatment Effects Approach." *IZA Discussion Paper No. 3916*.
- Astibro, Thomas and Jing Chen. 2014. "The entrepreneurial puzzle: Mismeasurement or real?" *Journal of Business Venturing* 28: 88-105.
- Bargain, Olivier, and Prudence Kwenda. 2011. "Earnings Structures, Informal Employment, And Self-Employment: New Evidence From Brazil, Mexico, And South Africa." *Review of Income and Wealth* 57 (s1): S100–S122.
- Basch, Michael, and Ricardo D. Paredes-Molina. 1996. "Are There Dual Labor Markets in Chile?: Empirical Evidence." *Journal of Development Economics* 50 (2): 297–312.
- Becker, Gary S. 1962. "Investment in Human Capital: A Theoretical Analysis." *The Journal of Political Economy* 70 (5): 9–49.
- Bennett, John and Saul Estrin (2010), "Informal firms in developing countries: entrepreneurial stepping stone or consolation prize?" *Small Business Economics*, 2010, 34 (1), 53-63
- Besley, Timothy, and Robin Burgess. 2004. "Can Labor Regulation Hinder Economic Performance? Evidence from India." *The Quarterly Journal of Economics* 119 (1): 91–134.
- Bryan, Gharad, Shyamal K. Chowdhury, and Ahmed Mushfiq Mobarak. Seasonal migration and risk aversion. Centre for Economic Policy Research, 2012.
- Botero, J., S. Djankov, R. La Porta, F. Lopez-de-Silanes, and A. Shleifer. 2004. "The Regulation of Labor." *The Quarterly Journal of Economics* 119 (4): 1339–82.
- Busse, Matthias, and Jose Luis Groizard. 2008. "Foreign Direct Investment, Regulations and Growth." *The World Economy* 31 (7): 861–86.
- Cahuc, Pierre, Fabien Postel-Vinay, and Jean-Marc Robin. "Wage bargaining with on-the-job search: Theory and evidence." *Econometrica* 74.2 (2006): 323-364.
- Cuñat, Alejandro, and Marc J. Melitz. 2011. "Volatility, Labor Market Flexibility, and the Pattern of Comparative Advantage." *Journal of the European Economic Association* 10 (2): 225–54.
- De Mel, Suresh, David McKenzie, and Christopher Woodruff. 2010. "Who Are the Microenterprise Owners? Evidence from Sri Lanka on Tokman versus De Soto." In *International Differences in Entrepreneurship*, 63–87. University of Chicago Press.
- De Soto, H. 1989. *The Other Path: The Economic Answer to Terrorism*. New York: HarperCollins.
- Dickens, William, and Lawrence F. Katz. "Inter-Industry Wage Differences and Industry Characteristics." *Unemployment and the Structure of Labor Markets*, Basil. 1987.
- Djankov, Simeon, T. Ganser, C. McLiesh, R. Ramalho, and A. Shleifer. 2008. "The Effect of Corporate Taxes on Investment and Entrepreneurship." *NBER Working Paper No. 13756*.
- Djankov, Simeon, Rafael La Porta, Florencio Lopez de Silanes, and Andrei Shleifer. 2002. "The Regulation of Entry." *Quarterly Journal of Economics* 117 (1): 1–37.

- Djankov, Simeon, and R. Ramalho. 2009. "Employment Laws in Developing Countries." *Journal of Comparative Economics* 37 (1): 3–13.
- Eslava, Marcela, John Haltiwanger, Adriana Kugler and Maurice Kugler. 2010. "Facrot Adjustments after Deregulation: Panel Evidence from Colombian Plants," *The Review of Economics and Statistics* 92(2): 378-391.
- Feldmann, Horst. 2009. "The Unemployment Effects of Labor Regulation around the World." *Journal of Comparative Economics* 37 (1): 76–90.
- Fields, G. S. 2005. "A Guide to Multisector Labor Market Models." *World Bank, Social Protection Working Paper No. 0505*.
- . 2009. "Segmented Labor Market Models in Developing Countries." In *The Oxford Handbook of Philosophy of Economics*, 476–510. New York: Oxford University Press.
- Freeman, R. 2009. "Labor Regulations, Unions, and Social Protection in Developing Countries: Market Distortion or Efficient Institutions." *NBER Working Paper No. 14789*.
- Freund, Caroline, and Bineswaree Bolaky. 2008. "Trade, Regulations, and Income." *Journal of Development Economics* 87 (2): 309–21.
- Freund, Caroline and Bob Rijkers (2013), "Employment Miracles," mimeo, The World Bank, Washington, April.
- Frölich, Markus, and Blaise Melly. 2010. "Estimation of quantile treatment effects with Stata." *Stata Journal* 10 (3): 423.
- Gallagher, Mary, John Giles, Albert Park and Meiyang Wang. 2013. "China's 2008 Labor Contract Law: Implementation and Implications for China's Workers," World Bank Policy Research Working Paper No. 6542, July.
- Gasparini, Leonardo and Leopoldo Tornarolli. 2007. "Labor Informality in Latin America and the Caribbean: Patterns and Trends from Household Survey Data," *Centro de Estudios Distributivos, Laborales y Sociales (CEDLAS) Working Paper No. 46*, February.
- Gindling, T. H. 1991. "Labor Market Segmentation and the Determination of Wages in the Public, Private-Formal, and Informal Sectors in San Jose, Costa Rica." *Economic Development and Cultural Change*, 585–605.
- Gindling, T. H., and David Newhouse. 2013. "Self-Employment in the Developing World." *World Bank Policy Research Working Paper No. 62101*.
- Gindling, T. H., Nadwa Mossaad and David Newhouse. 2015. "The Impact of Labor Market and Other Regulations on Earnings Premiums and Penalties for Self-Employment Around the World." Working paper.
- Günther, I., & Launov, A. (2012). Informal employment in developing countries: Opportunity or last resort? *Journal of Development Economics*, 97(1), 88–98.
- Hallward-Driemeier, Mary, and David Stewart. 2004. "How Do Investment Climate Conditions Vary Across Countries, Regions and Types of Firms?" *Background Paper Prepared for the World Development Report 2005: A Better Investment Climate for Everyone. The World Bank, Washington, DC*.
- Harris, John R. & Todaro, Michael P. (1970), "Migration, Unemployment and Development: A Two-Sector Analysis", *American Economic Review* 60 (1): 126–142.
- Heckman, James J. (1979). "Sample selection bias as a specification error," *Econometrica* 47 (1): 153–61.
- Heckman, James J., and V. Joseph Hotz. 1986. "An Investigation of the Labor Market Earnings of Panamanian Males: Evaluating the Sources of Inequality." *Journal of Human Resources* 21 (4): 507–42.
- Heckman, James J., and Carmen Pagés. 2004. *Carmen Pages, eds.(2004) Law and Employment: Lessons from Latin America and the Caribbean*. New York: University of Chicago Press.
- Helpman, Elhanan, and Oleg Itskhoki. 2010. "Labour Market Rigidities, Trade and Unemployment." *Review of Economic Studies* 77 (3): 1100–1137.

- Hurst, Erik, Geng Li and Benjamin Pugsley, 2010. "Are Household Surveys Like Tax Forms: Evidence from Income Underreporting of the Self Employed," *NBER Working Papers* 16527.
- Jensen, Robert. "Do Labor Market Opportunities Affect Young Women's Work and Family Decisions? Experimental Evidence from India." *The Quarterly Journal of Economics* 127.2 (2012): 753-792.
- Krueger, Alan B., and Lawrence H. Summers. "Efficiency Wages and the Inter-industry Wage Structure." *Econometrica* 56.2 (1988): 259-93.
- Kuznets, Simon. 1955. "Economic Growth and Income Inequality." *The American Economic Review* 45 (1): 1–28.
- LaPorta, Rafeal and Andrei Schleifer. 2014. "Informality and Development, *Journal of Economic Perspectives*, 28(3): 109-126.
- La Porta, Rafael, and Andrei Schleifer. 2008. "The Unofficial Economy and Economic Development." *Brookings Papers on Economic Activity*, no. 2 (August): 275–352.
- Launov, Andrey. 2006. "Competitive and Segmented Informal Labor Markets." *IZA Discussion Paper No. 2349*.
- Lee, Eddy. 1998. *The Asian Financial Crisis: The Challenge for Social Policy*. International Labour Organization.
- Lee, Sangheon, Deirdre McCann, and Nina Torm. 2009. "The World Bank's 'Employing Workers' Index: Findings and critiques—A Review of Recent Evidence." *International Labour Review* 147 (4): 416–32.
- Lehmann, Hartmut, and Alexander Muravyev. 2012. "Labor Market Institutions and Informality in Transition and Latin American Countries." *IZA Discussion Paper No. 7035*.
- Lewis, Arthur. 1954. "Economic Development with Unlimited Supplies of Labor." *Manchester School of Economic and Social Studies* 22(2): 139–91.
- Maloney, W. F. 1999. "Does Informality Imply Segmentation in Urban Labor Markets? Evidence from Sectoral Transitions in Mexico." *The World Bank Economic Review* 13 (2): 275–302.
- . 2004. "Informality Revisited." *World Development* 32 (7): 1159–78.
- Meghir, Costas, Renata Narita, and Jean-Marc Robin. 2012. "Informality in Developing Countries." *NBER Working Paper No. 18347*.
- Micco, Alejandro, and Carmen Pagés. 2006. "The Economic Effects of Employment Protection: Evidence from International Industry-Level Data." *IZA Discussion Paper No. 2433*.
- Mincer, Jacob. 1962. "On-the-Job Training: Costs, Returns, and Some Implications." *The Journal of Political Economy* 70 (5): 50–79.
- Montenegro, C. E., and M. L. Hirn. 2009. "A New Disaggregated Set of Labor Market Indicators Using Standardized Household Surveys from Around the World." *Background Paper for the World Development Report 2009*.
- Nguyen, Huu, Christophe Nordman, and Francois Roubaud. 2013. "Who Suffers the Penalty? A Panel Data Analysis of Earnings Gaps in Vietnam." *IZA Discussion Paper 7149*.
- Perry, Guillermo, William Maloney, Omar Arias, Pablo Fajnzylber, Andrew Mason, and Jaime Saavedra. 2007. "Informality: Exit and Exclusion, World Bank Latin America and Caribbean Studies." *World Bank, Washington DC*.
- Pierre, Gaëlle, and Stefano Scarpetta. 2004. "Employment Regulations through the Eyes of Employers: Do They Matter and How Do Firms Respond to Them?" *IZA Discussion Papers* 1424.
- Roy, Andrew D. (1951), "Some Thoughts on the Distribution of Earnings," *Oxford Economic Papers*, 3:135-146.
- Saavedra, Jaime, and Alberto Chong. 1999. "Structural Reform, Institutions and Earnings: Evidence from the Formal and Informal Sectors in Urban Peru." *The Journal of Development Studies* 35 (4): 95–116.

- Sabirianova Peter, Klara. 2009. "Income Tax Flattening: Does It Help to Reduce the Shadow Economy?" *IZA Discussion Papers* 4223.
- Schneider, F., A. Buehn, and C. E. Montenegro. 2010. "New Estimates for the Shadow Economies All over the World." *International Economic Journal* 24 (4): 443–61.
- Schultz, Theodore W. 1961. "Investment in Human Capital." *The American Economic Review* 51 (1): 1–17.
- Smith, James P., Duncan Thomas, Elizabeth Frankenberg, Kathleen Beegle, and Graciela Teruel. 2002. "Wages, Employment and Economic Shocks: Evidence from Indonesia." *Journal of Population Economics* 15 (1): 161–93.
- Tokman, Victor E. 1978. "An Exploration into the Nature of Informal—formal Sector Relationships." *World Development* 6 (9): 1065–75.
- Tokman, Víctor E. 1984. "Wages and Employment in International Recessions: Recent Latin American Experience." *Helen Kellogg Institute for International Studies, University of Notre Dame* 11.
- Van Reenen, John (1996), "The Creation and Capture of Rents: Wages and Innovation in a Panel of U.K. Companies," *The Quarterly Journal of Economics*:195-226.
- Van Stel, André, David Storey, and A. Thurik. 2007. "The Effect of Business Regulations on Nascent and Young Business Entrepreneurship." *Springer, Small Business Economics* 28 (2): 171–86.
- World Bank. 2013. "Doing Business 2013: Smarter Regulations for Small and Medium-Size Enterprises". Washington, DC: World Bank Group.

Table 1: Proportion of Workers in Each Employment Category, by Income Group						
A. Self-employed and employees	Self-employment Shares	(Standard Error)	Employee Shares	(Standard Error)	Number of Countries	Number of Surveys
Total sample	0.267	(0.089)	0.733	(0.089)	73	347
Income Group						
Low Income	0.546	(0.061)	0.454	(0.061)	20	32
Low Middle Income	0.441	(0.026)	0.559	(0.026)	23	134
Upper Middle Income	0.274	(0.026)	0.726	(0.026)	16	114
High Income	0.115	(0.003)	0.885	(0.003)	14	67
B. Dividing self-employed into non-professional own account and employers/professional own-account	Non-Professional Own-account Share	(Standard Error)	Employers & Professionals Share	(Standard Error)	Number of Countries	Number of Surveys
Total sample	0.225	(0.104)	0.033	(0.010)	42	152
Income Group						
Low Income	0.501	(0.076)	0.020	(0.001)	7	9
Low Middle Income	0.436	(0.030)	0.013	(0.007)	8	29
Upper Middle Income	0.203	(0.025)	0.049	(0.004)	14	52
High Income	0.070	(0.003)	0.045	(0.002)	13	62
C. Dividing employees in to informal and formal	Informal Employees	(Standard Error)	Formal Employees	(Standard Error)	Number of Countries	Number of Surveys
Total sample	0.244	(0.029)	0.447	(0.034)	34	190
Income Group						
Low Income	0.135	(0.037)	0.089	(0.018)	9	11
Low Middle Income	0.319	(0.090)	0.385	(0.062)	20	104
Upper Middle Income	0.216	(0.019)	0.485	(0.036)	5	75
High Income	na	na	na	na	0	0

A. Self-employed and employees	Self-employment Shares	(Standard Error)	Employee Shares	(Standard Error)	Number of Countries	Number of Surveys
Total sample	0.267	(0.089)	0.733	(0.089)	73	347
Region						
Latin America & Caribbean	0.321	(0.005)	0.679	(0.005)	20	217
Europe & Central Asia (High-Income)	0.108	(0.007)	0.892	(0.007)	13	58
Europe & Central Asia (Developing)	0.055	(0.009)	0.945	(0.009)	19	43
Other	0.272	(0.034)	0.728	(0.034)	21	29
<i>East Asia & Pacific</i>	0.467	(0.002)	0.533	(0.002)	3	3
<i>Middle East & North Africa</i>	0.493	(0.014)	0.507	(0.014)	2	3
<i>North America</i>	0.116	(0.015)	0.884	(0.015)	1	3
<i>South Asia</i>	0.455	(0.020)	0.545	(0.020)	2	3
<i>Sub-Saharan Africa</i>	0.521	(0.077)	0.479	(0.077)	13	17
B. Dividing self-employed into non-professional own account and employers/professional own-account	Non-Professional Own-account Share	(Standard Error)	Employers & Professionals Share	(Standard Error)	Number of Countries	Number of Surveys
Total sample	0.225	(0.104)	0.033	(0.010)	42	152
Region						
Latin America & Caribbean	0.235	(0.007)	0.056	(0.002)	7	52
Europe & Central Asia (High-Income)	0.051	(0.025)	0.021	(0.010)	12	56
Europe & Central Asia (Developing)	0.053	(0.011)	0.056	(0.010)	12	31
Other	0.240	(0.134)	0.028	(0.013)	11	14
<i>East Asia & Pacific</i>	0.460	(0.000)	0.007	(0.000)	2	2
<i>Middle East & North Africa</i>	0.469	(0.002)	0.025	(0.000)	2	2
<i>North America</i>	0.072	(0.000)	0.044	(0.000)	1	3
<i>South Asia</i>	0.437	(0.000)	0.020	(0.000)	1	2
<i>Sub-Saharan Africa</i>	0.323	(0.183)	0.021	(0.002)	5	5
C. Dividing employees in to informal and formal	Informal Employees	(Standard Error)	Formal Employees	(Standard Error)	Number of Countries	Number of Surveys
Total sample	0.244	(0.029)	0.447	(0.034)	34	190
Region						
Latin America & Caribbean	0.229	(0.010)	0.445	(0.027)	18	172
Europe & Central Asia (High-Income)	na		na		0	0
Europe & Central Asia (Developing)	0.454	(0.301)	0.526	(0.299)	9	11
Other	0.177	(0.041)	0.338	(0.144)	7	7
<i>East Asia & Pacific</i>	na		na		0	0
<i>Middle East & North Africa</i>	0.630	-	0.069	-	1	1
<i>North America</i>	na		na		0	0
<i>South Asia</i>	na		na		0	0
<i>Sub-Saharan Africa</i>	0.176	(0.041)	0.338	(0.144)	6	6

A. All self-employed vs. all employees										
	Self-employment vs. Employees	(Standard Error)						Number of Countries	Number of Surveys	
Total sample	-0.095	(0.076)						73	347	
Low Income	0.236	(0.055)	***					20	32	
Low Middle Income	-0.168	(0.080)	**					23	134	
Upper Middle Income	-0.027	(0.118)						16	114	
High Income	-0.238	(0.023)	***					14	67	
B. Non-professional own-account and employers and professionals vs. all employees										
	Non-professional Own Account vs. Employees	(Standard Error)		Employers & Professionals vs. Employees	(Standard Error)			Number of Countries	Number of Surveys	
Total sample	-0.096	(0.067)		0.284	(0.095)	***		42	152	
Low Income	0.286	(0.021)	***	0.590	(0.030)	***		7	9	
Low Middle Income	-0.167	(0.079)	**	0.223	(0.131)	*		8	29	
Upper Middle Income	0.035	(0.043)		0.563	(0.028)	***		14	52	
High Income	-0.243	(0.018)	***	0.076	(0.030)			13	62	
C. All Self-employed vs. informal and formal employees, informal vs. formal employees										
	Self-employed vs. Formal Employees	(Standard Error)		Self-employed vs. Informal Employees	(Standard Error)		Informal vs. Formal Employees	(Standard Error)	Number of Countries	Number of Surveys
Total sample	-0.208	(0.114)	**	0.131	(0.095)		-0.341	(0.013)	34	190
Low Income	-0.123	(0.236)		0.076	(0.140)		-0.016	(0.080)	9	11
Low Middle Income	-0.184	(0.028)	***	0.129	(0.065)	**	-0.362	(0.015)	20	104
Upper Middle Income	-0.218	(0.150)	*	0.132	(0.113)	*	-0.337	(0.017)	5	75
High Income	na	na		na	na		na	na	0	0
D. Non-professional own-account vs. formal employees, informal employees and employers and professionals										
	Non-professional Own-account vs. Formal Employees	(Standard Error)		Non-professional Own-account vs. Informal Employees	(Standard Error)		Non-professional O.A. vs. Employers and Professionals	(Standard Error)	Number of Countries	Number of Surveys
Total sample	-0.150	(0.052)	***	0.245	(0.059)	***	-1.015	(0.048)	15	58
Low Income	-0.157	(0.304)		-0.379	(0.122)	***	-0.170	(0.192)	4	4
Low Middle Income	-0.234	(0.045)	***	0.207	(0.074)	***	-0.968	(0.086)	7	24
Upper Middle Income	-0.117	(0.063)	*	0.260	(0.057)	***	-1.042	(0.040)	4	30
High Income	na	na		na	na		na	na	0	0

Notes: * significantly different from zero at 1%; ** significant different from zero at 5%; ***significantly different from zero at 10%

A. All self-employed vs. all employees										
	Self-employment vs. Employees	(Standard Error)						Number of Countries	Number of Surveys	
Total sample	-0.095	(0.076)						73	347	
Latin America & Caribbean	-0.017	(0.099)						20	217	
Europe & Central Asia (High-Income)	-0.212	(0.146)						13	58	
Europe & Central Asia (Developing)	-0.226	(0.060)	***					19	43	
Other	-0.169	(0.073)	**					21	29	
<i>East Asia & Pacific</i>	-0.278	(0.000)	***					3	3	
<i>Middle East & North Africa</i>	0.379	(0.006)	***					2	3	
<i>North America</i>	-0.243	(0.000)	***					1	3	
<i>South Asia</i>	0.269	(0.044)	***					2	3	
<i>Sub-Saharan Africa</i>	-0.248	(0.068)	***					13	17	
B. Non-professional own-account and employers and professionals vs. all employees										
	Non-professional Own Account vs. Employees	(Standard Error)		Employers & Professionals vs. Employees	(Standard Error)			Number of Countries	Number of Surveys	
Total sample	-0.096	(0.067)		0.284	(0.095)	***		42	152	
Latin America & Caribbean	0.049	(0.027)	*	0.495	(0.059)	***		7	52	
Europe & Central Asia (High-Income)	-0.398	(0.118)	***	0.103	(0.110)			12	56	
Europe & Central Asia (Developing)	-0.325	(0.057)	***	-0.039	(0.046)			12	31	
Other	-0.173	(0.061)	***	0.076	(0.049)			11	14	
<i>East Asia & Pacific</i>	-0.252	(0.000)	***	0.024	(0.000)	***		2	2	
<i>Middle East & North Africa</i>	0.389	(0.004)	***	0.702	(0.005)	***		2	2	
<i>North America</i>	-0.225	(0.000)	***	0.109	(0.000)	***		1	3	
<i>South Asia</i>	0.270	(0.000)	***	0.565	(0.000)	***		1	2	
<i>Sub-Saharan Africa</i>	-0.364	(0.006)	***	0.420	(0.016)	***		5	5	
C. All Self-employed vs. informal and formal employees, informal vs. formal employees										
	Self-employed vs. Formal Employees	(Standard Error)		Self-employed vs. Informal Employees	(Standard Error)		Informal vs. Formal Employees	(Standard Error)	Number of Countries	Number of Surveys
Total sample	-0.150	(0.115)		0.186	(0.113)	*	-0.337	(0.015)	34	190
Latin America & Caribbean	-0.146	(0.116)		-0.036	0.084		-0.329	(0.016)	18	172
Europe & Central Asia (Developing)	-0.024	(0.062)		0.190	0.116	*	-0.018	(0.054)	9	11
<i>Middle East & North Africa</i>	0.190	0.000		-0.431	na		0.241	na	1	1
<i>Sub-Saharan Africa</i>	0.530	(0.019)	***	0.134	0.027	***	-0.663	(0.006)	6	6
D. Non-professional own-account vs. formal employees, informal employees and employers and professionals										
	Non-professional Own-account vs. Formal Employees	(Standard Error)		Non-professional Own-account vs. Informal Employees	(Standard Error)		Non-professional O.A. vs. Employers and Professionals	(Standard Error)	Number of Countries	Number of Surveys
Total sample	-0.150	(0.052)	***	0.245	(0.059)	***	-0.674	(0.035)	15	58
Latin America & Caribbean	-0.122	(0.055)	***	0.259	(0.055)	***	-0.670	(0.037)	6	47
Europe & Central Asia (Developing)	-0.221	(0.099)	***	-0.245	(0.130)	*	-0.368	(0.137)	6	8
<i>Sub-Saharan Africa</i>	-0.696	(0.000)	***	0.035	(0.009)	***	-1.002	(0.039)	3	3

Notes: * significantly different from zero at 1%; ** significant different from zero at 5%; ***significantly different from zero at 10%

A. All self-employed vs. all employees	Self-employment vs. Employees	(Standard Error)					Number of Countries	Number of Surveys			
Total sample	-0.046	(0.065)					73	347			
Low Income	0.248	(0.050)	***				20	32			
Low Middle Income	-0.053	(0.046)					23	134			
Upper Middle Income	-0.010	(0.090)					16	114			
High Income	-0.224	(0.022)	***				14	67			
B. Non-professional own-account and employers and professionals vs. all employees	Non-professional Own Account vs. Employees	(Standard Error)		Employers & Professionals vs. Employees	(Standard Error)		Number of Countries	Number of Surveys			
Total sample	-0.126	(0.072)	*	0.234	(0.125)	*	42	152			
Low Income	0.272	(0.020)	***	-3.556	(1.933)	*	7	9			
Low Middle Income	-0.173	(0.047)	***	0.216	(0.161)	*	8	29			
Upper Middle Income	-0.040	(0.077)		0.456	(0.095)	***	14	52			
High Income	-0.305	(0.017)	***	0.079	(0.052)	*	13	62			
C. All Self-employed vs. informal and formal employees, informal vs. formal employees	Self-employed vs. Formal Employees	(Standard Error)		Self-employed vs. Informal Employees	(Standard Error)	Informal vs. Formal Employees	(Standard Error)	Number of Countries	Number of Surveys		
Total sample	-0.074	(0.063)		0.208	(0.084)	**	-0.657	(0.013)	***	34	190
Low Income	0.091	(0.178)		0.283	(0.148)	*	-0.220	(0.110)	*	9	11
Low Middle Income	-0.056	(0.016)	***	0.216	(0.052)	***	-0.715	(0.022)	***	20	104
Upper Middle Income	-0.079	(0.076)		0.204	(0.099)	**	-0.636	(0.026)	**	5	75
High Income	na	na		na	na		na	na		0	0
D. Non-professional own-account vs. formal employees, informal employees and employers and professionals	Non-professional Own-account vs. Formal Employees	(Standard Error)		Non-professional Own-account vs. Informal Employees	(Standard Error)	Non-professional O.A. vs. Employers and Professionals	(Standard Error)	Number of Countries	Number of Surveys		
Total sample	-0.156	(0.066)	**	0.253	(0.069)	***	-0.627	(0.045)	***	15	58
Low Income	-0.215	(0.390)		-0.072	(0.174)		-0.134	(0.116)	***	4	4
Low Middle Income	-0.223	(0.045)	***	0.220	(0.101)	**	-0.589	(0.065)	***	7	24
Upper Middle Income	-0.134	(0.085)		0.265	(0.067)	***	-0.639	(0.042)	***	4	30
High Income	na	na		na	na		na	na		0	0

Notes: * significantly different from zero at 1%; ** significant different from zero at 5%; ***significantly different from zero at 10%

A. All self-employed vs. all employees	Self-employment vs. Employees								
	Female	(SE)	Male	(SE)					
Total sample	-0.177	(0.080) **	-0.053	(0.067)					
Low Income	-0.145	(0.084) *	0.310	(0.036) ***					
Low Middle Income	-0.142	(0.028) ***	-0.224	(0.106) **					
Upper Middle Income	-0.084	(0.118)	-0.002	(0.106)					
High Income	-0.400	(0.054) ***	-0.072	(0.037) *					
B. Non-professional own-account and employers and professionals vs. all employees	Non-professional Own Account vs. Employees				Employers & Professionals vs. Employees				
	Female	(SE)	Male	(SE)	Female	(SE)	Male	(SE)	
Total sample	-0.218	(0.090) **	-0.114	(0.072)	-0.190	(0.075) **	0.184	(0.156)	
Low Income	-0.116	(0.099)	0.347	(0.007) ***	-0.441	(0.195) **	-3.567	(2.003) *	
Low Middle Income	-0.147	(0.018) ***	-0.313	(0.082) ***	-0.186	(0.106) *	0.266	(0.146) *	
Upper Middle Income	-0.070	(0.071)	-0.006	(0.046)	-0.035	(0.025)	0.584	(0.037) ***	
High Income	-0.487	(0.014) ***	-0.134	(0.037) ***	-0.279	(0.068) ***	0.196	(0.070) ***	
C. Informal vs. Formal	Non-professional Own Account vs. Employers & Professionals				Informal Employees vs. Formal Employees				
	Female	(SE)	Male	(SE)	Female	(SE)	Male	(SE)	
Total sample	0.214	(0.667)	-0.192	0.259	-0.341	(0.013) ***	-0.337	(0.021) ***	
Low Income	5.852	(0.638) ***	4.236	1.890 **	-0.016	(0.080)	-0.238	(0.105) **	
Low Middle Income	0.063	(0.478)	-0.428	0.036 ***	-0.362	(0.015) ***	-0.353	(0.041) ***	
Upper Middle Income	-0.669	(0.059) ***	-0.610	0.021 ***	-0.337	(0.017) ***	-0.332	(0.018) ***	
High Income	-0.410	(0.013) ***	-0.373	0.019 ***	na	na	na	na	
D. Non-professional own-account vs. formal and informal employees	Non-professional Own-account vs. Formal Employees				Non-professional Own-account vs. Informal Employees				
	Female	(SE)	Male	(SE)	Female	(SE)	Male	(SE)	
Total sample	-0.226	(0.071) ***	-0.123	(0.043) ***	0.163	(0.078) **	-0.273	0.045 ***	
Low Income	-0.284	(0.427)	-0.234	(0.318)	-0.176	(0.299)	0.408	0.162 **	
Low Middle Income	-0.327	(0.036) ***	-0.153	(0.074) **	0.136	(0.095)	-0.213	0.076 ***	
Upper Middle Income	-0.193	(0.089) **	-0.104	(0.047) **	0.175	(0.084) **	-0.296	0.039 ***	
High Income	na	na	na	na	na	na	na	na	

Notes: * significantly different from zero at 1%; ** significant different from zero at 5%; ***significantly different from zero at 10%

A. All self-employed vs. all employees	Self-employment vs. Employees								
	Female	(SE)	Male	(SE)					
Total sample	-0.177	(0.080) **	-0.053	(0.067)					
Latin America & Caribbean	-0.091	(0.099)	0.011	(0.086)					
Europe & Central Asia (High-Income)	-0.162	(0.041) ***	-0.256	(0.131) **					
Europe & Central Asia (Developing)	-0.254	(0.054) ***	-0.202	(0.062) ***					
Other	-0.300	(0.099) ***	-0.075	(0.099)					
B. Non-professional own-account and employers and professionals vs. all employees	Non-professional Own Account vs. Employees				Employers & Professionals vs. Employees				
	Female	(SE)	Male	(SE)	Female	(SE)	Male	(SE)	
Total sample	-0.218	(0.090) **	-0.114	(0.072)	-0.190	(0.075) **	0.184	(0.156)	
Latin America & Caribbean	-0.059	(0.056)	0.000	(0.029)	-0.069	(0.043)	0.498	(0.050) ***	
Europe & Central Asia (High-Income)	-0.634	(0.178) ***	-0.368	(0.123) ***	0.030	(0.026)	-0.027	(0.075)	
Europe & Central Asia (Developing)	-0.433	(0.057) ***	-0.322	(0.059) ***	0.001	(0.036)	-0.074	(0.064)	
Other	-0.328	(0.119) ***	-0.130	(0.102) ***	-0.429	(0.090) ***	-0.102	(0.316)	
C. Informal vs. Formal	Non-professional Own Account vs. Employers & Professionals				Informal Employees vs. Formal Employees				
	Female	(SE)	Male	(SE)	Female	(SE)	Male	(SE)	
Total sample	0.214	(0.667)	-0.192	0.259	-0.341	(0.013) ***	-0.337	(0.021) ***	
Latin America & Caribbean	-0.663	(0.054) ***	-0.587	(0.034) ***	-0.335	(0.009) ***	-0.329	(0.025) ***	
Europe & Central Asia (High-Income)	-0.503	(0.134) ***	-0.415	(0.049) ***	na	na	na	na	
Europe & Central Asia (Developing)	-0.330	(0.056) ***	-0.251	(0.020) ***	-0.035	(0.071)	-0.009	(0.046)	
Other	0.730	(1.208)	-0.040	0.409	-0.671	(0.055) ***	-0.643	(0.013) ***	
D. Non-professional own-account vs. formal and informal employees	Non-professional Own-account vs. Formal Employees				Non-professional Own-account vs. Informal Employees				
	Female	(SE)	Male	(SE)	Female	(SE)	Male	(SE)	
Total sample	-0.226	(0.071) ***	-0.123	(0.043) **	0.163	(0.078) **	0.273	(0.045) ***	
Latin America & Caribbean	-0.186	(0.065) ***	-0.105	(0.049) **	0.182	(0.074) **	0.284	(0.042) **	
Europe & Central Asia (High-Income)	na	na	na	na	na	na	na	na	
Europe & Central Asia (Developing)	-0.283	(0.217)	-0.202	(0.033) ***	-0.257	(0.211)	-0.115	(0.074) *	
Other	-0.887	(0.023) ***	-0.578	(0.007) ***	-0.090	(0.010) ***	0.130	(0.007) ***	

Notes: * significantly different from zero at 1%; ** significant different from zero at 5%; ***significantly different from zero at 10%

A. All self-employed vs. all employees	Primary Incomplete	(Standard Error)	Primary Graduate	(Standard Error)	Secondary Graduate and University Incomplete	(Standard Error)	University Graduate	(Standard Error)
Total sample	-0.042	(0.060)	-0.099	(0.104)	-0.004	(0.025)	0.004	(0.007)
Low Income	0.239	(0.089) ***	0.168	(0.076) **	-0.013	(0.014)	0.001	(0.006)
Low Middle Income	-0.128	(0.034) ***	-0.238	(0.077) ***	-0.027	(0.074)	0.032	0.091
Upper Middle Income	-0.037	(0.089)	0.012	(0.134)	0.077	(0.023) ***	0.034	(0.022)
High Income	-0.167	(0.049) ***	-0.143	(0.026) ***	-0.168	(0.029) ***	-0.014	(0.011)
B. Informal vs. Formal	Primary Incomplete	(Standard Error)	Primary Graduate	(Standard Error)	Secondary Graduate and University Incomplete	(Standard Error)	University Graduate	(Standard Error)
Total sample	-0.363	(0.015) ***	-0.379	(0.025) ***	-0.431	(0.041) ***	-0.444	(0.039) ***
Low Income	-0.362	(0.248)	-0.196	(0.060) ***	-0.253	(0.151) *	-0.058	(0.155)
Low Middle Income	-0.394	(0.037) ***	-0.365	(0.051) ***	-0.520	(0.104) ***	-0.408	(0.036) ***
Upper Middle Income	-0.353	(0.016) ***	-0.385	(0.020) ***	-0.391	0.025 ***	-0.471	(0.053) ***
High Income	na	na	na	na	na	na	na	na

Notes: * significantly different from zero at 1%; ** significant different from zero at 5%; ***significantly different from zero at 10%

Table 9: By Age: Self-employment and Informal Earnings Premiums(+) or Penalties(-), by Income Group								
A. All self-employed vs. all employees	Age 15-24	(Standard Error)		Age 25-44	(Standard Error)		Age 45-64	(Standard Error)
Total sample	-0.075	(0.107)		-0.080	(0.107)		-0.056	(0.027) **
Low Income	0.077	(0.010)		0.208	(0.062) ***		0.205	(0.052) ***
Low Middle Income	-0.250	(0.045) ***		-0.128	(0.057) **		-0.068	(0.010) ***
Upper Middle Income	0.037	(0.095)		-0.008	(0.088)		-0.051	(0.011)
High Income	0.317	(0.469) ***		-0.248	(0.025) ***		-0.356	(0.306)
B. Non-professional own-account workers vs. all employees	Age 15-24	(Standard Error)		Age 25-44	(Standard Error)		Age 45-64	(Standard Error)
Total sample	-0.137	(0.084)		-0.153	(0.057) ***		-0.202	(0.073) ***
Low Income	0.193	(0.055) ***		0.255	(0.039) ***		0.302	(0.029) ***
Low Middle Income	-0.247	(0.035) ***		-0.200	(0.028) ***		-0.205	(0.117) *
Upper Middle Income	0.031	(0.048)		-0.059	(0.045)		-0.080	(0.053)
High Income	-0.235	(0.049) ***		-0.319	(0.012) ***		-0.332	(0.020) ***
C. Employers and Professionals vs. Employees	Age 15-24	(Standard Error)		Age 25-44	(Standard Error)		Age 45-64	(Standard Error)
Total sample	-0.917	(1.287)		0.187	(0.152)		0.277	(0.123) ***
Low Income	-5.436	(0.114) ***		-2.718	(2.078)		-2.588	(2.216)
Low Middle Income	0.114	(0.310)		0.143	(0.158)		0.465	(0.055) ***
Upper Middle Income	0.537	(0.045) ***		0.522	(0.057) ***		0.554	(0.074) ***
High Income	0.889	(0.471) *		0.025	(0.044)		0.106	(0.051) **
C. Informal vs. Formal Employees	Age 15-24	(Standard Error)		Age 25-44	(Standard Error)		Age 45-64	(Standard Error)
Total sample	-0.311	(0.024) ***		-0.317	(0.019) ***		-0.393	(0.020) ***
Low Income	-0.090	(0.117)		-0.132	(0.063)		-0.232	(0.133) *
Low Middle Income	-0.330	(0.050) ***		-0.324	(0.032) ***		-0.416	(0.021) ***
Upper Middle Income	-0.305	(0.016) ***		-0.315	(0.019) ***		-0.388	(0.025) ***
High Income	na	na		na	na		na	na

Notes: * significantly different from zero at 1%; ** significant different from zero at 5%; ***significantly different from zero at 10%

Table A7 (cont.):

Country	Year	Self-employed vs. employees	Non-professional 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 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	-0.2	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	--	--	--	--	--

Figure 1a: Earnings differentials vs. log GDP per capita – Self-employment vs. employees



Figure 1b: Earnings differentials vs. log GDP per capita – Non-professional own-account vs. employees

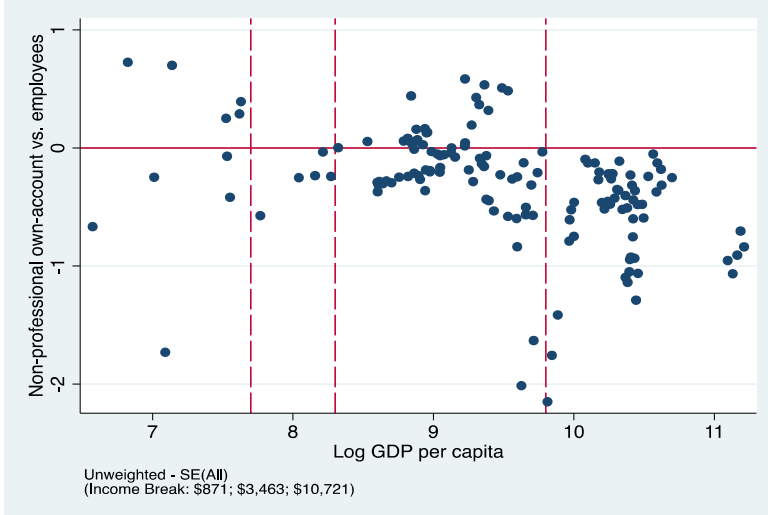


Figure 1c: Earnings differentials vs. log GDP per capita – Employers and professionals vs. employees

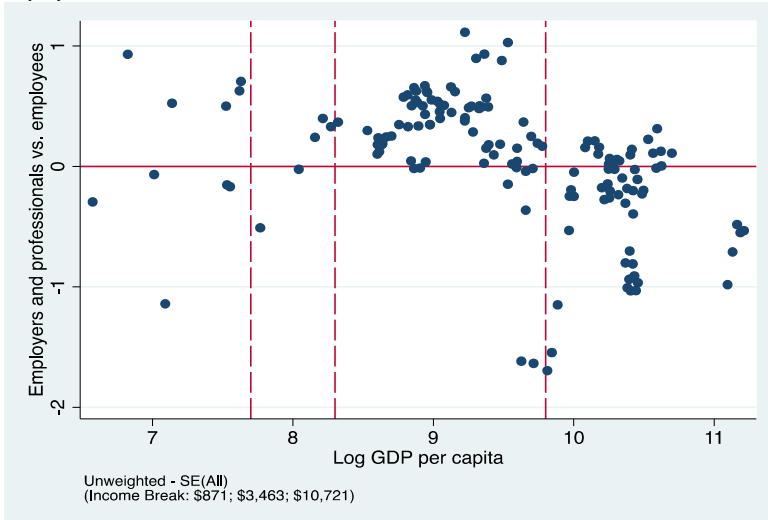


Figure 2a: Earnings differentials vs. log GDP per capita – Urban self-employment vs. employees

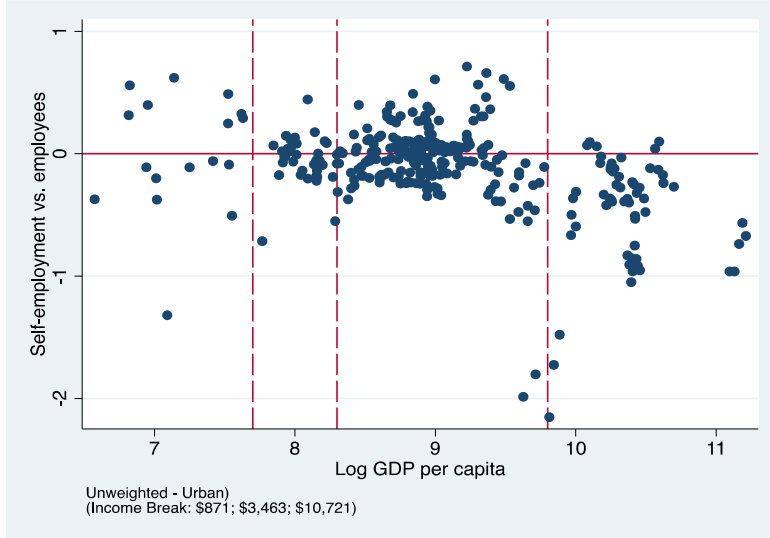


Figure 2b: Earnings differentials vs. log GDP per capita – Urban Non-professional own-account vs. employees

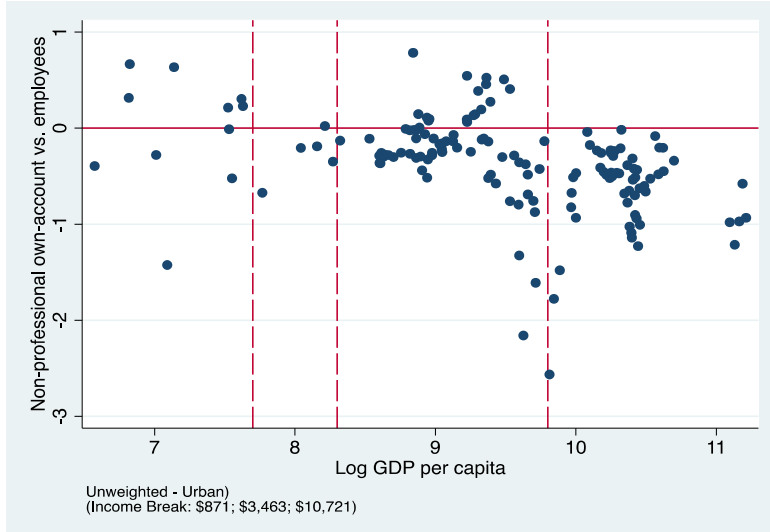


Figure 2c: Earnings differentials vs. log GDP per capita – Urban Employers and professionals vs. employees

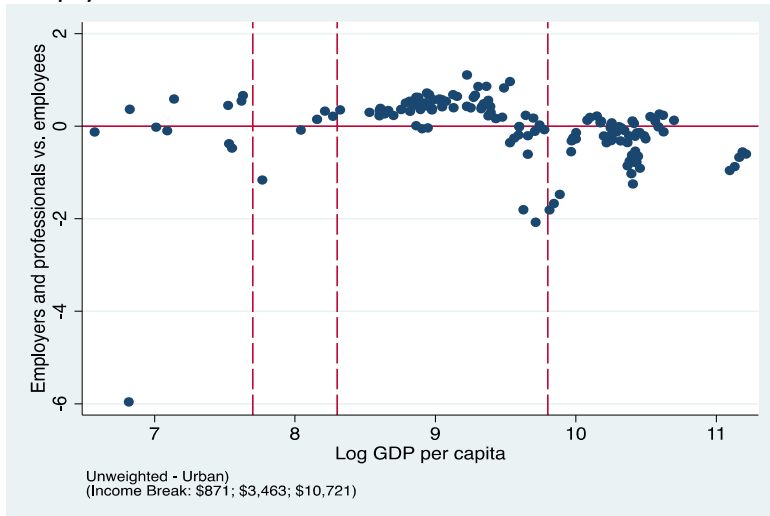


Figure 3a: Earnings differentials vs. log GDP per capita – Female self-employment vs. employees

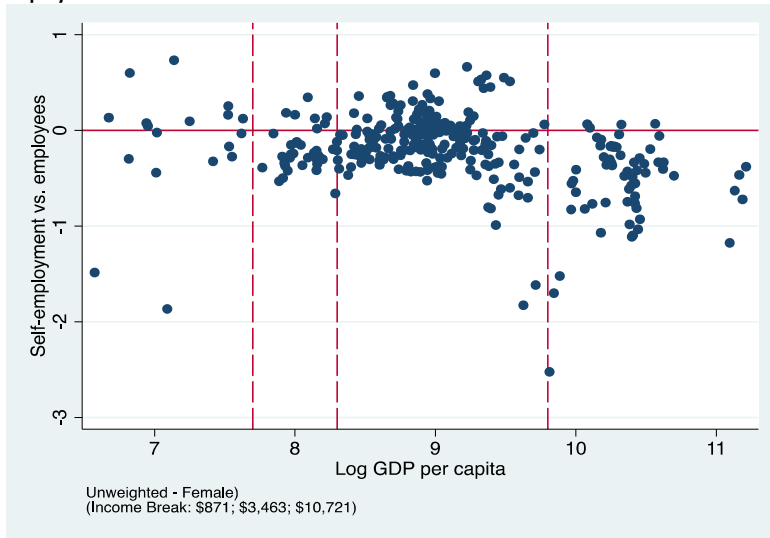


Figure 3b: Earnings differentials vs. log GDP per capita – Female Non-professional own-account vs. employees

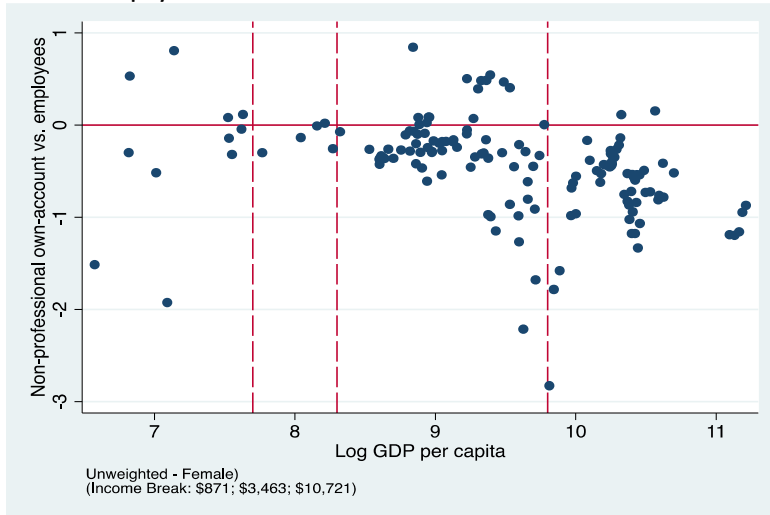


Figure 3c: Earnings differentials vs. log GDP per capita – Female Employers and professionals vs. employees

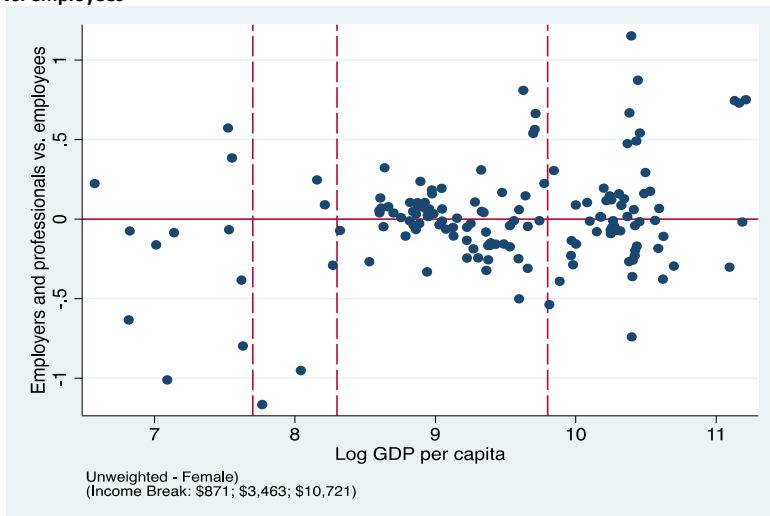


Figure 4a: Earnings differentials vs. log GDP per capita – Male self-employment vs. employees

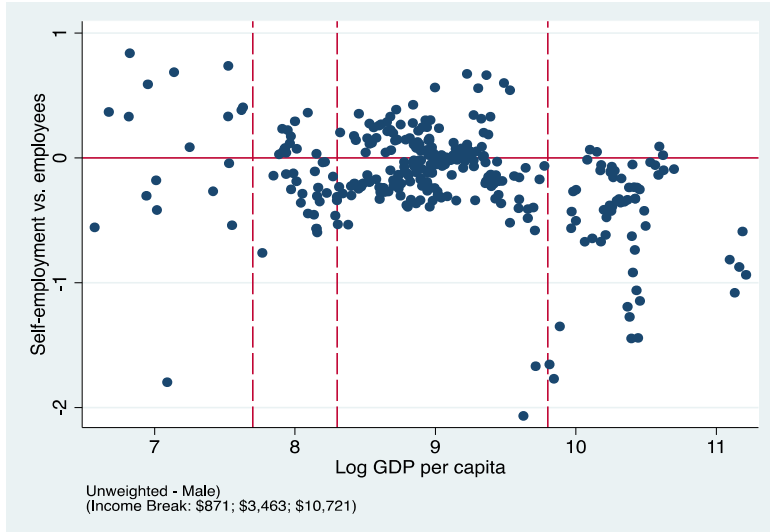


Figure 4b: Earnings differentials vs. log GDP per capita – Male Non-professional own-account vs. employees

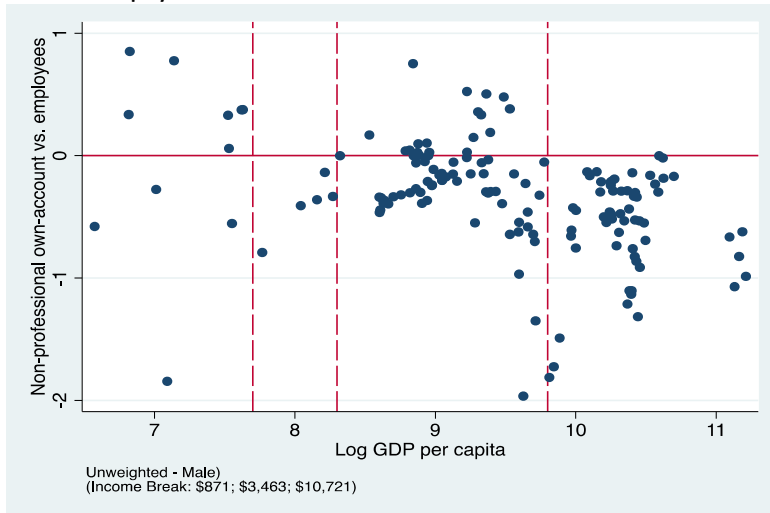


Figure 4c: Earnings differentials vs. log GDP per capita – Male Employers and professionals vs. employees

