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Earnings and Caste: An Evaluation of Caste Wage Differentials in the Nepalese Labor Market

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Abstract

This paper examines the sources of wage differentials among castes in Nepal, a country which had, until 1963, an age-old caste-based social division of labor. We use an extended Oaxaca decomposition model with occupation and firm size augmenting the conventionally used measures of human capital endowments. Our results indicate that caste wage differentials in Nepal are large and that human capital endowments and lack of access to better paying occupations and larger firms have a significant impact. Furthermore, we find mixed evidence that the government policy of affirmative action has narrowed down the caste wage differential.

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

1 Introduction

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 gender, race, 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 (Phelps, 1972). While considerable attention has been paid to racial labor market discrimination, less attention has been paid to 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 population, caste-based stratification was inherently associated with an occupational division of labor.

Caste discrimination persists in two self-perpetuating ways (Banerjee and Knight, 1985). First, caste classification discourages low-caste workers from developing their human capital in line with occupations assigned to the higher castes. Second, it subjects backward castes to informational and network disadvantages because of their exclusion from certain sectors of employment. Thus, a caste-based division of labor can perpetuate itself through the inter-generational transmission of low educational and occupational status from one generation to the next even once discrimination per se is abolished (Borjas, 1994;

Darity and Mason, 1998).

This paper examines the sources of wage differentials among castes 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 the new Constitution of the Kingdom of Nepal in 1990, which made the practice of untouchable illegal. Since then, several policies have been implemented to reduce the impact of such discrimination, including positive discrimination and the establishment of the 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 effect of such policies has not been studied. This paper partly aims to fill this gap.

In doing so, we follow the empirical literature and distinguish between pre-market and current market labor discrimination. The first type of discrimination captures the effects of the propagation mechanisms mentioned above that contribute to the persistence of wage inequality even if active discrimination is no longer practiced by employers. The second type represents active discrimination by employers. The Oaxaca decomposition method (Oaxaca, 1973; Blinder, 1973) is the most commonly used technique for disentangling the two effects. Empirical studies based on the Oaxaca decomposition have focused on human capital endowments as the sole proxy for pre-market effects. In addition, Darity and Mason (1998) identifies group differences in access to better paying industries and occupations as major contributors to the persistence of labor market discrimination. Empirical work carried out by Banerjee and Knight (1985), Das and Dutta (2007) and Madheswaran and Attewell (2007) estimate such effects in the Indian labor market by incorporating occupation in the wage differential decomposition method[i].

In this paper, we go further in capturing the effects on wage inequality by introducing firm characteristics to supplement educational and occupational differences. In imperfectly competitive markets, firms may remunerate their employees differently, even if they have similar levels of education and work in the same occupation (Vi-etorisz and Harrison, 1973).[ii] In such a situation, employer characteristics such as size, profitability and reputation might matter as much in explaining wage differences as employee characteristics such as education and occupation. We proxy better paying employers by the size of their rms. The empirical literature provides evidence that larger firms hire higher quality workers (Brown and Medo, 1989; Schmidt and Zimmermann, 1991; Hettler, 2007; Fajnzylber, Maloney, and Montes-Rojas, 2009). Accordingly, we expand the Oaxaca method and estimate three separate decomposition models: one using occupation, another using firm size, and a third in which occupation is interacted with firm size.

Our results indicate that caste wage discrimination is indeed present in the Nepalese labor market, with intermediate *(Matwali)* and low *(Pani Nachalne)* castes earning significantly less than the higher *(Tagadahari)* castes. For the *Matwali,* the wage differential decreases over the period of analysis, 2003 to 2010, which may reflect the effect of certain governmental policies to reduce caste discrimination. However, the wage differential increases for the *Pani Nachalne*. Lack of access to employment in certain occupations and large firms is found as a major factor behind the caste wage differential together with years of schooling.

The rest of the paper is organized as follows. Section 2 describes the historical and institutional basis of caste classification in Nepal. Section 3 states the econometric model, while the data and descriptive statistics are presented in Section 4. The main econometric results are presented in Section 5. Section 6 concludes and discusses policy implications.

2 Caste system in Nepal: An overview

Nepal, along with other countries, had a caste-based social division of labour in the past. Historically, caste classification on the Indian subcontinent was based on the Varna system of Hindu philosophy and the Aryan division of labour. These comprised four categories, namely Brahman, Kshatriyas (Chhetri), Vaisyas and Shudras. Together these encompassed a social division of labour as priests and teachers, warriors and royalty, merchants and money lenders, and artisans, service providers and other manual workers, respectively (Bank, 2006; Deshpande, 2011). Brahman, being the superior caste, enjoyed the best status in Nepalese society, followed by Chhetri. While Vaisyas were not as privileged as Brahmans or Chhetri, they enjoyed relatively higher social status than Shudras in 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 version of the Hindu caste system came with some 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 (Bennet, Dahal, and Govindasamy, 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, Damai

and Sarki but also Muslims and Mlechha (literally "foreigners"), which in turn included Christians. Dalit is a designation for a group of people traditionally regarded as untouchable. This is where the intersection of caste and ethnicity entered into the social hierarchy of Nepal. Hofer (1979) and Gurung (2003) describe a hierarchy of ethnic groups and their respective associations 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 subcategories: while the pure *Matwali* were divided into enslavable and non-enslavable, 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. We refer to these groups as castes although, from a strict point of view, they correspond to caste and ethnicity.

3 Empirical model

Consider caste categories j= *t; m; p* (*Tagadhari*= t, *Matwali*= m and *Pani Nachalne* = *p*). An expanded Mincerian log wage equation can be specified for each caste as,

$$w_{ij} = \beta_j E_{ij} + \delta_j S_{ij} + \gamma_j S_{ij} + \varepsilon_{ij} \quad \text{.....(1)}$$

where w_{ij} is the log hourly wage of individual i of caste j, E_{ij} represents years of schooling completed, S_{ij} is a set of variables containing job characteristics such as occupation and/or firm size (see below), X_{ij} is a set of covariates comprising of a constant, experience, experience square, marital status, regional and industry dummies, and ε is the unobserved component in the wage equation. The gross logarithmic caste wage differentials in observable variables can be calculated as,

$$\overline{w}_t - \overline{w}_m = (\beta_t \overline{E}_t - \beta_m \overline{E}_m) + (\delta_t \overline{S}_t - \delta_m \overline{S}_m) + (\gamma_t \overline{X}_t - \gamma_m \overline{X}_m), \quad \text{.....(2)}$$

$$\overline{w}_t - \overline{w}_p = (\beta_t \overline{E}_t - \beta_p \overline{E}_p) + (\delta_t \overline{S}_t - \delta_p \overline{S}_p) + (\gamma_t \overline{X}_t - \gamma_p X_p) \quad \text{.....(3)}$$

where $\bar{\cdot}_j$ is the mean of variable for caste j.

Considering *Tagadhari* workers as the dominant/reference group and *Matwali* and *Pain Nachalne* workers as the non-dominant/comparison groups caste wage differentials among these groups can be decomposed into explained and unexplained components by employing the Oaxaca (1973) and Blinder (1973) decomposition methodology. 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 (i.e. differences in E, S and X) and unexplained differences in the market valuation of such individual productivity characteristics (i.e. differences in β, δ and γ),

$$\begin{aligned}\overline{w}_t - \overline{w}_m = {} & \beta_t(\overline{E}_t - \overline{E}_m) + (\beta_t - \beta_m)\overline{E}_m \\ & + \delta_t(S_t - S_m) + (\delta_t - \delta_m)\overline{S}_m \\ & + \gamma_t(\overline{X}_t - \overline{X}_m) + (\gamma_t - \gamma_m)\overline{X}_m, \quad \text{.....(4)}\end{aligned}$$

$$\begin{aligned}\overline{w}_t - \overline{w}_p = {} & \beta_t(\overline{E}_t - \overline{E}_p) + (\beta_t - \beta_p)\overline{E}_p \\ & + \delta_t(S_t - S_p) + (\delta_t - \delta_p)\overline{S}_p \\ & + \gamma_t(\overline{X}_t - \overline{X}_p) + (\gamma_t - \gamma_p)\overline{X}_p. \quad \text{.....(5)}\end{aligned}$$

As argued in Fortin, Lemieux, and Firpo (2011) the Oaxaca decomposition requires that the dependence structure between the unobserved factors (i.e. ε) and the observe variables is the same across groups (i.e. castes).

We estimate the full decomposition model in equations (4) and (5) to evaluate the sources of caste wage differentials. For each decomposition, the first term denotes the wage difference attributable to the difference in observable characteristics between the two groups evaluated according to the dominant group's wage structure. The second term represents the wage difference because of differences in the wage structure between the two groups, evaluated at the mean level of the comparison groups. The former terms represent the explained components of the wage differential whereas the latter terms are the unexplained components. These are also known respectively as *pre-market* discrimination and *current market* discrimination.

The decomposition in E analyzes differences in education, which in the traditional Oaxaca decomposition is the main component of human capital.

The decomposition in S shows group differences in access to better jobs and this is the main contribution of this paper. As argued in Banerjee and Knight (1985), the choice of occupation can influence the wage a worker receives and that this is important for the rigid caste structure in India. Their methodology isolates the effect of productivity characteristics and occupational distribution on wages (see also Hinks and Watson, 2001, for a related analysis). As we argued above, access to jobs in medium and large firms can play a considerable role in producing wage differentials across groups of workers and this is particularly important for developing countries in which the average firm size is smaller than in developed countries. In order to evaluate the effect of occupation and firm size on caste wage differentials we consider three models. First, we only apply the

occupation decomposition, S = *{occupation}*; second, we only apply the firm size decomposition, S = *{firm size};* and finally, we consider decomposing the full interaction between occupation and firm size, S = *{occupation x firm size}*. These models are referred as Occupational, Firm size and Interaction decomposition models, respectively.

Finally, the decomposition in X studies other characteristics such as industry, rural/urban or regional distribution of workers cannot be ruled out while estimating the sources of wage differentials across castes.

4 Data and descriptive statistics

This paper employs two waves of the National Living Standard Survey (NLSS) 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 (these surveys will be referred below as 2003 and 2010, respectively.) The surveys follow the World Bank's Living Standard Measurement Survey and apply a two-stage sampling scheme. 73 out of the 75 administrative districts of Nepal are covered. A total of 5240 households in 2003 and 5998 households in 2010 were interviewed, and information recorded about 28110 and 28670 individuals in each of the respective years. The data include information 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 the 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. See the Appendix for the details of these classification plus definitions of all variables.

The analysis includes 785 in 2003 and 834 in 2010 male wage workers aged 19-59 years old from the non-agricultural sector.[iii] Descriptive statistics are presented in Tables 2 and 3. The *Tagadhari* group represents the dominant share of employees in both periods, accounting for 70.7% of the total employment in 2003 and 71.3% in 2010. The *Matwali* accounted for 19.2% and 21.4%, and *Pani Nachalne* 9.9% and 7.3% in each survey year, respectively.

Tables 2 and 3 show an average log hourly wage rate of 3.34 and 3.83 NPR respectively. The USD equivalent would be .38 and .68, respectively.[iv] The *Matwali* and *Pani Nachalne* workers earn on average wage 30% and 49% less than *Tagadhari* workers, respectively, in 2003. By 2010, the wage gap between the *Tagadhari* and *Pani Nachalne* remains identical whereas it has been decreased to 20% in case of the wage gap between the *Tagadhari* and *Matwali* workers.

Average years of education, defined as the highest level of completed years of schooling were 7.78 in 2003 and 9.88 in 2010. The education gap between *Tagadhari* and *Matwali* was 2.29 years in 2003 and by 2010 it had decreased slightly to 2.10 years. However, the educational gap between *Tagadhari* and the lowest caste Pani *Nachalne* increased over this period, from 3.03 years in 2003 to 4.45 years in 2010.

The NLSS survey contains a question about the size of the firm where the wage worker works. As described in the Appendix it contains three categories: 1 employee, 2-10 employees, and more than 10 employees. We use the ad-hoc classification of small, medium and large firms, respectively. This variable has a high proportion of missing observations, i.e. non-respondents, which resulted in a

particular distribution of workers across occupations. In the robustness section below we consider the imputation of firm size to certain occupations.

We aggregate occupations into seven broad groups based on Nepal's National Classification of Occupations: professional, clerical, service, skilled, sales, agri-worker and unskilled. The professional category includes the categories of doctor, engineer, manager, religious and clerical comprises of categories such as clerk, typist, book keeper, etc. Those not included in any of the six occupations are classified as unskilled workers which in turn includes loaders, unskilled construction workers and laborers. Similarly, eight categories of industry are constructed based on *the Standard Industrial Classification (SIC)* reported in the survey.

In 2003, the occupational ranking is as follows: professionals is the largest category accounting for 38.6% of workers, unskilled is second largest with 18.4% followed by skilled workers at 17.9%. By 2010 the rankings are 28.2% for skilled, 23.9% for professional and 19.1% for clerical. The professional and clerical occupations, which collectively correspond to white collar jobs, have a higher proportion of *Tagadhari* workers, while the lower castes *Matwali* and *Pani Nachalne* workers are more engaged in unskilled and skilled occupations. In order to highlight the role of firm size, Table 4 report average wages in 2003 and 2010 by occupation in the three firm size categories we consider. In all cases, larger firms pay higher wages than smaller ones.

In terms of the workers' industry, the majority of workers are in the service, manufacturing and other industry classification.[v] There are no significant differences between the *Tagadhari* and *Matwali* workers with respect to their association to industries. The *Pani Nachalne* workers are more likely to work in the manufacturing industry.[vi] Information is not available to distinguish between public and private sector employees.

In summary, the descriptive statistics indicate that caste-based disparities in key labor market outcomes continue to play an important role in Nepal. The intermediate *Matwali* group have managed to slightly close the gap with the dominant *Tagadhari* group, while the lowest caste *Pani Nachalne* appears to have fallen further behind. However, the descriptive statistics alone cannot tell us which are the key drivers of these disparities are.

5 Econometric analysis

5.1 Access to large firms and occupations by caste

We first evaluate if there are differences in access to large firms and occupations by caste, after controlling for other observed characteristics.

Table 5 presents probit estimates for access to large rms. The results show that both *Matwali* and *Pani Nachalne* castes are less likely to work in large firms in 2003 (column 1), while for 2010 only the *Pani Nachalne* effect remains significant (column 3) but of smaller magnitude. This provides some evidence of a reduction in caste discrimination in access to large firms. Interacting the caste dummy variables with education reveals that caste discrimination for the *Pani Nachalne* is more prevalent for the less educated in 2003 (column 2). The interaction provides no significance in 2010.

Table 5 presents a multinomial logit model for access to occupations (base category Unskilled). Convergence issues on the multinomial models with few observations make us to consider a reduced models with only key covariates. The 2003 results show that *Taghadari* workers are more likely to work in Professional occupations, but less in Skilled occupations. The other occupations show no clear pattern. For 2010, however, the statistical significance is further reduced and no clear conclusions can be extracted. *Taghadari* workers are more likely to work in

Clerical occupations and less in Skilled, as compared to *Matwali.*

5.2 Baseline regression analysis

Wage regression analysis was carried out to estimate the underlying wage equations for each sample period. The estimates are listed in tables 7 for 2003 and 8 for 2010. Columns 1, 2 and 3 report results of separate regressions for each of the three castes, followed by the pooled sample results in column 4 with caste dummy variables, where the *Tagadhari* caste represents the reference caste.

Returns to education for the pooled sample are positive, increasing with time, and statistically 0.018 (significant at 5%) and 0.070 (significant at 1% level) in 2003 and 2010, respectively. However, they vary considerably across caste groups. In 2003, the *Tagadhari* caste has positive and significant returns, while *Pani Nachalne* and *Matwali* depicts a negative but statistically not significant education coefficient. In 2010, these coefficients increased markedly for each group and are statistically significant. The *Tagadhari* has the highest returns to education followed by the *Pani Nachalne* and *Matwali* groups.

Firm size plays a crucial role in determining wages in the *Tagadhari* and *Matwali* sub-samples. For example, in 2003, those belonging to the *Tagadhari* group and working in medium-sized and large-sized firm were likely to earn a premium of respectively 34:7% and 57:9% compared to those working in small rms. The same measures ac-count for 59:2% and 56:2% for the *Matwali* sub-sample. Firm size coefficients other than the medium firm in the *Matwali* sub-sample are similar in the latter period. These coefficients are statistically not signicant in the *Pani Nachalne* sub-sample.

The results for occupational effects (with reference group = unskilled workers) show mixed significance across sub-samples. For instance, professional, clerical and skilled occupations are the main contributors of the *Tagadhari* worker's wage in 2003. Occupational categories other than professional and sales do not show

any significant impact on *Matwali* worker's wages in this period. None of the occupation coefficients are found statistically significant in the *Pani Nachalne* sub-sample. In the second period, professional occupation continues to have a positive impact on the *Tagadhari* worker's wage whereas professional, clerical and skilled occupations seem to have positive impact on the *Matwali* worker's wage. As in 2003, none of the occupations seem to have significant impact on wage earning by the *Pani Nachalne* workers.

Industry-type effects (with reference group = Agriculture) are not consistent across sub-samples and reflect variability in the base category.

In the pooled regression using caste dummies in column 4, the coefficients on the dummies are negative for both castes in 2003. However, the *Matwali* coefficient is not statistically significant in this period. In contrast, both caste dummy coefficients became positive although still not significant in 2010. This shows that in order to explore caste wage differentials, the Oaxaca decomposition model is necessary.

5.3 Decomposition results

Three different decomposition models are employed to study the sources of wage differentials. These models are hereafter referred as the *Occupational, Firm size* and *Interaction* decomposition models. Each model consists of three components; namely (1) explained and unexplained wage differences attributable to differences in education endowments, (2) explained and unexplained wage differences attributable to differences in job characteristics (firm size and/or occupation), (3) explained and unexplained wage differences attributable to differences in other variables including the constant term.

The results are presented in tables 9 and 10 for the years 2003 and 2010,

respectively. These tables present only the summary results. Detailed decomposition results are not presented in order to save space but can be provided upon request.

The decomposition results show that wage gaps attributable to differences in human capital endowments (i.e. education, explained, $\beta_t(\overline{E}_t - \overline{E}_m)$ and $\beta_t(\overline{E}_t - \overline{E}_p)$, generally considered as being the main source of wage gaps among workers, explains less than half of the wage differentials in 2003 but more than three-fourths in 2010. For 2003 and for the *Tagadhari - Matwali* wage differential, the *Occupational* model shows that differences in education endowments are 0.060 out of a total wage gap of 0.299, and this corresponds to 0.096 and 0.057 for the *Firm size* and *Interaction* models. For the *Tagadhari - Pani Nachalne* wage differential, the Occupational model shows that differences in education endowments are 0.080 out of 0.493, and this corresponds to 0.128 and 0.076 for the Firm size and *Interaction* models. In 2010, the *Tagadhari - Matwali* wage differential decreases to 0.199, and this is explained by differences in education endowments by 0.179, 0.213, 0.150 for the *Occupational*, *Firm size* and *Interaction* decomposition models, respectively. Moreover the *Tagadhari - Pani Nachalne* wage differential is 0.489 in 2010, and this is explained by differences in education endowments by 0.380, 0.454, 0.319 for the *Occupational, Firm size* and *Interaction* decomposition models, respectively.

The wage gaps arising from differences in job characteristics (i.e. job, explained, $\delta_t(\overline{S}_t - S_m)$ and $\delta_t(\overline{S}_t - S_p)$ are statistically significant, and they show a consistent positive effect. The results show that the largest effect is obtained when using the *Interaction* decomposition model. Overall, this shows that access to jobs in better occupations and higher paying firms plays a non-trivial part in explaining the wage gaps across castes. In 2003, for the *Tagadhari - Matwali* wage

differential, differences in occupation explain a gap of 0.127, differences in firm size explain 0.077 and the interaction of the two 0.180 (out of 0.299); while for the *Tagadhari - Pani Nachalne* wage differential, each model explains 0.128, 0.063, 0.191 (out of 0.493), respectively. In 2010, for the *Tagadhari - Matwali* wage differential, differences in occupation explain a gap of 0.041, differences in firm size explain 0.032 and the interaction of the two 0.084 (out of 0.199); while for the *Tagadhari - Pani Nachalne* wage differential, each model explains 0.088, 0.078, 0.227 (out of 0.489), respectively.

The wage gaps arising from differences in job characteristics (i.e. job, explained, $\delta_t(\bar{S}_t - \bar{S}_m)$ and $\delta_t(\bar{S}_t - \bar{S}_p)$ are statistically significant, and they show a consistent positive effect. The results show that the largest effect is obtained when using the *Interaction* decomposition model. Overall, this shows that access to jobs in better occupations and higher paying firms plays a non-trivial part in explaining the wage gaps across castes. In 2003, for the *Tagadhari - Matwali* wage differential, differences in occupation explain a gap of 0.129, differences in firm size explain 0.066 and the interaction of the two 0.185 (out of 0.277); while for the *Tagadhari - Pani Nachalne* wage differential, each model explains 0.131, 0.055, 0.205 (out of 0.371), respectively. In 2010, for the *Tagadhari - Matwali* wage differential, differences in occupation explain a gap of 0.051, differences in firm size explain 0.034 and the interaction of the two 0.090 (out of 0.209); while for the *Tagadhari - Pani Nachalne* wage differential, each model explains 0.092, 0.079, 0.217 (out of 0.537), respectively.

The differences in endowments in variables other than education, occupation and firm size (i.e. Others, explained, $\gamma_t(\bar{X}_t - \bar{X}_m)$ and $\gamma_t(\bar{X}_t - \bar{X}_p)$ generally

appear as statistically insignificant. Moreover, the unexplained differences in wage gaps attributable to education (i.e. differences in returns to education), job characteristics (occupation and/or firm size), and other components are in general not statistically significant, although some of them are large in magnitude. Note that the later contains industry as one component which preliminary estimations show it is not relevant for the decomposition.

The differences in endowments in variables other than education, occupation and firm size (i.e. others, explained, $\gamma_t(\overline{X}_t - \overline{X}_m)$ and $\gamma_t(\overline{X}_t - \overline{X}_p)$ generally appear as statistically non-significant. Moreover, the unexplained differences in wage gaps attributable to education (i.e. differences in returns to education), job characteristics (occupation and/or firm size), and other components are in general not statistically significant, although some of them are large in magnitude. Note that the later contains industry as one component which preliminary estimations show it is not relevant for the decomposition.

One important point to arise from this analysis is that the *Tagadhari - Matwali* wage differential decreased in 2010 whereas the *Tagadhari - Pani Nachalne* wage differential remained constant. The underlying reason could be that there is a slightly reduction in the gaps in human capital endowment in the former comparison group which has been widened in the case of the latter group. The *Matwali* group have improve their access to better jobs with a relative improvement in educational attainment in the latter period. For instance, Interaction decomposition results shows that the job-explained component of the *Tagadhari- Matwali* wage differential has decreased to 0.084 in 2010 relative to 0.180 in 2003 while it has increased in the case of *Tagadhari-Pani Nachalne* wage differential. This indicates that although government introduced a policy of

affirmative action providing quotas in public sector jobs, the *Pani Nachalne* group might not have been able to take this advantage because of a lack of minimum level of education required for public sector jobs.

5.4 Robustness: Imputation of missing firm size

In our preceding analysis, we had restricted ourselves to a subset of workers who had explicitly reported the firm size of their employer. This exclusion had resulted in a higher proportion of workers in the professional and clerical occupations in our sub-sample than in the overall sample. It could therefore be suspected that the estimated decomposition results may be attributable to group differences in access to white collar jobs rather than group differences in access to larger rms. We thus propose another firm size measurement that might still suffer from measurement error but that serves to evaluate the robustness of the previous results. Note that both, previous and new, firm size variables are (imperfect) proxies for the quality of the firm and the job.

In order to test for this possible bias, we construct an extended sample by imputing a large firm size when missing for certain occupations where the size can be detectable from the work description reported in the survey questionnaire but imputing the rest to small rm. Work descriptions given by production/operation department managers, architect, engineers, nursing/midwifery professionals, primary and secondary education teachers, other teaching professionals, business professionals, computer technicians, optical/electronic equipment operators, modern health associates, administrative personal, secretaries/clerks, library/mail clerks, cashier/tellers clerks, client information clerks, travel attendants, housekeeping and restaurant workers are considered as working for the large rm. The rest of workers with missing firm size are imputed as small firm, except for agricultural, fishery, brick/glass workers and porters for which firm size cannot be

clearly assigned and they are therefore excluded from the imputation exercise.

Table 11 reports the original and imputed firm size distribution. It should be noted that the imputation exercise increases mostly those assigned to small firms. This imputation leads to a significant increment in the sample size (from 785 to 1357 in 2003 and from 834 to 1110 in 2010) and a reduction in the proportion of white collar jobs. The proportion of professional and clerical workers is reduced to 23.37% and 7.59% from 38.30% and 12.08% in 2003, respectively, and to 19.91% and 14.59% from 23.86% and 18.71% in 2010. Tables 12 and 13 presents the distribution of male wage workers by occupation and industry, before and after the imputation exercise.

Decomposition results for the extended sample are listed in Tables 14 and 15. If the difference in access to white collar occupations was driving the baseline results is valid, then it is expected that the explained components of access to jobs will be smaller in the extended sample than in the baseline sample, particularly for 2003 where the proportion of white collars jobs has been significantly reduced in the extended sample. In 2003, the results for the Job-Explained component increases while the Education-Explained component is slightly reduced. For instance, in the Interaction model, the Job-Explained increases to 0.211 from 0.180 in the *Matwali* and to 0.225 from 0.191 for the *Pani Nachalne* groups. In 2010, on the contrary, the Job-Explained component decreases although the *Interaction* model still continues to have the largest effect. Overall the results are qualitatively similar to those of the original sample, and thus, they confirm that access to jobs in larger firms play an important role in explaining caste discrimination.

6 Conclusions and policy implications

In this paper we investigate the sources of caste wage differentials in Nepal by extending the conventional Oaxaca methodology to include both occupational and firm size effects. The study covered two different surveys over a time span of seven years (2003 and 2010), a period of radical political change in Nepal. We find that caste wage inequality is present in the Nepalese labor market in both 2003 and 2010. At the same time, our results indicate that differences in human capital endowments are important for explaining wage inequality, but so are occupational and firm size effects, especially when the latter two are taken together. Within the components of discrimination that are related to access to better jobs our results indicate that such access continues to exist for reasons other than differences in human capital for both *Matwali* and *Pani Nachalne* disadvantaged groups. This suggests that discriminatory behavior by employers continues to exist in Nepal.

Overall, the government's policy intended to reverse historical caste labor market discrimination, for instance by imposing quotas in public sector employment, has not been successful enough to overcome other barriers that prevent under-privileged workers from accessing such jobs. If any, the government policy has benefit *Matwali* workers but not *Pani Nachalne* ones. The analysis suggests that together with increasing human capital endowments of disadvantaged groups, increasing access to better jobs has an important role in narrowing down discrimination.

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Appendix: Variables definition

Tagadhari	Taking value 1 if an individual's ethnicity is reported as Brahmin, Chhetri, Newar and Yadav; and 0 otherwise.
Matwali	Taking value 1 if an individual's ethnicity is reported as Gurung, Magar, Tharu, Tamang, Rai and Limbu; and 0 otherwise.
Pani Nachalne	Taking value 1 if an individual's ethnicity is reported as Damai, Kami, Sarki and Muslim; and 0 otherwise.
lhwage	log of hourly wage (cash, in-kind, bonus, transport, and medical allowances).
Education	Years of schooling completed (the highest level completed).
Experience	Age-years of schooling-6.
Married	Taking value 1 if an individual is married; and 0 otherwise.
Small firm	Taking value 1 if a firm employs only one employee; and 0 otherwise.
Medium firm	Taking value 1 if a firm employs 2-10 employees; and 0 otherwise.
Large firm	Taking value 1 if a firm employs more than 10 employees; and 0 otherwise.
Eastern	Taking value 1 if an individual works in eastern administrative region; and 0 otherwise.
Central	Taking value 1 if an individual works in central administrative region; and 0 otherwise.
Western	Taking value 1 if an individual works in eastern administrative region; and 0 otherwise.
Mid-western	Taking value 1 if an individual works in mid-western administrative region; and 0 otherwise.
Far-western	Taking value 1 if an individual works in far-western administrative region; and 0 otherwise.
Abroad	Taking value 1 if an individual works outside Nepal; and 0 otherwise.
Unskilled	Taking value 1 if an individual's occupation is not included in other categories; and 0 otherwise.
Professional	Taking value 1 if an individual's occupation is reported as doctor, engineer, administrative executive, religious professional etc.; and 0 otherwise.
Clerical	Taking value 1 if an individual's occupation is reported as clerk, typist, book keeper, telephone operator, military, other clerical; and 0 otherwise.
Service	Taking value 1 if an individual's occupation is reported as travel, trekking, cooking, housekeeping, care takers, laundry workers, barbers and other service worker; and 0 otherwise.
Sales	Taking value 1 if an individual's occupation is reported as shop and stall sales person; 0, otherwise.
Agri-worker	Taking value 1 an individual's occupation is reported as farm manager, farm worker, agricultural worker, forestry worker, fisherman, hunters and trapper; and 0 otherwise.
Skilled	Taking value 1 if an individual's occupation is reported as metal processor, chemical processor, plumber, welders, jewellery workers, paper makers; and 0 otherwise.

Appendix: continued

Agricultural	Taking value 1 if industry is reported as agricultural, forestry and logging and fishing; and 0 otherwise.
Mining	Taking value 1 if industry is reported as coal mining, petroleum gas, metal mining and other mining; and 0 otherwise.
Manufacturing	Taking value 1 if industry is reported as food and beverage, textile apparel, wood furniture paper printing, handicrafts, other metallic; and 0 otherwise.
Construction	Taking value 1 if industry is reported buildings, street highways, water ports project, irrigation, electricity gas and water; and 0 otherwise.
Trade	Taking value 1 if industry is reported as wholesale, retail and restaurant; and 0 otherwise.
FRE	Taking value 1 if industry is reported as finance, insurance and real estate; and 0 otherwise.
Service sector	Taking value 1 if industry is reported as transport, communication, recreation and cultural and international; and 0 otherwise.
Other	Taking value 1 if industry is not responded or is responded as other; 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" (Brahmin)	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 Bennet, Dahal, and Govindasamy (2008).

Table 2: Descriptive statistics: 2003

Variables	Total	*Tagadhari*	*Matwali*	*Pani Nachalne*
Caste	1.00	.707(.016)	.192(.014)	.099(.010)
Lhwage	3.34(.033)	3.45(.039)	3.15(.073)	2.96(.099)
Education	7.78(.172)	8.53(.201)	6.24(.361)	5.5(.557)
Experience	20.69(.411)	20.22(.475)	21.38(.946)	22.65(1.50)
Experience^2	560.66(20.32)	534.35(22.81)	591.60(48.35)	687.62(80.33)
Married	.825(.013)	.810(.016)	.880(.026)	.820(.043)
Rural	.798(.014)	.761(.018)	.934(.020)	.794(.046)
Lnholding('00000)	7.34(.733)	8.44(.994)	6.08(1.04)	2.01(.308)
Small firm	.059(.008)	.043(.008)	.106(.025)	.077(.030)
Medium firm	.419(.017)	.383(.020)	.497(.040)	.526(.056)
Large firm	.522 (.017)	.574(.021)	.397(.039)	.397(.055)
Eastern	.121(.011)	.096(.012)	.139(.028)	.253(.049)
Central	.421(.017)	.447(.021)	.374(.039)	.333(.053)
Western	.136(.012)	.125(.014)	.189(.031)	.116(.036)
Mid-western	.070(.009)	.066(.010)	.083(.022)	.077(.030)
Far-western	.046(.007)	.047(.008)	.063(.019)	-
Abroad	.206(.014)	.219(.017)	.152(.028)	.221(.046)
Unskilled	.184(.013)	.161(.015)	.278(.036)	.167(.042)
Professional	.386(.017)	.451(.021)	.245(.035)	.192(.044)
Clerical	.122(.011)	.133(.014)	.073(.021)	.128(.038)
Service	.057(.008)	.045(.008)	.086(.022)	.090(.032)
Sales	.047(.007)	.054(.009)	.026(.013)	.038(.021)
Agri-worker	.025(.005)	.014(.004)	.046(.017)	.064(.027)
Skilled	.179(.013)	.142(.014)	.246(.035)	.321(.053)
Agriculture	.022(.005)	.019(.005)	.026(.013)	.026(.018)
Mining	.014(.004)	.013(.004)	.020(.011)	.013(.012)
Manufacturing	.193(.014)	.152(.015)	.238(.034)	.397(.055)
Construction	.034(.006)	.029(.007)	.066(.020)	.012(.012)
Trade	.093(.010)	.107(.013)	.060(.019)	.064(.027)
FRE	.034(.006)	.045(.008)	.013(.009)	-
Servicesec	.451(.017)	.471(.021)	.444(.040)	.321(.053)
Others	.159(.013)	.164(.015)	.133(.027)	.167(.042)
Obs.	785	554	153	78

Notes: Standard deviations in parentheses. "-" indicates no observations.

Table 3: Descriptive statistics: 2010

Variables	Total	*Tagadhari*	*Matwali*	*Pani Nachalne*
Caste	1.00	.713(.015)	.214(.014)	.073(.009)
Lhwage	3.89(.029)	3.96(.034)	3.76(.059)	3.47(.102)
Education	9.88(.129)	10.66(.131)	8.56(.304)	6.21(.573)
Experience	19.56(.392)	19.27(.457)	20.77(.892)	18.91(1.48)
$Experience^2$	510.11(17.95)	495.00(20.51)	569.31(42.33)	487.58(70.51)
Married	.792(.014)	.790(.016)	.810(.029)	.766(.055)
Rural	.731(.015)	.710(.018)	.815(.029)	.786(.052)
Lnholding('00000)	29.92(3.98)	36.80(5.15)	14.74(6.84)	6.00(1.95)
Small firm	.030(.006)	.023(.006)	.052(.016)	.067(.032)
Medium firm	.332(.016)	.290(.018)	.339(.035)	.617(.063)
Large firm	.638(.016)	.685(.019)	.609(.037)	.316(.060)
Eastern	.105(.010)	.094(.012)	.126(.025)	.133(.044)
Central	.608(.016)	.652(.019)	.551(.037)	.350(.062)
Western	.157(.012)	.148(.014)	.167(.028)	.217(.053)
Mid-western	.073(.009)	.064(.010)	.075(.019)	.150(.046)
Far-western	.038(.006)	.027(.006)	.052(.016)	.100(.008)
Abroad	.019(.004)	.013(.004)	.029(.012)	.050(.028)
Unskilled	.084(.009)	.072(.010)	.126(.025)	.083(.035)
Professional	.239(.014)	.283(.018)	.149(.027)	.067(.032)
Clerical	.191(.013)	.224(.017)	.086(.021)	.166(.048)
Service	.127(.011)	.115(.013)	.121(.024)	.267(.057)
Sales	.066(.008)	.071(.010)	.046(.015)	.083(.035)
Agri-worker	.008(.003)	.001(.001)	.023(.011)	.033(.023)
Skilled	.282(.015)	.231(.017)	.448(.037)	.300(.059)
Agriculture	.007(.002)	.008(.003)	.005(.005)	-
Mining	.008(.003)	.008(.003)	.011(.008)	-
Manufacturing	.129(.011)	.106(.012)	.149(.027)	.300(.059)
Construction	.035(.006)	.027(.006)	.052(.016)	.067(.032)
Trade	.079(.009)	.081(.011)	.051(.016)	.133(.044)
Servicesec	.193(.013)	.179(.015)	.247(.032)	.183(.050)
FRE	.065(.008)	.074(.010)	.057(.017)	-
Others	.481(.017)	.515(.020)	.425(.037)	.317(.060)
Obs.	834	594	179	61

Notes: Standard deviations in parentheses."-" indicates no observations.

Table 4: Wages by occupation and firm size

	Year: 2003			Year: 2010		
Occupation	Small firm	Medium firm	Large firm	Small firm	Medium firm	Large firm
Unskilled	2.26(0.772)	2.90(0.941)	3.09(0.608)	3.26(.769)	3.37(0.617)	3.64(0.715)
Professional	3.08(1.50)	3.48(0.907)	3.91(0.874)	4.50(1.27)	4.50(0.936)	4.52(0.762)
Clerical	2.16(1.26)	3.14(0.628)	3.78(0.761)	-	3.86(0.846)	4.02(0.638)
Service	2.65(0.951)	3.02(1.06)	3.19(0.393)	-	3.19(0.704)	3.83(0.723)
Sales	2.59(0.260)	2.65(0.868)	3.13(.291)	3.09(0.580)	3.23(0.460)	3.66(0.640)
Agri-worker	3.06(.659)	3.14(1.03)	3.67(0.792)	3.17(2.52)	-	3.41(0.431)
Skilled	2.77(0.490)	3.14(0.897)	3.15(0.793)	3.07(0.430)	3.28(0.720)	3.96(0.650)

Notes: Standard deviations in parentheses. \-" indicates no observations.

Table 5: Probit model for access to large firms: Dep. var. : dummy=1 for large firm, 0 otherwise

Variables	Year: 2003		Year: 2010	
	1	2	3	4
Education	.009**(.004)	.007(.005)	.035***(.006)	.040***(.008)
Experience	.011*(.007)	.013*(.007)	.006(.006)	.006(.006)
Experience2	-.000(.000)	-.000(.000)	.000(.000)	.000(.000)
Married	-.053(.061)	-.052(.062)	.039(.058)	.041(.058)
Rural	-.158**(.069)	-.164**(.069)	-.031(.042)	.032(.042)
Lnholding	.365***(.120)	.373***(.120)	-.011(.015)	-.011(.015)
Eastern	.075(.102)	.066(.104)	.222***(.057)	.218***(.057)
Central	.195**(.089)	.194**(.089)	.123*(.059)	.116*(.059)
Western	.201**(.091)	.194**(.092)	-.112(.090)	-.113(.090)
Mid-western	.088(.109)	.092(.108)	-.026(.103)	-.023(.104)
Abroad	.076(.096)	.073(.096)	.092(.120)	.079(.122)
Professional	.098*(.060)	.101*(.060)	-.156*(.086)	-.165*(.087)
Clerical	.039(.074)	-.040(.074)	-.031(.082)	-.033(.082)
Service	.112(.086)	.124(.087)	.009(.085)	.005(.085)
Sales	-.382***(.076)	-.382***(.076)	-.483***(.113)	-.485***(.113)
Agri-worker	-.183(.125)	-.170***(.127)	.272*(.085)	.251*(.100)
Skilled	-.009(.063)	-.002(.063)	-.048(.073)	-.050(.073)
Mining	.310(.157)	.324*(.148)	.136(.223)	.135(.222)
Manufacturing	.052(.150)	.065(.150)	.162(.145)	.153(.145)
Construction	-.214(.157)	-.204(.159)	.120(.163)	.119(.160)
Trade	-.134(.157)	-.129(.157)	.146(.162)	.140(.161)
FRE	-.013(.182)	-.002(.181)	.018(.176)	.014(.173)
Servicesec	-.192(.143)	-.190(.142)	.142(.149)	.134(.150)
Others	.017(.149)	.025(.148)	.221(.168)	.216(.165)
*Matwali*Education*	-	.005(.011)	-	-.009(.011)
*Pani Nachalne*Education*	-	.021*(.013)	-	-.016(.015)
Matwali	-.154***(.049)	-.196**(.083)	-.047(.047)	.037(.109)
Pani Nachalne	-.154**(.063)	-.270***(.092)	-.207***(.080)	-.073(.138)
Pseudo R^2	.1156	.1179	1629	.1640
Log likelihood ratio	-480.75	-479.50	-457.02	-456.40
Obs.	785	785	834	834

Notes: Robust standard errors in parentheses. Marginal effects are reported. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 6: Multinomial logit model for access to occupations

	Dependent variable: Occupational categorical variable					
	Year: 2003					
	Professional	Clerical	Service	Sales	Agri-worker	Skilled
Education	.034***(.004)	.009***(.003)	-.003***(.001)	-.001(.001)	-.003***(.001)	-.012***(.002)
Experience	-.003**(.002)	-.001(.001)	.000(.000)	.000(.000)	.001(.001)	-.001(.001)
Rural	.015(.047)	-.053(.047)	.079**(.036)	-.002(.020)	.021**(.009)	-.050(.039)
Lnholding	.439***(.145)	.269***(.071)	-.382***(.123)	-.073(.122)	.039(.028)	-.73*(.159)
Matwali	-.164***(.044)	-.030(.033)	.030(.022)	-.029*(.017)	.021(.016)	.119***(.043)
Pani Nachalne	-.185***(.056)	.036(.048)	.020(.027)	-.016(.023)	.040(.029)	.167***(.058)
Log likelihood ratio			-1154.62			
Obs.			785			
	Year: 2010					
Education	.046***(.009)	.033***(.007)	-.025***(.004)	-.003(.003)	-.001(.001)	-.034***(.007)
Experience	.002***(.000)	.002**(.001)	-.005***(.001)	-.003***(.001)	.000(.000)	.000(.000)
Rural	-.010(.010)	-.045(.029)	.032(.033)	.015(.033)	-.001(.004)	.048(.042)
Lnholding	-.002(.003)	.010(.023)	.014(.024)	.001(.008)	.000(.000)	.013(.016)
Matwali	-.007(.010)	-.154***(.038)	-.028(.033)	-.038*(.023)	.007(.007)	.188***(.047)
Pani Nachalne	.010(.028)	.031(.075)	.048(.055)	.001(.041)	.007(.009)	-.055(.073)
Log likelihood ratio			-1150.02			
Obs.			834			

Notes: Robust standard errors in parentheses. Marginal effects are reported. * significant at 10%, ** significant at 5% and *** significant at 1%. Unskilled occupation as base category.

Table 7: Regression results: 2003

	Tagadhari	*Matwali*	*Pani Nachalne*	*Dummy*
	1	2	3	4
Education	.024***(.009)	-.009(.021)	-.002(.035)	.016**(.007)
Experience	.030**(.015)	.000(.025)	-.029(.035)	.026**(.011)
Experience2	-.000(.000)	.000(.000)	.000(.000)	-.000(.000)
Married	.041(.102)	.263(.229)	.472*(.262)	.113(.088)
Lnholding	-.000(.003)	-.007(.024)	-.071(.155)	-.000(.003)
Medium firm	.347**(.203)	.592**(.248)	-.179(.410)	.366***(.138)
Large firm	.579***(.200)	.562**(.254)	.561(.433)	.601***(.139)
Eastern	.045(.225)	-.116(.259)	-.454*(.288)	-.032(.171)
Central	.247(.191)	.146(.236)	-.439(.429)	.196(.152)
Western	.188*(.203)	.779**(.319)	dropped	.299*(.167)
Mid-western	.243(.224)	.251(.249)	-.587(.627)	.208(.173)
Abroad	.194(.200)	.431*(.273)	-.197(.432)	.190(.160)
Professional	.639***(.113)	.540***(.217)	.107(.363)	.647***(.093)
Clerical	.317**(.124)	.054(.324)	.275(.445)	.389***(.109)
Service	.050(.197)	.322(.316)	-.119(.444)	.132(.157)
Sales	.005(.205)	.729***(.226)	-.542(.596)	.056(.165)
Agri-worker	.277(.455)	-.184(.301)	-.111(.576)	.356*(.205)
Skilled	.195*(.131)	.212(.187)	.225(.455)	.301***(.100)
Mining	-.180(.334)	-.173(.595)	.387(.502)	-.169(.259)
Manufacturing	.012(.331)	-.708**(.324)	.233(.534)	-.094(.212)
Construction	.156(.343)	.053(.369)	1.28***(.465)	.215(.226)
Trade	-.189(.335)	-.705**(.344)	.027(.503)	-.252(.218)
FRE	.663*(.356)	-.209(.407)	-	.594**(.255)
Servicesec	.092(.314)	-.262(.334)	-.296(.366)	-.009(.202)
Others	.195(.324)	.525(.444)	.467(.573)	.246(.211)
Matwali	-	-	-	-.083(.077)
Pani Nachalne	-	-	-	-.244**(.110)
Constant	1.73***(.450)	2.08***(.519)	3.00***(.811)	1.76***(.311)
R^2	.2738	.4010	.4237	.2718
Obs.	555	153	78	786

Notes: Robust standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

Base categories: Small firm, Unskilled, Agricultural and *Tagadhari* are omitted categories for firm size, occupation, industry-type and caste dummy variables, respectively.

Table 8: Regression results: 2010

	Tagadhari	*Matwali*	*Pani Nachalne*	*Dummy*
	1	2	3	4
Education	.078***(.012)	.058**(.017)	.077*(.041)	.066***(.009)
Experience	.011(.012)	.072***(.020)	.028(.042)	.033***(.010)
Experience2	-.000(.000)	-.001(.000)	-.000(.000)	-.000(.000)
Married	.239**(.113)	-.125(.156)	.100(.320)	.131*(.086)
Lnholding	.000(.000)	-.000(.001)	.032(.031)	-.000(.000)
Medium firm	.305**(.146)	.304*(.205)	-.282(.831)	.265*(.137)
Large firm	.492***(.149)	.583***(.186)	.149(.863)	.487***(.137)
Eastern	.155(.150)	-.304(.326)	-.086(.685)	.025(.128)
Central	.210*(.125)	.096(.282)	.635(.658)	.245**(.109)
Western	.048(.154)	-.105(.301)	.042(.670)	.063(.123)
Mid-western	.335*(.203)	-.271(.335)	.676(.696)	.286*(.160)
Abroad	.313(.309)	-.683(.318)	.348(.799)	.086(.202)
Professional	.498***(.140)	.742***(.225)	-.142(.826)	.618***(.110)
Clerical	.150(.125)	.374*(.233)	-.546(.713)	.253**(.100)
Service	.052(.138)	.176(.223)	-.197(.474)	.156*(.107)
Sales	-.649***(.197)	-.526*(.330)	.127(.932)	-.370*(.187)
Agri-worker	.144(.134)	.322(.590)	-.806(.538)	-.073(.350)
Skilled	.017(.121)	.373**(.175)	-.404(.545)	.170*(.089)
Mining	-.729**(.349)	.131(.342)	-	-.436(.369)
Manufacturing	-.289(.317)	.573**(.276)	-.013(.832)	-.058(.345)
Construction	-.221(.344)	.939***(.294)	-	.067(.356)
Trade	.147(.326)	.899***(.323)	-.482(.972)	.232(.353)
Servicesec	-.434(.313)	.520*(.311)	-.190(.838)	-.192(.344)
FRE	-.044(.329)	.915***(.266)	-	.177(.355)
Others	-.239(.310)	.656***(.242)	-.494(.666)	-.031(.340)
Matwali	-	-	-	.043(.056)
Pani Nachalne	-	-	-	.064(.113)
Constant	2.27***(.375)	1.57***(.496)	2.69**(1.10)	2.02***(.398)
R^2	.3724	.4819	.3315	.3708
Obs.	594	179	61	834

Notes: Robust standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

Base categories: Small firm, Unskilled, Agricultural and *Tagadhari* are omitted categories for firm size, occupation, industry-type and caste dummy variables, respectively.

Table 9: Oaxaca decomposition results: 2003

		Education		Job		Other	
	Total	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
			Tagadhari vs. Matwali				
Occupational	.299***	.060**	.198*	.127***	0.029	.016	-.131
	(.089)	(.023)	(.153)	(.036)	(.044)	(.027)	(.200)
Firm size	.299***	.096***	.161	.077***	.059	.041	-.135
	(.086)	(.026)	(.127)	(.025)	(.418)	(.029)	(.297)
Interaction	.299***	.057**	.265*	.180***	.201	.014	-.418
	(.089)	(.023)	(.153)	(.044)	(.259)	(.027)	(.604)
			Tagadhari vs. Pani Nachalne				
Occupational	.493***	.080**	.104	.128***	.178	.041	-.038
	(.118)	(.032)	(.196)	(.042)	(.493)	(.044)	(.378)
Firm size	.493***	.128***	.230*	.063**	.361	.114**	-.403
	(.114)	(.036)	(.152)	(.028)	(95.99)	(.045)	(.419)
Interaction	.493***	.076**	.289*	.191***	-.270	.044	.163
	(.119)	(.031)	(.191)	(.055)	(.478)	(.044)	(.864)

Notes: Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 10: Oaxaca decomposition results: 2010

		Education		Job		Other	
	Total	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
			Tagadhari vs. Matwali				
Occupational	.199***	.179***	.126	.041	-.192	.009	.036
	(.071)	(.037)	(.180)	(.031)	(.108)	(.029)	(.232)
Firm size	.199***	.213***	.202	.032**	-.095	-.003	-.150
	(.070)	.040)	(.166)	(.015)	(.064)	(.030)	.334
Interaction	.199***	.150***	.131	.084*	-.780*	.002	.612
	(.071)	(.034)	(.187)	(.043)	(.501)	(.027)	(.791)
			Tagadhari vs. Pani Nachalne				
Occupational	.489***	.380***	.084	.088*	-.068	.044	-.039
	(.122)	(.071)	(.310)	(.046)	(.071)	(.055)	(.528)
Firm size	.489***	.454***	.027	.078***	.801	.092*	-.963
	(.118)	(.075)	(.246)	(.029)	(1.22)	(.055)	(.592)
Interaction	.489***	.319***	.019	.227***	-.394	.028	.290
	(.128)	(.067)	(.318)	(.064)	(.493)	(.053)	(1.25)

Notes: Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 11: Firm size distribution (before and after imputation)

	Year: 2003						Year: 2010					
	Reported		Imputed		Total		Reported		Imputed		Total	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Small firm	46	5.85	546	95.62	592	43.63	25	2.99	247	89.49	272	24.50
Medium firm	332	42.37	-	-	333	24.54	278	33.29	-	-	278	25.05
Large firm	407	51.78	25	4.38	432	31.83	532	63.72	28	10.14	560	50.45
Total	785	100	571	100	1357	100	834	100	276	100	1110	100

Table 12: Distribution of male wage workers by occupation and industry (before and after firm size imputation): 2003

	Reported		Imputed		Total	
Occupation	Obs.	%	Obs.	%	Obs.	%
Unskilled	145	18.45	99	17.34	244	17.98
Professional	301	38.30	16	2.80	317	23.37
Clerical	95	12.08	8	1.40	103	7.59
Service	46	5.85	28	4.90	74	5.45
Sales	37	4.71	10	1.75	47	3.46
Agri-workers	20	2.54	15	2.63	35	2.58
Skilled	141	18.07	395	69.18	537	39.57
Industry	Obs.	%	Obs.	%	Obs.	%
Agriculture	17	2.16	20	3.50	37	2.73
Mining	11	1.40	6	1.05	17	1.25
Manufacturing	152	19.34	172	30.13	324	23.88
Construction	29	3.69	299	52.37	328	24.17
Trade	71	9.03	16	2.80	87	6.41
FRE	27	3.44	4	0.70	31	2.28
Service sector	351	44.78	32	5.60	384	28.30
Other	127	16.16	22	3.85	149	10.98
Total	785	100	571	100	1357	100

Table 13: Distribution of male wage workers by occupation and industry (before and after firm size imputation): 2010

	Reported		Imputed		Total	
Occupation	Obs.	%	Obs.	%	Obs.	%
Unskilled	75	8.99	2	0.73	77	6.94
Professional	199	23.86	22	7.97	221	19.91
Clerical	156	18.71	6	2.17	162	14.59
Service	107	12.83	58	21.01	165	14.86
Sales	55	6.59	3	1.09	58	5.23
Agri-worker	6	0.72	6	2.17	12	1.08
Skilled	236	28.30	179	64.86	415	37.39
Total	834	100	276	100	110	100
Occupation	Obs.	%	Obs.	%	Obs.	%
Agricultural	7	0.84	18	6.52	25	2.24
Mining	6	0.72	3	1.09	9	0.81
Manufacturing	109	13.07	65	23.55	174	15.68
Construction	28	3.36	117	42.39	145	13.06
Trade	66	7.91	8	2.90	74	6.67
FRE	158	18.94	30	10.87	188	16.94
Service sector	55	6.59	5	1.81	60	5.41
Other	405	48.57	30	10.87	435	39.19
Total	834	100	276	100	1110	100

Table 14: Oaxaca decomposition results with imputed firm size: 2003

		Education		Job		Other	
	Total	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
Tagadhari vs. Matwali							
Occupational	.268***	.063**	.059	.138***	.011	-.053*	.050
	(.053)	(.028)	(.066)	(.034)	(1.83)	(.035)	(.135)
Firm size	.268***	.107***	.071	.083**	.025	-.032	.014
	(.053)	(.028)	(.063)	(.035)	(.070)	(.038)	(.107)
Interaction	.268***	.044*	.073	.211***	.026	-.086**	.000
	(.053)	(.028)	(.063)	(.047)	(.145)	(.039)	(.199)
Tagadhari vs. Pani Nachalne							
Occupational	.387***	.082**	-.000	.148***	.021	-.039	.175
	(.069)	(.036)	(.070)	(.036)	(.284)	(.042)	(.172)
Firm size	.387***	.140***	.085	.097**	-.031	.010	.086
	(.068)	(.037)	(.065)	(.042)	(.300)	(.043)	(.119)
Interaction	.387***	.057*	.042	.225***	.030	-.069*	.102
	(.070)	(.036)	(.071)	(.052)	(.037)	(.044)	(.224)

Notes: Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 15: Oaxaca decomposition results with imputed firm size: 2010

		Education		Job		Other	
	Total	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
Tagadhari vs. Matwali							
Occupational	.216***	.202***	.029	.041*	-.299	.001	.242
	(.061)	(.035)	(.137)	(.026)	(.327)	(.027)	(.225)
Firm size	.216***	.245***	.137	.013	-.101	-.011	-.067
	(.061)	(.038)	(.130)	(.016)	(.192)	(.029)	(.167)
Interaction	.216***	.179***	.073	.076**	.131	.003	-.246
	(.068)	(.035)	(.143)	(.033)	(.788)	(.026)	(.642)
Tagadhari vs. Pani Nachalne							
Occupational	.489***	.387***	.082	.086***	-.022	.034	-.078
	(.084)	(.061)	(.162)	(.033)	(.021)	(.047)	(.443)
Firm size	.489***	.469***	.081	.043	-.063	.045	-.086
	(.082)	(.062)	(.145)	(.034)	(.110)	(.050)	(.205)
Interaction	.489***	.342***	.063	.150***	1.52	.034	-1.62
	(.086)	(.062)	(.171)	(.054)	(1.98)	(.048)	(1.13)

Notes: Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

[i] Most evidence on caste discrimination is based on data from India. In a study of wage differentials between scheduled and non-scheduled caste migrants in Delhi, Banerjee and Knight (1985) finds that low-caste workers are 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 find that a significant part of the caste wage differential was attributable to differences in access to better paid occupations. Das and Dutta (2007) estimates the caste wage differential in both regular and casual jobs in the Indian labor market. The results show that a substantial differential exists between scheduled and non-scheduled castes in regular jobs, but not in casual ones, with almost two thirds of the differential in regular jobs being attributable to endowment effects (educational and occupational variables). In a study of regular salaried jobs in India, Madheswaran and Attewell (2007) found that endowment differences are larger than current market wage differences in explaining the caste wage differentials, and that the most important type of difference in endowments was the difference in occupation across castes. For Nepal, Cameron (1995), Bhattachan, Sunar, and Bhattachan (2009) and Karki (2007) analyze caste wage discrimination. All of them find strong evidence of caste discrimination against Dalit, although only the latter applies the Oaxaca decomposition method.

[ii] In perfect competitive markets discrimination disappears with 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).

[iii] The NLSS has separate questions for agriculture and non-agriculture wage employment. We only consider respondents in the non-agriculture employment. However, agriculture can also be a selected as an industry in the non-agriculture wage employment questionnaire.

[iv] Average exchange rates between NPR and USD were 73.99 and 71.80 in 2003 and 2010, respectively. Source: Nepal Rastra Bank.

[v] Note that there is a significant change in the industry classification between 2003 and 2010 regarding the other category, which represents industry not responded or responded as other.

[vi] Workers from this caste do not have representation in the FRE industry in both periods and FRE, mining and agricultural industries in 2010