Is education the panacea for economic deprivation of Muslims?
Evidence from wage earners in India, 1987-2005[*]

Sumon Kumar Bhaumik[**]
Brunel University,
IZA – Institute for the Study of Labour, Bonn, and
William Davidson Institute, University of Michigan, Ann Arbor

Manisha Chakrabarty
Indian Institute of Management, Kolkata,

Abstract:
Few researchers have examined the nature and determinants of earnings differentials among religious groups, and none has been undertaken in the context of conflict-prone multi-religious societies like the one in India. We address this lacuna in the literature by examining the differences in the average log earnings of Hindu and Muslim wage earners in India, during the 1987-2005 period. Our results indicate that education differences between Hindu and Muslim wage earners, especially differences in the proportion of wage earners with tertiary education, are largely responsible for the differences in the average log earnings of the two religious groups across the years. By contrast, differences in the returns to education do not explain the aforementioned difference in average log earnings. In conclusion, we discuss some policy implications.

*Keywords***:** earnings gap, education, decomposition, religion

*JEL classification***:** J31, J15, I28

Journal of Asian Economics (In press)

**Is education the panacea for economic deprivation of Muslims?
Evidence from wage earners in India, 1987-2005**

1. Introduction

Economists have traditionally viewed economic class division as a source of social conflict. There is, however, an increasing perception that differences in economic opportunities and living standards of groups that are divided along ethnic or religious lines may be a bigger source of conflict than traditional divisions along class lines (e.g., Stewart, 2001; Varshney, 2001). This could be on account of past grievances that are alive in the collective consciousness of the ethnic or religious groups (Horowitz, 1985; Collier and Hoeffler, 2004). Horowitz (1998) has extended this line of argument to explain inter-ethnic group conflict as an outcome of diverging material interests. Wintrobe (1995) has suggested that envy on the part of members of one ethnic group, on account of greater success of a rival ethnic group, might precipitate conflict. In a recent article, Esteban and Ray (2006) also argue that ethnic conflict may be salient in the presence of economic inequality. Once initiated, an inter-ethnic (religious) group conflict might get a life of its own because the conflict would lead to a breakdown in trust which is a necessary pre-condition for a social contract about distribution of resources in an environment of peace.

Despite the importance of inter-ethnic group and inter-religion differences in economic conditions, however, there are relatively few studies that focus on this issue. In an early attempt to examine the relationship between religious denomination and earnings, Gockel (1969) demonstrated that Catholics in the United States have an advantage vis-à-vis Protestants. The Jewish advantage over people of other religious denominations has been recorded in the case of the United States (Chiswick, 1983)[1] and Canada (Tomes (1985).[2] In a more recent study, Steen (1996) found that the relative impact of affiliation to Judaism, Catholicism and the Protestant church(es) on earnings of labourers in

---

[1]Chiswick (1983) found that, ceteris paribus, Jewish men have 16 percent higher earnings than non-Jewish men. This can be significantly explained by a 20 percent higher rate of return from schooling for the former, and a steeper experience-earnings profile.

[2] Tomes (1985) showed that, ceteris paribus, Jews in Canada earned 12.7 percent more than the Protestants who, in turn, earned 5.1 percent more than people of all other religious denominations.

the United States, as reported in the studies of Gockel (1969), Chiswick (1983) and Tomes (1985), continues to hold. To our knowledge, there has been no significant contribution to this thin literature since.

It is evident that not only is the relationship between religion and earnings relatively unexplored, but also that the relationship has been examined largely in the context of the United States and Canada which are overwhelmingly Christian countries, especially so in the 1980s and the 1990s.[3] Given the small size of the minorities relative to the overall population, the likelihood of actual inter-religion conflict was unlikely. Esteban and Ray (2006) have argued, for example, that the likelihood of conflict increases with the size of the rival groups. While sub-denominations within Christianity, namely, the Protestants and the Catholics, each comprised a large proportion of the overall population, and while Protestant-Catholic conflict in North America is not unheard of (see Kane, 1951), a Northern Ireland type violent conflict along those lines is difficult to envisage.

In several other contexts, however, relative deprivation of one religious group vis-à-vis another might precipitate serious, even violent, conflict. India is one such context. At independence, the country was divided on religious grounds, and witnessed major riots along religious lines that left over half a million people dead. Since then, riots on a smaller scale have continued to persist. Muslims comprise of 13.4 percent of the Indian population, and comprise as much as a quarter of the population in some states like West Bengal. Yet they account for 6.3 percent of the college graduates and well over 90 percent of them are employed in the low-paying informal sector. Further, while low caste and economically backward Hindus find succour in the affirmative action schemes that reserve nearly 50 percent of public sector jobs for them, there is no systematic affirmative action scheme for the Muslim population. As a consequence, in most states, Muslims account for less than 5 percent of the public sector workforce. Following the publication of the Sachar Committee Report (Government of India, 2006), the popular perception is that, on average, Muslims in India are worse off than even

---

[3]In 1990, for example, 88.3 percent of the US population was Christian, while 1.8 was Jewish. Less than a third of the Christians were Catholics. Atheists/agnostics, who accounted for 8.4 percent of the population, comprised the second largest "religious" group. In 1991, in Canada, 80 percent of the population was Christian, about 56 percent of whom were Catholics. Jews made up 1.2 percent of the population. Once again, atheists were the second largest "religious" group, accounting for 12.3 percent of the population.

the lower caste Hindu population, largely on account of lower educational attainments. In other words, in India, both Hindus and Muslims have large populations, a significant proportion of whom share mistrust about the rival religious community, and actual as well as perceived differences in economic status that can precipitate or intensify any conflict between the two religious groups.

Ironically, these factors that make an intensification of religious conflict in India likely, *ceteris paribus*, are also those that make the context an interesting one for an examination of inter-religious group differences in measures of economic well-being such as employment and earnings. However, while living standards disparities across castes have been explored in detail in the literature (Borooah, 2005; Kijima, 2006b; Madheswaran and Attewell, 2007; Bhaumik and Chakrabarty, 2009), the impact of religion remains neglected. Noland (2005) uses state-level data from India to argue that state-level income during the 1981-96 period was significantly affected by the proportion of people belonging to Buddhists, Jains and "other" religions. However, his paper does not address the micro-issues related to disparities in earnings, consumption etc across the different religious groups.

The few papers till date that uses micro data on India to examine inter-religion differences are by Borooah and Iyer (2005) on school enrolment rates across religious groups, by Borooah, Dubey and Iyer (2007) on categories of employment status across different caste/religion groups and by Dutta (2004) on wage structure across caste and religious affiliation.[4] Borooah and Iyer (2005) find evidence of a narrowing gap between the enrolment rates of Hindus and Muslims at schools, especially for children with illiterate parents. The marginal impact of religion on enrolment rates is influenced by the size of the community in which the children reside. Borooah, Dubey and Iyer (2007), using a single round of employment survey data (1999) of India, find that the probability of being a regular salaried employee is significantly lower for Muslim labourers than for upper caste Hindus. Dutta (2004), does not explicitly model the inequality of wages across religious groups. She explores the wage structure of adult male workers by incorporating the dummies for religious

---

[4]In a much cited paper, Duraisamy (2000) studies the changes in return to education for ten years period spanning from 1983 to 1993. However, the emphasis of this paper is on the examination of the differences in returns to labourer characteristics over time and across regions. The paper does not make any attempt to examine the trends in the earnings differences between religious groups.

affiliation, using three rounds of employments survey (1983, 1993, 1999). She finds a significant negative impact on regular wages for being Muslim across these three years.

In this paper, we use data from India to make a significant contribution to the literature on the impact of religion on earnings. We use National Sample Survey household-level data from 1987, 1993, 1999 and 2005 to explore the relative impact of characteristics and returns on those characteristics on the earnings differential between Hindus and Muslims.[5] Our results indicate that education differences between Hindu and Muslim wage earners, especially differences in the proportion of wage earners with tertiary education, are largely responsible for the differences in the average log earnings of the two religious groups across the years. By contrast, differences in the returns to education do not explain the aforementioned difference in average log earnings. These findings provide *prima facie* justification for policies aimed at significantly improving an average Muslim's access to education in India. We discuss this implication of our results later in the paper.

The rest of the paper is organised as follows: In Section 2, we describe the institutional features of India's labour market; especially reservation policies for protecting interests of depressed sections of population to explore the opportunities available across different segments of population including Muslims. In Section 3, we describe the data set, and report some patterns in the data. The empirical strategy is outlined in Section 4. The results are reported and discussed in Section 5. Finally, in Section 6, we discuss the implications of our results for policy formulation.

2. Aspects of the Indian labour market

It is generally argued that the twin objectives of job security and social security of people employed in the organised sector lay at the heart of the post-Independence evolution of labour market institutions in India (Datta Chaudhuri, 1996; Basu, Fields and Debgupta, undated). It has been argued that the legislations have made it difficult for the organised sector to expand in terms of labour recruitment, reducing demand for labour by as much as 17.5 percent (Fallon and Lucas, 1993). Further, they may

---

[5]These surveys cover the following periods: July 1987 to June 1988, July 1992 to June 1993, July 1999 to June2000, and July 2004 to June 2005, respectively.

have hurt India's growth potential. Besley and Burgess (2004) find that growth rates are higher in states where the labour institutions are less restrictive.

As such, none of the restrictive legislations enacted in the post-independence era in India, can explain the form and magnitudes of earnings disparities between different castes, linguistic groups and religions within India because these institutions are common to all organised sector workers. While legislations may impact employment generation and wage growth differently across sectors, so long as a labourer was not prevented by these legislations from moving to one sector of employment to another, there is no *a priori* reason to suspect that they could have contributed to earnings disparities on their own. In order to explain such discrepancies, we may have to examine a less discussed labour market institution in India, namely, the "reservation policy" that provides for positive discrimination in favour of some historically deprived sections of the population. The genesis of these post-Independence positive discrimination policies in India lay in the British colonial policies of the 19th and early 20th centuries (Jaffrelot, 2006).

After India's Independence in 1947, the British policy of positive discrimination for the Untouchables was expanded on the basis of the share of the Untouchables, who were re-christened Scheduled Castes, in the population, and new employment and educational quotas were created for the Scheduled Tribes. In 1951, the "reservation" policy set aside 15 percent of seats in public sector educational institutions and the same proportion of public sector jobs for people belonging to the Scheduled Castes, and the corresponding figure for the Scheduled Tribes was 7.5 percent. However, in the absence of adequate education, people belonging to the scheduled castes and tribes mostly account for menial jobs in the public sector – Class 3 and Class 4 employment – until 1980. Since then, the employment for Class 1 and Class 2 employment had increased significantly to 18.7 percent, the comparable figure for 1974 being 7.8 percent (Mendelsohn and Vicziany, 1998).

In contrast to the positive discrimination enjoyed by the Untouchables since the late 19th century, the Shudras, who were just above the Untouchables in the caste hierarchy, did not enjoy such benefits until 1990. Some sub-castes within the Shudras were fairly well off in some regions of India, while some others were as vulnerable as the Untouchables. After Independence, this category was renamed Other Backward Classes (OBC). The first Backward Classes Commission was appointed in

1953, and it concluded that both educational and economic backwardness was strongly correlated with caste, and identified 2,399 OBC castes that made up 32 percent of India's population. The Commission recommended that 50 percent of government jobs be reserved for people belonging to these backward classes, *in addition to* the jobs that were reserved for the scheduled castes and tribes. In a landmark decision in 1963, India's Supreme Court rejected this reservation policy for OBCs as being unconstitutional. While the attempts to extend the reservation policy in the more populous states of India such as Uttar Pradesh, and at the federal level, were successfully reversed by the upper castes during the 1970s, in 1978, the backward class representatives of the among the socialists were able to set up a second Backward Class Commission, the so-called Mandal Commission. The Mandal Commission noted that OBCs accounted for 52 percent of India's population but only 12.5 percent of civil service posts, and recommended that 27 percent of all public sector jobs be reserved for OBCs.[6] In 1990, the Janata Dal government at the federal level adopted the recommendations of the Commission.

We have to note two important aspects of this major change in India's labour market policies. First, unlike the scheduled castes and tribes, the OBCs, who gained most from the implementation of the Mandal Commission's recommendations, included within its fold a visible share of India's Muslim population. In the 2004-05 round of the National Sample Surveys, for example, 39.2 percent of the Muslims identified themselves as OBCs.[7] They were largely converts from the Hindu (intermediate) occupational castes like artisans and those from the lowest Hindu castes; known as the *Ajlaf* and the *Arzal* respectively. Taken together with the fact that the Constitutional (Scheduled Caste) Order of 1950 restricted the Scheduled Caste status to Hindus alone, it is easy to see that the gains for the OBCs could, for the first time, result in gains for some sections of the Muslim population.[8]

---

[6] For details about the provisions laid out in the Commission's Report to identify backward classes, see Ramaiah (1992).

[7] The corresponding figure for the Hindus was 42.8 percent.

[8] For details about regional variations in classifications of individuals as well as in the reservation policy for OBCs, see the Sachar Committee Report (Government of India, 2006). It is important to note two things, however. First, there is no separate quota for Muslims within the overall quota for OBCs (see, e.g., Table 10.1 of the Sachar Committee Report, pp. 198). Second, with a few exceptions,

Second, given the stagnation of India's public sector, and the emergence of the private sector as the main driver of the economy, quotas for public sector employment were unlikely to prove a panacea for the economically backward groups in India. The situation has worsened since 1991; public sector employment during 1994-2000 grew at the annual compounded rate of *minus* 0.03 percent, the comparable figure for the 1983-94 period being 1.52 percent. The analysis of Brennan, McDonald and Shlomowitz (2006) suggests that the marginal impact of the expansion of job reservations has had a small marginal impact on the welfare of the intermediate caste OBCs, many of whom already owned land (a symbol of wealth) at the time of Independence, and were therefore able to benefit from political movements like the anti-Brahmin movements that were widespread in southern India. However, given that the Arzals, the Muslim equivalent of the Hindu members of the scheduled castes and tribes, were neither part of the landed class (in general), nor included in the reservation policies rolled out soon after Independence, the marginal impact of the post-Mandal reservations on the Muslim population was likely to have been more significant. This view finds support in the observation that since the early 1990s a key demand of the Muslim community in India has been the inclusion of a larger section of the community within the ambit of the OBC classification, thereby extending to other parts of India a variant of the model that was adopted in the state of Kerala in 1994 (Wright, 1997; Jenkins, 2001).[9]

While the Muslim population in India may have benefited from the adoption of the Mandal Commissions recommendations, it is not obvious whether this translated into a significant narrowing of the Hindu-Muslim earnings gap, especially for the wage earning section of the population. Reservation policy in India assures a defined proportion of the available jobs to certain socio-economic groups, *provided the applicants from these groups meet the minimum required criteria for the jobs in question*. Further, as mentioned above, the quotas are effective only in the public sector; the dynamic private sector has been left outside the ambit of these quotas. In other words, traditional factors like educational endowment have possibly played a much bigger role in determining the

---

seats at educational institutions and places of employment that are included in quotas remain unfilled if there are not enough qualified candidates from the relevant castes (and classes).

[9] In 1994, the state of Kerala classified all Muslims as backward for the purpose of affirmative action at the state level.

earnings of the Muslims than job reservations for OBCs *per se* (see Kijima, 2006b). The Sachar Committee reports that, as of 2004-05, 9.5 percent of Muslim OBCs and 11.1 percent of their non-OBC counterparts were with completed high school education or more, the comparable figure for the overall population being 16.5 percent. About 25 percent of Muslims have either never attended school or have dropped out, a proportion that is higher than the corresponding figure for any other socio-economic group. This may have had serious implications in an economy where growth is largely in the services sector and skill-intensive manufacturing industries, as opposed to mass-manufacturing that requires semi-skilled and unskilled labourers.

In sum, Muslims in India may have benefited in post-1990 by way of job reservations for the OBC section of the community. However, any gains on account of these reservations may not have been significant, on account of the low educational endowment. We examine this issue in detail in the rest of the paper.

3. Data

We use Indian National Sample Survey (NSS) employment data for the urban sector for the years 1987, 1993, 1999 and 2005, i.e., from the 43rd, 50th, 55th and 61st rounds of the survey. These rounds involved collection of data for large quinquennial surveys that included a separate Employment and Unemployment schedule. The survey is conducted as stratified multi-stage sample where the units of interest in the final stage, i.e, households, are selected by random draw without replacement from the first-stage units, namely, urban blocks, each of which includes a certain minimum number of people. We, therefore, have comparable data for large samples for a period of 17 years.

During these years, India experienced emergence of Hindu nationalism as a political force and intense riots in several parts of the country, a significant widening of the affirmative action net that was likely to have benefited backward class Hindus more than their Muslim counterparts, as well as rapid economic growth following industrial liberalization in the post-1991 period. Importantly, the economic growth has been driven more by skill-intensive and capital-intensive manufacturing and services industries like auto ancillaries, pharmaceuticals, software and banking-finance, aggravating

the extent of inequality in India (Ravallion, 2000; Kjima, 2006a), almost certainly between skilled and unskilled laborers. This mix of political and economic events make the period of our analysis interesting, especially in view of the significant difference in the average education levels of Muslims and the Hindus (Borooah and Iyer, 2005).

For each individual included in the sample, the surveys provide information about weekly earnings, demographic characteristics of individuals such as age and gender, educational attainment, industry of occupation, and state of residence. The 1987 and 1993 surveys cover about 74,000 labour force participants each, and the coverage for 1999 and 2005 were about 87,000 and about 75000, respectively. Across the years, Hindus account for about 80 percent of the labour force while Muslims account for another 14 percent. The balance is made up of a variety of religions including Sikhs, Christians and Jains. Since each of these other religious groups individually account for a small share of the labour force – no more than 2 percent – we drop them from the sample, and focus on the earnings differences between Hindus and Muslims.

The earnings data, that are central to our analysis, are reported only for wage earners and casual workers. Hence, we have been forced to leave out the self-employed individuals from our sample. Further, the earnings reported by the casual workers for the reference week are not necessarily a good proxy for the annual earnings, given the irregular employment patterns of these workers (Dutta, 2004, 2006). Therefore, these workers have to be dropped from the sample as well.[10] In other words, our samples include only wage earners in regular employment, and they account for about 35% of the overall sample of labourers for each of the survey years. This is consistent with the samples on Indian labour force used elsewhere in the literature (see Kijima, 2006a). Our measure of their earnings includes salaries and wages, bonuses and perquisites, but not the income from working overtime. We have used consumer price indices for industrial workers to deflate the earnings figures and thereby make them comparable across time, treating 1987 as the base year.

---

[10] We, nevertheless, repeated the empirical exercise described later in this paper, using data for casual labour. Our results indicated that returns to education are much lower for casual workers than for workers with regular employment, and that neither differences in education levels nor differences in returns to education explain differences in average log earnings between Hindus and Muslims. The results are available from the authors on request.

Finally, we restrict our sample to 21-60 year old people to avoid possible endogeneity with respect to education; people in India typically get their first university degree at the age of 21. Further, we leave out of the sample people belonging to Jammu and Kashmir and the politically troubled states in the north east of the country, where economic activity, employment etc are affected by insurgency and terrorism. Our final usable sample, therefore, includes 21-60 year old wage earners from 16 major states that account for approximately 78 percent of the total number of wage earners included in the survey. Our 1987, 1993, 1999 and 2005 data include, respectively, 18,187 Hindus and 1,929 Muslims, 17,389 Hindus and 1,773 Muslims, 17,422 Hindus and 2,107 Muslims, and 15959 Hindus and 1787 Muslims.

INSERT Table 1 about here.

The descriptive statistics are reported in Table 1. The descriptive statistics indicate the following:

- It can be seen that over time there was an increase in the Hindu-Muslim wage gap. The gap in the average earnings of the Hindus and the Muslims was 23 percent of the latter's average income in 1987, 32 percent in 1993, 29 percent in 1999, and 37 percent in 2005. Overall, between 1987 and 2005, there was a 45 percent increase in the real average weekly earnings of the Hindus and a 30 percent increase in the real average weekly earnings of the Muslims.

- The average age of the Hindu and Muslim wage earners was similar during all four years, between 35 and 39. There is also no noticeable difference between the proportion of Hindu and Muslim wage earners who were married. However, while the proportion of females among both Hindu and Muslim wage earners was low, with a high of 21 percent for Hindus and 15 percent for Muslims, in 2005, consistently through the years the proportion of wage earners who were female was higher among Hindus than among Muslims.

- The greatest difference between the Hindu and the Muslim wage earners was, however, with respect to their educational attainment.[11] In 1987, 15 percent of the Hindu wage earners had

---

[11] There was a slight difference in the educational categories included in the 1987-88, 1993-94 and 1999-2000 questionnaires, and those included in the 2004-05 questionnaire. After reconciling the

tertiary education, while another 29 percent had high school education. By 2005, these proportions had risen to 28 and 31, respectively. On the other hand, in 1987, only 11.5 percent of the Muslim wage earners had tertiary education and another 21 percent had high school education. By 2005, while both these proportions had gone up, to 16 and 26, respectively, the proportion of Muslim wage earners with higher (especially tertiary) education was still significantly lower than their Hindu counterparts. At the other end of the education spectrum, a greater proportion of Muslim wage earners was with primary education or less, compared with Hindu wage earners.

The descriptive statistics suggest that over time the average earning of Hindu wage earners rose much faster than that of the Muslim wage earners, and, at the same time, there was a much more spectacular increase in the proportion of Hindu wage earners with tertiary education than in the corresponding proportion for their Muslim counterparts. Even though this is merely a correlation, it highlights the possibility of a causal link between the difference in average wage earnings of the Hindus and Muslims, and the differences in the average educational attainment of the two groups. The conjecture about the role of educational levels driving the earnings difference, as opposed to returns on education, finds support in the observation that for each of the sample years, the average earnings of Muslims within any educational category was very similar to the average earnings of the Hindus within the same category. The ratio of the average earning of Muslims to the average earning of the Hindus for the education categories varied within 0.85 and 1.0, with a mean of about 0.9. However, establishing the importance of the level of education as a key driver of inter-religion differences in earnings requires a more rigorous examination of the data, and this is our endeavour in the rest of this paper.

---

differences to create comparable educational categories across all the years, we are left with the following categories: illiterate, below-primary, primary, middle school, secondary and higher secondary combined (which we call high school education), and tertiary. The first three surveys included information about people with medical and technical education. But wage earners with these qualifications account for less than 2 percent of the final samples for those years. Further, returns to medical and technical education were not significantly different from those with general tertiary education. Hence, in our analysis, we use the tertiary education category to account for all kinds of university education.

4. Empirical strategy

Conventionally, researchers aiming to explain earnings differences between any two socio-economic groups use a Mincer equation that relates log earnings of individuals within each of the groups to characteristics like age, gender and education.[12] They then use the estimated coefficients of the Mincer equations and an algorithm proposed by Oaxaca and Blinder (Oaxaca, 1973; Blinder, 1973) to decompose the difference in log earnings into characteristics and coefficients effects (Ghiara, 1999; de Coulon, 2001; Garcia-Aracil and Winter, 2006). Characteristics effects indicate the extent to which differences in average characteristics of labourers in the different socio-economic groups explain the differences in log earnings, other things remaining the same. Similarly, coefficients effects indicate the extent to which differences in the impacts of these characteristics on the log earnings of these socio-economic groups (i.e., differences in the aforementioned estimated coefficients) explain the differences in log earnings, other things remaining the same.

We choose the following variant of the stylised Mincerian equation:

$$\ln E_i = \alpha_0 + \alpha_1 age_i + \alpha_2 age_i^2 + \sum_k \beta_k S_{ik} + \sum_j \lambda_j X_{ij} + A_i'\delta + \varepsilon_i \qquad [1]$$

where $\ln E_i$, the natural logarithm of the earning of individual i, and this (log) earning is a function of age, level of education attainment by k types of degree/certification, denoted by S_{ik}, and personal characteristics such as gender and marital status,[13] indexed by X_{ij}. Our specification allows the rate of

---

[12] In a traditional Mincer equation, (log) earning is assumed to be a function of experience. This is typically measured as age of an individual less the sum of the number of years of schooling and five. However, our data do not provide information about the number of years of schooling, and any attempt to generate years of experience from the age of an individual would lead to measurement error. Since experience is a linear monotonic transformation of age, we retain the latter in the specification, instead of approximating the former.

[13] The rationale for inclusion of marital status in the specification is that marriage increases the size of an individual's social network, thereby enhancing his or her ability to obtain better paid employment. In the Indian context, it can be said with a reasonable degree of certainty that for all but a handful of highly educated and upwardly mobile labourers, marriage is exogenously determined. In order to examine whether marital status affects earnings of male and female labourers differently, we have experimented by including an interaction between gender and marital status in the Mincer specification. However, the coefficient of the interaction term was insignificant and hence we dropped it from the specification. The insiginificance of the interaction term is not surprising, given that marriage typically affects labour supply of women and their choice of sectors. Since our choice of sample focuses on labourers with regular employment and given that we control for the sector of occupation, the marginal impact of the interaction term is not significant.

return to vary across types of education level, which is consistent with the relevant literature (Heckman, Layne-Farrar and Todd, 1996; Sakellariou , 2004; Münich, Svejnar and Terrell, 2005). In addition, we control for the location of the individual and the broad industry group in which the individual works, using dummy variables for the states and industry groups.[14] In equation (1), these dummy variables are included in the vector A.

The aforementioned Oaxaca-Blinder decomposition algorithm suggests the following:

$$Ln\overline{E}_h - \ln \overline{E}_l = \overline{X}_l{}'(\hat{\beta}_h - \hat{\beta}_l) + (\overline{X}_h - \overline{X}_l){}'\hat{\beta}_l + (\overline{X}_h - \overline{X}_l){}'(\hat{\beta}_h - \hat{\beta}_l) \qquad [2]$$

where $\ln \overline{E}$ is the predicted mean (log) earning; h and l refer to the groups with higher and lower earnings, respectively, $\overline{X}$ is the mean vector of earning determining variables (human capital variables or endowments variable), $\hat{\beta}$ is vector of the estimated returns to the earnings determinants; and the last term indicates the interaction effect.[15] Our decomposition assumes that the *high* earnings group is the reference or "no discrimination" group, such that the explained component of the decomposition comprises of the endowment effect and the interaction effect, while the unexplained component includes only the coefficients effect (see Oaxaca, 1973). As evident from the descriptive statistics reported earlier, in all four years of analysis, Hindu wage earners are type h while Muslim wage earners are type l.

The standard Mincer-Oaxaca-Blinder analysis has been extended to take into consideration the possibility that labourers do not become wage earners at random, but rather are selected into that category on the basis of their characteristics. If this is indeed the case, an ordinary least squares (OLS) estimation of the Mincer equation would yield biased coefficient estimates. Any selection bias, if present, can be corrected using the Heckman procedure that separately models the selection and the earnings equations. However, in the absence of good exclusion conditions, OLS yields better results than the Heckman model (see Puhani, 2000; Munich, Svejnar and Terrell, 2005). Nevertheless, we

---

[14] The industries are clubbed together as 3 sectors such as primary, secondary and tertiary. Primary includes agriculture, fishing etc; secondary includes mining and quarrying, manufacturing, electricity and construction and tertiary sector includes wholesale and retail trade, restaurant and hotels, transport, storage and communication services, financial, insurance, real estate and business services, community, social and personal services.

[15] For a discussion about the relevance of the interaction effect, see Winsborough and Dickinson (1971) and Jones and Kelly (1984).

test for the presence of selection bias using the Heckman two-step process. Our exclusion conditions in the earning equation are the ratios of individuals in the 0-5, 6-15 and greater than 60 year olds age groups within households to the total number of household members, i.e., a variant of the so-called dependency ratios. The rationale for the choice of these variables in the selection equation is that presence of children and elderly people within homes make it difficult for people to choose the regular wage earning professions that typically does not permit flexible working hours.[16]

Our results, not reported in the paper, indicate that for each Mincer equation at least one of these dependency ratios is significant, and that the inverse Mill's ratio is not significant for any of the earnings equations. One way to interpret this result is to conclude that there is no selection bias in our data. This would not altogether be surprising in the Indian context where the ability to find a job as well as choice of career (e.g., wage earner vs. self-employed) may be influenced at least as much by unobserved factors such as social capital as by the observed characteristics of the laborers and their households. The results could equally suggest that our excluding conditions, while statistically significant, are not adequate to capture any selection bias in the data. In either case, it would be imprudent to use a Heckman type model to estimate the Mincer equation. We, therefore, use OLS to estimate the Mincer equation,[17] and subsequently use the Oaxaca-Blinder decomposition methodology to decompose the difference between the average log earnings of Hindu and Muslim wage earners during the four survey years. The regression and decomposition results are reported and discussed in the next section.

5. Results

The estimates of the Mincer equation are reported in Table 2. To begin with, it is evident that the variables included in our specification have the expected signs, e.g., females earn less, on average,

---

[16] In the literature, other identifying variables include land holdings and non-labour income (Buchinsky, 2001). However, our data do not provide the information on these variables for urban workers.

[17] As a robustness check, we have estimated the OLS regressions both by using and by not using sampling weights. The results, not reported in the paper but reported to referees, indicate that the main result of the paper, discussed below, remains unaffected by the use of weights. Hence, we continue to report and discuss the results obtained on the basis of unweighted OLS.

than males, and education is positively correlated with earnings. Further, the goodness of fit of the regression models – around 0.40, on average – is comparable with similar models estimated with cross-section data. In addition, almost all estimated coefficients are significant at the 1 percent level.[18]

INSERT Table 2 about here.

The regression results indicate the following:

Age: log earnings are a quadratic function of age, which is our proxy for experience. It is easy to demonstrate that the coefficients imply that, *ceteris paribus*, the earnings of both Hindu and Muslim wage earners increase at least until the age of 70, longer in some cases. Further, it can also be shown that the marginal impact of age on earnings is roughly the same for Hindus and Muslims. For example, in 1987, the marginal impact of age on the log earnings of a 25-year old Hindu wage earner was 0.045, and the corresponding marginal impact was 0.040 for a Muslim wage earner. In the subsequent years, the marginal impacts of age on the log earnings of a similarly aged person were as follows: 0.055 (Hindu) and 0.045 (Muslim) in 1993, 0.055 (Hindu) and 0.050 (Muslim) in 1999, and 0.045 (Hindu) and 0.055 (Muslim) in 2005. In other words, coefficients effects of age are unlikely to significantly explain differences in the average log earnings of the Hindu and Muslim samples.

Gender: Women clearly earned less than men with both the Hindu and Muslim communities and across all the four years of analysis. Further, the absolute value of the (negative) coefficient of the female dummy variable was lower for the Hindu sample than for the Muslim sample. However, while the coefficients for this dummy variable for the Hindu and Muslim communities were significantly different for 1987 (0.23), 1993 (0.18) and 1999 (0.18), this difference was not significant in 2005 (0.05). In other words, among wage earners, both Hindu and Muslim women face discrimination relative to men, and, at least until 1999, Muslim women faced greater discrimination than Hindu women. However, in 2005, the extent of discrimination experienced by women of both communities was roughly the same, on account of a sharp decrease in the earnings of Hindu women relative to their

---

[18] For example, Zhang et al. (2005) reported R-square values in the 0.43-0.52 range for the fourteen Mincer equations estimated using Chinese data. Campos and Joliffe (2003) report R-square estimates in a comparable range (0.39-0.52) for Hungary.

Hindu male counterparts. We might, therefore, expect the coefficients effect of the female dummy to explain inter-religion differences in average log earnings until 1999, but this coefficients effect is unlikely to be significant in 2005.

Education: In keeping with the literature, for both Hindu and Muslim wage earners, and for all the years in our analysis, the impact of education on earnings is positive, and the earnings-education profile is convex (see Duraisamy, 2000; Dutta, 2004, 2006). For example, in 1987, *ceteris paribus*, the log earnings of a Hindu wage earner with a below-primary education exceeds that of an illiterate person by 0.14, while that of a Hindu wage earner with tertiary education exceeds that of the illiterate person by 1.03. In other words, tertiary education adds about 7.5 times more to the log earnings of a wage earner than below-primary education. For both religious groups, there was an increase in the marginal impact of education over time, but the increase in the impact was much more noticeable for lower levels of education than for higher levels of education. For example, relative to the illiterate wage earners, below-primary education added 0.14 to the log earnings of Hindus in 1987, and this impact rose to 0.22 for the same religious community in 2005, i.e., by 78 percent. The corresponding figures for tertiary education were 1.03 and 1.38, respectively, i.e., a rise of 34 percent.

Overall, with a few exceptions, the returns to education for Hindu wage earners were noticeably different across the years, while those of their Muslim counterparts were not. Interestingly, returns to education were higher for the Muslim wage earners in 1987, e.g., high school education added 0.65 to the log earnings of a Hindu wage earner but 0.75 to that of a Muslim wage earner. But the trend had been reversed by 2005, e.g., the corresponding impacts for high school education for that year were 0.91 (Hindu) and 0.75 (Muslim) respectively. It is not obvious from this as to whether the coefficients effects of the education variables are likely to explain the inter-religion differences in average log earnings to a significant extent, and we shall revisit this empirical question later in this paper.

It is also evident that the sector of occupation and the location of the wage earner had a significant impact on their earnings, the former largely for the Hindu wage earners. This is consistent with the differences in the rates of growth of the primary, secondary and tertiary sectors in India, as also with differences in the different rates of growth/development with the different states and regions

within the country. However, we are using these as control variables for the regression analysis, and hence would not examine these impacts in any detail.

INSERT Table 3 about here.

The decomposition results are reported in Table 3. The interaction effects explain a very small proportion of the differences in the mean log earnings of the Hindus and Muslims, and hence we do not report them in the table. We focus instead on the characteristics and coefficients effects. Interestingly, while characteristics effects, i.e., the differences in education etc between the Hindu and Muslim wage earners, significantly explained the differences in average log earnings, with a few exceptions, individual coefficients effects were not statistically significant. Indeed, characteristics effects explained 72 percent, 57 percent, 65 percent and 79 percent of the difference in average (log) wages in 1987, 1993, 1999 and 2005, respectively. Further, most of the significant coefficient effects are associated with demographic characteristics like gender[19] and age.[20] Only in 2005 did the coefficient effects of high school and tertiary education account for about 24 percent of the log earnings gap, in favour of the Hindus.

The 1987-2005 period in India was marked by two major phenomena. The first of these was the rise of the Hindu-nationalist Bharatiya Janata Party (BJP) since 1987, resulting in a succession of BJP-dominated central governments between 1998 and 2005.[21] The other was the liberalisation of the

---

[19] The coefficients effect for the female dummy variable is positive. It once again brings to the fore the result that while both Hindu and Muslim wage earners earn less than their male counterparts, the gender difference is lower for the Hindus than for the Muslims. In other words, if the gender gap in earnings for Muslim wage earners were the same as that of the Hindu wage earners, the difference in the average log earnings of Hindu and Muslim wage earners would be reduced by 7-10 percent.

[20] The coefficients effect of age is positive for all the four years, but relatively small the years prior to 2004-05. In 2004-05, however, the coefficients effect (0.887), albeit significant only at the 10 percent level, is more than three times the observed difference in log earnings of the Hindus and the Muslims. Given that, in a Mincer equation, age is a proxy for experience, this suggests that not only is the premium on experience higher for the Hindus, on average, but that the premium rose sharply after the turn of the century, possibly reflecting underlying differences in the occupations of Hindu and Muslim wage earners.

[21] In the 1985 election, the BJP won only two seats in the 529-seat lower house of the Parliament. In 1989, the number of seats won by BJP increased to 85, and this number increased further to 120 in the 1991 election. In the 1996 election, the BJP emerged as the single largest party in the lower house, with 161 seats, and staked claim to the government. The party finally formed government after the

Indian economy, arguably initiated in 1991, and the gradual dominance of the private sector and market processes over the public sector and central planning.[22] Political discrimination against Muslims by the BJP and its allies, to the extent possible, would imply differences in earnings largely on account of differences in the return on individual characteristics on log earnings. In other words, such discrimination would be captured by the coefficients effect, which was indeed the case for 2005.[23] However, given that the process of liberalisation robbed the central and state governments of their power of patronage, as the role of the public sector in creating jobs shrunk considerably over time, one should treat such an interpretation of this result with caution. A plausible explanation for this coefficient effect, for example, is higher returns on the unobserved aspects of high school and tertiary education of Hindus like choice of streams of study (science, medicine, engineering etc), vis-à-vis the Muslims. As such, the difference in average log earnings is largely on account of differences in characteristics like education. On balance, our analysis suggests that the political polarisation in large parts of India, along religious lines, did not play a major role in lowering the average log earnings of the Muslim wage earners relative to their Hindu counterparts (see Brennan, McDonald and Schlomowitz, 2006).

Given the statistical insignificance of the coefficients effects, by and large, and relatively small values of these effects, when significant, we restrict our discussion to characteristics effects. Further, given that the characteristics effects are similar across the years, we focus mostly on the results for 1987 and 2005. The characteristics effects can be interpreted as follows:

1998 elections, in which it had won 182 seats, more than any other political party, and once again after the 1999 elections. In the 2004 elections, however, its strength in the lower house declined to 138, and it had to relinquish the reins of the government to the Indian National Congress, which emerged as the single largest party in the lower house.

[22] The Indian government's revenue expenditure, a measure of the relative size of the public sector, as a percentage of GDP declined from over 21 percent in 1990 to about 15 percent in 2000, and has since stabilised at that level.

[23] In the stylised Mincer-Oaxaca literature, discrimination is, by definition captured by the coefficients effect. To recapitulate, coefficients effect for a characteristic (say, education) is computed by holding this characteristic equal for two groups of labourers, on average, and focusing on the difference in the returns to this characteristic. In other words, a coefficients effect is large only if the returns to a characteristic are noticeably different between two groups of people that have the same average value of this characteristic, which is discrimination by definition. Further, in a constitutionally secular state like India, where access to educational institutions cannot be barred on the basis of religion, it would be much easier for a political party to affect the returns to education of people belonging to a certain religion, than the average educational levels of the religious groups themselves.

Age: With the exception of 1987, the characteristics effects of age are significant for both the linear and quadratic terms. Since Hindu wage earners were older, on average, than the Muslim wage earners, the difference between the average age of the Hindus and the Muslims, as well as the difference between the squares of the average ages, is positive. The positive characteristics effect of the linear term, therefore, is driven by the positive coefficient of the linear component of age, while the negative characteristics effect of the quadratic term is driven by the negative coefficient of the quadratic component. On balance, however, the characteristics effect associated with the linear component dominates; e.g., in 2005, the characteristics effect associated with the linear term is 0.06 while that associated with the quadratic term is (-) 0.026. In other words, overall, the higher average age of Hindu wage earners explains 0.034 (or 12.5 percent) of the difference in log earnings of the two religious communities. In 1987, 1993 and 1999, the characteristics effects of age accounted for 13 percent, 8 percent and 16 percent of the Hindu-Muslim difference in average log earnings, respectively. In other words, over time, the share of the earnings gap between Hindu and Muslim wage earners that can be attributed to the characteristics effect of age has remained roughly the same.

Gender: As indicated by the regression results discussed above, *ceteris paribus*, women earned less than men during all the years. The descriptive statistics reported earlier in the paper indicated that women constituted a greater proportion of the Hindu wage earners than the Muslim wage earners. In other words, the average log earnings of the Hindu wage earners are reduced relative to that of the Muslim wage earners on account of the higher proportion of women among the former. This is reflected by the negative (and significant) characteristics effect of the female dummy variable. However, given the average value of about (-) 0.025 for this dummy variable, it is evident that the difference in the average log earnings of the Hindu and Muslim wage earners would have widened only marginally if, for example, the Hindu sample had the same proportion of women as the Muslim sample.

Education: All levels of education had a positive impact on log earnings of both the Hindu and Muslim wage earners. The negative characteristics effects for below-primary, primary and middle school education, therefore, reflect the greater concentration of Muslim wage earners in those education categories, relative to the Hindu wage earners. However, the absolute values of these

characteristics effects vary between 0.01 and 0.025 and hence do not have a significant impact on the relative (average) earnings of the two religious groups. On the other hand, the positive characteristic effects for high school education and tertiary education, which reflect the greater concentration of Hindu wage earners within the higher education categories, explain a significant proportion of the differences in log earnings between the two communities. For example, in 1987, the characteristics effects of high school education and tertiary education, which favour the Hindu wage earners, add up to 0.21, i.e., about 100 percent of the difference in average log earnings between the Hindu and Muslim samples. Similarly, in 2005, the characteristics effects for high school education and tertiary education account for nearly 0.184, i.e., about 68 percent, of the difference in average log earnings of the Hindu and Muslim wage earners. In other words, if Muslim wage earners had the same distribution across the education categories as the Hindu wage earners, they might have been able to reduce the gap in average log earnings between the two communities by about 84 percent [= (- 0.011 - 0.026 + 0.062 +.003 + 0.150)/0.212] in 1987 and about 53 percent [= (- 0.011 - 0.018 - 0.010 + 0.039 + 0.145)/0.272] in 2005. Clearly, the most important factor driving the relative deprivation of the Muslim wage earners is the lower average education level relative to a Hindu wage earner. This is consistent with the views of the aforementioned Sachar Committee Report.[24] At the same time, however, our study shows that the relative importance of the characteristics effect of education in explaining the log earnings gap has declined over time. This is consistent with Borooah and Iyer's (2005) observation that Muslims in India were catching up with the Hindu population in terms of school enrolment.

The policy implications of these empirical results are discussed in the concluding section.

6. Concluding comments

---

[24] Borooah, Dubey and Iyer (2006) also find a significant contribution of low level of education attributes in explaining the lower proportion of regular salaried Muslims as compared to upper caste Hindu. Their counterfactual analysis also shows that the tackling of remaining coefficient bias through job-reservation can only benefit Muslims around 3-4 percent in securing regular salaried employment.

In this paper, we first estimate stylised Mincer equations for Hindu and Muslim wage earners in India for 1987, 1993, 1999 and 2005. The estimated coefficients suggest that log earnings for both Hindus and Muslims are quadratic functions of age, and also both the Hindu and Muslim women wage earners earn less than their male counterparts. The estimates also suggest that earnings increase with the level of education, and that the earnings-education profile is convex, i.e., people with tertiary education earn a lot more than people with (say) primary or even middle school education. Thereafter, using these estimated coefficients and the Oaxaca-Blinder algorithm, we decompose the differences in the average log earnings of the Hindu and Muslim wage earners into characteristics and coefficients effects. Our results indicate that the aforementioned difference in average log earnings is largely explained by the characteristics effect, especially by those for education and age. Over time, the relative importance of the characteristic effect of age has remained largely unchanged, but there has been a decline in the relative importance of the characteristic effect of education. The decomposition results suggest that even in 2005, if the Muslims and the Hindus had the same average level of education, the difference in their log earnings would have been lower by 53 percent. The coefficient effects of education, by contrast, did not play a role in explaining Hindu-Muslim difference in log earnings in any year other than 2005, and even then the combined coefficient effect of high school and tertiary education was about 24 percent, less than half the characteristic effect of education. This suggests that, *prima facie*, education can be a panacea for relative economic deprivation of Muslims in India.

Not surprisingly, policymakers in India are divided over whether to enact legislations that would usher in quotas for poorer Muslim households at public sector educational institutions. The danger of ushering in such a quota is that there is likely to be political resistance from the Hindu majority as well as from other religious minorities like Sikhs and Christians who would fall outside the purview of the quota. In other words, in the short run, a quota is likely to result in an intensification of the conflict among the different religious groups (see Horowitz, 1998). At the same time, provision of quotas at educational institutions may not necessarily translate into an immediate increase in the proportion of the Muslim labour force with tertiary education whose characteristics effect explains 45-50 percent of the difference in the average log earnings of Hindu and Muslim wage

earners across the years. There is evidence in the literature to suggest that income as well as measures of capability such as education and health are highly correlated across generations, and in large part this is on account of the ability of the parents to invest in education and health of the children early in the lives of the latter (e.g., Restuccia and Urrutia, 2004; Blanden, Gregg and Machin, 2005). Given that the average Muslim household is poorer and less educated than the average Hindu household, therefore, and given the imperfections in Indian capital markets, it is unlikely, therefore, that the reservation in itself will bridge the educational divide that explains a large proportion of the gap in the average log earnings of Hindu and Muslim wage earners. The path to higher average educational levels for Indian Muslims might therefore be a tortuous path spanning decades, and a quick-fix like an educational quota is unlikely to be a panacea. In other words, while an enhancement of educational capabilities remains a laudable goal by its own right, an improvement of the economic status of the Muslim population in India, to put them at par with the Hindus and perhaps other religious groups might require a multi-pronged process that includes usual development policy prescriptions such as greater access to credit to facilitate investment in (higher) education.

References

Basu, K., G. Fields and S. Debgupta (undated). Retrechment, labor laws and government policy: An analysis with special reference to India. Mimeo, Cornell University, Ithaca.

Besley, T. And R. Burgess (2004). Can labor regulations hinder economic performance? Evidence from India. Quarterly Journal of Economics, **119**:1, 91-134.

Bhaumik, S.K and M. Chakrabarty (2009). Earnings Inequality in India: Has the Rise of Caste and Religion Based Politics in India Had an Impact? In: A. Shariff and R. Basant (Eds.) *Handbook of Muslims in India*, Oxford University Press, New Delhi (forthcoming).

Bhaumik, S.K., I.N. Gang and M.S. Yun (2006). Ethnic conflict and economic disparity: Serbians and Albanians in Kosovo. Journal of Comparative Economics, **34**, 754-773.

Blackaby, D.H. et al. (2002). White/ethnic minority earnings and employment differentials in Britain: Evidence from the LFS. Oxford Economic Papers, **54**, 270-297.

Blanden, J., P. Gregg and S. Machin (2005). Intergenerational mobility in Europe and North America. Mimeo, Centre for Economic Performance, London School of Economics.

Blinder, A.S. (1973). Wage discrimination: Reduced form and structural variables. Journal of Human Resources, **8**, 436-455.

Borooah, V.K. (2005). Caste, inequality and poverty in India. Review of Development Economics, **9**:3, 399-414.

Borooah, V.K. and S. Iyer (2005). Vidya, Veda and Varna: The influence of religion and caste on education in rural India. Journal of Development Studies, **41**:8, 1369-1404.

Borooah, V.K, A. Dubey, and S Iyer (2007). Has Job Reservation Been Effective? Caste, Religion, and Economic Status in India. Development and Change, vol 38, issue 3, 423-445.

Brennan, L., J. McDonald and R. Shlomowitz (2006). Caste, inequality and the nation state: The impact of reservation policies in India, c. 1950-2000. Journal of South Asian Studies, **29**:1, 117-162.

Buchinsky, M. (2001). Quantile regression with sample selection: Estimating womens' return to education in the U.S. Empirical Economics, **26**, 87-113.

Campos, N. and D. Joliffe (2003). After, before and during: Returns to education in Hungary (1986-1998). Economic Systems, **27**:4, 377-390.

Chiswick, B.R (1983). The Earnings and Human Capital of American Jews. Journal of Human Resources, **18**, 313-36..

Collier, P. and A. Hoeffler (2004). Greed and grievance in civil war. Oxford Economic Papers, **56**:4, 563-595.

Datta Chaudhuri, M. (1996). Labour markets as social institutions in India. Iris-India working paper no. 10, University of Maryland, College Park.

De Coulon, A. (2001). Wage differentials between ethnic groups in Switzerland. Labour, **15**:1, 111-132.

Duraisamy, P (2000). Changes in Returns to Education in India, 1983-94: by Gender, Age-Cohort And Location. Economic Growth Center, India, discussion paper no. 815.

Dutta, P.V (2004). The structure of wages in India, 1983-1999, Poverty Research Unit, Sussex University, Working Paper no. 25.

Dutta, P.V (2006). Returns to Education: New Evidence for India, 1983-1999. Education Economics, Volume 14, Issue 4 , pages 431 - 451

Esteban, J. and D. Ray (2006). A model of ethnic conflict. Mimeo, New York University and Instituto de Analisis Economico.

Fallon, P.R. and R.E.B. Lucas (1993). Job security regulations and the dynamic demand for industrial labor in India and Zimbabwe. Journal of Development Economics, **40**, 241-273.

Gockel, G.L. (1969) Income and religious affiliation: A regression analysis. American Journal of Sociology, **74**, 632-646.

Garcia-Aracil, A. and C. Winter (2006). Gender and ethnicity differentials in school attainment and labour market earnings in Ecuador. World Development, **34**:2, 289-307.

Ghiara, R. (1999). Impact of trade liberalisation on female wages in Mexico: An econometric analysis. Development Policy Review, **17**:2, 171-190.

Government of India (2006). Social, economic and education status of the Muslim community of India. Report submitted by the Prime Minister's High Level Committee, New Delhi.

Heckman, J.J., A. Layne-Farrar and P. Todd (1996). Human capital pricing equations with applications to estimating the effects of schooling quality on earnings. Review of Economics and Statistics **78**, 562-610.

Horowitz, D.L. (1985). Ethnic groups in conflict. University of California Press, Berkeley, California.

Horowitz, D.L. (1998). Structure and strategy in ethnic conflict. Paper presented at the Annual Bank Conference on Development Economics, The World Bank, Washington, D.C.

Jaffrelot, C. (2006). The impact of affirmative action in India: More political than socio-economic. India Review, **5**:2, 173-189.

Jenkins, L.D. (2001). Becoming backward: Preferential policies and religious minorities in India. Commonwealth and Comparative Politics, **39**:2, 32-50.

Jones, F.L. and J. Kelly (1984). Decomposing differences between groups: A cautionary note on measuring discrimination. Sociological methods and Research, **12**, 323-343.

Kane, J.J. (1951). Protestant-Catholic tensions. American Sociological Review, **16**:5, 673-672.

Kijima, Y. (2006a). Why did wage inequality increase? Evidence from urban India 1983-99. Journal of Development Economics, **81**:1, 97-117.

Kijima, Y. (2006b). Caste and Tribe Inequality: Evidence from India, 1983-1999. Economic Development and Cultural Change, **54**:2, 369-404.

Madheswaran, S. and Attewell, P (2007). Caste Discrimination in the Indian Urban Labour Market: Evidence from the National Sample Survey. Economic and Political Weekly, October.

Mendelsohn, O. and Vicziany M (1998). The untouchables: subordination, poverty and the state in modern India. *Cambridge University Press*, Cambridge.

Meng, R. and J. Sentence (1984). Religion and the determination of earnings: Further results. Canadian Journal of Economics, **17**:3, 481-488.

Münich, D., J. Svejnar, and K. Terrell (2005). Is women's human capital valued more by markets than by planners? Journal of Comparative Economics, **33**, 278-299.

Noland, M. (2005). Religion and economic performance. World Development, **33**:8, 1215-1232.

Oaxaca, R. (1973) Male-female wage differentials in urban labor markets. International Economic Review **14**, 693-709.

O'Neill, J. (1990). The role of human capital in earnings difference between black and white men. Journal of Economic Perspectives, **4**:4, 25-45.

Puhani, P.A. (2000) The Heckman correction for sample selection and its critique: A short survey. Journal of Economic Surveys **14**, 53-68.

Ramaiah, A. (1992). Identifying other backward classes. Economic and Political Weekly, June 6, 1203-1207.

Ravallion, M. (2000). Should Poverty Measures be Anchored to the National Accounts?, Economic and Political Weekly, **35**: 35/36, 3245-3252.

Restuccia, D. and C. Urrutia (2004). Intergenerational persistence of earnings: The role of early and college education. American Economic Review, **94**:5, 1354-1378.

Sakellariou, C (2004). The use of quantile regressions in estimating gender wage differentials: A case study of the Philippines. Applied Economics, **36**, 1001-1007.

Stanley, T.D. and S.B. Jarrell (1998). Gender Wage Discrimination Bias? A Metaregression Analysis. Journal of Human Resources, **33**:4, 947-973.

Steen, T.P. (1996). Religion and earnings: Evidence from the NLS youth cohort. International Journal of Social Economics, **23**:1, 47-58.

Stewart, F. (2001). Horizontal inequalities as a source of conflict. In: F. Hampson, and D. Malone (Eds.) *From Reaction to Prevention*. Lynne Rienner Publishers, London.

Tomes, N. (1985). Religion and the earnings function. American Economic Review Papers and Proceedings, **75**:2, 245-250.

Varshney, A. (2001). Ethnic conflict and civic society: India and beyond. Johns Hopkins University Press, Baltimore, Maryland.

Winsborough, H.H. and Dickinson, P. (1971). Components of Negro-White income differences. Proceedings of the American Statistical Association, Social Statistics Section, 6-8.

Wintrobe, R. (1995). Some economics of ethnic capital formation and conflict. In: A. Breton et al. (Eds.) *Rationalism and Nationality*, Cambridge University Press, Cambridge, United Kingdom.

Wright, T.P., Jr. (1997). A new demand for Muslim reservations in India. Asian Survey, **37**:9, 852-858.

Zhang, J., Y. Zhao, A. Park and S. Song (2005). Economic returns to schooling in urban China, 1988-2001. Journal of Comparative Economics, **33**:4, 730-752.

Table 1
Descriptive statistics

	1987		1993		1999		2005	
	Hindu	**Muslim**	**Hindu**	**Muslim**	**Hindu**	**Muslim**	**Hindu**	**Muslim**
Real earnings	254.23 (165.50)	206.90 (138.68)	326.41 (218.44)	247.85 (176.51)	412.82 (301.13)	319.30 (256.81)	370.07 (442.91)	269.55 (279.32)
Age	37.15 (9.93)	36.64 (10.09)	37.61 (9.83)	36.59 (9.93)	38.11 (10.03)	36.60 (10.23)	37.79 (10.16)	36.16 (10.35)
Female	14.08	8.50	15.48	10.55	15.38	9.77	21.00	14.77
Married	81.02	81.54	81.93	81.33	81.36	80.83	78.04	75.21
Illiterate	11.04	18.51	9.64	18.56	7.92	14.32	10.39	15.78
Below primary	8.06	14.72	7.02	11.68	5.87	10.10	5.91	9.35
Primary	12.79	21.20	9.06	12.41	7.71	13.66	9.47	15.28
Middle school	13.81	13.17	14.15	16.58	15.01	15.99	15.19	17.40
High school	29.16	20.94	30.41	25.38	32.92	27.13	31.00	25.80
Tertiary	15.16	11.45	29.71	15.40	30.47	18.74	28.05	16.40
Nobs	18187	1929	17389	1773	17422	2107	15959	1787

Note: The values within parentheses are standard deviations.

Table 2
Mincer equation

	1987		1993		1999		2005	
	Hindu	**Muslim**	**Hindu**	**Muslim**	**Hindu**	**Muslim**	**Hindu**	**Muslim**
Constant	3.07 ***	3.24 ***	2.88 **	3.41 ***	3.18 ***	3.67 ***	4.07 ***	4.67 ***
	(0.08)	(0.24)	(0.10)	(0.29)	(0.09)	(0.28)	(0.10)	(0.28)
Age	0.07 ***	0.05 ***	0.08 ***	0.07 ***	0.08 ***	0.06 ***	0.06 ***	0.084***
	(0.003)	(0.01)	(0.004)	(0.01)	(0.004)	(0.01)	(0.01)	(0.01)
Age square	- 0.001 ***	- 0.0004 ***	- 0.001 ***	- 0.001 ***	- 0.001 ***	- 0.0004 ***	- 0.001 ***	- 0.0002
	(0.00004)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Female	- 0.31 ***	- 0.54 ***	- 0.32 ***	- 0.50 ***	- 0.27 ***	- 0.45 ***	- 0.48 ***	- 0.53 ***
	(0.01)	(0.06)	(0.02)	(0.07)	(0.02)	(0.06)	(0.02)	(0.06)
Married	0.13 ***	0.09 **	0.15 ***	0.12 **	0.14 ***	0.05	0.14 ***	0.16 ***
	(0.01)	(0.04)	(0.00)	(0.05)	(0.02)	(0.04)	(0.02)	(0.05)
Below primary	0.14 ***	0.16 ***	0.23 ***	0.26 ***	0.15 ***	0.24 ***	0.25 ***	0.32 ***
	(0.02)	(0.04)	(0.02)	(0.06)	(0.03)	(0.05)	(0.03)	(0.06)
Primary	0.21 ***	0.30 ***	0.25 ***	0.25 ***	0.23 ***	0.18 ***	0.37 ***	0.31***
	(0.02)	(0.04)	(0.02)	(0.05)	(0.02)	(0.04)	(0.02)	(0.05)
Middle school	0.34 ***	0.44 ***	0.41 ***	0.36 ***	0.34 ***	0.36 ***	0.52 ***	0.44 ***
	(0.02)	(0.05)	(0.02)	(0.05)	(0.02)	0.05)	(0.02)	(0.06)
High school	0.65 ***	0.75 ***	0.74 ***	0.70 ***	0.68 ***	0.64 ***	0.91 ***	0.75 ***
	(0.02)	(0.04)	(0.02)	(0.05)	(0.02)	(0.04)	(0.02)	(0.05)
Tertiary	1.03 ***	1.09 ***	1.11 ***	0.98 ***	1.11 ***	1.12 ***	1.38 ***	1.25 ***
	(0.02)	(0.05)	(0.02)	(0.06)	(0.02)	(0.05)	(0.02)	(0.06)
Industry	Yes ***	Yes ***	Yes ***	Yes	Yes ***	Yes	Yes ***	Yes
State/Location	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***
F-statistics	521.63	58.88	351.66	39.89	546.96	74.13	514.76.	42.35
(p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Adjusted R-sq	0.42	0.41	0.36	0.35	0.40	0.41	0.52	0.46
Nobs	18187	1929	17389	1773	17439	2108	15959	1787

Note: The values within parentheses are robust standard errors
           ***, ** and * indicate significance at the 1%, 5% and 10% levels.

Table 3
Decomposition of earnings difference

	1987		1993		1999		2005	
	High: Hindu Low: Muslim Difference: 0.212 *** (0.017)		High: Hindu Low: Muslim Difference: 0.273 *** (0.019)		High: Hindu Low: Muslim Difference: 0.273 *** (0.018)		High: Hindu Low: Muslim Difference: 0.272*** (0.022)	
	Characteristics Effects	**Coefficients Effects**	**Characteristics Effects**	**Coefficients Effects**	**Characteristics Effects**	**Coefficients Effects**	**Characteristics Effects**	**Coefficients Effects**
Constant		- 0.172 (0.248)		- 0.527 * (0.309)		- 0.484 * (0.290)		- 0.607** (0.294)
Age	0.027 * (0.014)	0.558 (0.412)	0.076 *** (0.024)	0.040 (0.541)	0.090 *** (0.022)	0.722 (0.446)	0.060 *** (0.024)	0.887* (0.500)
Age square	- 0.017 (0.010)	- 0.225 (0.204)	- 0.053 *** (0.020)	0.023 (0.274)	- 0.047 *** (0.018)	- 0.356 (0.223)	- 0.026 (0.020)	0.325 (0.250)
Female	- 0.030 *** (0.005)	0.020 *** (0.005)	- 0.025 *** (0.005)	0.019 ** (0.008)	- 0.026 *** (0.005)	0.019 *** (0.006)	- 0.033 *** (0.006)	0.008 (0.009)
Married	- 0.0005 (0.001)	0.028 (0.034)	0.001 (0.001)	0.019 (0.024)	0.0002 (0.001)	0.077 ** (0.037)	0.005 ** (0.002)	-0.016 (0.037)
Below primary	- 0.011 *** (0.003)	- 0.004 (0.007)	- 0.012 *** (0.003)	- 0.003 (0.007)	- 0.010 *** (0.003)	- 0.009 (0.006)	- 0.011 *** (0.003)	- 0.006 (0.006)
Primary	- 0.026 *** (0.006)	- 0.019 * (0.010)	- 0.009 *** (0.003)	- 0.0002 (0.007)	- 0.011 *** (0.003)	0.006 (0.007)	- 0.018 *** (0.004)	0.009 (0.009)
Middle school	0.003 (0.004)	- 0.013 * (0.007)	- 0.009 ** (0.004)	0.008 (0.009)	- 0.004 (0.003)	- 0.002 (0.008)	- 0.010** (0.004)	0.014 (0.011)
High school	0.062 *** (0.006)	0.020 ** (0.010)	0.036 *** (0.008)	0.009 (0.012)	0.038 *** (0.007)	0.012 (0.013)	0.039 *** (0.009)	0.041*** (0.015)
Tertiary	0.150 *** (0.011)	- 0.007 (0.006)	0.140 *** (0.013)	0.020 * (0.010)	0.133 *** (0.018)	- 0.001 (0.010)	0.145 *** (0.014)	0.023** (0.011)
Total	0.152 *** (0.015)	0.049 *** (0.014)	0.155 *** (0.018)	0.092 *** (0.016)	0.177 *** (0.016)	0.049 *** (0.014)	0.217 *** (0.020)	0.025 (0.017)

Note: The values within parentheses are standard errors.
***, ** and * indicate significance at 1%, 5% and 10% level, respectively. The interaction effect from equation (2), not presented here, is insignificant for all the years.