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A decomposition method on employment and wage discrimination and its application in urban China (2002–2013)

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ABSTRACT

Labor market discrimination is an important issue in developing countries where path-dependent institutions have been dominant, while effective institutional arrangements and policies have been hidden by local customs and culture. However, the existing applications of classical Blinder-Oaxaca decomposition face criticism for their imprecise understanding of the factors affecting institutional discrimination in labor markets, as well as for their lack of power in formulating well-targeted anti-discrimination policies. Following Oaxaca (1973), we propose a new method to decompose the total discrimination index (TDI) to analyze employment and wage discrimination in the labor markets of developing countries. The TDI is decomposed into the employment discrimination index (EDI) and the wage discrimination index (WDI), then into the underpayment index to majorities (UPI) and the overpayment index to minorities (OPI). We apply this method to the institutional discrimination against rural migrants in China's urban areas. Using national representative data from 2002 to 2013, we have found that, 1) the TDI increased quickly after China entered the WTO, then dropped after anti-discrimination policies were implemented. 2) The TDI is mainly determined by the UPI, while the TDI's fluctuation is mainly determined by the WDI. Our method provides insights into the changing composition of employment and wage discrimination and their respective labor market outcomes in developing countries. As a result, appropriate policy measures may be developed accordingly.

1. Introduction

Discrimination is a generally observed socio-economic phenomenon in the labor market and is an important research topic for social scientists. Academic investigation on intended discrimination can be typologized into individual-level and institutional-level discrimination (Pincus, 1996). Currently, two leading theories for individual-level discrimination have been developed – taste-based discrimination (Becker, 1972) and statistical discrimination (Arrow, 1972; Phelps, 1972) – relating to the limited (observed) information on expected labor market productivity. These cases of individual-level discrimination, however, could further be established as "institutional discrimination" (McCrudden, 1982): using laws or regulations to prevent certain sub-group(s) of the population from enjoying equal rights, treatments, and/or entitlements. Viewing institutional discrimination in the context of labor market issues, labor markets are often far from being integrated—especially in developing economies, where they remain segmented (House, 1984; Meng & Miller, 1995; Meng & Zhang, 2001; Appleton, Knight, Song, & Xia, 2004). This is characteristic of the so-called "two-tier" (or dual) labor market structure (Doeringer & Piore, 1971; Dickens & Lang, 1985). One frequently studied case of institutional discrimination in labor market studies is China's household registration (*hukou*) system (Cai et al., 2003; Chan, 2015; Meng & Zhang, 2001). This two-tier labor market structure has posed a methodological challenge in analyzing discrimination and its associated outcomes, as the classical decomposition of mean wage differentials in a single wage equation would arrive in misleading results.

Different decomposition methods have been developed in order to estimate the average wage difference between groups and to analyze the impact of institutional discrimination (Guryan & Charles, 2013; Riach & Rich, 2002). However, the existing applications of classical Blinder-Oaxaca decomposition face criticism for their imprecise understanding of the factors affecting institutional discrimination (see for example, Aeberhardt, Fougère, Pouget, & Rathelot, 2010; Baldwin & Johnson, 1992; Duguet, L'Horty,

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Meurs, & Pascale, 2010), as well as for their lack of power in formulating well-targeted anti-discrimination policies. For instance, the sources of discrimination may be embedded into the labor market structure according to different levels of employment, such as from formal and informal sectors or majority and minority workers. In this regard, conventional methods that decompose the wage difference between (the two types of) workers may lack power to address the full extent of a policy measure (Bendick, Jackson, & Reinoso, 1994; Fortin, Oreopoulos, & Phipps, 2015; Riach & Rich, 1991-2). In addition, empirical studies must separately investigate the processes and outcomes of institutional discrimination to clarify its impacts (McCrudden, 1982).

Based on Oaxaca (1973), this paper proposes a new framework to decompose the total discrimination of two labor groups – majorities and minorities in a two-tiered labor market structure – with both formal and informal sectors.[1] More specifically, we first calculate the total discrimination index (thereafter TDI) and then decompose it into two major discrimination dimensions: the employment discrimination index (thereafter EDI) and the wage discrimination index (thereafter WDI). Each of these two dimensions can be further decomposed into the underpayment index to majorities (thereafter UPI) and overpayment index to minorities (thereafter OPI) (see Section 2.2 for details). In other words, since each of the WDIs and EDIs consist of the overpayment to majorities and underpayment to minorities, there is generally a linear combination of OPI and UPI, where TDI = WDI + EDI = OPI + UPI. We can then utilize these four components to derive a more detailed discrimination analysis.

We further apply this methodology to identify and measure the institutional discrimination in China's urban labor market – where majorities are the local residents with urban *hukou* (thereafter "locals") and minorities are the rural migrants without urban *hukou* (thereafter "migrants") – using several sets of national representative household surveys from 2002 to 2013. (See Chan (2015) for a detailed review of the *hukou* system and Section 2.3 in this paper for its policy implications.) This paper finds that first, the TDI against migrants increased quickly as the country faced rapid economic growth over the early period of 2002–2007; then in the later years of the studied period (2007–2013), the TDI dramatically dropped with the implementation of new anti-labor-market discrimination policies, such as the New Labor Contract Law of 2008. Second, while the EDI fell over the entire period, the WDI experienced the same upward and downward trends as the TDI. Thus, the TDI's fluctuation was mainly determined by the changes of the WDI, as associated with the policy addressed in the captioned period (e.g., the 2008 Labor Contract Law). Third, the TDI was mainly determined by an underpayment to migrants, while an overpayment to locals did not account for a major component.

The rest of the paper is organized as follows: Section 2 presents a literature review detailing the decomposition methods on labor market discrimination and its limitations, and the latter part of Section 2 discusses the institutional discrimination against rural migrants in China's urban labor market and related empirical works. Section 3 introduces the discrimination index's measurements and decompositions, while Section 4 discusses the related empirical issues in applying our methodology into a two-tier labor market setting. Section 5 focuses on the data descriptions, measurements, and definitions of the two-tier labor market in urban China; Section 6 provides the decomposition results and the robustness checks. Section 7 concludes the paper with a discussion on the policy implications in China's urban labor market and future extensions of this methodology.

2. Literature review on the decomposition methods in labor market discriminations

In this section, we will separate the problems of current classical decomposition methods into three sub-sections for review, to demonstrate the research gap and importance of our new methodology. We will first give a brief overview on these problems as shown in literature. We then examine research studies regarding the overpayment in favor of majorities and its relation to the underpayment against minorities. At the end of this section, we review prior research on the discrimination against migrants in urban China. Finally, we map out our new method and apply it to China's urban labor market.

2.1. Limitations of current mean wage decomposition methods in analyzing labor market discrimination

Many studies that quantified labor market discrimination have employed the classical Blinder-Oaxaca decomposition method, stemming from Blinder (1973), Oaxaca (1973) and its variations (see for example, Brown, Marilyn, & Zoloth, 1980; Reimers, 1983). These methods focus on decomposing gross wage differences into discrimination and productivity components, where the residual component from the decomposition is regarded as the size of discrimination (see Silber and Weber (1999) for a comparison of these decomposition methods). The labor market discrimination outcomes and the determinants of other endowment gaps to discrimination are then analyzed (Fortin et al., 2015). While this method is widely used in analyzing gender and racial discrimination, the major criticism of these applications is that it is insufficient in identifying the sources and problems of discrimination, and therefore unable to provide accurate policy advice.

Most applications of the Blinder-Oaxaca decomposition method focus on labor market discrimination outcomes or analyze two types of economic agents with regard to the determinants of other endowment gaps (Anglade, Useche, & Deere, 2017; Fortin et al., 2015; Ouyang & Pinstrup-Andersen, 2012). Perhaps due to technical difficulties, only a few studies have tried to modify this method, and those that have primarily used wage gaps according to racial discrimination (Antecol & Bedard, 2004) and gender discrimination (Fortin, 2008). Fairlie (2005) has also extended the Blinder-Oaxaca decomposition technique to the Logit and Probit models, and Oaxaca and Chung (2016) apply panel data to correct for problems with sample selection in the decomposition.

First, some discrimination theories suggest that minorities may suffer from unfair treatment with both employment and wages (Arrow, 1973; Becker, 1972; Cotton, 1988, Dickens & Lang, 1985; Lang and Lehmann, 2012). However, most empirical studies do not clearly distinguish between employment discrimination and wage discrimination. Indeed, employment discrimination and wage discrimination are sometimes separable processes that do not necessarily happen simultaneously in the labor market (Darity & Mason, 1998; Heckman, 1998; Madden, 1975). Bendick et al. (1994) and Riach and Rich (1991–2) provide further evidence that solely focusing on wage discrimination would be misleading and would not help uncover the determinates of discrimination.

Second, current methods that decompose the mean wage differentials may result in biased estimates of discrimination. Aeberhardt et al. (2010), Baldwin and Johnson (1992), and Duguet et al. (2010) suggest that discrimination studies using the classical Blinder-Oaxaca decomposition method often overlook

[1] Some studies refer to this two-tier labor market structure as the formal and informal sectors; however, the definitions of formal and informal sectors are locally and contextually dependent. In our case, we discuss this two-tier labor market structure in China according to their industry definitions and their restrictions with the *hukou* system, as shown in Section 3