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School of Social Sciences
CITY UNIVERSITY LONDON

Department of Economics

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Ram Prasad Mainali
City University London

Saqib Jafarey
City University London

Gabriel Montes-Rojas[1]
City University London

Department of Economics
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[1] Corresponding author: Department of Economics, City University London, Social Sciences Bldg, Northampton Square, London EC1V 0HB, UK.
Email: Gabriel.Montes-Rojas.1@city.ac.uk. F: +44 (0)20 7040 8580.

Earnings and Social Background: An Evaluation of Caste/Ethnic Wage Differentials in the Nepalese Labor Market

Ram Prasad Mainali* City University London

Saqib Jafarey† City University London

Gabriel Montes-Rojas‡ City University London

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Abstract

This paper examines the sources of wage differentials among caste/ethnic groups, employing national survey data from Nepal. Our study shows that, in countries such as Nepal which have imperfect labour markets, the conventional Oaxaca decomposition methodology fails to estimate precisely the source of wage differential. Using an extended model, occupational choice, firm size distribution and the interaction between these two are employed along with the conventionally used meaures of human capital endowments of different groups, to estimate these effects. Our results indicate that the lack of access to better paying occupations and larger firms, rather than differences in human capital, are the main factors underlying the caste/ethnic wage differentia in Nepal. Furthermore, empirical evidence is not found in favour of government policy of 'affirmative action' to contribute yet in narrowing down the caste/ethnic wage differential in the labour market.

Keywords: Labour Market Discrimination, Caste, Ethnicity
JEL Classification: J01, J31.

*City University London, Department of Economics
†City University London, Department of Economics
‡City University London, Department of Economics, City University London, London EC1V 0HB, UK. E-mail: Gabriel.Montes-Rojas.1@city.ac.uk

1 Introduction

The system of caste classification allocates social labor on the basis of caste hierarchy and restricts occupational mobility (Banerjee and Knight, 1985). This discrimination has two major effects on the labor market. First, caste-classification discourages low-caste workers from developing human capital endowments compatible with occupations assigned to the higher castes. Second, it subjects backward castes to an informational disadvantage because of their exclusion from certain sectors of employment. In turn, a caste-based division of labor can perpetuate itself through the inter-generational transmission of occupational status from one generation to the next (Borjas, 1994; Tyree, 991; Darity and Mason, 1998).

This paper examines the sources of wage differentials among castes/ethnic groups in Nepal, a country in which, until 1963, an age-old, caste-based social division of labor was imposed by the national legal code *Muluki Ain*. The new *Muluki Ain* of 1963 discarded this caste system. However, caste based discrimination was itself declared illegal only after the promulgation of a new Constitution of the Kingdom of Nepal in 1990 (this made the practice of *untouchability* illegal). Since then, several policies have been implemented to reduce the impact of such discrimination, including positive discrimination and the establishment of a Dalit Commission. The Second Amendment of the Civil Service Act, 1993, reserves 45% of total vacancies in the public sector for backward castes, female, disabled and remote inhabitants. The effects of such policies are not known, partly due to the lack of rigorous research on the subject. This paper partly aims to fill this gap. A relative descrease in wage differential due to the gorup difference in access to better paid jobs, larger firm, will indicate the positive contribution of this policy.

In doing so, we take into account the modern empirical literature on the subject, which distinguishes between 'current market' and 'pre-market' labor discrimination. The later type of effects are known in the literature to contribute to the persistence of wage inequality even if active discrimination is no longer in current practice by

employers. Our main methodological contribution is to use an expanded set of proxies for detecting the presence of such pre-market effects.

The Oaxaca decomposition method is the most commonly used technique for disentangling 'pre-market' from 'current market' discrimination. Empirical studies have focused on the human capital endowment as the sole proxy for pre-market effects (Grimshaw and Rubey, 2002). Additionally, Darity and Mason (1998) identifies 'group' differences in access to better paying jobs within industries and occupations as major contributive factors of persistence in labor market discrimination. Empirical work carried out by Madheswaran and Attewell (2007) and Banerjee and Knight (1985) estimate such effects in the Indian labor market by incorporating occupation in the wage differential decomposition method.

In this paper, we question the adequacy of using only education and occupation as proxies for pre-market effects in countries that have imperfectly competitive markets for both labor and goods and services. The reason is that, in imperfectly competitive markets, there might exist a hierarchy of employers that pay differently to workers of the same educational level and occupational classification. For instance, in Nepal, where the public sector is a significant employer of white-collar workers (Moore, 2006) jobs are categorized by grade, with each grade associated with its own point in the overall pay scale. Engineers, doctors, administrators or accountants falling into a given grade all receive similar wages. However, the private sector may display segmentation within the same market, so that different firms might display different levels of both profitability and ability to pay higher wages (Bluestone, 1974; Vietorisz and Harrison, 1973).

In such a situation, workers' characteristics such as education and occupation might matter less than employer characteristics in explaining observed difference in labor market outcomes. We thus proxy better paid jobs by firm size to acknowledge this possibility. The empirical literature has provided evidence that larger firms hire higher quality workers (Brown and Medoff, 1989). Similarly, Schmidt and Zimmermann (1991) and

Hettler (2007) have shown a positive relationship between firm size and the wage rate. Thus, workers from marginalized castes inherit limited occupational choices as well as unequal access to better firms, proxied by firm size. Accordingly, we expand the Oaxaca decomposition method to use occupation, firm size and their interaction as indicators of caste/ethnicity-specific 'endowments' rather than as control variables. Therefore, three separate decomposition models are estimated in investigating the sources of caste/ethnic wage differentials in the labor market.

Our results indicate that wage discrimination is indeed present in the Nepalese labor market, with intermediate and low castes earning significantly less than the higher castes. Section 2 offers a precise classification of the different caste/ethnic group combinations that we use in our analysis. Moreover, lack of access by intermediate and low castes to employment in larger firms is found as an important factor behind the caste wage differential while years of schooling explains only a small portion of the differential.

The rest of the paper is organized as follows. Section 2 describes the historical and institutional basis of caste classification in Nepal. Section 3 reviews the evidence on labor market discrimination in developing countries and highlights the linkage between the caste system and the persistence of labor market discrimination. Section 4 states the econometric model, while the data and descriptive statistics are presented in Section 5. The main econometric results are presented in Section 6. Section 7 concludes.

2 Caste system in Nepal: An overview

Nepal, along with other countries, had a caste-based social division of labor in the past. Historically, caste classification in the Indian sub-continent was based on the Varna system of Hindu philosophy and the Aryan division of labor. These comprised four categories, namely Brahman, Ksyatriyas (Chhetri), Vaisyas and Shudras. Together these encompassed a social division of labor as priests and teachers, warier and royalty, merchants and money lenders, and artisans, service providers and other menial workers,

respectively (Deshpande, 2011). Brahman, being the superior caste, enjoyed the best status in the Nepalese society followed by Chhetri. While Vaisyas did not seem as privileged as Brahmans or Chhetri, they enjoyed a relatively higher social status than Shudras on the caste based social hierarchy. Shudras were the lowest caste, considered untouchable by their superiors.

As a predominantly Hindu country with a significant Buddhist minority, Nepal's adopted the Hindu caste system came with some local variation, implemented in the form of a legal code called *Muluki Ain*. This code classified all Nepalese into different categories irrespective of their religious backgrounds, but based on their relative ritual purity (Lynn et al., 2008). The official classification under *Muluki Ain* consisted of three categories, namely *Tagadhari* (literally "twice-born"), *Matwali* (literally "liquor drinking") and *Pani Nachalne* (literally "impure") (Cox, 1988). *Tagadahari* included upper-caste Hindus such as the Brahmans of the traditional Hindu caste system. *Matwali*, on the other hand, consisted mainly of Buddhists and indigenous ethnic groups who practiced Animism and Shamanism, and were considered an intermediate caste. The *Pani Nachalne* were the lowest caste and included not just traditional Hindu untouchables such as Kami, Sarki, etc. but also Muslims and Mlecha (literally 'foreigners'), who in turn included Christians.

This is where the intersection of caste and ethnicity entered into the social hierarchy of Nepal. Andres (1979) and Gurung (2002) describe a hierarchy of ethnic groups and their respective association with the legal caste categories. This divides all ethnic groups into two broader categories of Pure and Impure caste hierarchies consisting of three and two subcategories, respectively (see Table 1). While ethnic groups belonging to the *Tagadhari* and *Matwali* castes, fell under Pure (or Water Acceptable, i.e. sharing water with them was acceptable), the *Pani Nachalne* were Impure (or Water Unacceptable). Within these there were sub-categories: while the Pure *Matwali* were divided into Enslavable and Non-enslavable ethnic groups, the Impure *Pani Nachalne* were further divided into Untouchable and Touchable, depending on whether or not

they belonged to Hindu religious groups.

In line with these classifications, we aggregate caste-ethnic identity into three broad categories, namely *Tagadhari*, *Matwali* and *Pani Nachalne*. Lack of observations on the Enslavable *Matwali* and Touchable *Pani Nachalne* groups prevents us from constructing a finer division of the social hierarchy. In addition, we use an additional category of *Other caste* for those who cannot be classified into the three main categories. This could be for one of three reasons: (i) their ethnicity was not identified; (ii) it was identified as 'Other'; or (iii) it was identified as belonging to one of the (usually very small) ethnic groups which were not classified under the old *Muluki Ain*.

We estimate the impact of labor-market endowments and job characteristics, human capital (education), occupation, and firm size, on ethnic wage differentials by applying Blinder (1973); Oaxaca (1973) decomposition technique and the model extended by Banerjee and Knight (1985). We expand the decomposition methodology to incorporate occupation, firm size and their interaction into the model.

3 Labor market discrimination and the caste system

Caste/ethnic labor market discrimination is defined as a situation in which a person who provides labor market services and is equally productive in a physical and material sense is paid less in a way that is related to caste or ethnicity (Altonji and Blank, 1999). This concept emerged from the theories of taste discrimination, whereby employers directly hold preferences about the ethnic background of their employees (Becker, 1957, 1971) and statistical discrimination, whereby employers have incomplete information about workers productivity and statistical priors about how productivity varies with ethnicity (Arrow, 1971; Akerlof, 1984; Phelps, 1972). Both these theories are based on a neoclassical model that implies that competition will lead to the elimination of race or gender discrimination in the long run. Under perfect competition and different degrees of prejudicial tastes, employers with the least taste for discrimination will hire

members of a minority group but pay them a lower wage than equally qualified non-minorities (Chase, 2000). By paying less than the equilibrium wage, those employers earn profits in the short run. In the long run, however, taste discrimination disappears with insolvency of prejudiced firms and new entry of less prejudiced competitors into the market. Similarly, if group differences in ability are perceived to exist by employers but are not real, as the theory of statistical discrimination assumes, employers will update their beliefs over time (Darity and Mason, 1998).

A range of empirical studies have tested these theories and found evidence for the existence of gender and ethnic discrimination in multi-racial countries in Latin American and Southern Africa (Atal et al., 2009; Lovell, 2006; Larrea and Torres, 2006; Patrinos, 1997; Szelewicki and Jonna, 2009). Other authors have looked into the *persistence* of discrimination caused by "pre-" or "extra-market" processes, which reduce the earning power of previously discriminated-against groups (Madden, 1975). According to this view, the main type of 'pre-market' effect is the inter-generational transmission of low levels of education. The reason is that when a generation of workers grows up suffering directly from discrimination, not only is their own education undermined, but even if the discrimination ends during their lifetime, they have both less incentive (via higher discounting of the returns to education) and fewer means (via lower income) to invest in the education of their own children (Agee and Crocker, 1996). Moreover, because less educated parents are less capable of helping their offspring with schoolwork than are their more educated, higher income counterparts, children from disadvantaged groups are likely to fare worse in schooling outcome than their privileged counter-parts (Bond, 1981). Ermisch and Francesconi (2001) also demonstrates that parental educational background is a significant determinant of a child's educational achievement.

Other authors have emphasized the effect of that low levels of inter-generational transmission of educational attainment have on limiting occupational mobility across generations (Checchi, 1997). This can become an additional factor along with low ed-

ucational endowments *per se* in reinforcing persistence of labor market discrimination. Madheswaran and Attewell (2007) and Banerjee and Knight (1985) both find evidence in favour of this hypothesis. An additional factor generating persistence of labor market discrimination is imperfect competition across employers (Botwinick, 1993; Darity and Williams, 1985). These authors argue that, in the absence of current discrimination, perfect competition would drive employers to offer workers of a given educational level and occupation the same wages, under imperfect competition, more profitable employers would be able to offer higher wages to employees, despite similarities in education, occupation and industry-type. This approach emphasizes how inequality across different groups of workers in access to jobs with employers who pay higher wages (Darity and Mason, 1998) can persist over time as a result of past discrimination and suggests that the wage structure across social groups should be studied as a joint function of individual and employer characteristics.

While considerable attention has been paid to labor market discrimination based on race and gender, less attention has been paid to the issue of caste even though caste-based discrimination might be more powerful and persistent than racial discrimination. Racism emerged in countries that were either colonized or participated in the slave trade during the colonial era, while caste-based societies have existed for centuries before colonialism (Deshpande, 2011). Moreover while, apart from the master-slave division of slavery, the colonial powers did not impose strict occupational restrictions on the subject population, caste-based stratification was inherently associated with an occupational division of labor.

Akerlof (1984) describes a caste-segregated society as being more self-perpetuating than one in which current discrimination is of the 'tastes' or 'statistical' variety. The reason for this is a self-enforcing mechanism inherent in the caste system, whereby third parties punish any employer-employee pair who deviate from the caste division, by casting out both from normal society. He shows that a caste equilibrium exists in which no single member of either the dominant or disadvantaged group is willing to

break away from the caste division of labor, despite the presence of potential bilateral gains between employers and employees from doing so. In practice, as pointed by Deshpande (2011), members of disadvantaged castes also adhere to the caste structure out of self-fulfilling sense of fatalism. Thus, even after countries such as India and Nepal legally outlawed caste discrimination, the tendency for caste discrimination to persist through decentralized behaviour continued.

Das and Dutta (2007) estimated the caste wage differential in both regular and casual jobs in the Indian labor market. The results showed that a substantial differential existed between Scheduled Castes (SC) and General Castes (GC) in regular jobs, but not in casual ones, with almost two third of the differential in regular jobs being attributable to endowment effects. However, while their endowment variable included both educational and occupational proxies, amongst others, it did not explicitly differentiate between different types of endowment; therefore, their study cannot explicitly report on the impact of specific types of endowment differences on the caste wage differential.

In a similar study of the wage differential between scheduled and non-scheduled caste migrants in Delhi, Banerjee and Knight (1985) found that low-caste workers were more likely to be engaged in traditional low-paid jobs. By extending the conventional decomposition methodology to include occupational access as part of a worker's pre-market endowment, they found that a significant part of the caste wage differential was attributable to difference in access to better paid occupations. In a study of regular salaried jobs in India, Madheswaran and Attewell (2007) found that endowment differences were more significant than current wage differences in explaining the caste wage differential, and further, that the most important type of difference in endowments was the difference in occupation across castes.

To summarize, these studies highlight the fact that pre-market effects of discrimination are more important than current market discrimination in explaining the persistence of the caste wage differential in India, with the difference in access to better paid

jobs as a major factor in promoting pre-market differences. However, none of these studies have considered access to employment in larger firms as a factor in explaining endowment differences. Moreover, an empirical study on Nepalese labor market has not been carried out as yet, even along the lines of the studies on India discussed above. This is an important gap which needs to be filled in light of the fact that Nepal is the only country to have had a long history of a *legally* imposed caste based division of labor.

4 Empirical Model

Consider *Tagadhari* workers as the dominant/reference group and *Matwali*, *Pani Nachalne* and *Other caste* workers as the non-dominant/comparison groups. Denoting them by d and n, respectively, the earning function for both types of workers can be written as,

$$\bar{w}_d = f_d(\bar{x}_d), \tag{1}$$

$$\bar{w}_n = f_n(\bar{x}_n), \tag{2}$$

where $\bar{w}_d$ and $\bar{w}_n$ are the mean of log of hourly wage and $\bar{x}_d$ and $\bar{x}_n$ represents a set of average productivity characteristics associated with d and n workers, respectively.

In the conventional Oaxaca methodology, the gross difference in mean log wages between the two groups can be decomposed into explained differences in the individual productivity characteristics (E) and unexplained differences in the market valuation of such individual productivity characteristics (D),

$$\begin{aligned} \bar{w}_d - \bar{w}_n &= f_d(\bar{x}_d - \bar{x}_n) + \bar{x}_n(f_d - f_n) \\ &= E + D. \end{aligned} \tag{3}$$

In equation 3, E denotes the wage difference attributable to the difference in educational attainment and other labour market characteristics between the two groups,

evaluated according to the dominant group's wage structure. D represents the wage difference because of the difference in wage structure between the two groups, evaluated at the mean education and labour market characteristics of the reference group's. The former term represents the explained component of the wage differential whereas the later term indicates the unexplained component. These are known respectively as the *"pre-market"* discrimination and the *"current"* market discrimination.

Banerjee and Knight (1985) extended the Oaxaca methodology by incorporating differences in occupational distribution across caste/ethnic workers,

$$\begin{aligned}
\bar{w}_d - \bar{w}_n &= \sum_k (p_{kd}\bar{w}_{kd} - p_{kn}\bar{w}_{kn}) \\
&= \sum_k p_{kd} f_{kd}(\bar{x}_{kd}) - p_{kn} f_{kn}(\bar{x}_{kn}) \\
&= \sum_k p_{kn}[f_{kd}(\bar{x}_{kd}) - f_{kn}(\bar{x}_{kn})] + \sum_k f_{kd}(\bar{x}_{kd})(p_{kd} - p_{kn}) \\
&= W + J, \qquad (4)
\end{aligned}$$

where $\bar{w}_{kj}$ represents the log hourly mean wage of the j^{th} group in the k^{th} occupation, and p_{kj} represents the sample proportion of workers belonging to the j^{th} group in the k^{th} occupation.

The first component of the final equation represents the wage difference between the two groups due to differences in their wage structures. The second component reflects wage differences due to differences in occupational attainment between the two groups. We have already seen how the first component can be decomposed using the Oaxaca methodology. In addition, since the occupational attainment of different groups can be the result of both differences in productivity characteristics and labor market discrimination, the second component can also be decomposed into explained and unexplained components. Thus the final decomposition suggested by Banerjee and Knight (1985) is

$$\bar{w}_d - \bar{w}_n = \sum_k p_{kn}[f_{kd}(\bar{x}_{kd}) - f_{kd}(\bar{x}_{kn})] + \sum_k p_{kn}(f_{kd}(\bar{x}_{kn}) - f_{kn}(\bar{x}_{kn}))$$

$$+ \sum_k \bar{w}_{kd}(p_{kd} - \hat{p}_{kn}) + \sum_k \bar{w}_{kd}(\hat{p}_{kn} - p_{kn})$$

$$= WE + WD + JE + JD \tag{5}$$

WE and WD in equation (5) are similar to E and D in equation (3) but disaggregated by occupational categories as indicated by sub-script k. As before, the first term WE represents group differences in wages characteristics evaluated at the reference groups' wage structure, weighted by the occupational distribution of the comparison group. The second term WD reflects differences in wages evaluated on the basis of mean productivity characteristics, weighted by the occupational distribution of the comparison group.

The final two terms on the right hand side of equation (5) represent the sum of group differences in access to occupational categories. In both these terms, $\hat{p}_{kn}$ is the probability of group n being in occupation k given that they had a similar occupational function to that of group d. It represents the predicted representation of the non-dominant group in occupation k.

The term JE depicts the wage difference arising from a difference between the observed representation of the dominant group and the predicted representation of the non-dominant group in occupation k. This term therefore reflects the difference in observable productivity characteristics of the two groups. The term JD depicts the wage difference arising from the difference between the observed and the predicted participation of the non-dominant group in occupation k. This therefore captures the unexplained or 'market' discrimination in access of the non-privileged group to occupation k.

Using a multinomial logit model, we compute $\hat{p}_{kn}$,

$$\hat{p}_{kn} = \frac{exp(\beta_{kd} x_n)}{\sum_{j=1} exp(\beta_{jd} x_n)}, \tag{6}$$

where β_{kd} is a vector of coefficients associated with the dominant group d in the k^{th} occupation. The independent variables x_n used in the multinomial logit model are education, experience and experience squared.

The Banerjee-Knight methodology extends the traditional Oaxaca decomposition by disaggregating the difference in wage structure by occupational categories and then further decomposing the occupational access affect into explained and unexplained components. However, their methodology restricts itself to occupational attributes as the only additional variable in explaining job discrimination in the labor market. As we argued above, access to medium and large firms can play a considerable role in producing caste/ethnic wage differentials. Descriptive statistics show that there is a significant differences in wages across firm size, even within the same occupational categories, as used in Banerjee and Knight (1985). Thus, to the extent that wage differences arising from occupational differences are positively correlated with wage differences arising from firm size effects, the Banerjee-Knight estimates could overstate the impact of occupational difference on wage differentials.

We applied an alternative approach by interacting firm size with occupational dummies in estimating caste/ethnic wage differentials. We compute three results: (i) the Banerjee and Knight (1985) model which uses occupation as the additional variable, (ii) an identical model which uses firm size instead of occupation, and (iii) a model which interacts firm size and occupational dummies. The third decomposition model can be written as:

$$\bar{w}_d - \bar{w}_n = \sum_i p_{in}(f_{in}(\bar{x}_{id} - \bar{x}_{in})) + \sum_i p_{in}(f_{id}(\bar{x}_{in}) - f_{in}(\bar{x}_{in}))$$

$$+ \sum_i \bar{w}_{id}(p_{id} - \hat{p}_{kn}) + \sum_i \bar{w}_{id}(\hat{p}_{in} - p_{in})$$

$$= WE' + WD' + JE' + JD', \tag{7}$$

where i is the index identifying the interaction between occupation and firm size. An identical multinomial logit model as in equation (6) is employed to predict group n's probability to be represented across different firm sizes as well as in each of the interaction categories.

5 Data and descriptive statistics

This paper employs two waves of the National Living Standard Survey of Nepal for 2003/2004 and 2010/2011 carried out by the Central Bureau of Statistics of Nepal with the combined support of the World Bank and the UK Department for International Development (This surveys will be referred below as 2003 and 2010, respectively.) The surveys follow the World Bank's Living Standard Measurement Survey Strategy and apply a two-stage sampling scheme. 73 out of the 75 administrative districts of Nepal are covered. A total of 3333 households in 2003 and 5998 households in 2010 were interviewed, and information recorded about 30043 and 28670 individuals in each of the respective years. The information includes labor market data on wage employment, self employment, sector of employment, industry type, mode of payment, labor market attachment and educational attainment at the individual level. Since information on experience is not reported, it is proxied by age minus years of schooling minus six which is an average age to start school in the Nepalese education system. For simplicity, it is assumed that every person joined the labor market immediately after completing their schooling. An individual is defined as "employed" if he/she worked at least one hour during the seven days prior to the interview.

This analysis includes 4490 wage workers in 2003 and 4169 wage workers in 2010 in both the agricultural and non-agricultural sectors. Table 2 reports the caste/ethnic distribution for both samples. The *Tagadhari* group represents a dominant share of wage employee in both periods accounting for 33.13% of the total employment in 2003

and 38.31% in the later period. The *Matwali* accounts for 26% and 23.94%, *Pani Nachalne* 17.47% and 13.53% , and *Othecaste* for 23.40% and 24.23%, for 2003 and 2010, respectively.

Descriptive statistics in tables 4 and 5 show an average log hourly wage rate of 2.69 and 3.38 NPR respectively. The USD equivalent would be .040, and .045 respectively, based on an average exchange rate of 1 USD = 72.86 NPR in 2003 and = 74.36 NPR in 2010. The *Matwali*, *Pani Nachalne* and *Other caste* workers earn average wage less by 38%, 50% and 52% than the *Tagadhari* workers respectively, in 2003. Wage gaps between workers remain almost constant in the later period accounting for 33%, 51% and 57% for the smae comparison groups. Average years of education, defined as the highest level of completed years of schooling were 3.51 in 2003 and 5.43 in 2010.

Firm size, proxied by the number of employees, is not responded by many wage workers in the surveys. Approximately, 31% (1415 out of 4490) wage workers in 2003 and 45% (1909 out of 4169) wage workers in 2010 had reported the number of employees with their employer. This gives the ratio of firm size categories: small firm, medium firm and large firm as 7.84%, 40.71% and 51.45% respectively, in 2003, and 6.33%, 33.84% and 60.03%, respectively, in 2010. As we intend to estimate the impact of difference on occupational distribution and firm size association on wage differential among four caste/ethnic categories this limited response on number of employees reduces the sample size which in turns affects our estimation strategy. We, thus imputed firm size as small firm for those who did not reported the number of employees unless detectable as large firm on the basis of individual occupations, i.e. if the occupation is reported as government or armed forces the employer is categorized as a large firm. This increases the sample size considerably to 4490 in 2003 and 4169 in 2010. However, the composition of firm size categories completely reversed after the imputation (see table 3). It also changed the occupational compostion to be included in the small sample. After the imputation the agricultural and construction workers became the major component to represent the small firm category. This may not effect

the analysis of occupational effect since agricultural as well as cinstruction labourers falls into the *unskilled* categories in our analysis. However, in evaluating the firm size effect, which we intend to do, this might give an impression that caste/ethnic wage differential is mainly caused by their differences in association with agricultural labourers and otherwise rather than depicting the impact of firm size. This will not impede us to test our argument that access to better paid jobs play a significant role in widening caste/ethnic wage gap. We briefly discussed this issue in the sub-section 6.4 below.

The majority of wage employees work for small firms, which accounts for 70.96% and 53.2% of all employees in each sample year respectively, while the next share of employees is in large firms, which accounted for 16.08% and 31.21%, respectively. Small firms are defined as those that employ only one worker, medium-size firms were defined as employing 2-10 workers and large firms as employing more than 10 workers.

Similarly, most workers are in unskilled (a generic term for porters, garbage collectors, etc.) and agricultural occupations. These two categories of occupations together accounted for approximately, 64% in each sample year. Occupational categories such as professional and clerical, which are considered as white collar jobs are limited to 16% in 2003 and 18% in 2010. Of these, 68% and and 71% is occupied by *Tagadhari* caste/ethnic worker in each respective year. *Matwali*, *Pani Nachalne* and *Other caste* caste ethnic workers share, respectively, by 11%, 6% and 15% of white collar jobs in 2003. This measure stands approximately at 14%, 3% and 10% for respective caste/ethnic workers in the second survey. Other occupational catagories are distributed almost proportionately. This evidence indicates that the majority of wage earners in Nepal were casual laborers, not associated with any specific type of industry, unlike long-term contract workers.

The caste based stratification of the social hierarchy is reflected in the educational attainment of different ethnic groups. The *Pani Nachalne* group, classified as untouchable in the historical caste hierarchy, display the lowest average years of schooling:

1.75 and 2.82 years, respectively in each of the sample years. On the other hand, the *Tagadhari* group displays the highest average years of schooling: 5.72 and 8.26 years, respectively for the same periods. The *Matwali* and *Other caste* groups display intermediate levels of schooling in each year.

Despite the implementation of positive discrimination in favor of low caste/ethnic groups, a significant difference in better paid jobs persists in the Nepalese labor market. The privileged *Tagadhari* group by itself accounts for approximately 60% of the employees of large firms in each of the sample years, despite the fact that the intermediate *Matwali* groups have increased their participation in such firms considerably. The *Pani Nachalne* and the *Other caste* groups remain almost in same proportion throughout the analysis. A similar picture emerges if, instead of firm type, we look at employment by occupational category. The *Tagadhari* group alone occupies approximately, 60% of white collar jobs which is a significantly higher ratio than that of their sample proprotion. The *Pani Nachalne* displays the lowest representation in such jobs in both periods. This further indicates that historically backward ethnic workers remain constrained to work in low paid occupations.

6 Econometric analysis

6.1 Baseline regression analysis

Regression analysis is carried out separately for each sample period. Estimated coefficients are listed in tables 7 and 8 for 2003 and 2010, respectively. The first column in each table shows regression results for all caste/ethnic groups included in the sample, followed by a separate regression for *Tagadhari*, *Matwali*, *Pani Nachalne* and *Other caste* in columns 2, 3, 4 and 5, respectively. The last column of the tables shows coefficients associated with ethnic dummy variables using the *Tagadhari* caste/ethnic group as the base category.

Ethnic dummy coefficients for *Matwali*, *Pani Nachalne* and *Other caste* are -.01,

-.072 and -.162 in 2003 and .032, .070 and -.103 in 2010, respectively. The coefficients associated with *Matwali* are not statistically significant in either period; *Pani Nachalne* coefficients are significant at the 5% level in both periods and the *Other caste* coefficients are significant at 1% level in both periods. Surprisingly in 2010, the *Pani Nachalne* caste/ethnic dummy displays a statistically significant positive coefficient, seemingly contradicting the *prime facie* evidence of lower wages for this group. However, we shall see from the decomposition results that discrimination remains positive and the OLS results might be influenced by the fact that the human capital gap between the dominant group and the *Pani Nachalne* seems to have narrowed.

Returns to education for the pooled sample are positive, increasing with time, and significant at the 1% level in each sample year: .038 in 2003 and .06 in 2010. However, they vary considerably across ethnic groups. The *Tagadhari* enjoy the highest returns amongst all groups in both years, with all coefficients strongly positive and significant at the 1% level. The *Matwali* and *Other caste* have somewhat lower but still fairly positive returns and coefficients for these castes are uniformly significant at 1% level across the sample years. The *Pani Nachalne* have been the most disadvantaged group. However, even this group seems to have caught up in this dimension with other groups so that in 2010 this coefficient was almost identically positive and significant across all groups.

As expected, firm size seems to play a crucial role in determining individual earnings in the Nepalese labor market. For example, in 2003, those working in medium-size and large-size firm were likely to earn 57% and 72% in the *Tagadhari* subsample; 45% and 70% for *Matwali*; 43% and 1.09% for *Pani Nachalne*, and 55% and 80% for *Other caste* subsample. These coefficients are not significantly changed when ethnic dummy variables are included (see the last column of Table 7). Firm size effects decreased considerably by 2010. [1]

[1]One possible reason for this reduction in firm size effect can be attributed to rapid unionization in recent decades, along with the ascent to power of the Nepalese Communist Party Maoist (NCPM). The NCPM has been a strong proponent of the betterment of economically disadvantaged groups and unionization and collective bargaining have been strengthened since the NCPM came to political

The results for occupational (with reference group = unskilled workers) coefficients were qualitatively similar but of mixed significance across the sample periods.

6.2 Multinomial regression results

The actual distributions of disadvantaged workers being in particular occupational and firm size categories are compared with the expected distributions for these workers in Tables 9 and 10 respectively. Analogous measures for the *joint* distributions across firm size-occupation categories are presented in Table **??** for the year 2003 and in Table 12 for the year 2010. The expected distributions are predicted by education, experience and experience squared, as outlined in section 4.

We measure the under- or over-representation of each of the comparison groups in a particular job category by the difference between actual and predicted representations. By this measure, in 2003, workers belonging to each comparison group were significantly under-represented in white collar (i.e. professional and clerical) and skilled occupations but over-represented in the unskilled and agricultural occupations. The magnitude of under representation in white collar jobs was the highest for the *Pani Nachalne* workers, by 9% in professional, 3% in clerical and 7% in skilled occupations. These tendencies continued even into the later period with only negligible decreases in magnitude.

Analogous to the distribution across occupations, the comparison groups are under-represented in larger firm over both periods of the analysis. More importantly, the firm size distribution seems more regressive than the occupational distribution and to have increased over time. For example, in 2003 the attainment gap between actual and predicted values for employment in large firms was 6% for Matwali, 7% for Pani Nachalne and 9% for Other Castes. In 2010, these figures had increased to 18%, 21% and 23% respectively for each group.

The joint distribution over firm size interacted with occupation indicates that the

power in 2006.

comparison groups are uniformly over-represented in agricultural jobs held in small enterprises and generally under-represented in larger firms across almost all occupations. At the same time, while the comparison groups are generally over-represented in the unskilled occupations over both sample periods, they are under-represented in the unskilled occupational category within the large firms. This underlines the importance of distinguishing between firm-size and occupational effects in labour market discrimination.

6.3 Decomposition results

As discussed in the section 4, we employed three different types of decomposition in estimating the impact of different factors on the caste/ethnic wage differential. These models are hereafter referred to as the *Occupational*, *Firm size* and *Interaction* decomposition models.

Each model consist of four components; namely (1) Wage Explained (WE): the wage difference attributable to the difference in personal characteristics, (2) Wage Unexplained (WD): the wage difference caused by the difference in market valuation of such characteristics, (3) Job Explained (JE): the wage differential attributable to the group difference in access to better occupations and/or firms, as explained by the average human capital characteristics of each group and (4) Job Unexplained (JD): the wage differential attributable to the difference in access to better paid job that can not be explained by human capital characteristics. Job explained and wage explained together correspond to the *pre-market* effect on individual earnings while wage discrimination and job discrimination jointly explain the *current market* discrimination.

The estimated decomposition results are presented in tables 13 and 14 for the year 2003 and 2010, respectively. For each model, these tables present only the summary results. Details are not presented in order to save space but can be provided upon request.

The decomposition results show that the differences in human capital endowments,

generally considered to be the main source of wage gaps among workers, only weakly explain the wage differential. Considering the *Interaction* model, in 2003 data, this component only explained 5.45% of the wage differential between *Tagadhari* and *Pani Nachalne*. For the other two comparison groups in 2003, and for all groups in 2010 data, the same effect was less than 4%. The latter is not surprising since by 2010, workers in each comparison group had significantly increased their average years of education. Indeed, workers in the Matwali and *Pani Nachalne* groups had registered a larger perecntage increase in their average human capital endowments than those in the reference group.

The two other decomposition models give slightly larger values for this effect. This is also not surprising since the models without interaction are likely to overstate the estimated coefficients for all components.

The second component of the wage differential, namely wage discrimination (WD), also did not show a significant impact on wage differential. The maximum effect was 7.15% which applied to the *Pani Nachalne* group in the Interaction model in 2010 data. In other cases, this effect was even negative across all comparison groups in at least one decomposition model and/or one period of analysis.

The components relating to occupational and firm size effects, by contrast, show considerably larger effects. For example, the Interaction model shows that in 2003, approximately 21% of the wage gap for both Matwali and Pani Nachalne (when each is compared to the reference Tagadhari group) could be explained by the component JE, which measures the difference in access to the better paid jobs, arising from differences in human capital endowments. The unexplained component of the difference in access to better paid jobs, JD, explained up to 16% of the wage gap for the Pani Nachalne and the *Other caste* groups (in the Interaction model). This effect, however, remained smaller than the explained effect JE for all but not the Other caste group.

By 2010, the unexplained part of the wage gap arising from access to better paid jobs had increased significantly for all groups. For each group, it had become larger

than the explained part. The switch in relative importance of JD versus JE between the two sample periods is most significant the *Matwali* group. Across all the decomposition models used, JE went from 17%-21% in 2003, to 6%-8% in 2010 while JD rose from 8%12% in 2003 to 23%-25% in 2010. Similar but marginally less striking results are found for the *Pani Nachalne* group. Both these groups experienced a significant narrowing of the educational gap with the dominant *Tagadhari* group. The *Other caste* who did not experience the same degree of human capital increase show a much smaller switch in importance of JD. All in all, the results indicate that discriminatory barriers to access to better paid jobs have become the major reason for wage discrimination.

An important point to arise from our results is that the combined impact of access of better jobs, as measured by JE and JD , is considerably higher from the *Interaction* model is higher than from the *Occupational* and *Firm size* models. This is true in both periods. This suggests that that, as claimed in our hypothesis, the lack of access to better occupations by under-privileged groups is closely related to a lack of access to larger firms. It also demonstrates that measures of labour market access which are based on occupational classification alone, as in Banerjee and Knight (1985), can under-estimate the degree of under-representation.

6.4 Robustness

As indicated in section 5, the small firm category is dominated by agricultural employment. Thus, the decomposition results discussed in the previous section might be the effect of differences between wages paid in agriculture as opposed to other sectors of the economy, even for workers of similar human capital endowments and case/ethnic identities. We therefore estimated all three decomposition models by using sub-samples that exclude agricultural workers.

The results from this analysis are presented in Tables 15 and 16. These results are consistent with the full-sample decomposition results in both periods of the analysis.

Since this sub-sample would be expected to have a larger proportion of employment

in the formal sector and/or in larger firms, where education matters relatively more, it would be expected to result in a higher value of the educational effects on the wage differential. The results show that this is true for 2010 but there is not much change in the component of discrimination attributable to educational effects in the 2003 data. In any case, this effect remains small even in 2010 data.

Analogous to the previous decomposition results, difference in access to better jobs plays a crucial role in explaining wage differential associated with all groups of workers in comparison. As in the full sample, there was an increase in the combined effect of JE and JD between the two sample periods, along with a switch in relative magnitudes from JE to JD.

Finally, the aggregate effect of JE and JD in the *Interaction* decomposition model is higher than other two decomposition models in both periods and across all comparison groups. This indicates that difference in interaction between larger firms and higher paying occupations plays an important role in producing caste/ethnic wage differentials and that these results are robust in the choice of different sub-samples.

7 Conclusion

In this paper, we have investigated the source of caste/ethnic wage differentials by extending the conventional Oaxaca decomposition methodology to include both occupational and firm size effects into the model. Two waves of National Living Standard Survey (NLSS) data from Nepal are employed. This study covers a time span of seven years and includes a period of radical political change in Nepal, including the overthrow of a century-long monarchy. Such changes were likely to influence labor market outcomes in the country. Additionally, this period also witnessed major public policy interventions to empower backward caste/ethnic groups by offering them *quotas* in public sector jobs.

We found a significant level of caste/ethnic discrimination to exist in the Nepalese labour market, which has in fact increased over the period of analysis. At the same

time, the results shows that only a small portion of the wage differentials can be attributed to caste/ethnic differences in human capital attainment. The results also suggest that only a relatively small component of the wage differential is coming from discriminatory behaviour once workers are employed in identical jobs. As we argued in the Introduction, and thus motivated the use of the extended Oaxaca decomposition methodology, a significant portion of the wage differential is coming from the difference in access to better paid jobs. These are jobs associated with better occupations and/or larger firms.

Within the components of discrimination that are related to access to jobs, during the 2003 period, the explained component of the wage differential dominated the unexplained component. This implies that non-dominant groups' access to better occupations and firms was constrained by their inferior human capital endowments in the data from 2003. However, by 2010, these groups seem to have considerably improved their human capital attainment but were still not able to gain access to the better-paying occupations and firms. This was reflected in a reversal of the relative importance of explained and unexplained portions of difference in group access to jobs.

Our results therefore suggest that access to better paying jobs, in better occupations and larger firms, is the main factor underlying castewage differentials in Nepal. Moreover, there are market barriers other than lack of educational endowments that undermine access of workers belonging to under-privileged groups to the more lucrative jobs. Future study could attempt to identify the economic factors, if any, behind such barriers; however, it is beyond the scope of the current study.

An interesting finding of this paper, especially from the methodological view point, is that firm size effects, when taken together with occupational effects, play an important role in determining caste ethnic wage differential in the labour market. The *Interaction* model shows higher effects than the other two models which are based on occupation alone and firm-size alone. This implies that the conventional Oaxaca decomposition which was later extended to incorporate occupational distribution might

fail to estimate precisely the source of wage differential among workers, particularly in countries that have imperfectly competitive labour markets.

Two points of policy concern arise from our results. First, the increase in gaps in access to better jobs between 2003 and 2010 suggests that the government's policy of imposing caste/ethnic *quotas* in public sector employment has not been enough to overcome other barriers that prevent under-privileged workers from accessing such jobs. Second, our results suggest that pre-market or explained (by differences in human capital) effects on wage differentials dominated the current market or unexplained effects in the earlier period but not in the more recent period. This implies that pure discrimination has increased.

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Appendix: Variables definition

hwage= All payments against the job such as cash, in-kind, bonus, transport, and medical allowances calculated on hourly basis.
Education= Years of schooling completed (Highest level completed).
Experience= Age -years of schooling -6.
Married=1, if individual is married; and 0, otherwise.

Ethnic Dummies

Tagadhari=1, if ethnicity belongs to Brahman, Chhetri, Newar and Yadav; and 0, otherwise.
Matwali=1, if ethnicity belongs to Gurung, Magar, Tharu, Tamang, Yadav, Rai and Limbu; and 0, otherwise.
Pani Nachalne=1, if ethnicity belongs to Damai, Kami, Sarki and Muslim; and 0, otherwise.
Other caste=1, if own ethnicity is not mentioned (ethnicity reported as in other category) and those not included in the above categories; and 0, otherwise.

Firm size Dummies

Small firm=1, if number of employee is 1; and 0, otherwise.
Medium firm =1, if number of employees is 2-10; and 0, otherwise.
Large firm= 1, if number of employees is more than 10; and 0, otherwise.

Occupational Dummies

Service=1, if occupation is travel, trekking, cooking, housekeeping , care takers, laundry workers, barbers and other service worker; and 0, otherwise.
Clerical=1, if occupation is clerk, typist, book keeper, telephone operator, military, other clerical; and 0, otherwise.
Professional=1, if occupation is Doctor, engineer, administrative executive, religious professional etc.; and 0, otherwise.
Unskilled= 1, if occupation is all not included in other category; and 0, otherwise.
Agri-worker=1, if occupation is farm manager, farm worker, agricultural worker, forestry worker, fisherman, hunters and trapper; and 0, otherwise.
Skilled=1, if occupation is metal processor, chemical processor, plumbers welders, jewelery workers, paper makers; and 0, otherwise.
Sales=1, if occupation is working proprietor, sales supervisor, sales person, insurance, real estate, other sales workers; and 0, otherwise.

Regional Dummies

Far-western =1, if individual works in far-western administrative region; and 0, otherwise.
Mid-western =1, if individual works in mid-western administrative region; and 0, otherwise.
Western =1, if individual works in eastern administrative region; and 0, otherwise.
Central=1, if individual works in central administrative region; and 0, otherwise.
Eastern =1, if individual works in eastern administrative region; and 0, otherwise.
Abroad=1, if individual works outside the country; and 0, otherwise.

Industry Dummies

Agricultural=1, if industry is agricultural, forestry and logging and fishing; and 0, otherwise.
Mining=1, if industry is coal mining, petroleum gas, metal mining and other mining; and 0, otherwise.

Manufacturing=1, if industry is food and beverage, textile apparel, wood furniture paper printing, handicrafts, other metallic; and 0, otherwise.
Construction=1, if industry is buildings, street highways, water ports project, irrigation, electricity gas and water; and 0, otherwise.
Trade=1, if industry is wholesale, retail and restaurant; and 0, otherwise.
FRE=1, if industry is finance, insurance and real estate; and 0, otherwise.
Servicesec=1, if industry is transport, communication, recreation and cultural and international; and 0, otherwise.
Others=1, if industry is not included in above categories; and 0, otherwise.

Table 1: Nepal Social Hierarchy: 1854

Hierarchy	Habitat	Belief/Religion
A.**Water Acceptable(Pure)**		
1.*Tagadhari:*/Wearer of the sacred thread		
"Upper Caste" (Brahman)	Hills	Hinduism
" Upper caste" (Madhesi)	Tarai	Hinduism
" Upper Caste" (Newar)	Kathmandu Valley	Hindusim
2. *Matwali:*/ Alcohol drinkers(non-enslavable)		
Gurung, Magar, Sunuwar	Hills	Tribal / Shamanism
Thakali, Rai, Limbu	Hills	Tribal / Shamanism
Newar	Kathmandu Valley	Buddhism
3. *Matwali:*/ Alcohol drinkers(enslavable)		
Bhote(Tamang)	Mountain/Hills	Buddhisim
Gharti,Chepang, Hayu	Hills	
Kumal , Tharu	Inner Tarai	Animism
B. **Water unacceptable (Impure)**		
1. *Pani Nachalne* / Touchable		
Dhobi, Kasai, Kusule, Kalu	Kathmandu Valley	Hinduism
Musalman	Tarai	Islam
Mlechha(Foreigner)	Europe	Christianity etc.
2. *Pani Nachalne* / Untouchable(achhut)		
Badi, Damai ,Gaine	Hill	Hinduism
Kadara, Kami, Sarki(Parbatiya)	Hills	Hinduism
Chhyame, Pode (Newar)	Kathmandu Valley	Hinduism

Source: Adapted from Bennett et.al (2008).

Table 2: Caste/ethnic Distribution of Wage Employees

	Year: 2003		Year: 2010	
Ethnic group	Obs.	%	Obs.	%
Tagadhari	1488	33.13	1597	38.31
Matwali	1168	26.00	998	23.94
Pani Nachalne	785	17.47	564	13.53
Other caste	1051	23.40	1010	24.23
Total	4490	100	4169	100

Table 3: Firm Size Distribution

	Responded		**Imputed**	
	Obs.	%	Obs.	%
	Year: 2003			
Small firm	111	7.84	3186	70.96
Medium firm	576	40.71	582	12.96
Large firm	728	51.45	722	16.08
Total	1415	100	4490	100
	Year: 2010			
Small firm	117	6.13	2218	53.2
Medium firm	646	33.84	650	15.59
Large firm	1146	60.03	1301	31.21
Total	1909	100	4169	100

Table 4: Descriptive Statistics: 2003

	2003				
Variables	Total	*Tagadhari*	*Matwali*	*Pani Nachalne*	*Other caste*
lhwage	2.69	3.00	2.62	2.50	2.48
Education	3.51	5.72	2.70	1.75	2.61
Small firm	3705	744	959	670	814
Medium firm	604	292	114	64	108
large firm	754	450	95	50	128
Central	1610	658	371	228	352
Eastern	799	141	247	161	248
Western	531	161	185	113	72
Mid-western	309	102	103	67	37
Far-western	166	70	58	29	09
Abroad	1077	354	204	186	332
Unskilled	719	278	223	91	126
Professional	565	383	68	28	85
Clerical	153	102	13	13	24
Service	140	61	38	19	22
Sales	87	42	12	05	28
Agricultural	2153	370	644	509	629
Skilled	675	250	170	119	136
Agriculture	53	20	18	07	08
Mining	34	10	13	07	04
Manufacturing	593	236	130	105	122
Construction	544	172	192	72	108
Trade	139	86	16	11	26
Finance	39	34	02	00	03
Service	768	446	147	59	116
Others	2318	482	650	523	663
Obs.	4488	1486	1168	784	1050

Table 5: Descriptive Statistics: 2010

	2010				
Variables	Total	*Tagadhari*	*Matwali*	*Pani Nachalne*	*Other caste*
lhwage	3.38	3.67	3.32	3.15	3.10
Education	5.43	8.26	4.64	2.82	3.18
Small firm	2218	465	628	432	693
Medium firm	650	342	132	63	113
large firm	1301	790	238	69	204
Eastern	938	226	302	109	301
Central	2053	976	468	153	456
Western	809	275	191	182	161
Mid-western	618	240	187	149	42
Far-western	380	197	70	88	25
Abroad	245	40	27	38	140
Unskilled	972	348	292	151	181
Professional	427	311	63	10	43
Clerical	325	237	40	15	33
Service	534	231	119	80	104
Sales	150	73	29	21	27
Agricultural	1676	352	450	332	542
Skilled	959	402	252	110	195
Agriculture	1704	354	455	337	558
Mining	69	25	20	08	16
Manufacturing	594	227	144	93	130
Construction	861	304	249	160	148
Trade	171	89	32	18	32
Service	425	201	119	37	68
Finance	127	87	25	04	11
Others	1092	667	201	62	162
Obs.	4169	1597	998	564	1010

Table 6: Wages by Occupation and Firm Size

	2003			2010		
Occupation	Small firm	Medium firm	Large firm	Small firm	Medium firm	Large firm
Unskilled	2.56(.83)	2.85(.94)	3.11(.72)	2.82(.83)	3.14(.86)	3.63(.71)
Professional	3.19(1.22)	3.40(.88)	3.73(.85)	3.85(1.01)	4.37(.77)	4.44(.93)
Clerical	2.52(1.41)	3.12(.62)	3.68(.81)	4.94(1.20)	3.69(.76)	3.91(.68)
Service	2.82(.92)	2.71(.89)	3.22(1.22)	3.02(.73)	3.29(.78)	3.53(.90)
Sales	2.79(.99)	2.60(.73)	3.17(.88)	3.02(.57)	3.25(.60)	3.85(.63)
Agri-worker	2.28(.63)	3.50(.99)	3.88(.68)	3.03(.58)	2.34(.61)	3.57(.94)
Skilled	2.73(.88)	3.08(.87)	3.06(.82)	3.11(.70)	3.28(.82)	3.97(.89)

Note: Standard deviation is presented in the parenthesis.

Table 7: OLS Regression Results: Year, 2003

	All	*Tagadhari*	*Matwali*	*Pani Nachalne*	*Other caste*	*Dummy*
	1	2	3	4	5	6
Education	.038***(.004)	.043***(.007)	.026***(.009)	.013(.011)	.037***(.010)	.027***(.004)
Experience	.019***(.003)	.024***(.005)	.017***(.005)	-.003(.008)	.012*(.007)	.013***(.003)
Experience2	-.000(000)	-.000(.000)	000(000)	-.000(000)	-.000(000)	-000(000)
Married	.068**(.030)	.121**(.052)	.050(.049)	.100(.073)	.067(.073)	.058**(.030)
Medium firm	.512***(.050)	.577***(.091)	.456***(.092)	.434***(.114)	.557***(.101)	.536***(.050)
Large firm	.770***(.048)	.728***(.081)	.703***(.115)	1.09***(.097)	.800***(.110)	.794***(.049)
Eastern	-.265***(.063)	-.112(.098)	-.289***(.088)	-.305(.217)	-.009(.247)	-.225***(.063)
Central	-.101*(.061)	-.008(.085)	-.125(.086)	-.237(.215)	.151(.246)	-.076(.061)
Western	-.019(.065)	-.077(.098)	.038**(.094)	-.003(.217)	.206(.257)	-.001(.065)
Mid-western	-.122*(.067)	-.019(.100)	-.253**(.099)	-.074(.219)	.056(.276)	-.108*(.067)
Abroad	-.148***(.062)	-.146*(.087)	-.031(.095)	-.016(.216)	.093(.246)	-.108*(.063)
Professional	.237***(.062)	.294***(.088)	.076(.143)	-.164(.214)	.268*(.171)	.256***(.062)
Clerical	.141*(.091)	.062(.110)	.694**(.351)	.596*(.394)	.155(.228)	.159*(.091)
Service	.108(.130)	-.153(.156)	.288(.326)	-.551**(.271)	1.00***(.307)	.119(.132)
Sales	-.144***(.133)	-.297(.207)	.186(.241)	-.362(.412)	.016(.243)	-.116(.134)
Agri-worker	.489***(.062)	.410***(.105)	.802***(.122)	.942***(.143)	.360**(.148)	.511***(.062)
Skilled	.088**(.042)	.097(.075)	.118*(.071)	.253**(.106)	-.009(.105)	.093**(.043)
Mining	-.004(.164)	.055(.243)	-.073(.305)	.356(.315)	-.334(.442)	-.002(.164)
Manufacturing	-.117**(.092)	-.131(.164)	.064(.157)	-.054(.240)	-.193(.291)	-.094(.093)
Construction	.423***(.088)	.506***(.162)	.458***(.148)	.331(.229)	.443*(.288))	.441***(.089)
Trade	-.342***(.132)	-.273(.199)	-.015(.249)	.198(.294)	-.749*(.389)	-.336**(.132)
FRE	.531***(.191)	.506**(.231)	-	-	.557*(.306)	.521**(.191)
Servicesec	.032(.092)	-.033(.157)	.334**(.164)	.208(.238)	-.033(.299)	.038(.093)
Others	-.516***(.092)	.238*(.162)	-.649***(.167)	-.870***(.231)	-.611**(.288)	-.505***(.092)
Matwali	-	-	-	-	-	-.010(.030)
Pani Nachalne	-	-	-	-	-	-.072**(.033)
Other caste	-	-	-	-	-	-.162***(.033)
Constant	2.15***(.111)	1.91***(.185)	2.10***(.188)	2.36***(.312)	2.07***(.359)	2.25***(.113)
R-square	.2951	.2961	.2646	.2782	0.3233	.2973
Obs.	4490	1488	1168	785	1051	4490

Notes: Robust Standard Error in the parenthesis. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 8: OLS Regression Results: Year, 2010

	All	*Tagadhari*	*Matwali*	*Pani Nachalne*	*Other caste*	*Dummy*
	1	2	3	4	5	6
Education	.060***(.004)	.060***(.007)	.057***(.008)	.055***(.012)	.059***(.008)	.055***(.003)
Experience	.029***(.003)	.038***(.005)	.016**(.006)	.020**(.009)	.026***(.006)	.028***(.003)
Experience2	-.000(.000)	-.000(.000)	-.000(.000)	-.000(.000)	-.000(.000)	-.000(.000)
Married	.058*(.039)	.030(.062)	.276***(.071)	-.048(.103)	-.004(.089)	.056**(.034)
Medium firm	.111*(.055)	.172*(.108)	.080(.121)	-.020(.167)	.112(.125)	.136**(.064)
Large firm	.435***(.054)	.444***(.108)	.461***(.111)	.495***(.168)	.428***(.106)	.467**(.062)
Eastern	.114**(.047)	.008(.097)	.268***(.068)	.236***(.092)	.321**(.146)	.124***(.048)
Central	.126***(.047)	.012(.092)	.400***(.070)	.065(.082)	.373**(.145)	.153***(.040)
Western	.032(.050)	-.112(.102)	.222***(.075)	-.011(.077)	.257*(.155)	.032(.043)
Mid-western	.114**(.053)	-.075(.114)	.314***(.081)	.133*(.086)	.254*(.159)	.104**(.042)
Abroad	-.137**(.067)	-.062(.147)	.071(.139)	-.276**(.129)	.161(.160)	-.073(.063)
Professional	.603***(.065)	.565***(.096)	.650***(.154)	.386(.284)	.707***(.142)	.619***(.065)
Sales	-.116(.117)	-.247*(.153)	.437(.405)	-.098(.297)	.066(.186)	-.173*(.103)
Agri-worker	-.133*(.086)	.175*(.126)	-.307*(.187)	.106(.278)	.087(.106)	-.028(.060)
Service	.004(.059)	.004(.093)	.122(.129)	.134(.189)	.022(.126)	-.027(.048)
Skilled	.135***(.053)	.111(.086)	.252**(.113)	.105(.162)	.172*(.106)	.180**(.031)
Clerical	.156***(.062)	.160*(.093)	.092(.140)	-.061(.296)	.308**(.125)	.211***(.052)
Mining	-.068(.123)	-.284**(.134)	-.178(.261)	-	.459(.353)	-.017(.086)
Manufacturing	-.118*(.066)	-.146(.141)	-.234*(.131)	.038(.163)	-.102(.101)	-.067(.066)
Construction	.282***(.052)	.343***(.132)	.047(.082)	.415***(.115)	.388***(.096)	.279***(.061)
Trade	.004(.110)	.076(.161)	.497(.370)	.498**(.262)	-.195(.155)	.183*(.100)
Servicesec	-.112*(.067)	-.198*(.124)	-.236*(.135)	.180(.170)	.015(.137)	.066(.072)
FRE	.156*(.104)	.168(.158)	.053(.221)	-.073(.473)	.224(.237)	.285(.108)
Others	-.109*(.063)	-.089(.125)	-.285**(.114)	-.099(.152)	-.074(.117)	.013(.069)
Matwali	-	-	-	-	-	.029(.030)
Pani Nachalne	-	-	-	-	-	.067**(.034)
Other caste	-	-	-	-	-	-.104***(.029))
Constant	2.30***(.055)	2.32***(.103)	2.22***(.093)	2.56***(.125)	2.06***(.168)	2.37***(.078)
R-square	.3801	.3745	.3450	.2306	.3433	.3871
Obs.	4169	1597	998	564	1010	4169

Notes: Robust Standard Error in the parenthesis. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 9: Occupational Distribution in % by Caste/Ethnic Groups

Year:2003							
Occupation	*Tagadhari*	*Matwali*		*Pani Nachalne*		*Othrcaste*	
	Actual	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Unskilled	0.18	0.12	0.19	0.11	0.11	0.12	0.13
Professional	0.25	0.03	0.14	0.03	0.12	0.08	0.18
Clerical	0.07	0.01	0.01	0.02	0.05	0.02	0.04
Service	0.04	0.02	0.04	0.02	0.02	0.02	0.02
Sales	0.02	0.001	0.01	0.01	0.01	0.02	0.03
Agriworker	0.55	0.64	0.39	0.65	0.44	0.59	0.39
Skilled	0.16	0.14	0.18	0.15	0.22	0.13	0.18
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Year:2010							
Unskilled	0.08	0.10	0.10	0.08	0.10	0.12	0.12
Professional	0.19	0.06	0.16	0.01	0.09	0.08	0.15
Clerical	0.15	0.04	0.08	0.02	0.11	0.02	0.08
Service	0.10	0.05	0.07	0.06	0.10	0.03	0.12
Sales	0.04	0.01	0.02	0.01	0.04	0.02	0.04
Agriworker	0.25	0.58	0.32	0.72	0.33	0.60	0.28
Skilled	0.17	0.13	0.22	0.07	0.20	0.13	0.18
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 10: Firm Size Distribution by Caste/Ethnic Groups

Year:2003							
Firm size	*Tagadhari*	*Matwali*		*Pani Nachalne*		*Othrcaste*	
	Actual	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Small	0.50	0.82	0.69	0.85	0.69	0.77	0.63
Medium	0.19	0.10	0.16	0.08	0.17	0.10	0.14
Large	0.30	0.08	0.14	0.06	0.13	0.12	0.21
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Year:2010							
Small	0.29	0.63	0.51	0.36	0.40	0.69	0.36
Medium	0.22	0.13	0.21	0.11	0.28	0.11	0.21
Large	0.49	0.24	0.43	0.12	0.32	0.20	0.43
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 11: Firm Size*Occupation Distribution by Caste/Ethnic Groups: Year, 2003

Interaction	*Tagadhari*	*Matwali*		*Pani Nachalne*		*Othrcaste*	
	Actual	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Unskilled*small firm	0.11	0.14	0.13	0.08	0.08	0.08	0.09
Unskilled*medium firm	0.03	0.02	0.03	0.02	0.02	0.01	0.01
Unskilled*large firm	0.04	0.01	0.02	0.003	0.008	0.01	0.01
Professional*small firm	0.03	0.01	0.01	0.01	0.01	0.01	0.03
Professional*medium firm	0.07	0.02	0.06	0.01	0.06	0.02	0.04
Professional*large firm	0.15	0.02	0.06	0.01	0.04	0.04	0.10
Clerical*small firm	0.005	0.001	0.002	0.001	0.001	0.003	0.004
Clerical*medium firm	0.02	0.001	0.01	0.006	0.02	0.005	0.01
Clerical*large firm	0.04	0.003	0.008	0.007	0.03	0.01	0.03
Service*small firm	0.01	0.02	.02	0.009	0.006	0.01	0.01
Service*medium firm	0.009	0.006	0.01	0.005	0.009	0.003	0.008
Service*large firm	0.01	0.005	0.009	0.005	0.009	0.003	0.004
Sales*small firm	0.005	0.005	0.003	0.001	0.005	0.007	0.005
Sales*medium firm	0.01	0.002	0.004	0.002	0.008	0.01	0.01
Sales*large firm	0.004	0.001	0.004	0.001	0.001	0.006	0.01
Agriworker*small firm	0.22	0.53	0.37	0.62	0.42	0.55	0.35
Agriworker*medium firm	0.01	0.01	0.01	0.01	0.01	0.02	0.01
Agriworker*large firm	0.01	0.008	0.005	0.01	0.01	0.02	0.02
Skilled*small firm	0.10	0.11	0.13	0.10	0.15	0.09	0.12
Skilled*medium firm	0.02	0.01	0.02	0.02	0.05	0.01	0.02
Skilled*large firm	0.03	0.01	0.02	0.01	0.02	0.01	0.02
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 12: Firm Size*Occupation Distribution by Caste/Ethnic Groups: Year, 2010

Interaction	*Tagadhari*	*Matwali*		*Pani Nachalne*		*Othrcaste*	
	Actual	*Actual*	*Predicted*	*Actual*	*Predicted*	*Actual*	*Predicted*
Unskilled*small firm	0.12	0.19	0.13	0.17	0.11	0.10	0.08
Unskilled*medium firm	0.02	0.02	0.02	0.01	0.01	0.02	0.01
Unskilled*large firm	0.03	0.03	0.04	0.02	0.03	0.04	0.05
Professional*small firm	0.003	0.001	0.001	0.001	0.006	0.001	0.001
Professional*medium firm	0.04	0.01	0.03	0.001	0.006	0.001	0.02
Professional*large firm	0.12	0.04	0.09	0.01	0.06	0.03	0.10
Clerical*small firm	0.001	0.00	0.001	0.00	0.00	0.001	0.00
Clerical*medium firm	0.04	0.01	0.01	0.01	0.05	0.001	0.02
Clerical*large firm	0.08	0.02	0.04	0.01	0.03	0.002	0.05
Service*small firm	0.04	0.06	0.05	0.06	0.08	0.04	0.04
Service*medium firm	0.02	0.01	0.01	0.02	0.05	0.02	0.02
Service*large firm	0.05	0.02	0.03	0.03	0.03	0.04	0.06
Sales*small firm	0.001	0.01	0.009	0.02	0.02	0.001	0.004
Sales*medium firm	0.02	0.001	0.005	0.001	0.02	0.01	0.02
Sales*large firm	0.007	0.001	0.20	0.001	0.01	0.001	0.005
Agriworker*small firm	0.17	0.35	0.002	0.46	0.18	0.48	0.23
Agriworker*medium firm	0.002	0.001	0.004	0.00	0.00	0.00	0.00
Agriworker*large firm	0.002	0.004	0.10	0.001	0.001	0.001	0.00
Skilled*small firm	0.07	0.10	0.06	0.10	0.13	0.10	0.12
Skilled*medium firm	0.04	0.04	0.06	0.03	0.08	0.04	0.07
Skilled*large	0.10	0.06	0.10	0.02	0.07	0.03	0.07
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 13: Main Decomposition Result: Year, 2003

	$P_{in} * f_d(X_d - X_n)$	$P_{in} * X_n(f_d - f_n)$	$w_{id}(p_{id} - \hat{p}_{in})$	$w_{id}(\hat{p}_{in} - p_{in})$
	WE	**WD**	**JE**	**JD**
	Tagadhari Vs Matwali			
Occupational	0.0342	0.0477	0.1800	0.0830
Firm size	0.0522	0.0392	0.1759	0.1003
Interaction	0.0220	0.0308	0.2142	0.1246
	Tagadhari Vs Pani Nachalne			
Occupational	0.0623	0.0052	0.1547	0.1413
Firm size	0.0784	0.0165	0.1786	0.1235
Interaction	0.0545	-0.0861	0.2082	0.1617
	Tagadhari Vs Other caste			
Occupational	0.0628	-0.0196	0.0990	0.1427
Firm size	0.0709	-0.0260	0.1109	0.1240
Interaction	0.0321	-0.0637	0.1165	0.1672

Table 14: Main Decomposition Result: Year, 2010

	$P_{in} * f_d(X_d - X_n)$	$P_{in} * X_n(f_d - f_n)$	$w_{id}(p_{id} - \hat{p}_{in})$	$w_{id}(\hat{p}_{in} - p_{in})$
	WE	**WD**	**JE**	**JD**
	Tagadhari Vs Matwali			
Occupational	0.0310	-0.0017	0.0643	0.2431
Firm size	0.0587	0.0431	0.0612	0.2224
Interaction	0.0157	-0.0731	0.0800	0.2474
	Tagadhari Vs Paninachalne			
Occupational	0.0317	0.0704	0.1295	0.3071
Firm size	0.0848	0.0123	0.1276	0.2735
Interaction	0.0105	0.0715	0.1830	0.2737
	Tagadhari Vs Other caste			
Occupational	0.1169	-0.0732	0.0781	0.2940
Firm size	0.0851	-0.0199	0.0657	0.2662
Interaction	0.0042	-0.0411	0.1072	0.2786

Table 15: Sub-sample Decomposition Result: Year, 2003

	$P_{in} * f_d(X_d - X_n)$	$P_{in} * X_n(f_d - f_n)$	$w_{id}(p_{id} - \hat{p}_{in})$	$w_{id}(\hat{p}_{in} - p_{in})$
	WE	**WD**	**JE**	**JD**
Tagadhari Vs Matwali				
Occupational	0.0330	0.0744	0.0900	0.0677
Firm size	0.0764	0.0464	0.1069	0.0851
Interaction	0.0057	0.1411	0.0971	0.0960
Tagadhari Vs Paninachalne				
Occupational	0.0572	0.0307	0.0882	0.0798
Firm size	0.0763	0.0464	0.1068	0.0851
Interaction	0.0283	0.0992	0.1091	0.0855
Tagadhari Vs Other caste				
Occupational	0.0188	0.0211	0.0676	0.0493
Firm size	0.0290	-0.0144	0.0845	0.0453
Interaction	0.0117	-0.0304	0.0824	0.0568

Table 16: Sub-sample Decomposition: Year, 2010

	$P_{in} * f_d(X_d - X_n)$	$P_{in} * X_n(f_d - f_n)$	$w_{id}(p_{id} - \hat{p}_{in})$	$w_{id}(\hat{p}_{in} - p_{in})$
	WE	**WD**	**JE**	**JD**
Tagadhari Vs Matwali				
occupational	0.0825	0.0678	0.0259	0.1196
Firm size	0.1541	0.1590	0.0304	0.080
Interaction	0.0522	-0.1002	0.0493	0.1604
Tagadhari Vs paninachalne				
Occupational	0.1543	0.3925	0.0538	0.1864
Firm size	0.2910	0.2330	0.0689	0.0918
Interaction	0.0944	0.3867	0.1097	0.2202
Tagadhari Vs Othrcaste				
Occupational	0.1200	0.0133	0.0742	0.1208
Firm size	0.2259	0.0099	0.0584	0.0682
Interaction	0.0781	-0.0047	0.1162	0.1489