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Heterogeneity in Informal Salaried Employment: Evidence from the Egyptian Labor Market Survey

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Summary. — This paper contributes to the continuing debates on the mechanisms driving labor market informality in developing countries by proposing an innovative way to discriminate between segmented and competitive markets. An empirical analysis is applied to Egyptian paid employment in the highly dynamic context of 1998–2006.
The study is based on recent nonparametric methods applied to estimate the model with essential heterogeneity. The model is extended to decomposing the treatment effects into unobserved and observed components.
The results show triple heterogeneity of workers on the Egyptian labor market, offering support to both segmented and competitive views on informal labor.

Key words — North Africa, Egypt, labor market segmentation, informal employment, wage differentials, essential heterogeneity

1. INTRODUCTION

The correct identification of the nature of informal employment is crucial for the efficient application of labor regulations in the context of informal labor. No consensus has been achieved on the mechanism driving informal employment in developing countries when arguing in favor of either the dual market theory or comparative advantage analysis. The inconclusiveness of the debates is likely due to the complex structure of informal employment. This paper addresses the issue of the voluntary *vs.* involuntary nature of informal employment by applying the model with "essential heterogeneity", a model allowing the detection of a correlation between workers' gains from formal *vs.* informal labor allocation and the allocation process.

The dual market theory assumes that there are two distinct segments in the labor market: a formal segment paying high wages and providing job security and social security and an informal segment paying low wages and serving as a last resort to unemployment (Harris & Todaro, 1970). According to this approach, informal employment is a predominantly involuntary engagement of workers in a segmented labor market, the formal segment being rationed (Fields, 1990, 2005a; Harris & Todaro, 1970; Stiglitz, 1976).

An alternative approach states that informal employment results from the voluntary choice of workers and thus fits the competitive market framework (Maloney, 1999, 2004; Rosenzweig, 1988, chap. 15). It contrasts with the dual labor market theory, which ignores micro-level decisions such as an individual's cost-benefit analysis [1]. The competitive market view implies that informal workers might be better off with incomes earned informally than they would be with those earned formally. In regard to poor informal workers it implies that they would not be better off holding formal jobs for which they are qualified (Maloney, 2004). The opportunity for employment choice underlying the competitive market view might be exceedingly limited when the share of formal employment is low.

A number of attempts have been made to empirically test the relevance of segmentation. For example, the validity of the dual market theory was challenged by (Basu, 1997; Cunningham & Maloney, 2002; Dickens & Lang, 1985; Heckman & Hotz, 1986; Magnac, 1991; Pratap & Quintin, 2006). The main idea of the tests is to look for grouping effects indicating the presence of two nonintegrated segments.

The results diverge, with some supporting each postulated extreme. For example, Dickens and Lang (1985) conclude that there is evidence of a dual labor market, finding different wage-setting mechanisms in the formal and informal segments and arguing that the returns to human capital should be the same in the context of an integrated market. Conversely, Maloney argues that conditional wage comparisons may be dubious measures given the different immeasurable, nonpecuniary benefits of formal and informal employment (Cunningham & Maloney, 2002). To take another example (Magnac, 1991) using similar approach, concludes that the market is competitive. However, his test is based on the implausible assumption that there is no correlation between preferences and observable or unobservable wage determinants except through monetary gains.

Overall, no strategy has been proposed that would allow researchers to discriminate between these two polar points of view. On the other hand, even the researchers working at the extremes of the two base theories admit that both theories are valid and operate simultaneously (Cunningham & Maloney, 2002; Fields, 1990).

The most recent theoretical studies suggest a combination of the two approaches, assuming that informal employment is heterogeneous (Fields, 2005b; Paulson & Townsend, 2005) and can consist of both voluntary and involuntary groups.

According to several empirical studies, the model of competitive, voluntary informal employment seems to be relevant to

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the most developed of developing countries (Maloney, 1999, 2004; Navarro-Lozano & Schrimpf, 2004). Additionally, most studies on informal employment validated the competitive market approach when studying informality in Latin American countries. Recent works on welfare analysis in these countries rely heavily on this literature and founds analysis on the assumption of a competitive labor market and not a dual labor market (see for example Meghir, Narita, and Robin (2012)).

Recent empirical studies on African and Asian labor markets instead put forward the idea of heterogeneity of informal employment. Recent literature offers a variety of approaches focusing on the demand side of the market (Böhme & Thiele, 2012; Grimm, Krüger, and Lay (2011)), food shortage (Floro & Swain, 2013) or intergenerational linkage and importance of family background of African workers in terms of informal employment and self-employment (Pasquier-Doumer, 2013).

Focusing on understanding informal employment, the present paper fits the research line followed by Gunther and Launov (2012) and Dimova, Nordman, and Roubaud (2010), who study African informal labor markets using the classical tools of selection and earnings equations.

Using household survey data from the Côte d'Ivoire, Gunther and Launov (2012) detect empirically several segments within the informal sector that differ in earnings, returns to human capital, and individual characteristics. They show that the distribution of workers among different segments is inefficient in terms of monetary earnings, which implies that some informal employment is involuntary and that informal activities are heterogeneous.

Dimova et al. (2010) also find differing returns to human capital and individual characteristics in the formal segment as compared to informal segments, defining the segments based on the self-employed *vs.* paid status of informal workers. They show various patterns of intra-sectorial selection, raising question of inefficient allocations in terms of unobserved skills as well as nonproductivity of the human capital in the informal sector.

This paper makes a three-fold contribution to the line of research that investigates the nature of informal employment in developing countries and is discussed above.

First, it proposes an innovative method of analysis which employs additional parameters and allows a more in-depth investigation of the behavioral patterns of informal workers. The application of the model with essential heterogeneity recently proposed by Heckman, Urzua, and Vytlacil (2006) allows the exploration not only differences of returns on observable human capital and unobservable skills of formal and informal workers, but also the exploration of individual formal and informal gaps in returns to unobservable characteristics. Essentially, it allows investigation of the distribution of the gaps and its relationship to the allocation process. In our context, the different types of the relationship are associated with different mechanisms driving informal employment.

Second, in contrast with the majority of studies analyzing earning equations, the present empirical analysis draws on Heckman et al. (2006) using nonparametric techniques. The estimation procedure relaxes the assumption that there is a specific shape of the distribution that the unobservable components of the model follow.

Finally, the paper offers an application to Egyptian informal paid employment, providing a case study of the labor market of one of the lower-middle-income African economies that is rather under-investigated. The data are drawn from 1998 and 2006 rounds of the ELMS household survey, allowing the comparison of results over a time period affected by significant fluctuation in the Egyptian labor market, in particular the shrinking of the formal sector.

The key findings are in line with recent literature suggesting that informal employment has a complex structure. Different workers may have different relative gains from working formally *vs.* informally; the distribution of the gains across employment may be socially efficient or not depending on the nature of informal engagement. Formal and informal workers may have different levels of skill; informal workers may also differ in their skills and mechanisms inducing them to work informally; finally, different strata may follow different patterns in their allocation between formal and informal groups. Moreover, the Egyptian case study shows that the mechanism driving informality may evolve under labor market restructuring: the data show evidence of increasing segmentation during 1998–2006.

The paper is organized as follows. Section 2 describes the concepts of the treatment literature related to the model with essential heterogeneity and discusses how they apply in the context of informal employment. Section 3 presents the data and discusses the main features of the Egyptian labor market over the period of study. Section 4 presents the model. Section 5 discusses the main empirical results. Final remarks are summarized in the Conclusion.

2. FORMAL EMPLOYMENT AS A TREATED POPULATION

The output of the paper's empirical analysis is a set of "treatment" effects. In our framework we designate as treated the population of workers holding formal jobs and as untreated the population of workers holding informal jobs. Formal and informal earnings represent the two outcomes from being treated and untreated, respectively. A difference between formal and informal earnings for a given worker defines an individual treatment effect.

Most of treatment estimators developed in econometrics respond to the two major problems of evaluation: a missing counterfactual state and selection into treatment. In our framework, the first problem translates into observing the majority of workers as a part of either formal or informal employment and not both simultaneously. The second problem is the classical endogeneity of occupational choice: workers' engagement in formal *vs.* informal employment may have the same unobservable determinants as their earnings from formal *vs.* informal jobs.

An additional evaluation problem arises in the event of the "essential heterogeneity," when individual heterogeneity is also related to the treatment responses and their correlation with the assignment rule. In a policy evaluation context, this implies first that different agents benefit differently from the policy and second that agents are either subjected to the policy or not depending on individual gain or loss from whether or not they are subjected to the policy.

In our context, allowing for essential heterogeneity is particularly interesting. First, a difference between formal and informal wages for a given worker may be nonzero: there may be different returns to observable (human capital variables, gender) and unobservable (entrepreneurial ability, family background) determinants of formal and informal wages. Second, a nonzero correlation between individual gains or losses from holding a formal rather than an informal job and allocation between different types of employment would capture workers' eventual sorting based on the gain into formal *vs.* informal employment. On the other hand, a zero correlation would