ESSAYS ON AFFIRMATIVE ACTION POLICIES IN EMPLOYMENT IN INDIA

by

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Abstract

This thesis analyses the effect of affirmative action policies on targeted groups in India. By using various non-linear estimation techniques, a robust analysis of the impact of public sector employment quotas for lower caste groups and women is estimated. Chapter 1 focuses on the effect associaton with these quotas has on lower caste groups and results show not all targeted groups benefit from the policy. Chapter 2 analyses the effect of women's reservation policy in public employment and results show that there is some movement by women into the labour force. However, the biggest effect is the movement from the private to the public sector, putting into question the effectiveness of the policy in increasing female labour force participation rates. The final chapter then extends Chapter 2 to look at the effect of having a female friendly state, by using reservation policy as proxy for this, and women's working status on incidences of domestic violence. Results show that women's working status reduces incidences of domestic violence and more female friendly states have a lower likelihood associated with violence. Further to this, it is found that domestic violence increases when women earn more then men. Overall, results are mixed on the effectiveness of affirmative action policies in employment in India. Possible policy recommendations are also outlined in each chapter.

To my late mother,

For your constant love, care and support,

To my father,

For your continuing love, care and support.

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Introduction

Affirmative action policies in India have been a prominent part of India's economy since independence. They were established as a means to correct for historical discrimination against various caste and minority groups and provide opportunities that, otherwise, would be difficult to obtain through the use of reservation quotas. These reservation quotas are provided in higher education, village level political seats and public employment. The impact of the latter is studied in this thesis.

Affirmative action programmes in the form of employment quotas in the US has provided a large amount of theoretical research into their effectiveness (Leonard (1984), Lundberg and Startz (1983), Lundberg (1991), Coate and Loury (1993)). Most built theoretical models and some tested their models using contractor data from the US to assess whether stereotypes held by employers and effectiveness of employees have changed as a result of the policy. Results have been somewhat ambiguous, with no clear consensus that reservation policy has helped to increase the minority workforce without effecting productivity in government institutions in the US. When looking at India, literature has mainly been empirical using accessible large scale surveys and results have also been mixed.

Employment quotas in public employment have long been used with it being reserved for lower caste groups, identified by each state, to increase their participation in permanent wage type jobs in order to provide them with a stable income. Discriminatory behaviour by employers, who might not have otherwise employed lower caste people, highlight the importance of such policies for allowing job opportunities to reach those in lower castes. This takes the form of having a mandated quota in place.

Chapter 1 analyses the effect of being in one of three identified caste groups has on the likelihood of being in public employment verses various other employment statuses. This adds to current literature by making the distinction between public and private employment, which previous literature has not and also assesses the effect of the policy on different members of the household. A decomposition model is also estimated to assess the level of discrimination still faced by those in the lower caste groups. Interestingly, results indicate that there is, in fact, a reverse type discrimination taking place when looking at some lower caste groups, where higher castes are less likely to be in public employment. Second generation males are also less likely to go into public employment, despite being eligible for the reservation quota.

Alongside caste reservation, women reservation was also in place in a few states in India during the period of data available. This is analysed in Chapter 2, where likelihood of eligible women being in public employment as a result of the policy is assessed. Despite growth in the Indian economy, female labour force participation

rates have remained low and there have been many demand and supply-side issues that have been noted as possible causes for this. In particular, the lack of suitable jobs, such as permanent salaried positions for educated Indian women, has been highlighted as demand-side/structural problem. Reservation policy aims to reduce this barrier to entry for women as it provides a mandated quota that public institutions have to fill with women employees.

This is the first study, to the best of our knowledge, that assesses the effectiveness of this policy and aims to add to the current literature on female friendly policies. Only a few states implemented the policy in the data period used in this study, and so the marginal impact of the policy is assessed using the other states as controls. Results from our analysis in Chapter 2 indicate that the policy is helping some women to move from out of the labour force (domestic duties status) to public sector employment. However, results also show the largest increase in likelihood of going into public employment comes from those who are already in private sector employment. This puts into question the effectiveness of the policy as it is mainly moving women from one type of employment to the other and not appreciably increasing the overall female labour participation rates.

The third and final chapter of this thesis extends the analysis in Chapter 2 to assess whether women working or those who are eligible for reservation effects the likelihood of spousal domestic violence. Past literature has focused on the male back-lash effect and whether women working threatens male dominance within the household resulting

in the use of domestic violence in it's different forms; physical, sexual and emotional violence. However, there is little to no research on the effect of female friendly policies on the likelihood of domestic violence. In this chapter, we bridge this gap in the literature by analysing the impact of reservation policy which acts as a proxy for more female friendly states in India whilst also taking into account possible other female friendly policies that were implemented within the treated states. Results indicate that those states with reservation policy are much less likely to suffer form domestic violence. Controlling behaviour by the husband in the household towards the wife is also used as a dependent variable as this kind of behaviour results in no legal penalty and could be more wide-spread then domestic violence, which is an offence.

The causal effect of women's working status and domestic violence is unclear, as higher rates of domestic violence could lead to women working less or simply not working due to the trauma caused. At the same time, women working could cause men to feel less dominant in the household and thus, domestic violence could increase in order to retain dominance. Thus, the possible endogeniety of women's working status is controlled for using the average women working rate in each primary sampling unit constructed using the National Family Health Survey-3 (NHFS-3). Appropriate exogeneity tests are conducted and the instrument is shown to be robust. In addition to this, spousal income differences are also taking into account using a categorical variable that states whether the wife's income is more or less then the husband's income. Results show that women's working status actually has a negative and

significant effect on the likelihood of domestic violence and/or controlling behaviour. However, women whose income is higher then their spouses are much more likely to suffer from violence. This indicates that the source of violence and backlash does not come from women working but, instead, it comes from differences in spousal income. Husbands feel their dominance is threatened when they earn less then their spouse and use violence and/or controlling behaviour to retain dominance.

Overall, this thesis consists of three chapters that try to bridge the current gap in the literature and provide a robust analysis of important programmes India has implemented in an attempt to increase development. As India extends reservations to include other minority groups and also into private sector institutions, we hope results presented in this thesis can help future policymakers to implement more effective policies.

Chapter 1

Affirmative Action Policies and Caste Groups

Abstract

This study sets out to analyse the association between affirmative action policies and public employment for targeted caste groups in India, with particular emphasis on generational differences within the household. The level of discrimination faced by caste groups is also estimated before and after a policy change for the Other Backward Classes (OBC) in 2008. This policy allowed quotas to be put in place in private educational institutions and opposition against this extension led to large-scale riots throughout India. Results indicate that the SC group have benefited from the policy, while the ST group shows mixed results and the OBC group presents no positive effect from the policy change. For 2nd generation individuals, private sector employment becomes much more likely. Decomposition of the mean differences between the proportion of targeted and non-targeted individuals shows that attribute differences are the main source of discrepancies, with discrimination against targeted groups accounting for a small part of this. Results for the SC and ST groups in particular show potential reverse discrimination against those in the Others caste group. The association of reservation policy in bringing targeted groups into public employment decreases post-2008, especially when looking at 2nd generation individuals, thus putting into question the effectiveness of reservation policy.

Keywords: Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC), discrimination, decomposition model

1.1 Introduction

The caste system, in India, is a historical hierarchy system that has restricted groups of individuals from access to development opportunities and limited social interactions between groups. Individuals were placed into four different groups based on their occupation type at the time; Brahmins (priests), Kshatriyas (warriors/soldiers), Vaishyas (farmers, merchants etc) and Shudras (servants, labourers etc) (D'Souza (2012)). A group also exists outside of this caste system, so called "Dalits" [1], that had job occupations that were deemed unhygienic and unsanitary [2]. Individuals in this group have been historically discriminated against due to their low level jobs. In addition to this, the caste system became hereditary and movement from one caste to another is difficult and uncommon [3]. As a result, it become very difficult for lower castes to gain similar educational and occupational opportunities when compared with those in higher castes and there has been large segregation and socio-economic differences between the castes (Mayell (2003)).

In order to correct for this, affirmative action policies were introduced by the Indian government, where preferential treatment/positive discrimination was actively enforced for Scheduled Castes (SC) and Scheduled Tribes (ST). The SC group represents the lower castes while the ST group covers indigenous tribes that live in remote areas

[1] In this study, Dalits are henceforth referred to as the lower castes.

[2] These castes are further split into many sub-castes.

[3] It is only normally seen when a woman from one caste marry a man of another caste. Traditionally, the wife takes on the caste of her husband and subsequently, their children also belong to the caste of the father.

and have generally had restricted access to the rest of the country and remained undeveloped. After the Mandal Report in 1980, another group was created to cover socially backward castes called the Other Backward Classes (OBC). These included sub-castes from the Vaishyas and Shudras castes. They were formally recognised in the constitution in 1990 and allowed access to affirmative action policies. The policies extend into higher education, political seats and public employment. The focus of this chapter is on the latter.

Affirmative action policy states that the ST, SC and OBC groups were to be allowed a minimum of 7.5%, 15% and 27% reservation in government jobs respectively. By providing access to a form of salaried employment, it was hoped that the welfare and living standards among the beneficiaries of affirmative action would increase (Deshpande et al. (2012)). As the workforce becomes more diverse, integration between lower and upper castes would follow and also improve attitudes of higher castes towards lower castes. Similarly, discrimination against the targeted groups should decline as public institutions are forced to hire lower caste workers. However, as Coate and Loury (1993) have theoretically argued, negative stereotypes held by employers can continue to persist in certain circumstances and affect the level of tasks assigned to beneficiaries. Although they enter employment, progression into higher-ranking positions may be more difficult.

A particular change in caste reservation related policy was implemented in 2008, where quotas in higher education for the OBC group were extended to private institutions

and caused major backlash from opposing groups. Previous to this implementation, large-scale strikes occurred across India in 2006 in opposition to the extension of educational reservations for the OBC group (Ghosh (2006)). A lot of opposition came from non-targeted groups who suggest that the quotas were too high and unfair due to the potentially economic advantage certain members of the OBC group may have. Arguments against the extension and increase in reservation also came from individuals that suggested entrance into employment and education should be based on merit and argue that lowering the standard required to enter higher education may result in high drop out rates and ill-equipped graduates who do not possess the strengths and ability an individual may have had if entered into education based on merit. Thus, a further argument could be made that employers may discriminate more against targeted groups after this policy was implemented as it was highly opposed and can further enforce stereotypes already held by employers on certain caste groups, in particular, the OBC group (Coate and Loury (1993)).

This paper sets out to assess whether the likelihood of gaining government employment has improved for the lower castes and other backward castes - relative to the upper castes - as a result of affirmative action policy. A logistic regression model, where the government binary variable is equal to one if the individual is in government employment and zero if not, is estimated. This is estimated for the whole sample and also for two subsamples; the 1st generation, which include the head of the household and/or their spouse, and the 2nd generation, which is the son or daughter of the household. The sub sample results can be compared to assess whether there are any

generational differences in the impact reservations have. The results from the logistic regression are then used to assess the level of discrimination against the beneficiaries using an extension of the renowned Blinder (1973) and Oaxaca (1973) decomposition method. The Blinder (1973) and Oaxaca (1973) method is further decomposed by Oaxaca and Ransom (1994) to allow for differentiation between productivity differences, upper caste advantage and lower caste disadvantage. A weighting matrix is required for this decomposition, of which the Neumark (1988) pooled matrix is used in the analysis. These are discussed further in the empirical specification.

As well as inter-generational differences, the OBC group further analysed by making a distinction between the creamy and non-creamy layer groups. The creamy-layer group include individuals whose family income exceed 1 lakh (100,000) Rupees [4] for three consecutive years [5] . These individuals do not qualify for reservations and, in order to account for this, a restricted sample is formed where all individuals, whose income is above this threshold, is removed from the population. The same regression and discrimination measures are estimated for this restricted sample to take into account those who may not have been eligible for reservation. These results are included as a robustness check in Section 1.6.2

[4]This was the threshold set in 1993. It was subsequently increased to 2.5 lakh Rupees in 2004, however, this was made during the time of the survey and implementation may of lagged. Therefore the 1 lakh Rupees threshold is used in this study. Most recently, this has now increased to 6 lakh Rupees as of 2013.

[5]Full information of this threshold can be found in the Office Memorandum (No. 36033/1/2013-Estt (Res.) by the Department of Personnel and Training, Ministry of Personnel, Public Grievances and Pensions (27th May, 2013).

This chapter adds to the current literature by analysing the differences in probability of being in public employment between different generations within the household. Previous studies have not made the distinction between public and private employment when assessing the impact or association of the policy. They also have not gone into further depth and analysed the impact of association at different generational levels. This chapter also uses a decomposition model to evaluate differences between mean public sector employment between targeted and non-targeted groups. This allows us to directly assess possible attribute differences and discrimination levels that lead to more individuals from the Others caste category to be employed in the public sector then all other caste groups.

Overall, results show that being associated with the OBC group and eligible for reservation has no significant impact on the likelihood of being in public employment. This is particularly true when looking at the second generation within the household, who also show no significant likelihood in going into public employment relative to all other types of employment. This could be due to a strong stigma effect, discussed further in this chapter, that is attached to being associated with a reservation group. The first generation SCs and STs, however, are more likely to enter public employment, showing a generational preference towards such jobs. When looking at the decomposition model, interesting results are found when looking at the SC and ST groups if treated as Others caste group. There is a very small percentage difference that suggests possible reverse discrimination whereby SC and STs are more likely to suffer from discrimination if treated as Others caste. This could be due to employers favouring

SC and STs over Others in order to meet quota targets. However, these percentage differences reduce overall when looking at 2012 against 2005.

The rest of the paper is as follows. Section 1.2 gives an overview of the background and literature on affirmative action policies. Section 1.3 describes the data and the empirical specification used for the logistic regression and decomposition models. Some descriptive statistics are given in Section 1.4 and results from the regression and decomposition analysis is presented in Section 1.5. Section 1.6 provides some robustness checks, including removal of the potential creamy layer households from the dataset. Finally, section 1.7 concludes this chapter with an overview of the results and implications they have on the effectiveness of affirmative action policies.

1.2 Background and Literature

Affirmative action has been the subject of much debate worldwide [6]. In India, policies have generally targeted women and lower castes individuals, the latter of which were placed into the various SC/ST/OBC categories. The OBC category has extended to include a number of minority religious groups, such as Muslims and Christians, which has sparked much debate. It has been argued that some of those included in the group, and also to some extent the SC group, may have been historically disadvantaged, but are not currently economically disadvantaged. These sets of individuals have the same socioeconomic status as those from upper castes and therefore could compete with them without the need for affirmative action, placing a need for provisions to be put into place to target those most in need of reservations (Chaudhury (2004)).

The OBC group is the most recent established group recognised by the government as "socially backward" and in need of reservation quotas in order to enhance further opportunities or them (Galanter (1978)). However, much controversy over the growing size and level of reservations given to this group has been at the forefront of news in India over the last two decades, with many arguing that many of the OBC group are not economically disadvantaged (Kandasamy (2009)). For this reason, the creamy layer OBC group - those who have a household income above 1 lakh (100,000) Rupees for three consecutive years - are exempt from the reservation policies. Only those OBC individuals below the threshold are eligible for reservations. Bertrand et al. (2010)

[6] In the US, there have been a number of court cases where affirmative action has been deemed unconstitutional as preferential treatment is given to a number of disadvantaged groups.

studied the effect of affirmative action policies in the context of education and its targeting properties. The results indicated that, while affirmative action in education is making an impact, it isnt targeting the poorest of the groups. This could also be the situation in employment and could make a case to reassess the threshold value as it currently stands.

Reservations have had a huge backlash from upper castes, in particular [7]. Many argue that there has been intense increased competition for the remainder of government jobs left unreserved. In the american context, Leonard (1983) explains that American employers feel there will be a productivity gap due to hiring under-skilled workers in order to meet the mandated quota. However, Leonard (1983) goes onto disprove this theory by using data on industry types and production functions for 1966 and 1977 and assessing whether minorities/women to white individual productivity ratios change. They found that productivity actually increased after anti-discrimination policies were enforced. In the context of India, Deshpande and Weisskopf (2010) also disproves this lack of productivity theory when looking at the Indian railway industry, where hiring a diverse selection of workers increased productivity. Their research uses data collected from employment records and various output measures, such as freight and passenger output, to assess the effectiveness of reservation workers vs non-reservation labour and found no significant difference. Although there has been considerable research into affirmative action policies, most literature has focused on

[7]Large-scale riots broke out in 2006 when plans to extend reservations in education to the OBC group were announced.

the employment outcomes and discrimination levels in the context of the US and their targeted groups (Blacks, Hispanics and other minority groups). In particular, the wage gap between the targeted and non-targeted groups has been assessed and discrimination levels estimated. There has been a vast amount of theoretical literature on assessing how affirmative action affects the level of discrimination against minorities in the US.

Lundberg and Startz (1983) and Lundberg (1991) build a model based on the presence of statistical discrimination, where there is imperfect information for the employers on the efficiency of different group of workers. As a result, minorities are perceived as less productive. When affirmative action is enforced, this discrimination was corrected for, as regardless of their information, a mandated quota needed to be met. This led to an increase in human capital investment by the minorities as they felt they would not be discriminated against and thus, are more likely to increase their human capital accumulation. However, having this quota may also come at a cost of efficiency in production, as other workers displaced by the policy may have been more efficient at the job in hand.

Other theoretical work on affirmative action models have predicted mixed results. Leonard (1984) created a tax employment model, where a tax was imposed on contractors for each white individual they hired. Empirical testing of this showed that the number of female and minorities hired in contractor sectors was higher then in non-contractor sectors, giving support to affirmative action policies as a market

intervention. Darity Jr and Mason (2004) gives a detailed outline of the literature on employment discrimination and the methods employed in order to measure and detect it. A majority, in the context of the US, are audit studies and direct evidence from firm level data on wages.

Holzer and Neumark (1996) carried out one of the first direct micro-level studies on the effects of affirmative action in employment in the US. By focusing on minorities and women, relative to white individuals, their results indicated that affirmative action has had an effect on the hiring behaviour of firms. In particular, white individuals are less likely to be hired into a company that adheres to a reservation policy rule. However, they found that the efficiency of workers, when looking at Hispanics, is lower as less educated and qualified individuals are hired over more qualified white individuals. This is in contrast to earlier discussed literature by Leonard (1983) and Deshpande and Weisskopf (2010), who found no effect on productivity. Nonetheless, Holzer and Neumark (1996) findings show that white individuals are now facing potential "reverse" discrimination, where they are not hired on merit in order to meet the mandated quota.

When looking at India and the targeted groups, Jain and Venkata (1994) give a detailed outline of the procedures and quotas government bodies have to fulfil on hiring SC/ST/OBC individuals. Reserved seats should not be filled by upper castes if it cannot be filled by the reservation candidates and is carried forward for another three years as a reserved seat. This has led to several relaxations in the hiring criteria

for certain jobs that are proving hard to fill. These relaxations extend to age limits and education/qualification criteria for the job in question. There are also some provisions available for pre-training in order for the reserved candidates to become more qualified for the job they are applying to. This all points to the question of whether the efficiency of Indian workers in the public sector has decreased. Although this is beyond this scope of this paper, studying the variations in education levels between the different caste groups can be used to gain some insight into attribute differences through the decomposition model.

It is also important to point out that all types of public employment come under the reservation policy. This goes from public gardeners to managerial roles in local government institutions or enterprises. They range from category A, which include professional roles, to category D, which include non-managerial roles such as sweepers or production workers. Jangir (2013) outlines the provisions made in the constitution of India for enforcing reservation policy. It is pointed out, for the SC and ST groups, that the category C and D government jobs are more easily filled to the target quota than the category A and B roles. Due to the nature of data available in this study, government employment category classification cannot be studied. Nevertheless, inferences can be made by looking at the education levels and to assess whether public reservation quota is being filled by low or high category type employment.

Empirical literature on affirmative action policies in India have mainly been on higher education, however, some of the same conclusions from this can be extended to

employment reservations. Gille (2013) studies the so-called stigma effect, whereby reservation seats carry a certain stigma to it that may deter applicants from applying to them. Results show that this is particularly the case for higher income families, who are less likely to apply via the reservation scheme as they feel it will affect their social upstanding. In particular, this meant that more qualified lower castes might not gain a place in higher education as they apply in the general candidate category and find it difficult to compete. In order to meet the quota, higher education institutions would then admit less qualified lower caste individuals onto the course, resulting in higher drop out rates later on. This can also be the case for employment reservations, where higher income individuals may be deterred away from applying to government employment via the reservation policy and opt for general candidate admission or private employment [8] . Results in this chapter suggest that being part of the OBC group has no significant impact on the likelihood gaining government employment, possibly due to a similar stigma effect outlined by Gille (2013) .

In the small literature that empirically assesses the effect of employment reservations in India, Borooah et al. (2007) use the 55th round NSS survey data (1999-2000) to evaluate the impact by occupation type; casual wage labourer, own account worker and salaried wage worker. By separating out the OBC group into further Muslim minority groups, differences between OBC Muslim and OBC Non-Muslims could be assessed. By using a multinomial logistic model and then decomposing the results

[8] 40 % of employment in 2004-05 was in private employment (Directorate General of Employment and Training, Ministry of Labour and Employment 2014)

using a similar Blinder (1973) and Oaxaca (1973) method, the outcomes show that the SC and ST groups have received positive benefits from reservations. The OBC sub-groups have not benefited, with the OBC-Muslims benefiting least. Conclusions are made on the effect of reservation policies by comparing the SC and ST groups with OBC Muslims, who are considered to be the employment position of SC and ST groups if they didnt receive job reservation and used as a counterfactual group. This is debatable as OBC Muslims do receive some kind of reservation in certain states. In this study, theNeumark (1988) weighting matrix is used in the decomposition model to make a comparison of what the employment position of lower castes would be had there not been any discrimination against them in the first place and they were treated as upper castes. This is described in more detail in Section 1.3.2.2.

Prakash (2009) looks into the labour market outcomes of the SC and ST groups in terms of the effect it has on occupational composition, wages and expenditure. As the percentage of reservations in most states is based on the population percentage of SC and ST, Prakash (2009) uses employment quota for each state as the variable to measure the impact of reservation policy in India. He then further analyses how this varies by individual characteristics, such as sex and age. His results indicate that SCs have improved job outcomes but the STs are unaffected and also suggests that the urban and less educated SCs benefit most from the reservation policy. As we will see from the results of this study, similar conclusions can be made for the ST group.

Ito (2009) takes a different approach to measuring discrimination and assesses wage

differences between beneficiaries and non-beneficiaries. He develops a measure of the transaction costs associated with entry into the labour market for each group of individuals. The transaction cost was a latent variable, measured as a function of socio-economic variables. This transaction cost enables him to distinguish between employer discrimination in wages and other barriers to entry into employment. The results imply that groups recognised as backward all face higher transaction costs than the upper castes. However, no wage discrimination was found. Thus lower castes face higher barriers of entry into employment. In this study, the Blinder (1973) and Oaxaca (1973) method, as well as the Neumark (1988) method, provides us with a breakdown of the total mean difference in government employment between upper and lower castes. This is the amount that contributes to differing attributes and the part that is purely due to discriminatory reasons. Differing attributes will give an idea of how much different socioeconomic variables affect the likelihood of gaining government employment, a sort of barrier to entry in itself. The remaining unexplained amount will give an indication of the"employment deficit, as Borooah et al. (2007) places it, which is a measure of discrimination faced by the caste groups.

Although there have been previous studies evaluating the effect of reservations on employment outcomes, they tend to focus on how it impacts the change in the type of employment (casual to salaried) in general. This chapter goes into further depth by looking at individuals by employee type, ie, public and private. The data used in this chapter solely looks at the effect it has on the likelihood of gaining government employment, where reservations have an influence over who is hired. With recent data

on India, more up to date evaluations can take place and comparisons can be made to see if the effects differ as reservations have been enforced for longer. Detailed work on employment outcomes of the OBC category is also missing from current literature, most likely due to its more recent formation. The evaluation in this study takes into account the effects in the OBC group and also makes a distinction between the creamy and non-creamy layer of the group. Due to the controversy behind the formation of the caste group and sheer size in comparison to the SC/ST groups, it is important to assess whether employment outcomes have improved for them. As the results will show, government employment may be not appeal to the OBC group who seeks to find employment elsewhere in private firms or institutions.

1.3 Data and Identification

1.3.1 Data

The datasets used in this chapter are the Indian Human Development Survey 2005-06 and 2011-12 rounds (IHDS-I and IHDS-II). This dataset provides reliable background characteristics of individuals and households, including information on education and caste groups. Data is restricted to those aged 18-50 and those who are currently in education are removed [9]. For the OBC group, as a robustness check, efforts are also made to ensure OBC households are eligible for reservation. As household income needs to be above these thresholds for 3 consecutive years, we are unable to distinguish whether the household is eligible for reservation or not. Nonetheless, removing those with a household income of above 1 lakh rupees from the dataset for the 2004-05 round and above 4.5 lakh rupees in 2011-12 round will remove any potential issue that may arise with having the creamy layer in the dataset.

[9]Women are included to avoid any potential bias by including males only. Although female reservation was in place for some states, the female control variable should capture any effect seen for women. For further discussion and analysis on women reservation policy, please refer to Chapters 2 and 3.

1.3.2 Methodology

1.3.2.1 Regression Analysis

Due to the multivariate nature of the dependent variable, Occupation [10], a multinominal type regression analysis would be appropriate. In particular, a multinomial logistic regression model would be the simplest to implement. However, this regression model requires the strong assumption of Irrelevance of Independent Alternatives (IIA). This assumption was tested and does not hold in this model, making this regression model unsuitable to use [11]. Other multinomial regression models, such as the multinomial probit model and nested logit models require one variable that differs between alternative outcomes. For example, cost of travel to the different types of employment could differ between the outcomes. However, due to the limitations of the data, this kind of variable could not be obtained and thus separate logistic regressions were implemented instead for the following estimation,

$$\begin{aligned} Logit(p(Public(k)=1)) &= log\left(\frac{p(Public(k)=1)}{1-p(Public(k)=1)}\right) \\ &= \alpha_s + \delta_t + \beta_{it}X_{it} + \gamma_{it}Caste_{it} + \mu_{it}Caste_{it} * Year_{it} + \epsilon_{it} \end{aligned} \tag{1.1}$$

[10] There are three outcomes; Unemployment, private sector employment, public sector employment

[11] This was tested using the Hausman test by re-running the model without one or two of the categories in Occupation and using the Hausman test to check if the stored results were significantly different Hausman and McFadden (1984).

Where Public(k) is dichotomous variable, where k =1,2,3 and the following holds,

$$\text{Public1} = \begin{cases} 1, & \text{if in Public Employment} \\ 0, & \text{if Otherwise} \end{cases}$$

$$\text{Public2} = \begin{cases} 1, & \text{if in Public Employment} \\ 0, & \text{if in Private Employment} \end{cases}$$

$$\text{Public3} = \begin{cases} 1, & \text{if in Public Employment} \\ 0, & \text{if Unemployed} \end{cases}$$

Public1 uses all the information in the data available by looking at public employment vs all other employment options, while Public2 and Public3 looks at public employment vs private employment and unemployment, respectively. The results are still consistent but are not as efficient as carrying out a multinomial logistic regression. Nonetheless, this is deemed as the more appropriate model as the IIA does not hold [12].

α_s and δ_t are state and year fixed effects, respectively, where "s" represents state and "t" represents year. X_{it} contains a set of control variables where X_{it} = (Age, AgeSq, Married, Female, Urban, FirstGen, Caste Association, Religion, Education, EPL, 1st Gen Public) . Caste represents a categorical variable for the respective caste groups (Upper Castes, OBC, SC and ST) and Caste Association is a binary variable

[12]As a robustness check, a multinomial logistic model is also estimated.

that is equal to 1 if the individual is part of any society or club that is exclusively for their caste group. FirstGen is also a binary variable that is equal to 1 if the individual is part of the 1st generation of the household and 0 if they are in the 2nd generation of the household. In order to further explore the generational differences, a logistic model estimation is carried out for three samples; the whole sample, 1st generation only and 2nd generation only [13]. It is expected that older generation would be more inclined towards taking up government employment as it is traditionally seen as a stable job, whereas, the younger generation may opt for more private sector type employment as opportunities have increased since privatisation in 1991.

In order to control for differences in labour market reforms in each state, the Employment Protection Legislation (EPL) index is used as a control. This is an Organisation for Economic Co-operation and Development (OECD) alternative measure to the more well known Besley and Burgess (2004) index (BB index), where EPL is measured in each state using various amendments to acts in relation to EPL. It is developed state wise by Dougherty (2009) and is available for 16 the 18 states used in this study. A higher value indicates more pro-worker friendly policies that give more protection to workers. As the EPL reduces the sample size, estimations are carried out both with and without this control and average marginal effects are presented in all results tables [14]. 1st Gen Public controls for whether the second generation has a parent employed in the public sector and is only included for the second generation regression analysis.

[13]Only these generations were analysed due to level of observations available. When looking at grandparents or grandchildren, the number of observations was considerably lower.

[14]As a robustness check, the regressions are re-run using the BB index.

1.3.2.2 Decomposition Model

Alongside this, an extension of the Blinder (1973) and Oaxaca (1973) decomposition model by Bauer and Sinning (2008) is used to analyze the extent of discrimination against the different caste groups. The model focuses on comparing two groups at any one time. For this reason, the OBC/SC/ST groups are compared with the upper caste group separately. The following decomposition would be calculated for two groups, g= (U, B) where U denotes the upper caste and B denotes the backward caste in equation,

$$\overline{Public_U} - \overline{Public_B} = \tag{1.2}$$

$$\{E_{\beta_U}[Public_{iU}|X_{iU}] - E_{\beta_U}[Public_{iB}|X_{iB}]\} + \{E_{\beta_U}[Public_{iB}|X_{iB}] - E_{\beta_B}[Public_{iB}|X_{iB}]\}$$

Equation (1.2) calculates the difference in mean of being in public employment between those in the upper caste and those in a backward caste (SC/ST/OBC groups). This gives an overall indication of raw mean difference between the two groups. The right-hand side then splits this raw mean difference into two parts. The first part of the equation can be put down to attribute/characteristic differences between upper caste individuals and those in the backward caste. The second part is due to coefficient difference, when evaluating the backward caste's characteristics using the upper caste's calculated coefficients. This is essentially treating backward castes as if they were upper castes. It is an indication of how much the difference

between government employment in the two groups can be explained by labour market discrimination and whether this discrimination has changed as a result of eligibility into the reservation policy. This can also be further decomposed, as shown by Oaxaca and Ransom (1994) in a linear case situation and Bauer and Sinning (2008) in the non-linear type situation to,

$$\begin{aligned}\overline{Gov_U} - \overline{Gov_B} = &\{E_{\beta^*}[Gov_{iU}|X_{iU}] - E_{\beta^*}[Gov_{iB}|X_{iB}]\} \\ &+ \{E_{\beta_U}[Gov_{iU}|X_{iU}] - E_{\beta^*}[Gov_{iU}|X_{iU}]\} \\ &+ \{E_{\beta^*}[Gov_{iB}|X_{iB}] - E_{\beta_B}[Gov_{iB}|X_{iB}]\}\end{aligned} \tag{1.3}$$

where $\beta^* = \Omega\beta_U + (1 - \Omega)\beta_B$ is a weighting average and Ω is a weighting matrix. Oaxaca and Ransom (1994) estimated the level of wage discrimination between whites and blacks in the US. They use this weighting average as a estimated nondiscriminatory wage structure, which is a measure or representation of the wage structure had there not been any discrimination. Similarly, in this chapter, the β^* represents a measure of the average take up of government employment in the absence of discrimination.

There have been many different interpretations of what Ω value should be. Oaxaca (1973) set the value to 0 and 1. For example, if we set Ω=1, $\beta^* = \beta_U$ implies that we use upper caste coefficients on backward castes characteristics. This assesses that, if backward castes had upper caste traits, how their mean average of going into government employment would change. The characteristic differences taken

in into account, such as education level, should explain all of the mean differences between upper and backward castes in the absence of discrimination. However, this is not the case and the remaining unknown raw coefficient difference is put down to discrimination.

Oaxaca and Ransom (1994) test various weighting matrices using empirical data on wages between different races in the US. This includes the pooled weighting matrix proposed by Neumark (1988), who find that a non-discriminatory wage structure can be modeled as the weighted average β^* and Ω is a pooled average of the sample of the two groups. This is essentially a estimated measure of what the competitive wage structure would be in the absence of discrimination. In this study, it would amount to be what the mean government employment outcome would be if it was a competitive market with no discrimination against any groups. Oaxaca and Ransom (1994) find that this method produced the lowest standard errors and is a useful tool in assessing the differing group advantage and disadvantage with reservation policy in place. Thus, this weighting matrix is also used in this analysis.

1.4 Descriptive Statistics

Table 1.1 shows some descriptive statistics of the entire sample. Due to the nature of the survey data, most variables are categorical or dummy variables. Average age is 34.1 years and most reside in rural areas, with only 36.2% of the population living in urban areas. A majority are also married, with only 22% unmarried. Just under half

are females and 67% of the population are 1st generation individuals in the household. Only 11% of the population are part of a caste association group. Just under 81% of individuals are Hindu, with the biggest minority group being Muslims. A large proportion of individuals, 37.6%, have secondary education, followed by 29.6% having no education at all. When looking at caste group distribution, individuals mainly fall under the OBC category, with 40% of individuals, or the Others category, with 31% of individuals. The ST group is by the far the smallest group with only 6.4% of the population. Finally, just over 11% of first generation males are in public employment.

Table 1.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	140,254	34.10032	9.276669	18	50
Urban	140,254	.3621644	.4806277	0	1
Married	138,728	.777435	.41597	0	1
Female	140,254	.4427325	.4967114	0	1
FirstGen	140,254	.6672109	.4712134	0	1
Caste Association	140,053	.1118719	.31521	0	1
Religion					
Hindu	140,254	.8066579	.3949203	0	1
Muslim	140,254	.1350692	.3417987	0	1
Christian	140,254	.019372	.1378291	0	1
Sikh	140,254	.0254681	.1575425	0	1
Others	140,254	.0134328	.1151192	0	1
Education					
No Education	139,877	.2960458	.4565131	0	1
Primary	139,877	.1592971	.3659542	0	1
Secondary	139,877	.3758731	.4843492	0	1
College	139,877	.0867905	.2815289	0	1
Higher	139,877	.0819935	.2743557	0	1
Caste					
Others	140,111	.3103397	.4626343	0	1
OBC	140,111	.4034872	.4905986	0	1
SC	140,111	.2211461	.4150202	0	1
ST	140,111	.065027	.2465744	0	1
1st Gen Public	97,718	.1115659	.3148333	0	1

Figures 1.1 and 1.2 show the breakdown of occupations by different caste groups for 1st generation and 2nd generation individuals, respectively. A majority of the population in both figures are in private employment [15] with the exception of 1st generation Others. Interestingly, the majority are unemployed, quite possibly due to finishing their jobs earlier than retirement age if their son or daughter is supporting them and has a well-paid job. Figure 1.1 shows that the Others caste group has the highest proportion of individuals, at 11.09% in public employment while the ST group has only 5.15% of individuals in public employment. Relatively few in each caste group are unemployed and the majority of the population are in private sector employment. Comparing this with Figure 1.2 for 2nd generation individuals, there is a clear drop in the number of individuals who are in public employment, especially when looking at the Others caste group, with only 8% of individuals in public employment.

In order to look further at possible differences in educational attainment, Figures 1.3 and 1.4 show the breakdown of education level by different caste groups for 1st generation and 2nd generation individuals, respectively. Figure 1.3 shows that the majority of individuals in the Others caste group have secondary education at over 38%. The SC group have only 27% with secondary education and the ST group have an even lower proportion at 19%. The majority of ST 1st generation individuals have no education at all and appear to be the most disadvantaged in terms of educational attainment. The Others group have the largest proportion of individuals in higher

[15] It is important to note that differences in casual and non-casual employment is not made in this chapter and so the private sector proportion will include agricultural labour. More educated individuals will be less willing to take on this employment and could remain unemployed until a more appropriate job is available.

education or above and in college level. For 1st generation individuals, it is clear that the Others caste category is the most educated overall.

In comparison, Figure 1.4 shows that 2nd generation individuals of all caste groups have a much lower proportion with no education level. However, the ST group still has the highest proportion of individuals with no education at 23.4%. Almost 50% of all individuals in each caste group have at least a secondary level education. The proportions of all caste groups in college or higher education is also higher when compared with Figure 1.3, however, the Others caste group remains the overall advantaged group in terms of education level. This shows that 2nd generation individuals are much more educated then 1st generation individuals in the household and have more opportunities to obtain higher skilled jobs. This is important to note before proceeding with the results of the logistic regressions as it could help explain findings. These results are discussed and presented in the next section.

Figure 1.1: Occupation by Caste Group for 1st Generation individuals

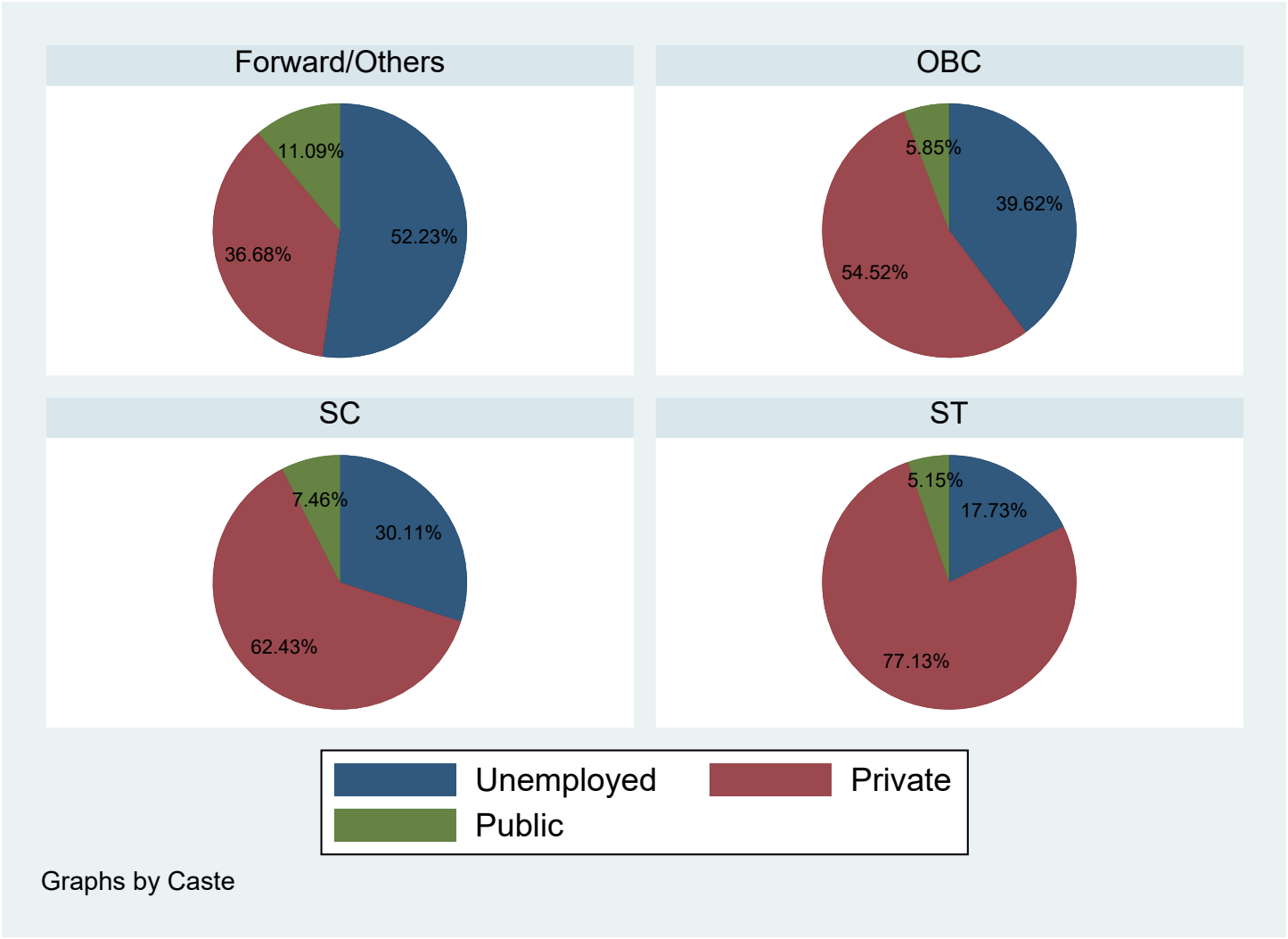


Figure 1.2: Occupation by Caste Group for 2nd Generation individuals

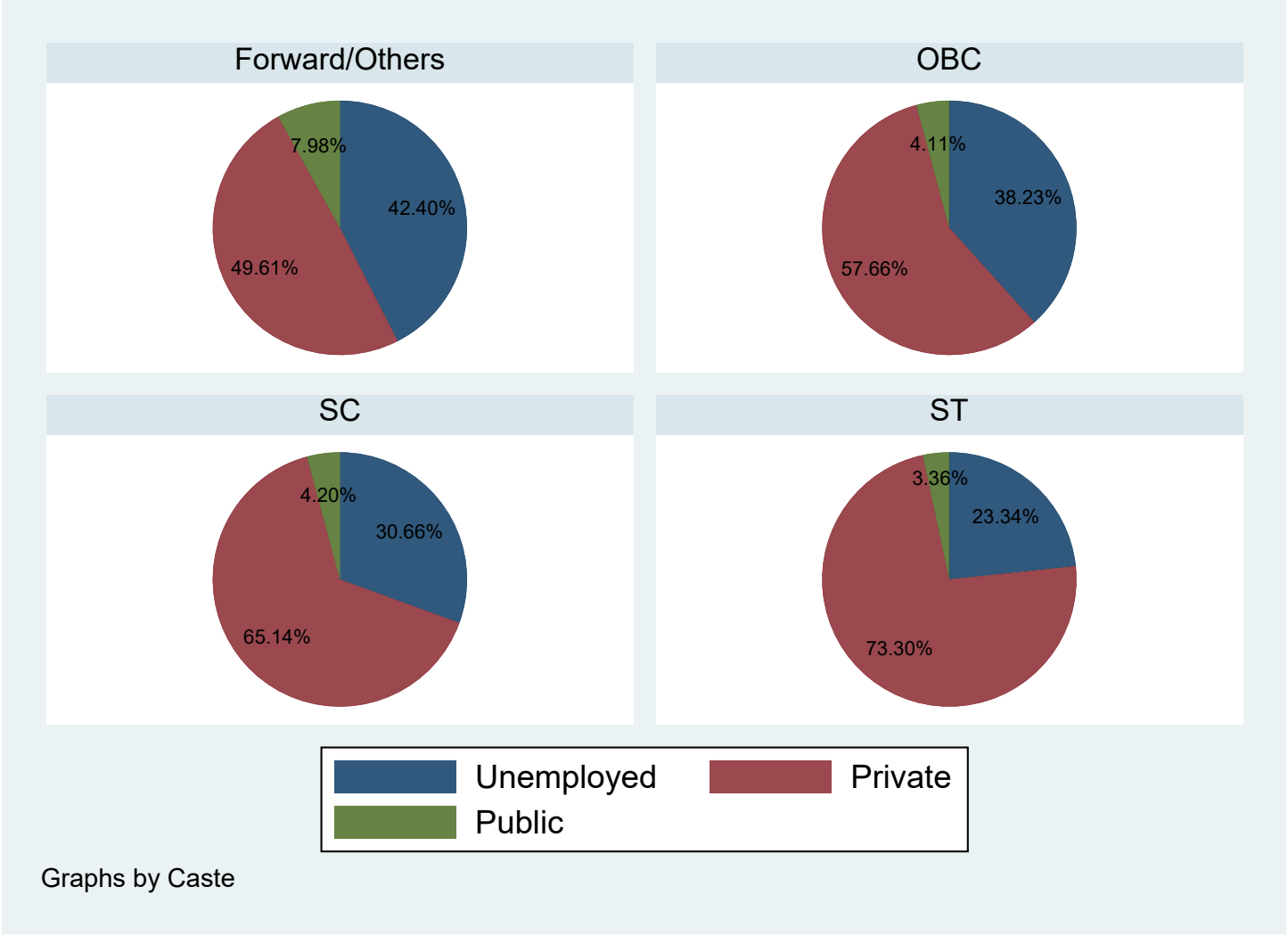


Figure 1.3: Education Level by Caste Group for 1st Generation individuals

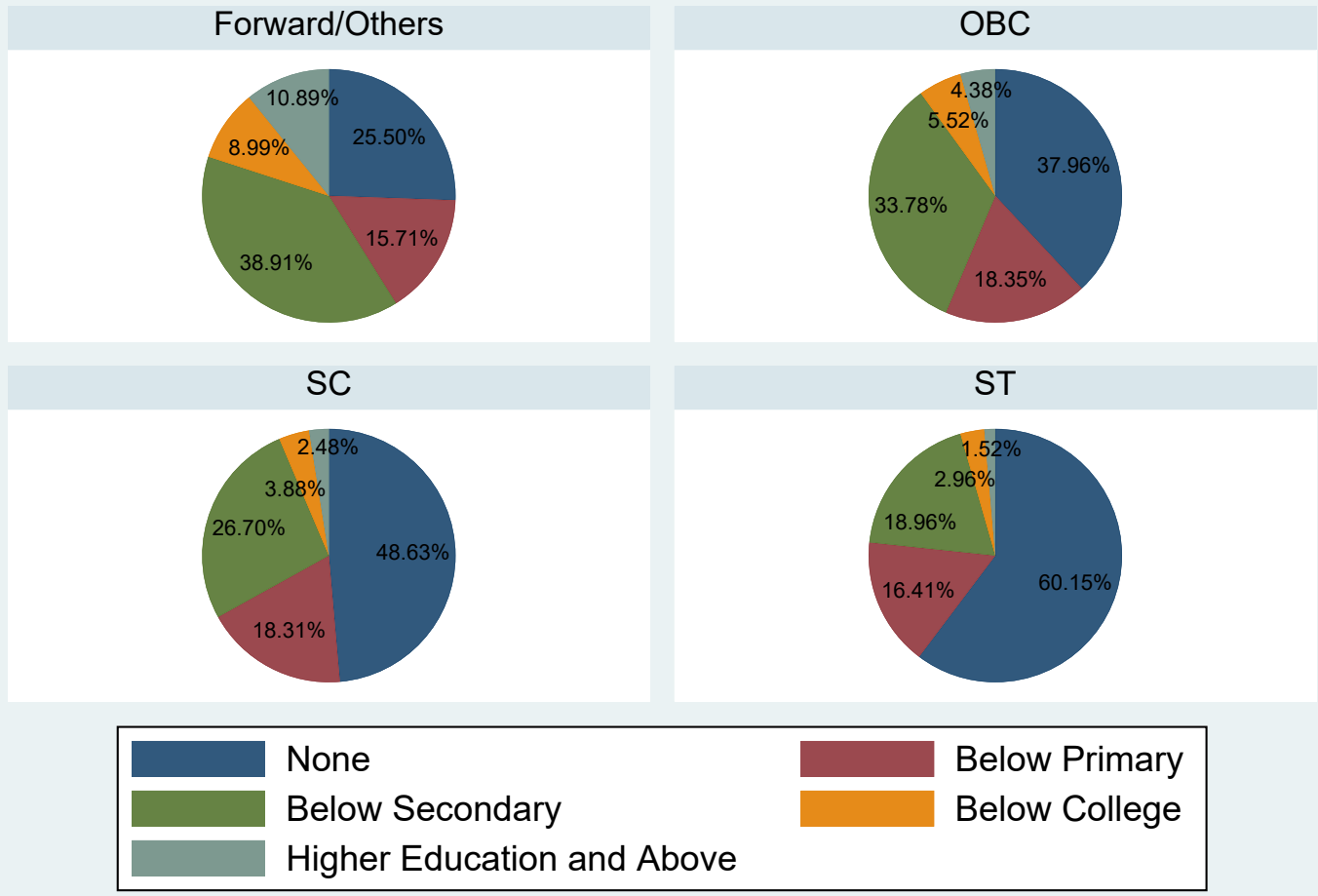
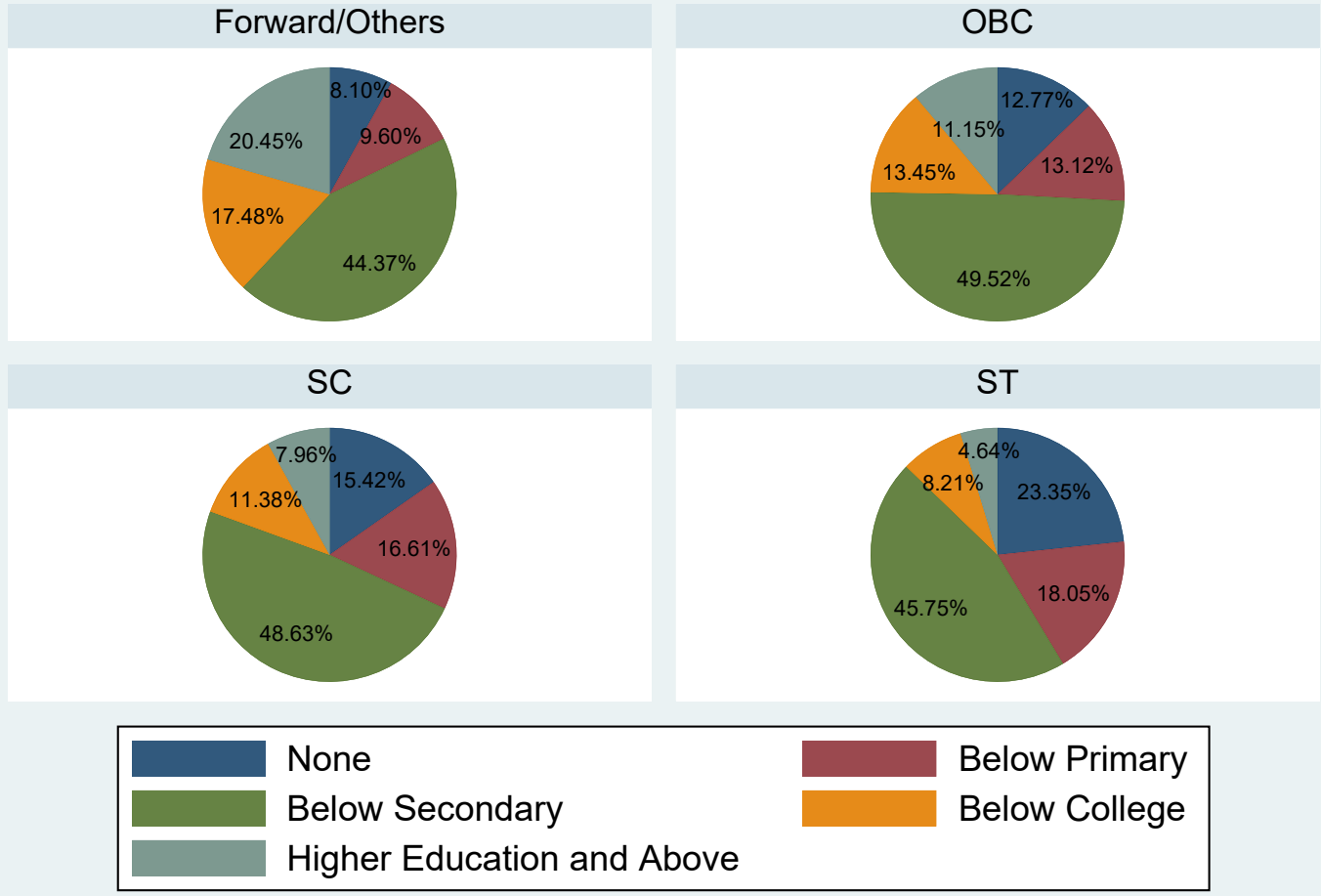


Figure 1.4: Education Level by Caste Group for 2nd Generation individuals



1.5 Results and Discussion

1.5.1 Regression Analysis

All results from the regression analysis are presented in this section. The tables show the average marginal effects for the whole sample, 1st generation sub-sample and 2nd generation sub-sample, both with and without controlling for state labour reforms using the EPL index. The pseudo R squared is presented at the bottom of the tables and appear to be low, however this may not be a good measure of fit when using the logistic regression model (Hagle and Mitchell (1992)). As such, the "Percent Correctly Predicted" (PCP) is also calculated for each specification and also presented at the bottom of the table. This percentage is fairly high for all the regressions in each table and, thus, we can conclude that the model is a good fit for the estimations [16]

1.5.1.1 Public vs Otherwise

Table 1.2 presents the average marginal effects for the control variables used in the analysis when looking at public employment vs all other types of employment or unemployment. The interaction terms are not presented as the marginal effects are

[16]There is some concern over comparison of average marginal effects between different logit models and the interpretation of results (Karlson et al. (2010)). This is due to differences in total variance across models making direct comparisons between models difficult. However, the total variance for each model in all tables were calculated and only differed by 0.1 to 0.3 and so it is not considered to be a major issue in this chapter. The focus in this chapter i s on the main specification that includes EPL.

not computable[17], however, they are included in the regression as stated in Equation 1. Table 1.3 presents the average predicted probabilities comparing 2011/12 probabilities with 2004/05 probabilities in order to understand any changes that occurred post-2008 ruling on extending quotas for the OBC group to private higher education institutes.

In Table 1.2, Age is significant and show that as an individual get older, they are more likely to take up public employment then other forms of employment or unemployment. This is an indication that elders still prefer public employment over other forms of employment. People living in urban areas are also more likely to be in public employment, however, this does not hold when looking at second generation individuals where the significance is lost. Being married makes it significantly less likely that an individual will be in public employment for all but the second generation in columns (5) and (6). First generation individuals are just under 2% more likely to go into public employment then second generation individuals as shown in the FirstGen variable in columns (1) and (2), where including the EPL variable dampens the effect by a very small magnitude.

Caste association is only significant when looking at second generations within the household and shows that they are less likely to take up public employment. However,

[17]As this was a non-linear estimation, average marginal effects were calculated as they present a more meaningful understanding of the effect variables have had on the dependent variable. In calculating the marginal effect for a certain variable, all other variables are kept constant. When looking at interaction terms, calculating average marginal effects is troublesome due to the interaction of two variables and deciding which and how to keep one of those variables constant. Therefore, it is more meaningful to look at the difference in predicted probabilities in each year of data to assess the impact of the policy over time in order to estimate whether the likelihood of caste groups going into public employment changed.

Table 1.2: Average Marginal Effects for Public vs All Other Types of Employment

VARIABLES	(1) All	(2) All	(3) 1st Generation	(4) 1st Generation	(5) 2nd Generation	(6) 2nd Generation
Age	0.00418***	0.00406***	0.00367***	0.00359***	0.00414***	0.00418***
	(0.000115)	(0.000117)	(0.000156)	(0.000161)	(0.000530)	(0.000511)
Urban	0.0152***	0.0175***	0.0235***	0.0255***	0.00425	0.00573
	(0.00464)	(0.00451)	(0.00515)	(0.00519)	(0.00399)	(0.00394)
Married	-0.00959**	-0.0116***	-0.0527***	-0.0520***	0.00420	0.00256
	(0.00440)	(0.00425)	(0.00718)	(0.00747)	(0.00420)	(0.00434)
Female	-0.0650***	-0.0612***	-0.0789***	-0.0749***	-0.0112***	-0.00857**
	(0.00554)	(0.00563)	(0.00653)	(0.00675)	(0.00424)	(0.00383)
FirstGen	0.0198***	0.0190***				
	(0.00265)	(0.00281)				
CasteAss	0.00306	0.00486	0.00389	0.00563	-0.00933**	-0.00693*
	(0.00323)	(0.00311)	(0.00357)	(0.00349)	(0.00430)	(0.00398)
Religion						
Base = Hindu						
Muslim	-0.00898	-0.0170***	-0.0110	-0.0181***	-0.00501	-0.00862
	(0.00791)	(0.00386)	(0.00814)	(0.00503)	(0.00696)	(0.00626)
Christian	-0.00347	-0.00423	-0.000153	-0.000788	-0.0116	-0.0119
	(0.00796)	(0.00784)	(0.00753)	(0.00749)	(0.0115)	(0.0107)
Sikh	-0.00136	-0.000541	0.00239	0.00290	0.00161	0.00342
	(0.00753)	(0.00771)	(0.0119)	(0.0123)	(0.00423)	(0.00311)
Others	-0.0130*	-0.0132*	-0.0146**	-0.0142*	-0.0113	-0.0110
	(0.00704)	(0.00691)	(0.00733)	(0.00730)	(0.0107)	(0.00979)
Education						
Base = No Education						
Primary	0.0145***	0.0145***	0.0174***	0.0171***	-0.000115	-7.17e-05
	(0.00196)	(0.00195)	(0.00277)	(0.00279)	(0.00527)	(0.00556)
Secondary	0.0501***	0.0475***	0.0628***	0.0596***	0.00802**	0.00639*
	(0.00242)	(0.00248)	(0.00345)	(0.00353)	(0.00361)	(0.00364)
College	0.141***	0.133***	0.176***	0.166***	0.0369***	0.0339***
	(0.00949)	(0.00951)	(0.0116)	(0.0114)	(0.00430)	(0.00420)
Higher	0.234***	0.226***	0.281***	0.272***	0.0645***	0.0583***
	(0.0116)	(0.0123)	(0.0153)	(0.0161)	(0.00888)	(0.00834)
Year						
Base = 2005						
2012	-0.0176***	-0.0191***	-0.0202***	-0.0216***	0.000561	-0.00168
	(0.00359)	(0.00334)	(0.00422)	(0.00410)	(0.00310)	(0.00274)
Caste						
Base = Others						
OBC	-0.00156	-0.00131	-0.00199	-0.00187	-0.000103	-0.00192
	(0.00213)	(0.00218)	(0.00258)	(0.00265)	(0.00366)	(0.00335)
SC	0.0195***	0.0193***	0.0253***	0.0254***	0.00723	0.00440
	(0.00458)	(0.00475)	(0.00529)	(0.00547)	(0.00450)	(0.00413)
ST	0.0178***	0.0167***	0.0213***	0.0194***	-0.00633	-0.00747
	(0.00538)	(0.00565)	(0.00678)	(0.00714)	(0.00907)	(0.00983)
1st Gen Public					0.0227***	0.0206***
					(0.00347)	(0.00365)
EPL		0.0347***		0.0379***		0.0157***
		(0.00119)		(0.00138)		(0.00151)
Pseudo R Squared	0.2603	0.2540	0.2756	0.2691	0.1915	0.1796
PCP	93.48%	93.69%	92.81%	93.03%	97.30%	97.44%
Observations	101,374	96,253	67,590	64,456	15,051	14,166

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

this magnitude is very low at below 1%. All religious groups, relative to Hindus, are less likely to go into public employment, with Muslims showing significant negative results in all samples when EPL is included except when looking at second generation individuals. Relative to Hindus, Muslims are known to be less economically well-off and suffer from poor employment prospects (Borooah et al. (2007)). However, the insignificant effect on second generation Muslims indicates that this may not be the case with younger individuals. As education level increases, relative to no education, individuals from both generations are more likely to be in public employment relative to other forms of employment or being unemployed.

Interestingly, individuals in 2012 are less likely to go into public employment then other forms of employment or unemployment when compared with individuals in 2005. This is particularly true for the 1st generation in columns (3) and (4), where they are over 2% less likely to go into public employment. This is an indication that fewer individuals are inclined towards public employment post-2008 backlash against the extension of OBC quotas in private higher educational institutions, possibly due to the stigma attached to taking up these reservation seats. When looking at caste groups, columns (5) and (6) show that second generation individuals who are eligible for reservation, relative to those who are not, have no significant effect on employment outcomes. Reservation policy doesn't appear to be pushing second generation individuals into public employment. However, this differs when looking at first generation individuals, where SC's and ST's are approximately 2% more likely to go into public employment. There is no significant effect for OBCs. These results are

in line with expectations as the OBC group tends to be more economically advantaged then those in the SC groups and, as pointed out by Gille (2013), those in wealthier households will be less inclined towards taking up reservation due to the stigma effect. And so, the results show that reservation policy is successful at increasing the probability of SC's going into public employment, however, OBC's reservation, even those are the largest caste group, does not have a positive effect.

1st Gen Public shows the effect of having a parent employed in public employment on the outcome of 2nd generations likelihood of themselves going into public employment. The results show that it makes individuals 4% more likely to go into public employment when compared with having a parent working outside of the public sector. The EPL index is positive and significant for all samples, and indication that more pro-worker friendly policies make it more likely that individuals will go into employment then if the state was more bias towards the employer. In order to get a better understanding of the differences in probabilities between 2005 and 2012, Table 1.3 outlines the average predicted probabilities of each caste group. The coefficient presented is the difference between predicted probabilities in 2012 and 2005, where a negative sign indicates that individuals are less likely to go into public employment in 2012 than in 2005.

Nearly all the average predicted probabilities are negative for all samples and caste groups, indicating that reservation policy becomes less effective in 2012; post-2006

Table 1.3: Average Marginal Effects Differences for Public vs All Other Types of Employment

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
Base= Caste*2005						
Others2012	-0.0183***	-0.0208***	-0.0194***	-0.0222***	0.00204	0.000468
	(0.00380)	(0.00344)	(0.00435)	(0.00402)	(0.00365)	(0.00399)
OBC2012	-0.0180***	-0.0187***	-0.0217***	-0.0218***	-0.000873	-0.00292
	(0.00362)	(0.00338)	(0.00441)	(0.00439)	(0.00392)	(0.00349)
SC2012	-0.0164***	-0.0165***	-0.0195***	-0.0196***	-0.00217	-0.00488
	(0.00578)	(0.00582)	(0.00670)	(0.00675)	(0.00749)	(0.00696)
ST2012	-0.0116	-0.0152*	-0.0168	-0.0201*	0.0135	0.0102
	(0.00864)	(0.00794)	(0.0113)	(0.0108)	(0.00923)	(0.00943)
Observations	101,374	96,253	67,590	64,456	15,051	14,166

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

riots against the extension of OBC reservation in private higher educational institutions. The magnitudes are particularly high when looking at 1st generation individuals in columns (3) and (4), where caste groups are 2 percentage points less likely to go into public employment then in 2005. However, the Others caste group, the only group not eligible for reservation, is also less likely to go into public employment in 2012 than 2005. This could be an indication that public employment is generally less favoured by all caste groups as a means of employment, rather than reservation policy itself is less effective. And so, it is important to look at the impact of association of public employment against private employment and unemployment separately, in order to assess whether there is a change in choice of employment type by caste groups.

1.5.1.2 Public vs Private Employment

The average marginal effects of the control variables are presented in Table 1.4 . These results are very similar in magnitude and significance to the previous regression in

Section 5.1.1 and thus, analysis in the section focuses on the caste group variables. Differences in predicted probabilities between 2005 and 2012 are presented in Table 1.5.

All individuals in Table 1.4 for both 1st and 2nd generation individuals are less likely to go into public employment in 2012. This is an interesting result as it suggests that more individuals choose private over public employment relative to 2005. This is a possible indication of an increasing preference for private employment, despite the increases and policy change in higher education in 2008. When looking at the caste groups, there is a significant effect found only in the OBC group when looking at the whole sample and the 1st generation individuals. Relative to the Others caste group, OBCs are approximately 1% likely to go into public employment, despite reservation policy being in place, for 1st generation individuals. This suggests that possibly OBCs are not taking up the reserved seats or that the policy isn't effective in targeting individuals. There is no significant effect found when looking at 2nd generation individuals for any caste group, relative to Others. In order to further analyse these results, a difference in difference method is implemented by calculating the average predicted probabilities, relative to 2005, of each caste group. Results are presented in Table 1.5.

Table 1.5 shows the average predicted probabilities, the difference between the predicted probabilities of each caste group in 2005 and 2012. The average predicted probabilities for all caste groups suggest that individuals from both generations are less likely to

Table 1.4: Average Marginal Effects for Public vs Private Employment

VARIABLES	(1) All	(2) All	(3) 1st Generation	(4) 1st Generation	(5) 2nd Generation	(6) 2nd Generation
Age	0.00630***	0.00602***	0.00638***	0.00611***	0.00494***	0.00493***
	(0.000216)	(0.000216)	(0.000270)	(0.000268)	(0.000785)	(0.000762)
Urban	0.0358***	0.0382***	0.0520***	0.0538***	0.00801	0.00988
	(0.00758)	(0.00740)	(0.00830)	(0.00832)	(0.00719)	(0.00713)
Married	-0.00341	-0.00630	-0.0317***	-0.0335***	-0.00150	-0.00273
	(0.00555)	(0.00520)	(0.00853)	(0.00847)	(0.00602)	(0.00620)
Female	0.0331***	0.0312***	0.0366***	0.0340***	0.0175***	0.0199***
	(0.00747)	(0.00748)	(0.00865)	(0.00865)	(0.00652)	(0.00555)
FirstGen	0.0175***	0.0181***				
	(0.00337)	(0.00349)				
CasteAss	0.00403	0.00715	0.00487	0.00779	-0.0138*	-0.0101
	(0.00532)	(0.00490)	(0.00610)	(0.00577)	(0.00760)	(0.00731)
Religion						
Base = Hindu						
Muslim	-0.0146*	-0.0212***	-0.0185**	-0.0232***	-0.00878	-0.0128
	(0.00875)	(0.00504)	(0.00904)	(0.00705)	(0.0129)	(0.0126)
Christian	-0.0116	-0.0119	-0.00684	-0.00718	-0.0151	-0.0157
	(0.0113)	(0.0111)	(0.0105)	(0.0104)	(0.0220)	(0.0205)
Sikh	-0.00596	-0.00525	-0.00417	-0.00497	0.000925	0.00488
	(0.0108)	(0.0111)	(0.0136)	(0.0145)	(0.0127)	(0.0111)
Others	-0.0170	-0.0162	-0.0195	-0.0178	-0.0135	-0.0127
	(0.0123)	(0.0126)	(0.0120)	(0.0125)	(0.0218)	(0.0204)
Education						
Base = No Education						
Primary	0.0309***	0.0303***	0.0395***	0.0383***	0.000354	0.000808
	(0.00327)	(0.00325)	(0.00448)	(0.00452)	(0.00758)	(0.00775)
Secondary	0.101***	0.0961***	0.132***	0.126***	0.0167***	0.0140***
	(0.00454)	(0.00468)	(0.00674)	(0.00684)	(0.00537)	(0.00521)
College	0.265***	0.251***	0.333***	0.317***	0.0808***	0.0727***
	(0.0156)	(0.0155)	(0.0186)	(0.0182)	(0.00763)	(0.00666)
Higher	0.379***	0.369***	0.451***	0.440***	0.137***	0.127***
	(0.0158)	(0.0169)	(0.0186)	(0.0198)	(0.0165)	(0.0161)
Year						
Base = 2005						
2012	-0.0367***	-0.0371***	-0.0389***	-0.0398***	-0.0165***	-0.0170***
	(0.00491)	(0.00474)	(0.00560)	(0.00547)	(0.00566)	(0.00553)
Caste						
Base = Others						
OBC	-0.00897***	-0.00911***	-0.0122***	-0.0126***	0.00112	-0.00300
	(0.00336)	(0.00351)	(0.00431)	(0.00452)	(0.00677)	(0.00607)
SC	0.0134*	0.0129*	0.0189**	0.0186**	0.00883	0.00331
	(0.00714)	(0.00734)	(0.00871)	(0.00899)	(0.00883)	(0.00818)
ST	0.00889	0.00679	0.0113	0.00863	-0.0123	-0.0164
	(0.00708)	(0.00732)	(0.0100)	(0.0105)	(0.0126)	(0.0126)
1st Gen Public					0.0488***	0.0457***
					(0.00594)	(0.00632)
EPL		0.0550***		0.0633***		0.0280***
		(0.00188)		(0.00210)		(0.00286)
Pseudo R Squared	0.2819	0.2742	0.2924	0.2852	0.2427	0.2315
PCP	90.05%	90.38%	89.07%	89.40%	95.28%	95.55%
Observations	62,808	60,431	41,311	39,899	8,733	8,386

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

go into public employment, when compared with 2005 predicted probabilities. It appears that private employment is the preferred employment type in 2012. This is significant for all generations in the Others and OBC caste groups, however, there is no significant effect found for 2nd generation SC and ST caste group. This is an indication that there is no significant change in probability of SC and ST individuals going into public employment. As there was also no significant effect in Table 1.4 for these two caste groups in the 2nd generation, this suggests that ST's are indifferent towards choosing between public and private employment, despite reservation policy being in place.

Table 1.5: Average Marginal Effects Differences for Public vs Private Employment

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
Base= Caste*2005						
Others2012	-0.0426***	-0.0446***	-0.0414***	-0.0448***	-0.0175**	-0.0171**
	(0.00499)	(0.00489)	(0.00582)	(0.00547)	(0.00701)	(0.00766)
OBC2012	-0.0338***	-0.0344***	-0.0378***	-0.0380***	-0.0181**	-0.0193***
	(0.00520)	(0.00488)	(0.00634)	(0.00622)	(0.00785)	(0.00739)
SC2012	-0.0349***	-0.0329***	-0.0385***	-0.0369***	-0.0197	-0.0195
	(0.00800)	(0.00797)	(0.00890)	(0.00893)	(0.0131)	(0.0125)
ST2012	-0.0229*	-0.0261**	-0.0295*	-0.0326**	0.0192	0.0136
	(0.0121)	(0.0117)	(0.0157)	(0.0155)	(0.0149)	(0.0144)
Observations	62,808	60,431	41,311	39,899	8,733 6	8,386

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

The magnitude in average predicted probabilities is highest among the 1st generation individuals, which indicates that they have become over 3% less likely to choose public employment over private employment. This generally shows an indication that the stigma associated with taking up reservation may have increased after the policy change in education reservation policy in 2008 and individuals feel less likely to take

up positions through reservation policy due to the increase in backlash. As a result, private employment appears to be the preferred choice of employment in order to avoid any stigma attached with gaining a government position. However, this also shows that reservation policy isn't targeting those who are already in employment, who are already in an good income position and could exploit their eligibility to reservation policy in order to gain a better position in public employment. Reservation policy aims to alleviate lower caste groups and minorities out of poverty by allowing them opportunities to gain a stable income through employment. Thus, looking at those from an unemployment background is important to understanding the effectiveness of the policy and the analysis forms the final part of this section.

1.5.1.3 Public Employment vs Unemployment

Table 1.6 presents the average marginal effects for the public employment vs unemployment regression analysis. The control variables have similar results to those presented in Section 5.1.1 in terms of magnitude and significance. The main notable difference is shown by the 2012 year dummy, where there is a positive and significant effect on 2nd generation individuals going into public employment, as shown in Column (5) and (6). This suggests that 2nd generation individuals are more likely to go into public employment then be employed in 2012, relative to 2005.

Unlike the previous results from public vs private employment, Table 1.6 suggests that the OBC group has a positive significant effect, suggesting that 1st generation individuals are more likely to be in public employment than unemployed. However,

Table 1.6: Average Marginal Effects for Public vs Unemployment

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
Age	0.00480***	0.00476***	0.00110***	0.00111***	0.0102***	0.0106***
	(0.000215)	(0.000232)	(0.000354)	(0.000381)	(0.00115)	(0.00116)
Urban	0.00113	0.00357	0.00270	0.00435	0.00749	0.0103
	(0.00620)	(0.00648)	(0.00599)	(0.00642)	(0.00738)	(0.00782)
Married	-0.00193	-0.00451	-0.103***	-0.102***	0.0294***	0.0267***
	(0.00778)	(0.00823)	(0.0120)	(0.0127)	(0.00869)	(0.00933)
Female	-0.231***	-0.229***	-0.231***	-0.230***	-0.0536***	-0.0499***
	(0.00417)	(0.00441)	(0.00239)	(0.00255)	(0.00741)	(0.00745)
FirstGen	0.0893***	0.0883***				
	(0.00738)	(0.00786)				
CasteAss	0.00519	0.00553	0.00632	0.00461	-0.0153*	-0.0119
	(0.00657)	(0.00726)	(0.00577)	(0.00596)	(0.00873)	(0.00835)
Religion						
Base = Hindu						
Muslim	-0.0202*	-0.0337***	-0.0211**	-0.0324***	-0.0142	-0.0179
	(0.0108)	(0.00541)	(0.00985)	(0.00635)	(0.0113)	(0.0124)
Christian	0.00114	-0.000259	0.00867	0.00779	-0.0302	-0.0306
	(0.0121)	(0.0120)	(0.0103)	(0.0104)	(0.0224)	(0.0216)
Sikh	-0.00474	-0.00315	0.00343	0.00524	0.000332	0.000435
	(0.00641)	(0.00621)	(0.0115)	(0.0113)	(0.0139)	(0.0134)
Others	-0.0220**	-0.0241**	-0.0219**	-0.0232**	-0.0302	-0.0297
	(0.00964)	(0.00982)	(0.00992)	(0.0101)	(0.0196)	(0.0184)
Education						
Base = No Education						
Primary	0.0281***	0.0292***	0.0253***	0.0270***	-0.00177	-0.00412
	(0.00571)	(0.00525)	(0.00656)	(0.00593)	(0.0182)	(0.0193)
Secondary	0.0669***	0.0639***	0.0687***	0.0659***	0.0106	0.00517
	(0.00592)	(0.00602)	(0.00723)	(0.00753)	(0.0123)	(0.0124)
College	0.138***	0.132***	0.148***	0.142***	0.0432***	0.0390***
	(0.0117)	(0.0123)	(0.0154)	(0.0159)	(0.0114)	(0.0117)
Higher	0.218***	0.213***	0.236***	0.230***	0.0734***	0.0641***
	(0.0132)	(0.0140)	(0.0185)	(0.0194)	(0.0171)	(0.0165)
Year						
Base = 2005						
2012	0.00427	0.000185	0.00323	0.000329	0.0260***	0.0195***
	(0.00551)	(0.00496)	(0.00612)	(0.00610)	(0.00611)	(0.00489)
Caste						
Base = Others						
OBC	0.00785**	0.00925**	0.00842*	0.0101**	-0.00124	-0.00344
	(0.00363)	(0.00371)	(0.00480)	(0.00486)	(0.00682)	(0.00686)
SC	0.0617***	0.0632***	0.0664***	0.0690***	0.0223***	0.0188**
	(0.00645)	(0.00681)	(0.00764)	(0.00798)	(0.00778)	(0.00763)
ST	0.0631***	0.0678***	0.0690***	0.0715***	-0.00762	-0.00500
	(0.0142)	(0.0157)	(0.0123)	(0.0135)	(0.0251)	(0.0290)
1st Gen Public					0.0341***	0.0275***
					(0.00971)	(0.00898)
EPL		0.0510***		0.0423***		0.0296***
		(0.00202)		(0.00269)		(0.00296)
Pseudo R Squared	0.4486	0.4463	0.5224	0.5197	0.2607	0.2458
PCP	91.16%	91.27%	92.12%	92.09%	94.20%	94.35%
Observations	45,580	42,209	31,519	29,373	6,726	6,142

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

there is no significant effect when looking at 2nd generation OBC individuals. There is a positive and significant effect in all regression specifications for the SC group, relative to the Others caste category. They are more likely to go into public employment then be unemployed. Similar to the OBCs, STs have a similar positive and significant likelihood for the whole sample and when looking at the 1st generation, however, there are no significant results for 2nd generation individuals. The EPL index is positive and significant for all regressions and suggests that labour law reforms are important to take into account when assessing the impact of caste reservation policy in employment.

Table 1.7 presents the results for the average predicted probabilities when comparing the probabilities for each caste group in 2012 with the 2005 predicted probabilities. The Others, OBC and ST caste group are more likely to be in public employment in 2012 than 2005 relative to being unemployed for the 2nd generation group. This is different for the SC group, where all but the 2nd generation individuals have a positive and significant effect, showing higher preference over being unemployed in 2012. The stigma attached to taking up reservation policy could explain the insignificance found withe 2nd generation SCs. Overall, 2nd generation individuals have a higher probability of being in employment then being unemployed in 2012, potentially indicating a higher take up of reservation policy by those who are from an unemployment background, except when looking at SCs.

Table 1.7: Average Marginal Effects Differences for Public vs Unemployment

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
Base= Caste*2005						
Others2012	-0.00230	-0.00899	-0.000932	-0.00684	0.0292***	0.0236***
	(0.00707)	(0.00631)	(0.00754)	(0.00734)	(0.00814)	(0.00814)
OBC2012	0.00193	-0.000151	-0.000375	-0.000678	0.0213***	0.0162**
	(0.00646)	(0.00646)	(0.00837)	(0.00870)	(0.00767)	(0.00695)
SC2012	0.0226**	0.0200**	0.0203**	0.0190**	0.0249	0.0149
	(0.00924)	(0.00943)	(0.00863)	(0.00884)	(0.0160)	(0.0150)
ST2012	0.0160	0.00919	0.000208	-0.00760	0.0419*	0.0427*
	(0.0152)	(0.0156)	(0.0161)	(0.0152)	(0.0225)	(0.0258)
Observations	45,580	42,209	31,519	29,373	6,726	6,142

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

1.5.2 Decomposition Results

The final part of this analysis looks at a measure of discrimination by decomposing the differences in mean outcomes between those from the Others caste group and one of the caste groups that are eligible for caste reservation. By doing so, we can quantify the amount of this difference that can be explained by characteristic differences such education and areas in which a individual may reside. The rest of the difference that is left is described as unexplained and is put down as a possible discrimination measure. Although reservation policy is in place making it mandatory for public institutions to hire lower caste and minority workers, there may be a discrimination bias that is lowering the mean likelihood that these targeted groups will go into public employment or, possibly, results will show reverse discrimination, where individuals from the Others caste category are being discriminated against in order to meet the quota.

Table 1.8 presents these results and the differences are the raw differentials between the two caste groups. There are two types of decomposition carried out, as explained previously in the methodology section of this chapter. The first presented is the Blinder (1973) and Oaxaca (1973) type estimation that is extended to non-linear data as explained by Bauer and Sinning (2008). The second type of decomposition is by Oaxaca and Ransom (1994) and extended to non-linear data by Neumark (1988), which provides an advantage and disadvantage portion of the difference in means that can help to understand if the Others caste group is advantaged by their caste status and vice versa for the lower caste groups and minorities.

Table 1.8: Decomposition Results for Public vs Otherwise Regression

2004-05		Blinder (1973) and Oaxaca (1973) Decomposition (With Creamy 2005)				Oaxaca and Ransom (1994)/Neumark (1994) Decomposition (2005)		
		(1) Treating Group B as U (using $\boldsymbol{\beta_U}$ coefficients)		(2) Treating Group U as B (using $\boldsymbol{\beta_B}$ coefficients)		(3) Non-discriminatory (using $\boldsymbol{\beta^*}$ coefficients)		
Group B (Group U = Upper Castes)	Total Difference ($\overline{\boldsymbol{Gov_U}} - \overline{\boldsymbol{Gov_B}}$)	Characteristic Difference	Coefficient Difference	Characteristic Difference	Coefficient Difference	Productivity Difference	Group U's Advantage	Group B's Disadvantage
OBC	0.0526	0.0442	0.0085	-0.0510	-0.0017	0.0489	-0.0017	0.0054
SC	0.0444	0.0521	-0.0078	-0.0521	0.0077	0.0557	-0.0017	-0.0096
ST	0.0655	0.0689	-.0.0034	-0.0689	0.0034	0.0692	0.0016	-0.0053
2011-12		**Blinder (1973) and Oaxaca (1973) Decomposition (With Creamy 2012)**				**Oaxaca and Ransom (1994)/Neumark (1994) Decomposition (2012)**		
		(4) Treating Group B as U (using $\boldsymbol{\beta_U}$ coefficients)		(5) Treating Group U as B (using $\boldsymbol{\beta_B}$ coefficients)		(6) Non-discriminatory (using $\boldsymbol{\beta^*}$ coefficients)		
Group B (Group U = Upper Castes)	Total Difference ($\overline{\boldsymbol{Gov_U}} - \overline{\boldsymbol{Gov_B}}$)	Characteristic Difference	Coefficient Difference	Characteristic Difference	Coefficient Difference	Productivity Difference	Group U's Advantage	Group B's Disadvantage
OBC	0.0407	0.0407	0.0001	-0.0401	-0.0006	0.0453	-0.0087	0.0041
SC	0.0257	0.0423	-0.0167	-0.0423	0.0167	0.0466	-0.0087	-0.1222
ST	0.0414	0.0573	-0.0159	-0.0573	0.0159	0.0583	-0.0052	-0.0117

The raw mean differential between the lower caste or minority group and the Others caste category is shown under the Total Difference column [18]. As explained in Borooah et al. (2007), this can be treated as the sample average for the population. For example, the first value in the Total Difference column for 2004/05 indicates that individuals in the Others caste group have 5.3 more percentage points in public employment then individuals in the OBC group. Similarly, individuals in Others caste group have 4.4 more percentage points in public employment then SC individuals in 2004/05. And so, any differences presented represent an increase or decrease in percentage points.

For both years of survey data, the differences between the two means are low, most of which lie below 5 percentage points. It is also important to note that the total difference between the means falls in 2011-12 for each caste group, in particular, for the ST group where the mean difference falls from 0.0444 to 0.0257. This shows that the gap between the Others caste group and lower caste and minority groups in public employment is decreasing, however, as seen from the previous regression results, there is an overall decline in probability of taking up public employment from all caste groups. Reservation policy is effective in reducing the gap in employment, however, due to data limitations, we do not know if this is because more people from Others caste category are moving to public employment or if reservation policy take up has increased despite the backlash in 2008. Nonetheless, the smaller difference in

[18] As the Government variable is binary, the mean for each caste group is below 1 and so the difference between these means will also be below 1.

means is a good indication of a narrowing in employment outcomes.

Column (1) shows the results for treating a lower caste or minority group using Others caste coefficients, where this means treating lower caste or minority groups as if they had the same characteristics as the Others caste category. For the OBC group in 2004-05, there would be 4.4 more percentage points of OBC individuals in public employment then other types of employment if they had Other's caste group characteristics and 1 more percentage points if OBCs were not discriminated against and treated like individuals in Others caste groups. When looking at the SC and ST groups, however, although most of the difference is explained through characteristic differences, where individuals in the ST group would have 6.9 higher percentage points in public employment if they had the characteristics of individuals from the Others caste category; the sign on the discrimination measure is negative. This means that if SC's or ST's where treated as individuals from the Others caste category, they would see a decrease in their percentage points of individuals being in public employment, an indication that they don't suffer from discrimination and, in fact, they would be discriminated against if they were part of the Others caste category. This is a sign of possible reverse discrimination, where employers favour SC or ST employees in order to meet the quota demand and individuals from the Others caste category experience a decrease in percentage points. However, these figures are below 1 percentage point and could be deemed as a negligible difference.

This also holds true when looking at column (4) for 2011-12, where OBCs are overall

better off if they were treated as individuals from the Others caste category and SC and ST's are worse off and discriminated against if treated as individuals from the Others caste category. Interestingly, the coefficient difference for SC and ST's in column (4) increase to just under 2 percentage points, indicating a worsening of reverse discrimination. The results for the OBC category were to be expected as the backlash in 2008 were directly against this caste group and, thus, would be more likely to suffer from discrimination. Columns (2) and (5) show the results if individuals from the Others caste category were treated as the corresponding lower caste or minority group. The results are similar to what was found previously, where individuals from the Others caste group would experience discrimination if treated as an OBC individual. However, if they were treated as an SC or ST individual, they would suffer less discrimination if treated as a SC individual or ST individual respectively in 2004/05, as shown in column (2). This is further amplified when looking at column (5) for 2011-12. This is an indication that reservation policy is helping the SC and ST group into public employment, however, this is at the expense of individuals in the Other caste categories, who now suffer from discrimination based on their ineligibility for reservation policy and quota.

Finally, on looking at the Neumark (1988) decomposition that provides a further breakdown of the total difference between caste groups, column (3) and (6) show the advantage individuals from the Other caste category have and the disadvantage the lower caste or minority group experience by employers for 2004-05 and 2011-12, respectively. These differentials coincide with the Blinder (1973) and Oaxaca (1973)

results, where a large amount of the overall difference can be put down to productivity/characteristic differences. Group B would experience higher percentage points if they had the Other's caste category characteristics. individuals in any of the OBC, SC or ST groups, when treated as an individual in the Others caste category, also experience a slight advantage in public employment, as shown in column (3), in 2004-05. However, this changes when looking at column (6) for 2011-12, where they experience a decrease in percentage points. However, this advantage (or disadvantage for the negative values) are below 1 percentage point and can be deemed negligible. The disadvantage that the low caste groups and minorities suffer in both 2004-05 and 2011-12 are also of negligible value. Nonetheless, the signs of the raw differential indicates that SC and ST's are at an advantage when it comes to discrimination as employers will favour them over individuals in the Others caste category.

The results presented in Table 1.8 show that all caste groups are at a disadvantage, relative to individuals from the Others caste category, when it comes to characteristic differences that lead them into public employment. However, SC and ST's will experience negative percentage points in public employment if treated as individuals from the Others caste category, indicating that discrimination is against the Others caste category and a potential reverse discrimination issue that could lead to further backlash from the Other's caste community.

1.6 Robustness Checks

1.6.1 Creamy Layer OBC and BB Index

Further specification checks were also carried out by removing the creamy layer OBC from the dataset and the analysis was re-estimated without the inclusion of households that fell over the appropriate thresholds [19]. These results are presented in Appendix A.1 and the results are also very similar in magnitude and significance to previous results. In addition to this, an alternative measure to the EPL index is used to ensure results are robust. The decomposition model for Public1 regression for public employment vs all other kinds of employment and unemployment was also re-estimated without the potential OBC creamy layer and shown in Table A.1.7. These results also remain largely unchanged, with the magnitude of mean difference being slightly lower.

The BB index, as previously explained, was used as an alternative measure and is similar in understanding to the EPL index. As the BB index increases, a state is deemed to be more pro-worker friendly. The results of this are presented in Appendix A.2 and the results are similar to previous estimations. The BB index is positive and significant, similar to the EPL index, and indicates that more pro-worker friendly state reforms lead to a higher probability of individuals going into public employment.

[19] For 2004-05, this threshold was set at 1 lakh rupees. For 2011-12, the threshold was set at 4.5 lakh rupees. Any household that was more or equal to this threshold were removed.

1.6.2 Standard Errors

All standard errors from the previous section were clustered at the state level. This was the most appropriate level to cluster the standard errors that now take into account within state variation during estimation (Bertrand et al. (2004)). However, this method may not hold asymptoticly if there are few clusters (less than 30). The dataset used in this chapter only has 18 states and, thus, the standard errors may be bias. Cameron and Miller (2015) and Cameron et al. (2008) recommend using bootstrap methods that have asymptotic refinement in order to overcome the issue of few clusters. In particular, for non-linear data, score bootstrap method is used to obtain p-values to test for significance (Kline and Santos (2012))[20]. The regressions were re-estimated and the coefficients along with the p-values for both clustered standard errors and score boostrapped standard errors are presented for the main variables in Appendix A.3. The significance of the coefficients were mostly the same as when clustering the standard errors at state level [21]. Therefore, clustering at state level is robust for each specification.

[20]It is important to note that the current capability to implement the score bootstrapping on STATA involves using the *boottest* command as created by Roodman et al. (2017). Their programme requires a null hypothesis to be imposed in order to gain the score bootstrapped p-values. The null hypothesis tested whether $\beta_{WomenWorking} = 0$ in the probit model for domestic violence. It is tested using a Wald test and the reported p-value are used for significance on the coefficients of the regression analysis.

[21]The only noticeable difference comes when looking at the EPL variable where the significance was lost . However, this doesn't effect the main variables of interest and could be down to the way the variable is outlined at state level.

1.7 Conclusion

This chapter analyses the association between caste reservation and public employment for the targeted castes. In particular, to look at the effect of the policy on different generations within the household and also whether a policy change to reservation policy in 2008 for the OBC effected the likelihood of all caste groups from taking up government employment against all other types of employment or unemployment. Results presented indicate that the OBC group is less likely to take up government employment, with the preference being on going into private employment instead. ST and SC groups show differences between 1st and 2nd generation individuals, where 1st generation individuals are more likely to take up public employment but 2nd generation individuals show a preference towards private sector employment.

All caste groups show preference towards employment, either public or private, against being unemployed, which was to be expected. The decomposition model showed evidence of reverse discrimination, where individuals from the Others caste category faced a lower percentage of individuals in public employment if treated as either SC or ST when looking at the discrimination part of the model. The magnitude of this is very low but has increased when looking at 2012 against 2005. However, it is important to note that the main differences in means came from attribute and characteristic differences, which can only be tackled through long-term supply side policies that target education and household poverty directly.

Overall, the results here indicate a need for better policies that enable lower caste individuals into poverty reducing opportunities. Although the SC and ST group show signs of increasing participation in public employment, this doesn't hold when looking at the 2nd generation individuals in the household and preference is shown towards private employment. Extending these reservations in the private employment may seem more appropriate. However, the results also show a decrease in participation of the OBC group in private employment after the 2008 policy change in education for this group. This backlash from Others caste group may also be similar to backlash against extending these reservations to private employment and, in turn, may produce a disincentive for SC and ST individuals from taking up the reservation policy in the private sector in order to avoid any stigmas attached to it.

More appropriate policies may be to target individuals with low income in all caste groups and take into account economic disadvantage. Correcting for the attribute differences, that is allowing more individuals from the Others caste group into employment than the lower caste and minority groups is also fundamental to improving outcomes for the targeted groups. This may decrease the inequality and discrimination presented in this chapter and also reduce issues of reverse discrimination by also taking into account economic disadvantage of all caste groups.

Appendix

A.1 Removal of Creamy Layer OBC

Table A.1.1: Average Marginal Effects for Public vs All Other Types of Employment Without OBC Creamy Layer

VARIABLES	(1) All	(2) All	(3) 1st Generation	(4) 1st Generation	(5) 2nd Generation	(6) 2nd Generation
Age	0.00388***	0.00378***	0.00350***	0.00342***	0.00377***	0.00380***
	(0.000119)	(0.000121)	(0.000163)	(0.000170)	(0.000457)	(0.000457)
Urban	0.0150***	0.0168***	0.0229***	0.0247***	0.00412	0.00560
	(0.00439)	(0.00438)	(0.00504)	(0.00510)	(0.00378)	(0.00374)
Married	-0.0140***	-0.0153***	-0.0524***	-0.0519***	0.00188	0.000401
	(0.00419)	(0.00417)	(0.00683)	(0.00707)	(0.00354)	(0.00364)
Female	-0.0628***	-0.0594***	-0.0773***	-0.0735***	-0.0115***	-0.00945***
	(0.00546)	(0.00557)	(0.00649)	(0.00668)	(0.00351)	(0.00338)
FirstGen	0.0239***	0.0222***				
	(0.00310)	(0.00313)				
CasteAss	0.00249	0.00461	0.00404	0.00603	-0.00723	-0.00505
	(0.00340)	(0.00327)	(0.00381)	(0.00375)	(0.00458)	(0.00423)
Religion						
Base = Hindu						
Muslim	-0.00875	-0.0159***	-0.0110	-0.0179***	-0.00430	-0.00779
	(0.00724)	(0.00405)	(0.00784)	(0.00509)	(0.00614)	(0.00530)
Christian	-0.00303	-0.00374	-0.000448	-0.00111	-0.00565	-0.00638
	(0.00726)	(0.00718)	(0.00762)	(0.00759)	(0.0120)	(0.0111)
Sikh	-0.00211	-0.00146	0.00131	0.00175	0.00406	0.00698
	(0.00543)	(0.00563)	(0.00959)	(0.0101)	(0.00508)	(0.00445)
Others	-0.0120**	-0.0123**	-0.0138**	-0.0135**	-0.0118	-0.0114
	(0.00602)	(0.00595)	(0.00681)	(0.00680)	(0.00936)	(0.00863)
Education						
Base = No Education						
Primary	0.0144***	0.0144***	0.0173***	0.0171***	-2.56e-05	4.30e-05
	(0.00192)	(0.00192)	(0.00270)	(0.00272)	(0.00511)	(0.00538)
Seconday	0.0491***	0.0468***	0.0618***	0.0588***	0.00774**	0.00642**
	(0.00251)	(0.00258)	(0.00336)	(0.00343)	(0.00321)	(0.00325)
College	0.137***	0.130***	0.173***	0.164***	0.0357***	0.0328***
	(0.00929)	(0.00934)	(0.0114)	(0.0112)	(0.00436)	(0.00433)
Higher	0.214***	0.207***	0.260***	0.252***	0.0586***	0.0525***
	(0.0115)	(0.0122)	(0.0145)	(0.0152)	(0.00823)	(0.00744)
Year						
Base = 2005						
2012	-0.0188***	-0.0199***	-0.0214***	-0.0224***	0.000244	-0.00153
	(0.00322)	(0.00301)	(0.00390)	(0.00380)	(0.00255)	(0.00222)
Caste						
Base = Others						
OBC	-0.00179	-0.00167	-0.00143	-0.00137	-0.000800	-0.00250
	(0.00245)	(0.00257)	(0.00283)	(0.00293)	(0.00409)	(0.00391)
SC	0.0188***	0.0188***	0.0249***	0.0251***	0.00778*	0.00534
	(0.00466)	(0.00483)	(0.00533)	(0.00550)	(0.00439)	(0.00421)
ST	0.0155***	0.0142***	0.0200***	0.0180**	-0.00654	-0.00619
	(0.00519)	(0.00543)	(0.00670)	(0.00706)	(0.00883)	(0.00922)
1st Gen Public					0.0219***	0.0193***
					(0.00314)	(0.00314)
EPL		0.0328***		0.0373***		0.0108***
		(0.00125)		(0.00143)		(0.00149)
Observations	98,817	93,938	66,301	63,265	14,650	13,804

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

Table A.1.2: Average Marginal Effects Differences for Public vs All Other Types of Employment Without OBC Creamy Layer

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
Others2012	-0.0209***	-0.0227***	-0.0217***	-0.0101	0.000224	-0.00109
	(0.00328)	(0.00304)	(0.00410)	(0.00785)	(0.00382)	(0.00432)
OBC2012	-0.0177***	-0.0184***	-0.0218***	-0.00146	0.000864	-0.00109
	(0.00326)	(0.00308)	(0.00418)	(0.00827)	(0.00339)	(0.00297)
SC2012	-0.0172***	-0.0174***	-0.0200***	0.0185**	-0.00248	-0.00476
	(0.00521)	(0.00523)	(0.00628)	(0.00851)	(0.00640)	(0.00592)
ST2012	-0.0135	-0.0169**	-0.0180	-0.00840	0.00980	0.00924
	(0.00899)	(0.00857)	(0.0119)	(0.0162)	(0.00879)	(0.00898)
Observations	98,817	93,938	66,301	28,367	14,650	13,804

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

Table A.1.3: Average Marginal Effects for Public vs Private Employment Without OBC Creamy Layer

VARIABLES	(1) All	(2) All	(3) 1st Generation	(4) 1st Generation	(5) 2nd Generation	(6) 2nd Generation
Age	0.00590***	0.00566***	0.00613***	0.00585***	0.00449***	0.00450***
	(0.000217)	(0.000219)	(0.000284)	(0.000283)	(0.000683)	(0.000678)
Urban	0.0359***	0.0377***	0.0510***	0.0526***	0.00932	0.0108*
	(0.00708)	(0.00704)	(0.00817)	(0.00818)	(0.00644)	(0.00637)
Married	-0.00945*	-0.0115**	-0.0326***	-0.0345***	-0.00517	-0.00604
	(0.00526)	(0.00505)	(0.00838)	(0.00827)	(0.00505)	(0.00520)
Female	0.0299***	0.0279***	0.0343***	0.0316***	0.0154***	0.0169***
	(0.00780)	(0.00784)	(0.00924)	(0.00925)	(0.00523)	(0.00487)
FirstGen	0.0224***	0.0218***				
	(0.00375)	(0.00385)				
CasteAss	0.00365	0.00729	0.00584	0.00910	-0.0114	-0.00738
	(0.00561)	(0.00514)	(0.00656)	(0.00629)	(0.00753)	(0.00698)
Religion						
Base = Hindu						
Muslim	-0.0148*	-0.0206***	-0.0188**	-0.0236***	-0.00771	-0.0116
	(0.00817)	(0.00553)	(0.00905)	(0.00729)	(0.0107)	(0.00997)
Christian	-0.00809	-0.00844	-0.00345	-0.00393	0.00105	-0.000435
	(0.0106)	(0.0105)	(0.0109)	(0.0108)	(0.0225)	(0.0213)
Sikh	-0.00488	-0.00440	-0.00162	-0.00260	0.00280	0.00893
	(0.00753)	(0.00778)	(0.0104)	(0.0114)	(0.0116)	(0.00835)
Others	-0.0155	-0.0150	-0.0182	-0.0167	-0.0161	-0.0153
	(0.0109)	(0.0112)	(0.0114)	(0.0120)	(0.0178)	(0.0166)
Education						
Base = No Education						
Primary	0.0304***	0.0299***	0.0389***	0.0376***	0.000312	0.000816
	(0.00317)	(0.00317)	(0.00431)	(0.00436)	(0.00741)	(0.00755)
Secondary	0.0983***	0.0938***	0.129***	0.123***	0.0159***	0.0136***
	(0.00466)	(0.00481)	(0.00655)	(0.00663)	(0.00468)	(0.00457)
College	0.257***	0.244***	0.327***	0.312***	0.0770***	0.0691***
	(0.0156)	(0.0156)	(0.0186)	(0.0184)	(0.00744)	(0.00672)
Higher	0.361***	0.350***	0.434***	0.422***	0.136***	0.125***
	(0.0158)	(0.0168)	(0.0183)	(0.0193)	(0.0147)	(0.0139)
Year						
Base = 2005						
2012	-0.0372***	-0.0371***	-0.0399***	-0.0404***	-0.0155***	-0.0148***
	(0.00458)	(0.00445)	(0.00528)	(0.00518)	(0.00482)	(0.00473)
Caste						
Base = Others						
OBC	-0.00965**	-0.00990**	-0.0117**	-0.0121**	-0.00120	-0.00502
	(0.00387)	(0.00407)	(0.00456)	(0.00478)	(0.00698)	(0.00670)
SC	0.0130*	0.0126*	0.0190**	0.0188**	0.00938	0.00417
	(0.00726)	(0.00748)	(0.00875)	(0.00900)	(0.00844)	(0.00796)
ST	0.00611	0.00407	0.00994	0.00725	-0.0138	-0.0150
	(0.00706)	(0.00732)	(0.0100)	(0.0106)	(0.0117)	(0.0119)
1st Gen Public					0.0478***	0.0442***
					(0.00635)	(0.00677)
EPL		0.0521***		0.0619***		0.0196***
		(0.00192)		(0.00220)		(0.00274)
Observations	61,294	59,073	40,737	39,375	8,467	8,145

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

Table A.1.4: Average Marginal Effects Differences for Public vs Private Employment Without OBC Creamy Layer

VARIABLES	(1) All	(2) All	(3) 1st Generation	(4) 1st Generation	(5) 2nd Generation	(6) 2nd Generation
Base= Caste*2005						
Others2012	-0.0453***	-0.0460***	-0.0440***	-0.0470***	-0.0200***	-0.0176**
	(0.00455)	(0.00438)	(0.00544)	(0.00508)	(0.00752)	(0.00833)
OBC2012	-0.0324***	-0.0329***	-0.0376***	-0.0378***	-0.0128*	-0.0140**
	(0.00471)	(0.00448)	(0.00617)	(0.00605)	(0.00699)	(0.00655)
SC2012	-0.0351***	-0.0336***	-0.0392***	-0.0373***	-0.0192*	-0.0184*
	(0.00743)	(0.00740)	(0.00845)	(0.00845)	(0.0114)	(0.0107)
ST2012	-0.0252**	-0.0278**	-0.0307*	-0.0333**	0.0126	0.0118
	(0.0125)	(0.0124)	(0.0166)	(0.0168)	(0.0139)	(0.0137)
Observations	61,294	59,073	40,737	39,375	8,467	8,145

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

Table A.1.5: Average Marginal Effects for Public vs Unemployment Without OBC Creamy Layer

VARIABLES	(1) All	(2) All	(3) 1st Generation	(4) 1st Generation	(5) 2nd Generation	(6) 2nd Generation
Age	0.00440***	0.00438***	0.000876**	0.000852**	0.00942***	0.00969***
	(0.000208)	(0.000223)	(0.000354)	(0.000378)	(0.00105)	(0.00108)
Urban	-0.00137	0.000601	0.00139	0.00281	0.00608	0.00866
	(0.00629)	(0.00667)	(0.00607)	(0.00649)	(0.00748)	(0.00802)
Married	-0.00832	-0.0102	-0.103***	-0.103***	0.0256***	0.0230***
	(0.00805)	(0.00848)	(0.0117)	(0.0124)	(0.00774)	(0.00818)
Female	-0.225***	-0.223***	-0.228***	-0.227***	-0.0518***	-0.0489***
	(0.00400)	(0.00420)	(0.00233)	(0.00243)	(0.00631)	(0.00655)
FirstGen	0.0960***	0.0943***				
	(0.00765)	(0.00812)				
CasteAss	0.00417	0.00509	0.00605	0.00457	-0.0125	-0.00809
	(0.00668)	(0.00730)	(0.00603)	(0.00615)	(0.00936)	(0.00889)
Religion						
Base = Hindu						
Muslim	-0.0185*	-0.0310***	-0.0203**	-0.0311***	-0.0125	-0.0167
	(0.0101)	(0.00565)	(0.00931)	(0.00629)	(0.0107)	(0.0113)
Christian	-0.000378	-0.00172	0.00725	0.00633	-0.0223	-0.0233
	(0.0102)	(0.0102)	(0.00921)	(0.00927)	(0.0215)	(0.0207)
Sikh	-0.00920*	-0.00782*	-0.00124	0.000460	0.00295	0.00321
	(0.00481)	(0.00469)	(0.0100)	(0.00977)	(0.0169)	(0.0165)
Others	-0.0204**	-0.0226**	-0.0208**	-0.0222**	-0.0272	-0.0269
	(0.00896)	(0.00917)	(0.00949)	(0.00968)	(0.0209)	(0.0197)
Education						
Base = No Education						
Primary	0.0275***	0.0290***	0.0252***	0.0272***	-0.00125	-0.00347
	(0.00570)	(0.00530)	(0.00657)	(0.00601)	(0.0171)	(0.0182)
Secondary	0.0644***	0.0620***	0.0672***	0.0648***	0.0108	0.00600
	(0.00598)	(0.00620)	(0.00714)	(0.00748)	(0.0110)	(0.0109)
College	0.130***	0.126***	0.143***	0.139***	0.0438***	0.0394***
	(0.0111)	(0.0117)	(0.0146)	(0.0152)	(0.0112)	(0.0114)
Higher	0.188***	0.184***	0.203***	0.197***	0.0633***	0.0540***
	(0.0127)	(0.0135)	(0.0171)	(0.0177)	(0.0165)	(0.0155)
Year						
Base = 2005						
2012.year	0.000734	-0.00285	0.00154	-0.00114	0.0228***	0.0170***
	(0.00507)	(0.00451)	(0.00595)	(0.00590)	(0.00523)	(0.00384)
Caste						
Base = Others						
OBC	0.00797**	0.00933**	0.00941*	0.0113**	-0.000656	-0.00332
	(0.00377)	(0.00399)	(0.00493)	(0.00505)	(0.00818)	(0.00822)
SC	0.0605***	0.0623***	0.0655***	0.0682***	0.0250***	0.0216**
	(0.00681)	(0.00713)	(0.00789)	(0.00822)	(0.00859)	(0.00870)
ST	0.0605***	0.0642***	0.0679***	0.0706***	-0.00493	-0.00306
	(0.0132)	(0.0146)	(0.0120)	(0.0130)	(0.0249)	(0.0267)
1st Gen Public					0.0312***	0.0250***
					(0.00794)	(0.00703)
EPL		0.0497***		0.0426***		0.0226***
		(0.00213)		(0.00276)		(0.00321)
Observations	43,818	40,638	30,426	28,367	6,535	5,972

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

Table A.1.6: Average Marginal Effects Differences for Public vs Unemployment Without OBC Creamy Layer

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
Others2012	-0.00790	-0.0139**	-0.00436	-0.0101	0.0227***	0.0169**
	(0.00657)	(0.00590)	(0.00790)	(0.00785)	(0.00811)	(0.00804)
OBC2012	-0.000256	-0.00199	-0.00105	-0.00146	0.0204***	0.0156***
	(0.00621)	(0.00623)	(0.00798)	(0.00827)	(0.00674)	(0.00597)
SC2012	0.0202**	0.0176**	0.0195**	0.0185**	0.0239*	0.0155
	(0.00872)	(0.00885)	(0.00830)	(0.00851)	(0.0133)	(0.0125)
ST2012	0.0137	0.00570	-0.000843	-0.00840	0.0395*	0.0405
	(0.0153)	(0.0161)	(0.0166)	(0.0162)	(0.0233)	(0.0250)
Observations	43,818	40,638	30,426	28,367	6,535	5,972

Standard errors in parentheses, state dummies included in regressions for columns (1), (3) and (5)
*** p<0.01, ** p<0.05, * p<0.1

Table A.1.7: Decomposition Results for Public vs Otherwise Regression

2004-05		Blinder (1973) and Oaxaca (1973) Decomposition (Without Creamy 2005)				Oaxaca and Ransom (1994)/Neumark (1994) Decomposition (2005)		
		(1) Treating Group B as U (using $\boldsymbol{\beta_U}$ coefficients)		(2) Treating Group U as B (using $\boldsymbol{\beta_B}$ coefficients)		(3) Non-discriminatory (using $\boldsymbol{\beta^*}$ coefficients)		
Group B (Group U = Upper Castes)	Total Difference ($\overline{\boldsymbol{Gov_U}} - \overline{\boldsymbol{Gov_B}}$)	Characteristic Difference	Coefficient Difference	Characteristic Difference	Coefficient Difference	Productivity Difference	Group U's Advantage	Group B's Disadvantage
OBC	0.0486	0.0408	0.0078	-0.0451	-0.0035	0.0439	-0.0012	0.0058
SC	0.0392	0.0470	-0.0077	-0.0594	0.0202	0.0500	-0.0012	-0.0096
ST	0.0599	0.0624	-0.0025	-0.1138	0.0538	0.0627	0.0020	-0.0048
2011-2012		**Blinder (1973) and Oaxaca (1973) Decomposition (Without Creamy 2012)**				**Oaxaca and Ransom (1994)/Neumark (1994) Decomposition (2012)**		
		(4) Treating Group B as U (using $\boldsymbol{\beta_U}$ coefficients)		(5) Treating Group U as B (using $\boldsymbol{\beta_B}$ coefficients)		(6) Non-discriminatory (using $\boldsymbol{\beta^*}$ coefficients)		
Group B (Group U = Upper Castes)	Total Difference ($\overline{\boldsymbol{Gov_U}} - \overline{\boldsymbol{Gov_B}}$)	Characteristic Difference	Coefficient Difference	Characteristic Difference	Coefficient Difference	Productivity Difference	Group U's Advantage	Group B's Disadvantage
OBC	0.0299	0.0306	-0.0007	-0.0317	0.0018	0.0346	-0.0086	0.0039
SC	0.0152	0.0314	-0.0162	-0.0520	0.0368	0.0358	-0.0086	-0.0120
ST	0.0304	0.0440	-0.0136	-0.1040	0.0736	0.0457	-0.0055	-0.0098

A.2 BB Index

Table A.2.1: Average Marginal Effects for Public1 Logistic Regressions with Creamy and BB Index

VARIABLES	(1) All	(2) 1st Generation	(3) 2nd Generation
Age	0.00383***	0.00337***	0.00340***
	(0.000115)	(0.000156)	(0.000480)
Urban	0.0149***	0.0226***	0.00411
	(0.00426)	(0.00450)	(0.00386)
Married	-0.00663	-0.0450***	0.00536
	(0.00440)	(0.00690)	(0.00417)
Female	-0.0574***	-0.0696***	-0.0107**
	(0.00461)	(0.00531)	(0.00451)
FirstGen	0.0173***		
	(0.00258)		
CasteAss	0.00155	0.00196	-0.00909**
	(0.00290)	(0.00306)	(0.00421)
Religion			
Base = Hindu			
Muslim	-0.00435	-0.00527	-0.00600
	(0.00718)	(0.00732)	(0.00696)
Christian	-0.00159	0.00237	-0.0103
	(0.00756)	(0.00710)	(0.0112)
Sikh	0.00543***	0.0131***	0.000147
	(0.00209)	(0.00269)	(0.00468)
Others	-0.00951	-0.0109	-0.0109
	(0.00745)	(0.00731)	(0.00969)
Education			
Base = No Education			
Primary	0.0118***	0.0142***	2.37e-05
	(0.00171)	(0.00259)	(0.00526)
Secondary	0.0482***	0.0615***	0.00649*
	(0.00224)	(0.00288)	(0.00352)
College	0.142***	0.176***	0.0370***
	(0.00893)	(0.0109)	(0.00429)
Higher	0.235***	0.282***	0.0655***
	(0.0101)	(0.0145)	(0.00922)
Year			
Base = 2005			
2012	-0.0180***	-0.0213***	0.00272
	(0.00351)	(0.00387)	(0.00283)
Caste			
Base = Others			
OBC	0.000234	0.000256	-0.000531
	(0.00177)	(0.00213)	(0.00386)
SC	0.0213***	0.0276***	0.00671
	(0.00351)	(0.00427)	(0.00454)
ST	0.0208***	0.0247***	-0.00667
	(0.00461)	(0.00587)	(0.00894)
Ist Gen Pub			0.0219***
			(0.00354)
BBIndex	0.0789***	0.0793***	0.0414***
	(0.00449)	(0.00401)	(0.00317)
Observations	95,542	63,817	14,236

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2.2: Average Marginal Effects for Public1 Logistic Regressions with Creamy and BB Index

VARIABLES	(1) All	(2) 1st Generation	(3) 2nd Generation
Others2012	-0.0181***	-0.0200***	0.00470
	(0.00390)	(0.00437)	(0.00303)
OBC2012	-0.0172***	-0.0212***	0.000969
	(0.00336)	(0.00400)	(0.00374)
SC2012	-0.0192***	-0.0232***	0.000759
	(0.00563)	(0.00640)	(0.00669)
ST2012	-0.0134	-0.0183	0.00999
	(0.00848)	(0.0112)	(0.00830)
Observations	95,542	63,817	14,236

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2.3: Average Marginal Effects for Public2 Logistic Regressions with Creamy and BB Index

VARIABLES	(1) All	(2) 1st Generation	(3) 2nd Generation
Age	0.00574***	0.00586***	0.00402***
	(0.000198)	(0.000249)	(0.000732)
Urban	0.0342***	0.0494***	0.00743
	(0.00731)	(0.00785)	(0.00675)
Married	-0.000954	-0.0249***	0.000845
	(0.00567)	(0.00856)	(0.00580)
Female	0.0320***	0.0352***	0.0158**
	(0.00732)	(0.00845)	(0.00694)
FirstGen	0.0149***		
	(0.00328)		
CasteAss	0.00217	0.00242	-0.0136*
	(0.00499)	(0.00547)	(0.00759)
Religion			
Base = Hindu			
Muslim	-0.00956	-0.0115	-0.0126
	(0.00786)	(0.00783)	(0.0115)
Christian	-0.00895	-0.00324	-0.0140
	(0.0109)	(0.00981)	(0.0210)
Sikh	0.00330	0.00819*	0.00561
	(0.00286)	(0.00447)	(0.0120)
Others	-0.0133	-0.0161	-0.0130
	(0.0128)	(0.0121)	(0.0198)
Education			
Base = No Education			
Primary	0.0257***	0.0329***	0.000704
	(0.00257)	(0.00384)	(0.00747)
Secondary	0.0980***	0.130***	0.0140***
	(0.00427)	(0.00580)	(0.00505)
College	0.265***	0.333***	0.0800***
	(0.0156)	(0.0187)	(0.00793)
Higher	0.382***	0.453***	0.139***
	(0.0136)	(0.0175)	(0.0163)
Year			
Base = 2005			
2012	-0.0366***	-0.0396***	-0.0126**
	(0.00484)	(0.00516)	(0.00548)
Caste			
Base = Others			
OBC	-0.00636**	-0.00870**	-0.00163
	(0.00301)	(0.00382)	(0.00655)
SC	0.0154**	0.0215***	0.00646
	(0.00612)	(0.00781)	(0.00827)
ST	0.0124*	0.0154	-0.0136
	(0.00653)	(0.00939)	(0.0124)
1st Gen Pub			0.0470***
			(0.00648)
BBIndex	0.139***	0.147***	0.0737***
	(0.00583)	(0.00508)	(0.00615)
Observations	59,394	39,204	8,322

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2.4: Average Marginal Effects for Public2 Logistic Regressions with Creamy and BB Index

VARIABLES	(1) All	(2) 1st Generation	(3) 2nd Generation
Others2012	-0.0417***	-0.0416***	-0.0136**
	(0.00534)	(0.00605)	(0.00660)
OBC2012	-0.0318***	-0.0363***	-0.0130*
	(0.00497)	(0.00575)	(0.00725)
SC2012	-0.0385***	-0.0430***	-0.0163
	(0.00744)	(0.00830)	(0.0107)
ST2012	-0.0251**	-0.0314**	0.0133
	(0.0117)	(0.0153)	(0.0133)
Observations	59,394	39,204	8,322

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2.5: Average Marginal Effects for Public3 Logistic Regressions with Creamy and BB Index

VARIABLES	(1) All	(2) 1st Generation	(3) 2nd Generation
Age	0.00458***	0.00113***	0.00878***
	(0.000233)	(0.000375)	(0.00113)
Urban	0.00385	0.00483	0.00804
	(0.00510)	(0.00479)	(0.00733)
Married	0.000800	-0.0949***	0.0287***
	(0.00820)	(0.0128)	(0.00918)
Female	-0.220***	-0.222***	-0.0514***
	(0.00388)	(0.00244)	(0.00756)
FirstGen	0.0855***		
	(0.00804)		
CasteAss	0.00340	0.00457	-0.0147*
	(0.00645)	(0.00560)	(0.00856)
Religion			
Base = Hindu			
Muslim	-0.0134	-0.0138	-0.0140
	(0.00986)	(0.00885)	(0.0124)
Christian	0.00280	0.0103	-0.0271
	(0.0113)	(0.00966)	(0.0221)
Sikh	0.000374	0.0114	-0.00716
	(0.00437)	(0.00723)	(0.00514)
Other	-0.0144	-0.0153*	-0.0289
	(0.00879)	(0.00831)	(0.0182)
Education			
Base = No Education			
Primary	0.0250***	0.0234***	-0.00253
	(0.00574)	(0.00667)	(0.0183)
Secondary	0.0662***	0.0710***	0.00691
	(0.00536)	(0.00591)	(0.0125)
College	0.143***	0.155***	0.0435***
	(0.0103)	(0.0142)	(0.0117)
Higher	0.223***	0.243***	0.0724***
	(0.0115)	(0.0176)	(0.0184)
Year			
Base = 2005			
2012	0.00365	0.00159	0.0287***
	(0.00556)	(0.00640)	(0.00581)
Caste			
Base = Others			
OBC	0.0108***	0.0118***	-0.000266
	(0.00303)	(0.00424)	(0.00748)
SC	0.0655***	0.0719***	0.0231***
	(0.00570)	(0.00633)	(0.00839)
ST	0.0708***	0.0788***	-0.00881
	(0.0131)	(0.00959)	(0.0241)
1st Gen Pub			0.0323***
			(0.0103)
BBIndex	0.0913***	0.0645***	0.0720***
	(0.00710)	(0.00671)	(0.00651)
Observations	42,185	29,110	6,267

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2.6: Average Marginal Effects for Public3 Logistic Regressions with Creamy and BB Index

VARIABLES	(1) All	(2) 1st Generation	(3) 2nd Generation
Others2012	-0.00257	-0.00260	0.0315***
	(0.00726)	(0.00818)	(0.00788)
OBC2012	0.000926	-0.00213	0.0225***
	(0.00591)	(0.00816)	(0.00722)
SC2012	0.0222**	0.0187*	0.0334**
	(0.0102)	(0.00977)	(0.0151)
ST2012	0.0180	0.00516	0.0328
	(0.0149)	(0.0151)	(0.0203)
Observations	42,185	29,110	6,267

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A.3 Standard Errors

Table A.3.1: Coefficients and P-values for Public vs Otherwise with Score Bootstrapping

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
OBC	-0.0316	-0.0443	-0.0161	-0.0369	0.0606	-0.00882
	(0.492)	(0.347)	(0.787)	(0.533)	(0.721)	(0.956)
	[0.5090]	[0.3720]	[0.8005]	[0.5495]	[0.7060]	[0.2545]
SC	0.312***	0.293***	0.395***	0.381***	0.364	0.277
	(0.00148)	(0.00415)	(3.38e-05)	(0.000111)	(0.117)	(0.241)
	[0.0035]	[0.0070]	[0.0010]	[0.0010]	[0.1270]	[0.8365]
ST	0.248**	0.240*	0.319**	0.296**	-0.733	-0.728
	(0.0418)	(0.0652)	(0.0164)	(0.0351)	(0.363)	(0.380)
	[0.0975]	[0.1330]	[0.0615]	[0.1015]	[0.2800]	[0.9580]
2012	-0.374***	-0.443***	-0.374***	-0.442***	0.0889	0.0203
	(3.63e-06)	(1.57e-08)	(2.56e-05)	(6.17e-07)	(0.577)	(0.907)
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.5755]	[0.0000]
OBC2012	-0.00123	0.0384	-0.0545	-0.000945	-0.127	-0.156
	(0.984)	(0.559)	(0.536)	(0.992)	(0.480)	(0.422)
	[0.9815]	[0.5575]	[0.5525]	[0.9905]	[0.5100]	[0.0720]
SC2012	0.102	0.163**	0.0788	0.140*	-0.164	-0.204
	(0.221)	(0.0374)	(0.323)	(0.0577)	(0.596)	(0.537)
	[0.2485]	[0.0650]	[0.3270]	[0.0765]	[0.6095]	[0.0720]
ST2012	0.179	0.178	0.112	0.116	0.705	0.606
	(0.144)	(0.129)	(0.480)	(0.479)	(0.299)	(0.371)
	[0.1480]	[0.1290]	[0.4940]	[0.4905]	[0.2005]	[0.1175]
EPL Included	No	Yes	No	Yes	No	Yes
Observations	101,374	96,253	67,590	64,456	15,051	14,166

P-Values for cluster robust in () and score bootstrapping in [ ]
State dummies included in regressions for columns (1), (3) and (5) and EPL for columns (2), (4) and (6)
All controls included in each model as previously
*** p<0.01, ** p<0.05, * p<0.1, referring to cluster bootstrapped p-values

Table A.3.2: Coefficients and P-values for Public vs Private Employment with Score Bootstrapping

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
OBC	-0.167***	-0.181***	-0.164***	-0.191***	0.0333	-0.0405
	(0.00100)	(0.000600)	(0.00668)	(0.00179)	(0.880)	(0.854)
	[0.0030]	[0.0020]	[0.0140]	[0.0045]	[0.8780]	[0.2000]
SC	0.109	0.0831	0.190*	0.163	0.219	0.105
	(0.305)	(0.446)	(0.0856)	(0.148)	(0.473)	(0.733)
	[0.2950]	[0.4455]	[0.0955]	[0.1560]	[0.5080]	[0.2255]
ST	-0.0143	-0.0318	0.0622	0.0308	-1.164	-1.185
	(0.906)	(0.803)	(0.669)	(0.839)	(0.118)	(0.118)
	[0.9080]	[0.8080]	[0.6780]	[0.8325]	[0.0710]	[0.2815]
2012	-0.581***	-0.629***	-0.526***	-0.586***	-0.477**	-0.463**
	(0.0000)	(0.0000)	(4.79e-10)	(0.0000)	(0.0118)	(0.0248)
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0200]	[0.0000]
OBC*2012	0.0907	0.110	0.00793	0.0466	-0.00487	-0.0909
	(0.146)	(0.130)	(0.931)	(0.646)	(0.985)	(0.738)
	[0.1335]	[0.1280]	[0.9360]	[0.6340]	[0.9865]	[0.0600]
SC*2012	0.145	0.205**	0.0859	0.155*	0.0164	-0.0325
	(0.100)	(0.0152)	(0.349)	(0.0694)	(0.963)	(0.929)
	[0.1370]	[0.0415]	[0.3445]	[0.0820]	[0.9685]	[0.0450]
ST*2012	0.287**	0.279**	0.176	0.184	1.243*	1.059
	(0.0344)	(0.0495)	(0.312)	(0.322)	(0.0762)	(0.134)
	[0.0415]	[0.0560]	[0.3410]	[0.3320]	[0.0565]	[0.0795]
EPL Included	No	Yes	No	Yes	No	Yes
Observations	62,808	60,431	41,311	39,899	8,733	8,386

P-Values for cluster robust in () and score bootstrapping in [ ]
State dummies included in regressions for columns (1), (3) and (5) and EPL for columns (2), (4) and (6)
All controls included in each model as previously
*** p<0.01, ** p<0.05, * p<0.1, referring to cluster bootstrapped p-values

Table A.3.3: Coefficients and P-values for Public vs Unemployment with Score Bootstrapping

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All	All	1st Generation	1st Generation	2nd Generation	2nd Generation
OBC	0.0909	0.0819	0.141	0.130	0.0551	-0.0100
	(0.118)	(0.172)	(0.165)	(0.212)	(0.741)	(0.949)
	[0.1325]	[0.1830]	[0.1865]	[0.2275]	[0.7300]	[0.5115]
SC	0.694***	0.690***	0.882***	0.889***	0.553**	0.497**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0135)	(0.0342)
	[0.0000]	[0.0005]	[0.0000]	[0.0005]	[0.0310]	[0.0850]
ST	0.749***	0.807***	1.045***	1.088***	-0.410	-0.390
	(0.000840)	(0.000958)	(7.58e-08)	(5.17e-08)	(0.680)	(0.704)
	[0.0070]	[0.0070]	[0.0030]	[0.0020]	[0.6855]	[0.7390]
2012	-0.0357	-0.142	-0.0163	-0.121	0.651***	0.521***
	(0.744)	(0.153)	(0.902)	(0.349)	(0.000194)	(0.00170)
	[0.7325]	[0.1585]	[0.8950]	[0.3565]	[0.0080]	[0.5425]
OBC2012	0.0644	0.139	0.00998	0.110	-0.167	-0.143
	(0.467)	(0.113)	(0.944)	(0.441)	(0.385)	(0.477)
	[0.5060]	[0.1540]	[0.9555]	[0.4800]	[0.4095]	[0.0455]
SC2012	0.306**	0.380***	0.285**	0.371***	-0.226	-0.258
	(0.0190)	(0.00430)	(0.0166)	(0.00191)	(0.486)	(0.461)
	[0.0295]	[0.0155]	[0.0280]	[0.0085]	[0.5015]	[0.0615]
ST2012	0.226	0.250	0.0191	0.0223	0.408	0.503
	(0.218)	(0.184)	(0.925)	(0.917)	(0.606)	(0.521)
	[0.2735]	[0.2635]	[0.9310]	[0.9050]	[0.5835]	[0.1375]
EPL Included	No	Yes	No	Yes	No	Yes
Observations	45,580	42,209	31,519	29,373	6,726	6,142

P-Values for cluster robust in () and score bootstrapping in [ ]
State dummies included in regressions for columns (1), (3) and (5) and EPL for columns (2), (4) and (6)
All controls included in each model as previously
*** p<0.01, ** p<0.05, * p<0.1, referring to cluster bootstrapped p-values

Chapter 2

Affirmative Action Policies and Women's Employment

Abstract

Despite India's strong economic growth, female participation rates in employment have remained low. This chapter sets out to analyse the effect of women's reservation policy in public employment on increasing participation rates, where reservation policy reduces the structural/demand-side barriers that women face in employment. By using data from the National Sample Survey (NSS), the likelihood of women going into public employment from either the private sector, unemployed status or domestic duties status is assessed. By estimating separate logistic regressions, results show that more women are likely to move from the private sector or from domestic duties status into the public sector, while those with unemployed status show a decrease or low likelihood of movement into employment. A large likelihood is associated with the movement from the private to public sector and this calls into question whether it is having an impact on increasing Female Labour Participation Rates (FLPR). Reservation policy has since been extended to other states in India and policy-makers may wish to amend the current policy in order to more effectively target women out of the labour force and increase FLPR overall.

Keywords : Female Labour Participation Rates (FLPR), employment, supply-side barriers, demand-side barriers

2.1 Introduction

Womens reservation policy is a form of positive discrimination and is part of the wider class of affirmative action policies that India has implemented in order to increase Female Labour Participation Rates (FLPR), which have remained low despite strong economic growth in the last two decades. This chapter sets out to analyse the effect of this policy on the likelihood of women going into public employment in India, which reduces demand-side barriers to entry. Due to the ongoing debate on whether this policy is unconstitutional owing to its gender targeting properties, only a handful of states have implemented this policy. In particular, Gujarat, Karnataka and Maharashtra have implemented the policy over the period examined in this chapter.

The policy was expected to bridge the gap between female and male employment and lead to higher bargaining power for women within the household. Reservation policies allow the relaxation of some of the structural barriers to labour market entry for women in employment. Structural/Demand-side barriers refer to the difficulties and/or constraints faced by women in accessing public sector jobs. As women become more educated, the policy can help women to gain more white-collar jobs. However the availability of these for women is limited, due to a number of discriminatory factors. Women reservation policy tries to correct for this by guaranteeing employment for women in the broad Grade A-D graded public employment jobs. However, there are also cultural/supply-side aspects that can dominate, prevent women from going into employment and making the policy ineffective. For example, if the low participation

rates are due to the cultural norms of women giving up their jobs after marriage then reservation policy may be ineffective in attracting women into the workforce.

This study looks at the likelihood of women going into employment with the policy in place, controlling for any affects of caste reservation and for cultural aspects effecting participation rates using proxies such as land owned. As the policy doesn't tackle the cultural factors that result in low participation, it would be expected that any positive results from the estimation carried out would be an outcome of lifting the limitations structural barriers can cause.

As far as we are aware, this is the first study to analyse the effect of women's reservation policy in employment and adds to the current literature that focuses on the impact of affirmative action policies that target women. It is also one of the first studies to assess the impact of reservation policy by differentiating between public and other types of employment statuses. Reservation policy is targeted at groups of individuals that would otherwise have a lower chance of gaining or being in employment and so assessing which individual backgrounds the the policy is impacting is fundamental to policy implications.

The main results in this chapter show that women are more likely to go into public employment relative to domestic duties status or private employment status. In particular, women from a private sector background are over 35% more likely to go into public employment. This is much higher than those who are from a domestic

duties status, where just over 2% are more likely to go into public employment. These results suggest that women who are already in employment may use reservation policy to gain employment elsewhere, possibly to gain better opportunities. However, this implies that the policy isn't successfully targeting women who are outside the labour force and not contributing to increasing overall FLPR, an issue that should be addressed by policy makers. This is discussed further in the results section of this chapter.

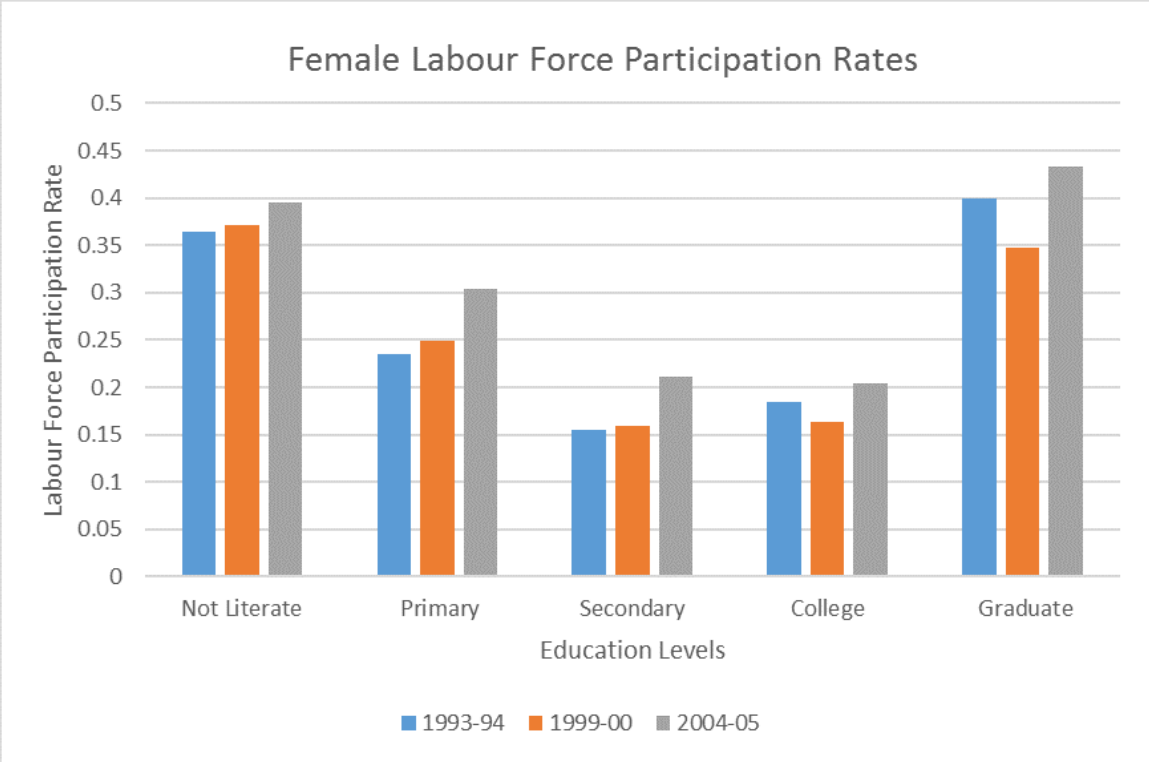
The rest of this study is as follows; Section 2.2 gives a brief background into female participation rates in India and reservation policy. Section 2.3 gives an overview of the literature on women's participation rate. Section 2.4 offers the methodology, data and estimation used to analyse the impact of the policy. Section 2.5 presents some descriptive statistics and the results from implementing the estimation method discussed in Section 2.4. Finally, Section 2.6 presents the results of the study and implications for future research and policies are discussed in the conclusion in Section 2.7.

2.2 Background

Women's participation rate in India has been consistently low, despite advancements in India's economy. Figure 2.1 shows the Female Labour Participation Rate (FLPR) by education levels in the three rounds of NSS data used in this study. Interestingly, it follows a U-shaped distribution as discussed by Goldin (1994) and Mammen and Paxson (2000). Initially participation rates are high when education levels are low, however, this starts to steadily decline as education levels increase. This decline continues until education reaches secondary level, as seen in Figure 2.1, where labour participation starts to increase again as income continues to rise, forming the U-shaped curve. However, the overall FLPR has remained low despite the expected trend with only 43% of those with a graduate degree in 2004-05 being in the labour force.

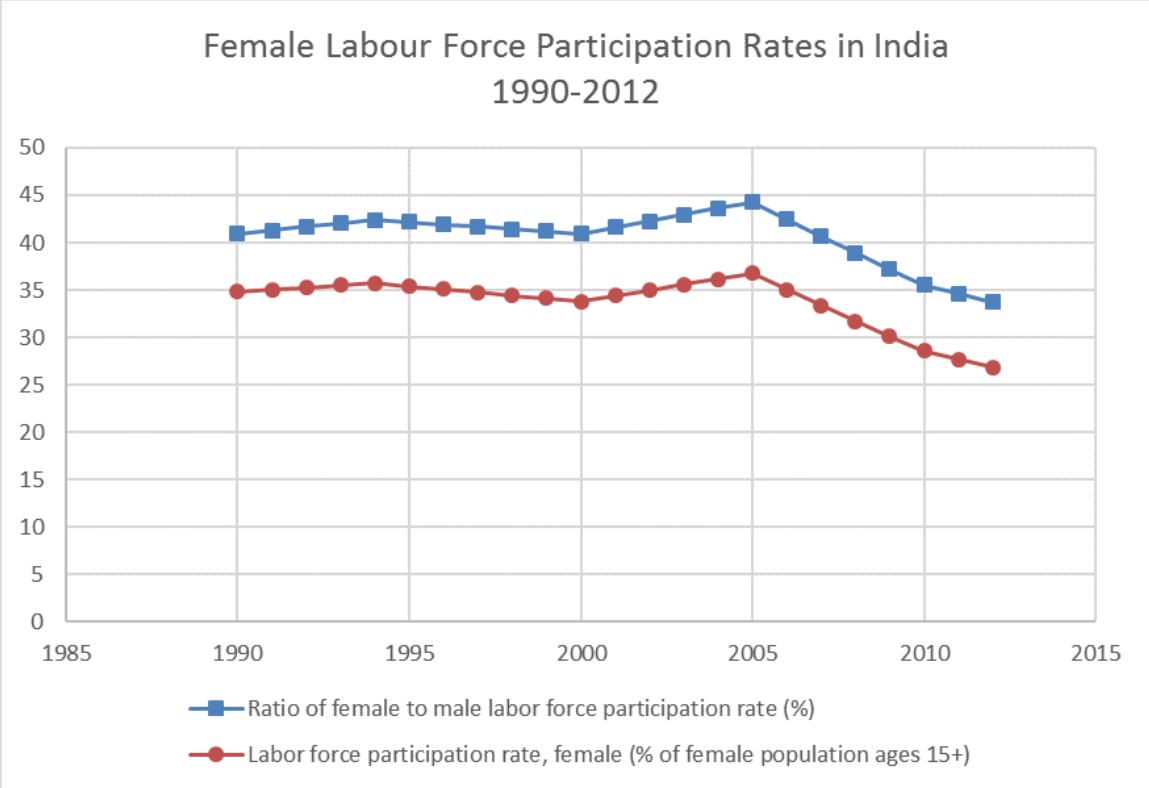
For comparison, Figure 2.2 presents the FLPR in Asia and India between 1990-2012. In India, the FLPR have remained around 35% between 1990 and 2005 but then dropped to approximately 25% in 2012. The rest of South Asia follows a similar trend and although East Asia and Pacific have an overall higher FLPR, there is also a downward trend when comparing 2012 with 1990. However, the problem remains that India and South Asia have a very low FLPR that is still decreasing.

Figure 2.1: Female Labour Force Participation Rates by Education Levels



Source: Various NSS Employment and Unemployment Rounds

Figure 2.2: Labour Force Participation Rates in Asia and India: 1990-2012



Source: World Development Indicators (Modeled by ILO)

In order to tackle the low labour force participation rates of women in India, reservation policy in employment was enforced in several states throughout India. Reservation policy for women has focused on electoral positions in the Panchayat Raj (village level), where the Women's Reservation Bill (1993) guarantees that at least 33% of seats be filled by a woman. However, unlike the Women's Reservation Bill 1993, this policy was deemed to be unconstitutional by the central government in India to be rolled out at a national level as it was considered to be gender biased. Nonetheless, some states chose to implement the policy anyway in a bid to reduce the structural barriers that prevent women going into employment. The policy only applies to public sector employment and any woman, regardless of caste, can apply.

Table 2.1 outlines the states that have implemented a women reservation policy up until 2006 [1]. As the data period looked at in this study is from 1993-2005, only the 3 states highlighted in bold are treated as the treatment group during the analysis. Assam, Tamil Nadu, Rajasthan and Andhra Pradesh are removed from the dataset as they implemented the policy outside of the data period used in this study [2] A basic two-way sample t-test was conducted to assess whether there were any significant differences in female employment rates between reserved and unreserved states both before and after the policy was implemented. The results suggested that there were

[1] Comprehensive research was conducted into evaluating which states had implemented the policy in the study's time frame. As state websites were not informative on past bills and laws past, information on women reservation policy in employment was found by manually searching through various search page results.

[2] Assam implemented the policy in 2005, however, it is unclear whether this was in force during the period of study. It was therefore removed on this basis as its status on reservation policy at the time of data collection by the National Sample Survey (NSS) team is unknown.

no significant differences between the two, even after the policy was implemented. However, reserved states had a higher female employment rate after the policy when compared with unreserved states. This is supplemented by the regression analysis, which looks at the impact of the policy after controlling for covariates such as marital status and wealth.

Table 2.1: List of States with Women Reservation Policy in effect up to 2006

State	Policy Implemented	Year	Given Quota at Time of Implementation
Assam	Yes	2005	30%
Gujarat	**Yes**	**1997**	**30%**
Karnataka	**Yes**	**1996**	**30%**
Maharashtra	**Yes**	**2001**	**30%**
Tamil Nadu	Yes	1989	30%
Rajasthan	Unclear	Unknown	N/A
Andhra Pradesh	Yes	1986	30%

NOTE: Information on women reservation policy from various state websites and articles are not easily accessible.

2.3 Literature Review

This is the first study of its kind to assess the impact of employment reservations for women in India. As a result, no past literature related to this particular policy is available on India. However, two types of literature are available; literature on employment reservations for targeted groups in the US and India and on the effect of women reservation policies in electoral positions in India. The literature on American affirmative action programs has been extensively discussed in the previous chapter, where both theoretical and empirical papers give mixed results as to the outcomes of employment reservations for minorities and caste groups in the US and India (Leonard (1984), Lundberg and Startz (1983), Lundberg (1991), Holzer and Neumark (1996), Prakash (2009), Borooah et al. (2007)). Here we discuss literature related to women reservation in India. In particular, political reservations where women reservation policies in electoral positions in India are enforced at a national level and require each state to have a third of all seats filled by women in the panchayat raj (village level).

Chattopadhyay and Duflo (2004) evaluated the effect this kind of reservation had on women friendly policies made by elected women in Rajasthan and West Bengal. The reservation policy meant that women in reserved constituencies had decision making power (as the village head) over the provision of public goods in their village. Using a primary dataset collected from villages in two states in India, their research found that elected women decided on a higher expenditure on women friendly public goods,

such as healthcare and access to drinking water, when compared with their male counterparts. Further to this, Beaman et al. (2009a) assessed whether having women as policy makers changes the attitudes of men towards women in a decision making role. They used a quasi natural experiment in the form of the randomly assigned women reservation quotas in political village level positions and their results suggested that, initially, men believed women to be inefficient. However, these stereotypes regarding women start to weaken as a result of the policy. Men attitudes changed as a result of experiencing women in power. These articles indicate that having reservations for women in powerful leadership roles does benefit them and the wider community. Nonetheless, Beaman et al. (2009a) also explain that there are issues relating to male dominance in the woman's household that can abuse this right given to women. This comes in the form of husbands using wives as the face of their own political campaign, where women abide by what dominant males in the family may want in terms of political regime.

Kudva (2003) discusses in length the effect of political reservations in Karnataka and shows that women who get elected tend to come from families that have a history in politics. In this case, women act as a front role figure for the dominant household male and their actions are dictated by him. This is particularly true in the case of upper caste women, who are both more likely to take up electoral seats and also more likely to be the front role figure for powerful men. Despite this, Kudva (2003) goes on to explain that financial corruption lessened when women were in power and they were generally more effective in implementing government programs dealing

with poverty. The issue of the presence of male dominance is an underlying problem that is similar to that of the cultural issue causing low women participation rates in employment. However, in the case of political reservation, the benefits across different studies (Chattopadhyay and Duflo (2004), Beaman et al. (2009a), Kudva (2003)) have shown overall improvements in perceptions of women's abilities. These articles provide strong evidence that the reduction in structural barriers and placing women in work could also in turn change cultural barriers when men see women working effectively.

There is also a plethora of literature on women's participation rates in the labour force in India. The determinants of women's participation rate are fundamental to understanding the low figures seen in India. In general, women's participation rate can be modeled as a U-shaped curve (Goldin (1994), Mammen and Paxson (2000)). Klasen and Pieters (2012) explain this behaviour in terms of a push or pull mechanism. At the start, women from poor households have to work in order to meet basic household expenditures; they are pushed into the workforce. As household income increases, there is less financial need for women in the household to work and labour participation rates decline. Generally, as household income starts to rise, the education levels of women start to increase as there is more disposable income available to educate them. As a result, high wages from professional and high skill jobs become more attractive, pulling women into the workforce and increasing participation rates. This is the normal case for most developing countries and can be seen for India in Figure 2.1. However the overall participation of women in

employment remains low.

Klasen and Pieters (2012) and Das et al. (2003) explain that the dynamics of Indian households dictate that women should stay at home and tend only to household duties. This is an underlying cultural issue and is not tackled directly by the policy, which could hinder the effectiveness of it. Status is very important to a lot of Indian societies in both rural and urban areas. Das et al. (2003) discuss and assess both the structural and cultural hypothesis behind why educated women do not work. It was found that 85% of women workers in non-agricultural work, work in the informal sector as a result of a severe lack of formal sector employment. They found that both do negatively effect the likelihood of a woman being in employment, however, structural issues have had the greater effect. In this study, the quota given solely to women lessens this structural issue. If our results indicate that reservation policy has no significant or negative effect, then this could be attributed to cultural issues outweighing the benefits of the policies. Das et al. (2003) also found that educated women generally marry men who have an equivalent or higher level of education and, thus, are less likely to work after marriage.

Overall, the literature suggests cultural and structural barriers to entry for women in India could be hindering the overall FLPR. However, policies that promote women into a position with authoritative power, whether that be political or empowerment through employment, could help women to lessen some of those barriers. The following sections discuss the methodology and present the results of our analysis to assess the

effectiveness of reservation policy.

2.4 Methodology

2.4.1 Data

The data used in this study is taken from the Employment and Unemployment rounds of the National Sample Survey (NSS) for the years 1993-94, 1999-00 and 2004-05 (50th, 55th and 61st rounds). Each round interviews both men and women in each household but only women are included in this study. Questions on individual characteristics and backgrounds make it possible to create a host of control variables in the estimation. For simplicity, the age was restricted to 18-50 year olds as this is the age group most likely to benefit from reservation. Women who also stated they were in full-time or part-time education were not included in the analysis. Due to the way the survey was undertaken in the 1993-94 round, only those who stated they had a regular salaried wage were asked whether they were in public or private employment. This was not the case with the following rounds. However, to keep consistency, this study only takes into account those who have a regular salaried wage.

As we are interested in whether the policy increases the likelihood of women participating in the labour force, it is important to define the alternative to public employment. These alternatives are the private sector, unemployment or in domestic duties/home related duties. The definition of unemployment used in the data are those who are either actively seeking work or are available to work but are yet to find employment. Those who fall outside of unemployment are considered to be those who are not in

the labour force; a majority of which come under the category of participating in domestic chores in the home. This is outlined the NSS guidlines as follows,

> ***"Persons who are neither 'working' and at the same time nor 'seeking or available for work' for various reasons during the reference period are considered to be 'out of labour force'. The persons under this category are students, those engaged in domestic duties, rentiers, pensioners, recipients of remittances, those living on alms, infirm or disabled persons, too young or too old persons, prostitutes, smugglers, etc. and casual labourers not working due to sickness" (National Sample Survey Organisation (NSSO) (2006))***

Using this information, a thorough analysis of the policy is assessed.

2.4.2 Identification

Due to the categorical nature of the independent variable, a multinomial type model was first considered for the estimation. The most commonly used model is the multinomial logistic regression, which is heavily reliant on the the Independence of Irrelevant Alternatives (IIA) assumption. This assumption was tested and it was shown to be violated when using this data. As a result, other models were considered, including the multinomial probit model and nested logit model. However, these require at least one variable that is "alternative-specific". This is a variable that varies between choices in the independent variable [3]. However, due to data limitations, this variable could not be obtained; only individual-specific variables are in the dataset. [4] As a result, four separate logistic regressions were estimated to determine whether women were more likely to be in public employment due to the reservation policy, where the dependent variable is binary and against the three different alternatives discussed earlier, as well as all three combined.

[3] For example, a variable such as commute type to work or wage would be an "alternative-specific" variable that would vary between unemployment, domestic duties, private and public employment.

[4] A wage variable was created as an alternative specific variable in order to use a nested logit or MNP model. It was created by using the average wage for each cluster in the dataset in each year for private and public employment separately. However, once created and the model estimated, no convergence was achieved and consequently results could not be obtained from this model

The following equation is estimated.

$$Logit(p(Public(k)=1)) = log\left(\frac{p(Public(k)=1)}{1-p(Public(k)=1)}\right) \tag{2.1}$$
$$= \alpha_s + \delta_t + \beta_{it}X_{it} + \gamma_{it}Reservation(l)_{ist} + \epsilon_{it}$$

where k=(0,1,2,3), depending on which of the four versions of the independent variable we are using as follows,

$$\text{Public0} = \begin{cases} 1, & \text{if in Public Employment} \\ 0, & \text{if Otherwise} \end{cases}$$

$$\text{Public1} = \begin{cases} 1, & \text{if in Public Employment} \\ 0, & \text{if in Private Employment} \end{cases}$$

$$\text{Public2} = \begin{cases} 1, & \text{if in Public Employment} \\ 0, & \text{if Unemployed} \end{cases}$$

$$\text{Public3} = \begin{cases} 1, & \text{if in Public Employment} \\ 0, & \text{if in Domestic/Home duties} \end{cases}$$

Our variable for women reservation policy also takes one of two different structures. This is because caste reservation was also enforced at the same time as women reservation policy and, for robustness, we need to ensure that the policy effect captured

is just for reservation policy. Reservation(l), where l=(1,2) , is as follows,

$$\text{Reservation1} = \begin{cases} 1, & \text{if individual "i" is in state "s", at time "t",} \\ & \text{who are in a treated state with reservation policy} \\ 0, & \text{if Otherwise} \end{cases}$$

$$\text{Reservation2} = \begin{cases} 1, & \text{if individual "i" is in state "s", at time "t",} \\ & \text{who are in a treated state with reservation policy} \\ & \text{and are in the "Others" caste category only} \\ 0, & \text{if Otherwise} \end{cases}$$

The "Others" caste category are not eligible for caste reservation so they would only be affected by women reservation policy. X_{it} contains all the control variables where X_{it}= (Age, AgeSq, Married, Urban, Religion, Education, Caste, Land Owned (in hectares), EPL) for individual "i" in year t. α_s are state fixed effects and δ_t are year fixed effects, where "s" represents states and "t" represents year. EPL is the OECD's Employment Protection Legislation (EPL) and is a measure of labour market policies/regulations in each state. As with the previous chapter, the state wise version, developed by Dougherty (2009), is the preferred measure of state labour reforms than the more well-known Besley and Burgess (2004) index due to the fact that it takes into account more then one labour policy. As the EPL increases, the more employee friendly the states is. It is available for 12 of the 16 major states included in the data. [5]

Information on household income would have been ideal to establish differences between wealthy and poor household. However, the amount of land owned by each household is the nearest variable available in the NSSO data sets and it is used as an approximation

[5]In order to control for political changes a variable was created that controls for whether there is a female chief minister in each round of data for each state. This was not included in the analysis as only Bihar had a female chief minister and is partly controlled through the state dummies used

of wealth (Gille (2013)). It is expected that as the amount of land owned by the household increases, women would be less likely to work in public employment due to the stigma effect. They may enter through general competition and not successfully gain a public sector job as they compete with the Others caste category. The Land variable aims to control for this possible effect, where an increase would be associated with a decrease in likelihood if the stigma effect holds true.

As with the previous chapter, clustering at the state level would yield more robust standard errors that take into account within-state correlation. However, as there are few clusters/states in this study, asymptotic properties may not hold when clustering at this level. As a result, there may be over rejection of the t-test from clustering at state level. These standard errors can be refined using score bootstrapping method, however, MacKinnon and Webb (2017) discussed that when there are few treatment and highly unbalanced clusters, this method can lead to under-rejection. As a result, heteroskedastic robust standard errors are used instead. This was considered to be the most appropriate method of obtaining standard errors for this study. State and year dummies are also included in all regressions, as well as, state specific time trends that control for time-variant shocks. Both with and without these state specific time trends are presented in the result tables.

It is also important to note that this is analysis uses repeated cross sectional data and thus the same female cannot be tracked over time. As a consequences, results presented in this chapter should be taken with some caution as other aspects that could change the likelihood of an individuals going into public employment cannot be tracked. For example, changes in an individual's marital status, change in household wealth, health etc). Although this is not ideal, relevant panel data are not currently

available to enable a study of the same females over time. However, attempts are made to control for the overall change in these different factors by adding explanatory variables. By controlling for different explanatory variables, the results presented here show the overall change in likelihood of females going into public employment [6]

[6]A variable that represented the time from implementation of the policy was also considered to be added to the model and interacted with states to isolate the effect of the policy. However, due to collinearity, this variable dropped out of the specification when running the regression analysis and so was not included in the final model

2.5 Descriptive Statistics

The descriptive statistics for the data are shown in Table 2.2. The average age in the data set is approximately 32 and only 27% identify themselves as being married, where a majority of those who are not married have never been married before. There are more rural households interviewed then urban, with only 36% of households classed as urban. The main religious group in the dataset are Hindus, who account for 80% of the population. Muslims are the biggest minority group at 13%. Looking at education, it is clear that almost 45% of women in the population have no education. This is followed by 23% who have secondary level education and 20% having a primary education. Only a small proportion of the population have College education or higher. In terms of caste, over 50% of the population are classed in the Others category (those not eligible for caste reservation), followed by OBC group with 23%. The average amount of land owned by households is approximately 357 hectares.

Figures 2.3, 2.4 and 2.5 presents the principal activity status of women in this study for 1993-94, 1998-99 and 2004-05, respectively. It can be seen that domestic duties status covers over 90% of the women included in the study in 1993-94, before the implementation of women reservation policy. This is a very large proportion of the population stating that domestic duties is their primary activity status. However, this starts to decrease in the subsequent years, dropping to just below 80% in 2004-05.

Figures 2.6, 2.7 and 2.8 breakdown the reasons for why women were still in domestic duties and provides an insight into the potential barriers women face in going into employment. There is no noticeable difference between 1993-94 and 2004-05. Social and religious constraints increase by just over 2% and, for those who cannot afford help, it increases by just under 1%. Generally, the lack of change between the different

years shows that women still face the same issues a decade later and could potentially undermine any positive effect from the reservation policy, especially with social and religious constraints having the highest percentage after the others category.

Table 2.2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	332,668	31.8552	9.380643	18	50
Married	290,714	.2695261	.4437144	0	1
Urban	332,668	.3586729	.4796117	0	1
Religion					
Muslim	295,903	.1278291	.3338999	0	1
Christian	295,903	.0217571	.1458898	0	1
Sikh	295,903	.0333724	.1796074	0	1
Others	295,903	.0287459	.1670918	0	1
Education					
Primary o..	332,511	.1992566	.3994419	0	1
Secondary..	332,511	.2275955	.4192807	0	1
College o..	332,511	.0605514	.2385059	0	1
Graduate	332,511	.0624761	.2420187	0	1
Caste					
SC	295,870	.1625342	.3689408	0	1
ST	295,870	.0836516	.2768651	0	1
OBC	295,870	.2288742	.4201088	0	1
Land	272,774	357.0597	7661.391	0	3190041
EPLIn	296,725	.7794498	.160236	.5	1

Figure 2.3: Principal Activity Status: 1993-94

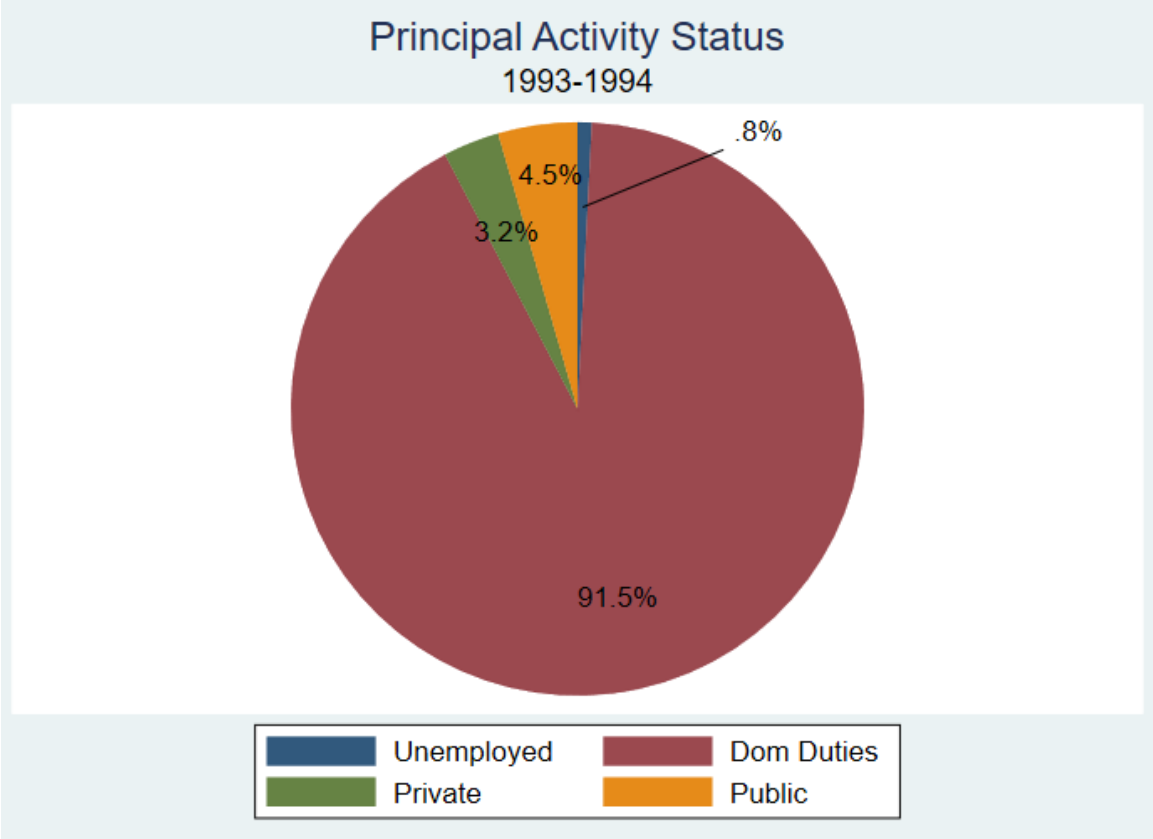
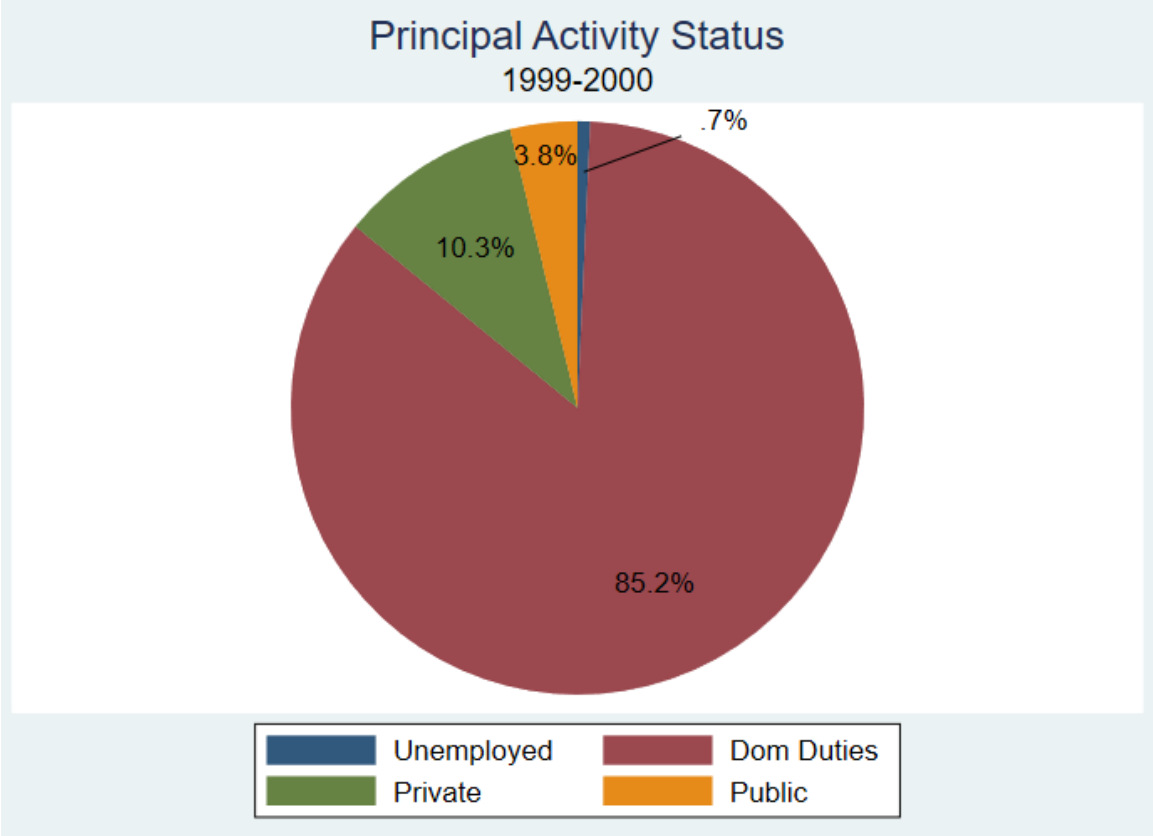


Figure 2.4: Principal Activity Status: 1999-00



Note: There were only three categories in this round of the survey, with Social and Religious Obligations part of the Others category

Figure 2.5: Principal Activity Status: 2004-05

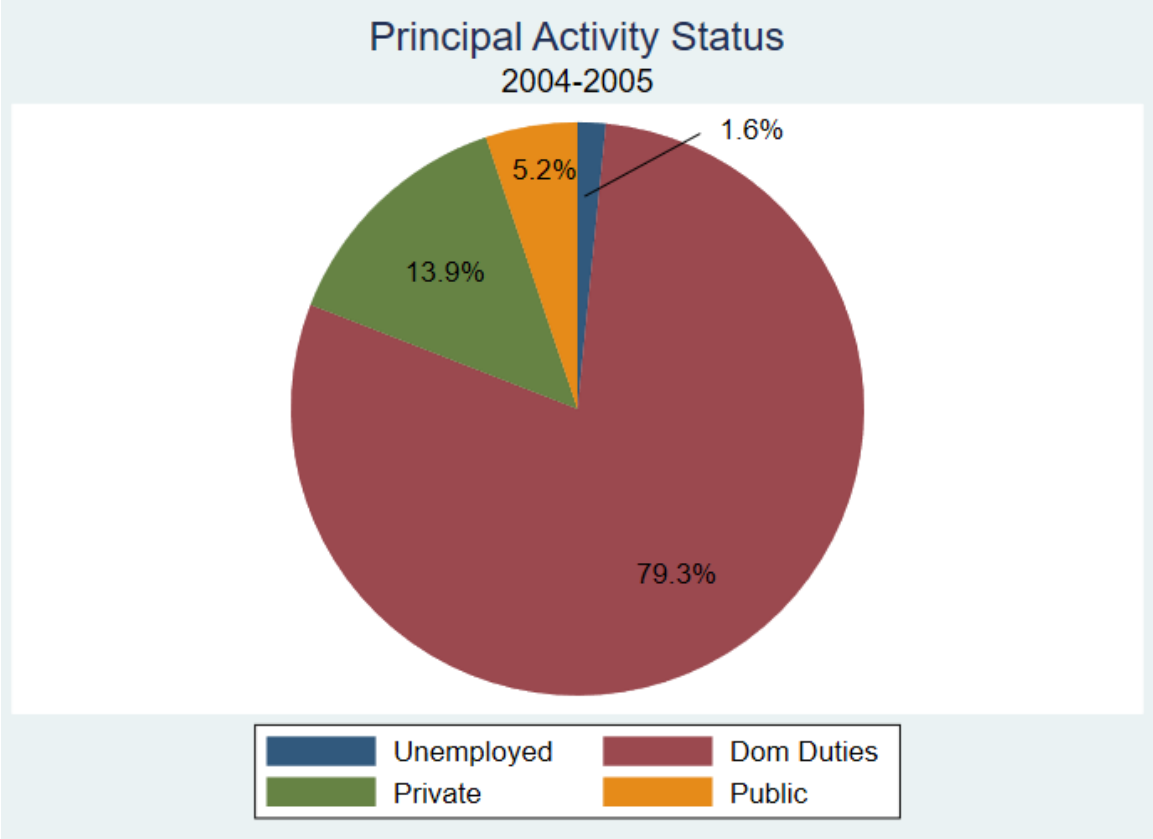


Figure 2.6: Reasons for Being in Domestic Duties: 1993-94

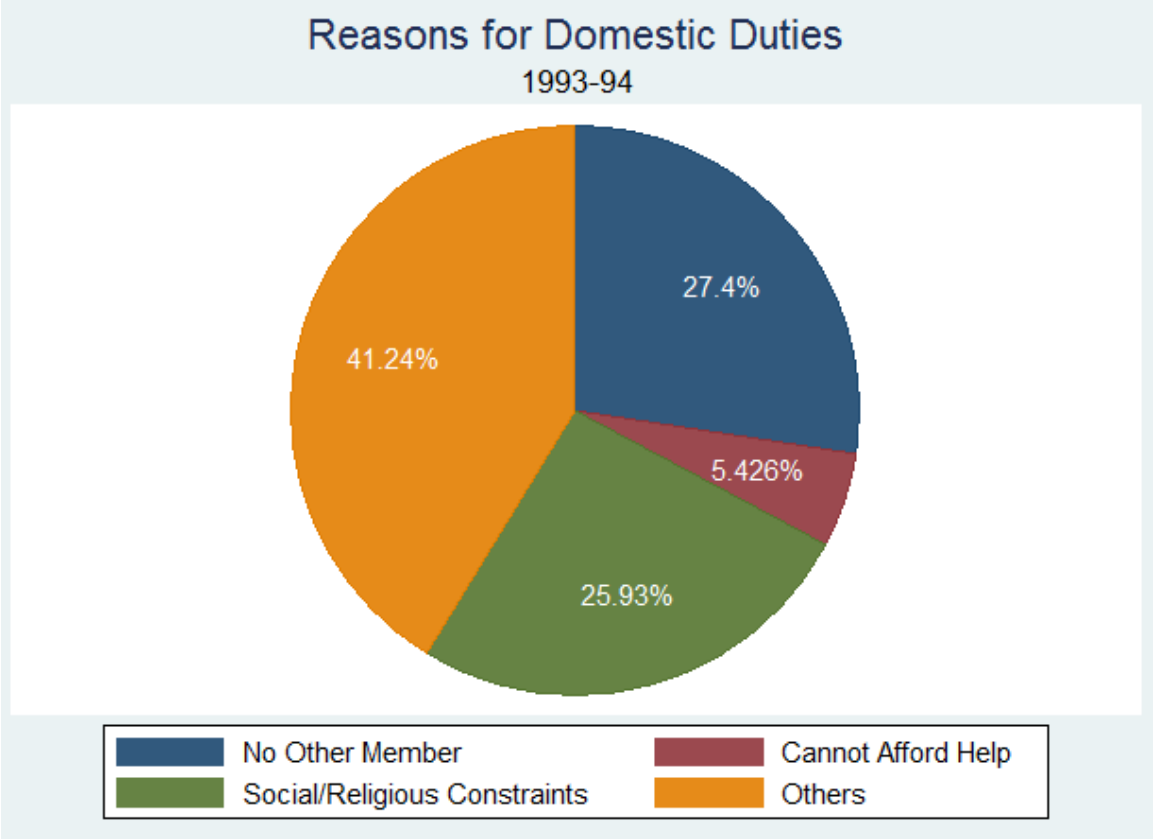
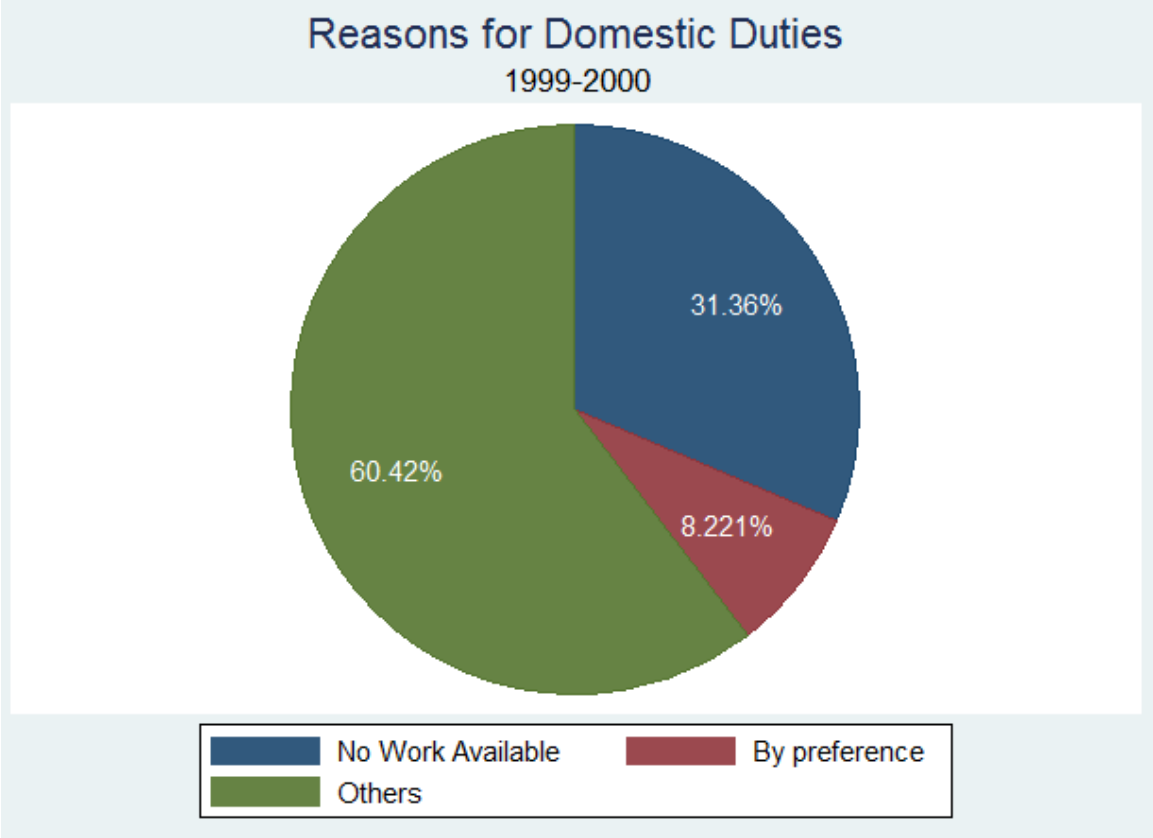
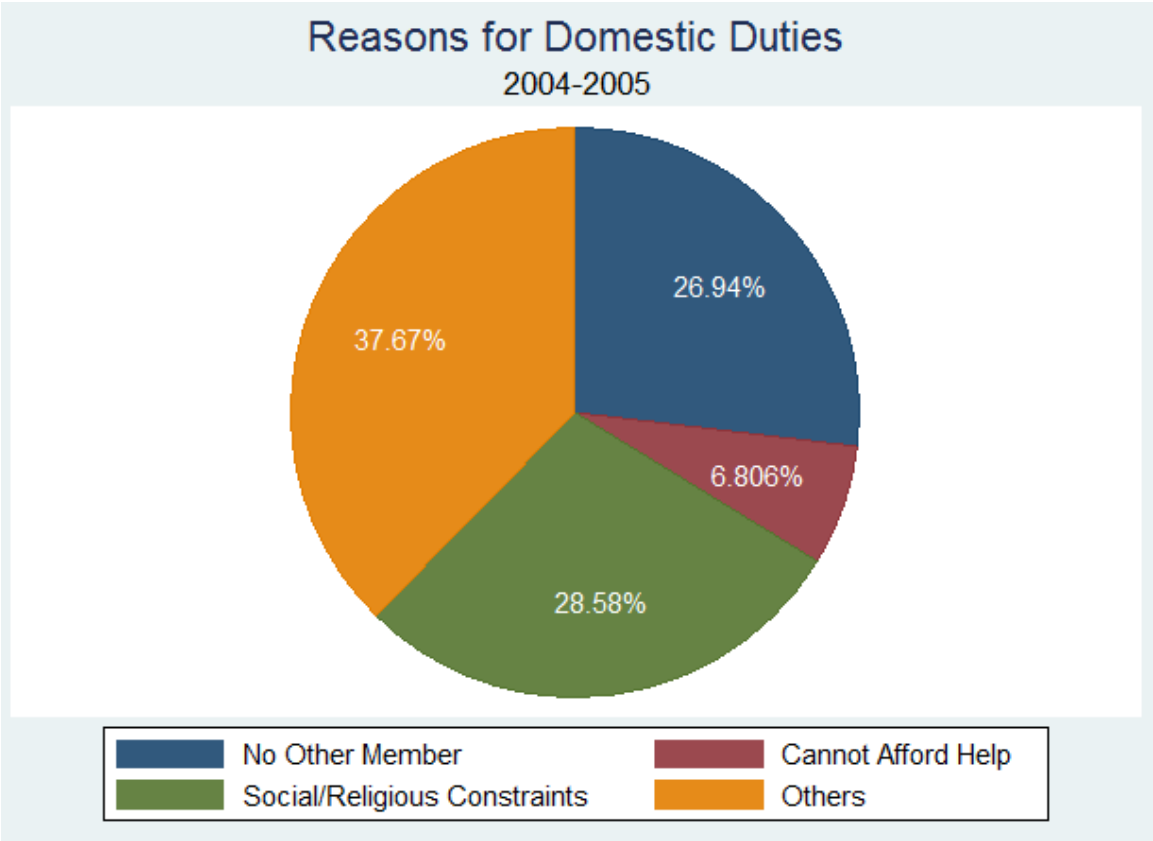


Figure 2.7: Reasons for Being in Domestic Duties: 1999-00



Note: There were only three categories in this round of the survey, unlike the other two rounds. Women were asked the reasons why their main principal activity was in domestic duties.

Figure 2.8: Reasons for Being in Domestic Duties: 2004-05



2.6 Results

All results and tables presented in the following sections show the average marginal effects. These are calculated in order to interpret the results of the logistic regressions more easily. As with the previous chapter, both the pseudo R squared and "Percent Correctly Predicted" (PCP) is also calculated for each specification and presented at the bottom of each table.

2.6.1 Public Employment vs All Other Employment Statuses

Tables 2.3 and 2.4 present the results when looking at public employment vs all other types of employment analysed in this study, with and without time trends respectively. Overall, the pseudo R squared is slightly higher when looking at Table 2.4 with time trends, indicating that unobserved varying heterogeneity across time and states should be accounted for and is the preferred estimation method. The significance and magnitudes of the marginal effects do not change when including time trends, however, there are changes to the main variables of interest as shown in Tables 2.5 and 2.6. Columns (1) and (2) show results for the whole sample while Columns (3) and (4) show results using the specified Reservation2 variable that just includes the Others caste category. Columns (5) and (6) show the results when restricting the whole sample to those in the Others caste category.

Firstly looking at the control variables, these do not greatly variable in each column in sign or magnitude. They also vary very little when comparing Table 2.3 and 2.4, showing that that state specific time trends do not affect the control variables. As such, the following discussion is a general overview of what these variables tell us the effect of certain traits on the likelihood of gaining government employment. Age has a significant effect on public employment, however the magnitudes are economically insignifcant at less than 0.01 % probability. Women who are married are 1-2% less

Table 2.3: Average Marginal Effects for Public vs All Other Employment Statuses Estimation

VARIABLES	(1) Public0	(2) Public0	(3) Public0	(4) Public0	(5) Public0	(6) Public0
Age	0.00136***	0.00130***	0.00137***	0.00130***	0.00159***	0.00150***
	(3.19e-05)	(3.24e-05)	(3.19e-05)	(3.25e-05)	(4.69e-05)	(4.80e-05)
Marital	-0.0173***	-0.0166***	-0.0173***	-0.0166***	-0.0210***	-0.0203***
	(0.00148)	(0.00150)	(0.00148)	(0.00150)	(0.00188)	(0.00191)
Urban	-0.00276***	-0.00312***	-0.00272***	-0.00308***	-0.00410***	-0.00472***
	(0.000774)	(0.000788)	(0.000774)	(0.000789)	(0.00110)	(0.00114)
Land	-5.36e-07**	-5.67e-07**	-5.33e-07**	-5.71e-07**	-6.89e-07**	-7.54e-07**
	(2.28e-07)	(2.27e-07)	(2.34e-07)	(2.33e-07)	(3.03e-07)	(3.07e-07)
Religion (Base=Hindu)						
Muslim	-0.00533***	-0.00571***	-0.00536***	-0.00565***	-0.00408**	-0.00475**
	(0.00111)	(0.00113)	(0.00111)	(0.00113)	(0.00186)	(0.00205)
Christian	0.00204	0.00149	0.00199	0.00141	-0.00127	-0.00218
	(0.00175)	(0.00171)	(0.00175)	(0.00171)	(0.00231)	(0.00222)
Sikh	-0.00203	-0.00143	-0.00205	-0.00143	-0.000429	0.000445
	(0.00165)	(0.00168)	(0.00165)	(0.00168)	(0.00218)	(0.00220)
Other	-0.00576***	-0.00596***	-0.00574***	-0.00593***	-0.00963***	-0.0144***
	(0.00132)	(0.00150)	(0.00133)	(0.00150)	(0.00306)	(0.00386)
Education (Base=No Education)						
Primary	0.00246***	0.00251***	0.00244***	0.00249***	0.0173***	0.0115***
	(0.000419)	(0.000445)	(0.000418)	(0.000444)	(0.00360)	(0.00361)
Secondary	0.0266***	0.0231***	0.0265***	0.0230***	0.0577***	0.0499***
	(0.000994)	(0.00101)	(0.000993)	(0.00101)	(0.00312)	(0.00306)
College	0.0815***	0.0729***	0.0815***	0.0729***	0.0801***	0.0710***
	(0.00357)	(0.00371)	(0.00357)	(0.00370)	(0.00337)	(0.00335)
Graduate	0.157***	0.148***	0.158***	0.148***	0.0955***	0.0859***
	(0.00454)	(0.00465)	(0.00454)	(0.00464)	(0.00338)	(0.00334)
Caste (Base=Others)						
SC	0.0230***	0.0235***	0.0227***	0.0230***		
	(0.00166)	(0.00171)	(0.00166)	(0.00171)		
ST	0.0355***	0.0383***	0.0346***	0.0374***		
	(0.00291)	(0.00324)	(0.00293)	(0.00326)		
OBC	0.00371***	0.00337***	0.00321***	0.00282***		
	(0.000944)	(0.000935)	(0.000971)	(0.000964)		
EPL		-0.001000		-0.000925		-0.00198
		(0.000957)		(0.000956)		(0.00143)
Pseudo R2	0.2774	0.2624	0.2771	0.2622	0.2848	0.2746
PCP	98.08%	98.21%	98.08%	98.21%	97.82%	97.98%
Observations	178,587	164,925	178,587	164,925	99,086	90,853

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.4: Average Marginal Effects for Public vs All Other Employment Statuses Estimation including Time Trends

VARIABLES	(1) Public0	(2) Public0	(3) Public0	(4) Public0	(5) Public0	(6) Public0
Age	0.00137***	0.00130***	0.00137***	0.00130***	0.00159***	0.00150***
	(3.18e-05)	(3.24e-05)	(3.19e-05)	(3.24e-05)	(4.69e-05)	(4.78e-05)
Marital	-0.0173***	-0.0168***	-0.0173***	-0.0168***	-0.0213***	-0.0207***
	(0.00149)	(0.00151)	(0.00149)	(0.00151)	(0.00188)	(0.00192)
Urban	-0.00268***	-0.00309***	-0.00266***	-0.00307***	-0.00384***	-0.00459***
	(0.000778)	(0.000792)	(0.000776)	(0.000790)	(0.00111)	(0.00115)
Land	-6.78e-07***	-6.86e-07***	-6.79e-07***	-6.92e-07***	-6.94e-07**	-7.10e-07**
	(2.42e-07)	(2.40e-07)	(2.46e-07)	(2.46e-07)	(3.11e-07)	(3.06e-07)
Religion (Base=Hindu)						
Mulslim	-0.00537***	-0.00580***	-0.00519***	-0.00563***	-0.00403**	-0.00502**
	(0.00111)	(0.00112)	(0.00112)	(0.00113)	(0.00187)	(0.00204)
Christian	0.00170	0.00139	0.00160	0.00123	-0.00136	-0.00210
	(0.00172)	(0.00170)	(0.00172)	(0.00169)	(0.00233)	(0.00225)
Sikh	-0.00178	-0.00121	-0.00172	-0.00114	-0.000310	0.000510
	(0.00167)	(0.00169)	(0.00167)	(0.00170)	(0.00218)	(0.00221)
Other	-0.00585***	-0.00619***	-0.00594***	-0.00642***	-0.0108***	-0.0139***
	(0.00131)	(0.00148)	(0.00130)	(0.00146)	(0.00322)	(0.00385)
Education (Base=No Education)						
Primary	0.00250***	0.00248***	0.00247***	0.00243***	0.0175***	0.0117***
	(0.000421)	(0.000444)	(0.000420)	(0.000443)	(0.00361)	(0.00362)
Secondary	0.0267***	0.0230***	0.0264***	0.0228***	0.0580***	0.0502***
	(0.000999)	(0.00101)	(0.000993)	(0.00100)	(0.00314)	(0.00309)
College	0.0817***	0.0733***	0.0813***	0.0730***	0.0803***	0.0712***
	(0.00357)	(0.00371)	(0.00355)	(0.00370)	(0.00339)	(0.00336)
Graduate	0.159***	0.149***	0.158***	0.149***	0.0957***	0.0862***
	(0.00458)	(0.00471)	(0.00457)	(0.00470)	(0.00341)	(0.00335)
Caste (Base=Others)						
SC	0.0231***	0.0234***	0.0212***	0.0216***		
	(0.00166)	(0.00170)	(0.00166)	(0.00171)		
ST	0.0364***	0.0383***	0.0336***	0.0353***		
	(0.00296)	(0.00323)	(0.00292)	(0.00321)		
OBC	0.00403***	0.00384***	0.00217**	0.00214**		
	(0.000964)	(0.000962)	(0.00100)	(0.00100)		
EPL		0.00199		0.00199		0.000875
		(0.00141)		(0.00141)		(0.00190)
Pseudo R2	0.2813	0.2652	0.2819	0.2658	0.2891	0.2775
PCP	98.09%	98.22%	98.09%	98.22%	97.83%	97.99%
Observations	178,587	164,925	178,587	164,925	99,067	90,853

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

likely to be in public employment relative to other employment types. Residing in urban areas has no significant impact and, although amount of land owned has a positive impact, the magnitude is low. Relative to Hindus, Muslims have a negative significant but low magnitude effect on going into public employment and nearly all the education levels, relative to having no education, are more likely to go into public employment then other employment statuses. The magnitude of this increases as the level of education increases, where those with graduate level education are over 8% more likely to be in public employment. All caste groups, relative to the Others caste group, are more likely to be in public employment, most likely due to their eligibility for caste reservation.

The EPL index changes when taking into account time trends. This is a variable that indicates how pro-worker friendly a state is through labour reforms and so an increase in EPL is associated with a more pro-worker friendly state. The average marginal effect of the EPL index is positive and significant in Table 2.3. However, when taking into account state specific time trends, Table 2.4 shows that this changes to a negative and significant effect. Nonetheless, the magnitude of all the estimations are economically insignificant, suggesting that elements that change within each state and over time have an important role on the likelihood of going into public employment then labour reforms alone.

Table 2.5 and 2.6 show the main variables of interest, Reservation1 and Reservation2, with and without time trends, respectively. In Table 2.5, Estimations (1) uses the entire sample and shows that everyone who is eligible for women reservation are more likely to be in public employment. The magnitude is dampened when taking into account labour regulations in each state as show in estimation (2). When taking into account unobserved time-varying heterogeneity, the magnitude increases to 1.7%

Table 2.5: Average Marginal Effects for Public vs All Other Employment Statuses Estimation

VARIABLES	(1) Public0	(2) Public0	(3) Public0	(4) Public0	(5) Public0	(6) Public0
Reservation	0.00521***	0.00377***				
	(0.00144)	(0.00138)				
Reservation2			-0.00250*	-0.00245*	0.00388*	0.00260
			(0.00150)	(0.00143)	(0.00207)	(0.00199)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.2774	0.2624	0.2771	0.2622	0.2848	0.2746
PCP	98.08%	98.21%	98.08%	98.21%	97.82%	97.98%
Observations	178,587	164,925	178,587	164,925	99,086	90,853

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

in Table 2.6 as shown in estimation (2). Estimations (3) and (4) isolate the main variable interest to just those in the Others caste category in order to capture the effect of women reservation policy alone. In Table 2.5, the average marginal effects for Reservation2 in columns (3) and (4) are significant but low in magnitude. This does not change when looking at Table 2.6.

Columns (5) and (6) uses a reduced sample set where just the Others caste category is included when undertaking the regression analysis. This is considered to be the most robust specification as it compares inviduals in the Others caste category in treated states with the same caste group individuals in non-treated states. In Table 2.5, with and without the EPL index, the effect is insignificant. However, in Table 2.6, when taking into account unobserved time varying heterogeneity, the effect becomes significant. Women from the Others caste category who are eligible for women reservation policy are more likely to be in public employment then those in the Others

Table 2.6: Average Marginal Effects for Public vs All Other Employment Statuses Estimation including Time Trends

VARIABLES	(1) Public0	(2) Public0	(3) Public0	(4) Public0	(5) Public0	(6) Public0
Reservation	0.0220***	0.0169***				
	(0.00689)	(0.00449)				
Reservation2			-0.00830***	-0.00697***	0.0329***	0.0260***
			(0.00180)	(0.00172)	(0.0124)	(0.00994)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.2813	0.2652	0.2819	0.2658	0.2891	0.2775
PCP	98.09%	98.22%	98.09%	98.22%	97.83%	97.99%
Observations	178,587	164,925	178,587	164,925	99,067	90,853

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

caste category who aren't eligible for women reservation. This effect is dampened when taking into account labour reforms in each state as shown estimation (6) in Table 2.6. The effect falls from 3.3% to 2.6%. This change in significance from Table 2.5 to 2.6 indicates that there are factors that vary by state and year that effect the likelihood of women going into public employment. This could be a variety of factors, such as possible changes in public sector structure that aren't well documented or known. By controlling for possible time varying heterogeneity, the fit of the model is better and considered to be the preferred specification.

2.6.2 Public vs Private Employment

We will now discuss the estimation results analysing public employment relative to private employment. Tables 2.7 and 2.8 show the control variables with and without trends, respectively. Both tables show very little difference in significance, magnitude and sign of the coefficients when compared with results in Section 6.1. The only notable difference is the EPL index, which now has a high average marginal effect of over 10 % in Table 2.8. Labour reforms appear to be more important when looking at private vs public employment, where an increase in EPL leads to an increase in likelihood of being in government employment. This could possibly be due to the public sector enforcing government policies more strictly and so, the more pro-worker the public sector is, the more likely women would choose to work there. The main variables of interest are discussed and presented in Tables 2.9 and 2.10, with and without time trends included, respectively, in the proceeding section.

Table 2.9 shows that none of the marginal effects for both Reservation1 and Reservation2 are significant and the coefficients are very small. However, when adding in time trends to account for unobserved time varying heterogeneity, this changes some what. In column (1) of Table 2.9, women are 5.7% less likely to be in public employment. Nonetheless, once accounting for differences in labour reforms in different states, Column (2) shows that this changes to a very high likelihood of 31.2% that women will be more likely to be in public employment. Although this is an indication of the policy working, this Reservation1 variable does not separate out those who are also eligible for caste reservation also and so the less bias estimate of the policy impact is shown through columns (3) - (6), where the variables Reservation2 only includes the Others caste group.

Table 2.7: Average Marginal Effects for Public vs Private Employment Statuses Estimation

VARIABLES	(1) Public	(2) Public	(3) Public	(4) Public	(5) Public	(6) Public
Age	0.00815***	0.00811***	0.00817***	0.00813***	0.0108***	0.0108***
	(0.000384)	(0.000390)	(0.000383)	(0.000389)	(0.000643)	(0.000664)
Marital	0.0749***	0.0751***	0.0750***	0.0752***	0.0750***	0.0775***
	(0.0166)	(0.0175)	(0.0166)	(0.0174)	(0.0214)	(0.0227)
Urban	-0.0398***	-0.0383***	-0.0395***	-0.0380***	-0.0766***	-0.0809***
	(0.00733)	(0.00753)	(0.00732)	(0.00753)	(0.0123)	(0.0130)
Land	6.92e-06**	6.24e-06**	7.20e-06**	6.46e-06**	2.69e-06	2.22e-06
	(3.11e-06)	(3.13e-06)	(3.12e-06)	(3.13e-06)	(5.12e-06)	(5.17e-06)
Religion (Base=Hindu)						
Muslim	-0.0350***	-0.0485***	-0.0348***	-0.0480***	-0.0490***	-0.0782***
	(0.0124)	(0.0130)	(0.0124)	(0.0131)	(0.0189)	(0.0211)
Christian	-0.0364**	-0.0419***	-0.0372***	-0.0427***	-0.0668***	-0.0722***
	(0.0144)	(0.0145)	(0.0144)	(0.0145)	(0.0227)	(0.0232)
Sikh	0.0234	0.0246	0.0228	0.0241	0.0524	0.0579*
	(0.0256)	(0.0261)	(0.0255)	(0.0260)	(0.0339)	(0.0347)
Other	-0.0597***	-0.0619***	-0.0598***	-0.0618***	-0.114***	-0.148***
	(0.0163)	(0.0186)	(0.0163)	(0.0186)	(0.0327)	(0.0395)
Education (Base=No Education)						
Primary	0.0633***	0.0586***	0.0630***	0.0584***	0.136***	0.109***
	(0.00808)	(0.00787)	(0.00807)	(0.00787)	(0.0303)	(0.0318)
Secondary	0.332***	0.311***	0.332***	0.311***	0.433***	0.411***
	(0.00999)	(0.0103)	(0.00998)	(0.0103)	(0.0241)	(0.0245)
College	0.515***	0.501***	0.516***	0.502***	0.537***	0.518***
	(0.0170)	(0.0182)	(0.0169)	(0.0182)	(0.0254)	(0.0259)
Graduate	0.572***	0.568***	0.572***	0.568***	0.571***	0.559***
	(0.0121)	(0.0126)	(0.0121)	(0.0126)	(0.0233)	(0.0235)
Caste (Base=Others)						
SC	0.104***	0.106***	0.103***	0.106***		
	(0.0104)	(0.0106)	(0.0108)	(0.0110)		
ST	0.126***	0.132***	0.124***	0.131***		
	(0.0140)	(0.0150)	(0.0145)	(0.0156)		
OBC	-0.00805	-0.00607	-0.00981	-0.00722		
	(0.00823)	(0.00831)	(0.00891)	(0.00905)		
EPL		0.0114		0.0116		0.0333*
		(0.0102)		(0.0102)		(0.0195)
Pseudo R2	0.3506	0.3303	0.3505	0.3302	0.3218	0.3051
PCP	82.54%	82.63%	82.60%	82.69%	77.13%	76.76%
Observations	12,336	11,528	12,336	11,528	5,602	5,154

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.8: Average Marginal Effects for Public vs Private Employment Status Estimation including Time Trends

VARIABLES	(1) Public	(2) Public	(3) Public	(4) Public	(5) Public	(6) Public
Age	0.00803***	0.00801***	0.00803***	0.00802***	0.0106***	0.0107***
	(0.000381)	(0.000389)	(0.000381)	(0.000389)	(0.000633)	(0.000657)
Marital	0.0763***	0.0754***	0.0766***	0.0757***	0.0755***	0.0745***
	(0.0165)	(0.0172)	(0.0166)	(0.0173)	(0.0214)	(0.0226)
Urban	-0.0418***	-0.0418***	-0.0416***	-0.0416***	-0.0790***	-0.0829***
	(0.00733)	(0.00754)	(0.00733)	(0.00754)	(0.0123)	(0.0129)
Land	7.87e-06**	7.35e-06**	8.15e-06***	7.59e-06**	5.35e-06	4.61e-06
	(3.12e-06)	(3.13e-06)	(3.13e-06)	(3.14e-06)	(5.04e-06)	(5.07e-06)
Religion (Base=Hindu)						
Muslim	-0.0407***	-0.0513***	-0.0400***	-0.0506***	-0.0621***	-0.0853***
	(0.0126)	(0.0130)	(0.0126)	(0.0130)	(0.0194)	(0.0211)
Christian	-0.0382***	-0.0438***	-0.0389***	-0.0446***	-0.0681***	-0.0721***
	(0.0144)	(0.0146)	(0.0144)	(0.0145)	(0.0228)	(0.0233)
Sikh	0.0213	0.0234	0.0216	0.0238	0.0496	0.0569
	(0.0253)	(0.0260)	(0.0254)	(0.0261)	(0.0339)	(0.0348)
Other	-0.0644***	-0.0623***	-0.0649***	-0.0634***	-0.123***	-0.133***
	(0.0160)	(0.0183)	(0.0160)	(0.0183)	(0.0352)	(0.0389)
Education (Base=No Education)						
Primary	0.0628***	0.0585***	0.0627***	0.0584***	0.132***	0.106***
	(0.00801)	(0.00785)	(0.00802)	(0.00786)	(0.0311)	(0.0321)
Secondary	0.325***	0.303***	0.324***	0.303***	0.425***	0.403***
	(0.00999)	(0.0103)	(0.01000)	(0.0103)	(0.0249)	(0.0250)
College	0.508***	0.492***	0.508***	0.492***	0.529***	0.509***
	(0.0170)	(0.0183)	(0.0170)	(0.0183)	(0.0261)	(0.0264)
Graduate	0.565***	0.561***	0.565***	0.561***	0.562***	0.552***
	(0.0122)	(0.0128)	(0.0122)	(0.0128)	(0.0239)	(0.0239)
Caste (Base=Others)						
SC	0.103***	0.104***	0.0975***	0.0987***		
	(0.0103)	(0.0106)	(0.0109)	(0.0112)		
ST	0.130***	0.131***	0.124***	0.124***		
	(0.0139)	(0.0148)	(0.0147)	(0.0158)		
OBC	-0.00249	-0.00306	-0.00883	-0.00916		
	(0.00823)	(0.00835)	(0.00921)	(0.00941)		
EPL		0.103***		0.103***		0.101***
		(0.0281)		(0.0281)		(0.0367)
Pseudo R2	0.3625	0.3396	0.3627	0.3397	0.3351	0.3147
PCP	83.11%	83.15%	83.03%	83.08%	78.31%	77.63%
Observations	12,336	11,528	12,336	11,528	5,598	5,154

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.10 is the preferred specification and Columns (3) and (4) show a negative but insignificant effect of the policy when using the full sample with just the Others caste category included in the Reservation2 variable. Columns (5) and (6) show the results when restricting the data to just comparing those in the Others caste group eligible for the policy against those in the Others caste group that aren't eligible. Column (5) shows a 9.2% lower likelihood of women being in public employment versus private employment. However, when accounting for the EPL index, Column (6) changes to a positive and significant value of 35.9%. This is a large difference when adding in a measure of labour reforms in each state and also occurs when looking at Column (1) and (3) of Table 2.10. This suggests that the addition of the EPL variable controls for policy measures that effect public and private employment and Columns (1) and (3) could have been capturing this effect before the EPL was included in Columns (2) and (4). Therefore, the results that include the EPL measure are preferred as it aids to isolate the effect of reservation policy.

Columns (5) and (6), by restricting the data to just those in the Others caste, give a better idea of how women reservation policy is affecting the likelihood of women being in public employment as it removes potential overlap of caste reservation policy. And so it can be concluded that women from the Others caste group are more likely to be in public employment then private if they are eligible for women reservation policy.

Table 2.9: Average Marginal Effects of Reservation Variable for Public vs Private Employment Statuses Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Public1	Public1	Public1	Public1	Public1	Public1
Reservation	0.0202	0.0187				
	(0.0149)	(0.0149)				
Reservation2			-0.00815	-0.00533	-0.00852	-0.00613
			(0.0141)	(0.0142)	(0.0229)	(0.0234)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.3506	0.3303	0.3505	0.3302	0.3218	0.3051
PCP	82.54%	82.63%	82.60%	82.69%	77.13%	76.76%
Observations	12,336	11,528	12,336	11,528	5,602	5,154

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.10: Average Marginal Effects for Public vs Private Employment Status Estimation including Time Trends

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Public1	Public1	Public1	Public1	Public1	Public1
Reservation	-0.0574	0.312***				
	(0.104)	(0.0627)				
Reservation2			-0.0248	-0.0228	-0.0924	0.359***
			(0.0161)	(0.0162)	(0.149)	(0.116)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.3625	0.3396	0.3627	0.3397	0.3351	0.3147
PCP	83.11%	83.15%	83.03%	83.08%	78.31%	77.63%
Observations	12,336	11,528	12,336	11,528	5,598	5,154

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

2.6.3 Public Employment vs Unemployment

Tables 2.11 and 2.12 present the marginal effects for the control variables in the Public2 variable (Public Employment vs Unemployment) regression analysis, with and without time trends, respectively. These are very similar to the marginal effects found for the regression analysis in the previous subsections and thus, only the main variables are interest are discussed. It should also be noted that the sample size of those classed as unemployed was fairly low when compared to the other employment types. Results presented should be taken with this caveat in mind. Nonetheless, the impact of reservation policy is still assessed to give an indication of whether the policy is helping individuals out of unemployment with the data available.

Tables 2.13 and 2.14 show the main variables of interest, Reservation1 and Reservation2, with and without time trends, respectively. In Table 2.13, columns (1) and (2), Reservation1 shows a positive and significant effect on women being in public employment. The magnitude decreases from 14% to 13% when taking into account differing state labour reforms with the EPL measure. Comparing this with Table 2.14, when adding in EPL and taking into account time trends, the Reservation1 variable changes to a negative and significant likelihood of 17.5%. This indicates that all women who are eligible for women reservation are less likely to go into public employment, an unexpected result. However, Reservation1 includes all caste groups that are eligible for women reservation and so there is the issue of the result showing some effect of caste reservation there.

Table 2.11: Average Marginal Effects for Public vs Unemployed Status Estimation

VARIABLES	(1) Public2	(2) Public2	(3) Public2	(4) Public2	(5) Public2	(6) Public2
Age	0.0258***	0.0258***	0.0260***	0.0261***	0.0275***	0.0274***
	(0.000526)	(0.000540)	(0.000526)	(0.000541)	(0.000673)	(0.000694)
Marital	0.138***	0.132***	0.145***	0.139***	0.121***	0.112***
	(0.0156)	(0.0174)	(0.0158)	(0.0177)	(0.0167)	(0.0184)
Urban	-0.00703	-0.00638	-0.00807	-0.00722	-0.00120	-0.000263
	(0.00958)	(0.0103)	(0.00963)	(0.0103)	(0.0125)	(0.0134)
Land	1.37e-05**	1.35e-05*	1.39e-05**	1.38e-05*	1.38e-05	1.16e-05
	(6.62e-06)	(7.14e-06)	(6.78e-06)	(7.33e-06)	(1.10e-05)	(1.08e-05)
Religion (Base=Hindu)						
Muslim	0.00247	-0.0126	-0.000264	-0.0147	0.0239	0.00101
	(0.0186)	(0.0202)	(0.0186)	(0.0202)	(0.0270)	(0.0298)
Christian	0.0114	0.000726	0.0114	0.000822	-0.0159	-0.0219
	(0.0162)	(0.0173)	(0.0164)	(0.0174)	(0.0211)	(0.0215)
Sikh	-0.00665	0.00479	-0.00779	0.00440	0.0278	0.0493
	(0.0306)	(0.0327)	(0.0310)	(0.0331)	(0.0357)	(0.0377)
Others	-0.0389	-0.0462	-0.0331	-0.0381	-0.0315	-0.0757
	(0.0339)	(0.0402)	(0.0334)	(0.0394)	(0.0419)	(0.0463)
Education (Base=No Education)						
Primary	0.0463*	0.0342	0.0464*	0.0343	0.0170	-0.0191
	(0.0271)	(0.0280)	(0.0272)	(0.0281)	(0.0450)	(0.0468)
Secondary	0.157***	0.156***	0.159***	0.158***	0.139***	0.130***
	(0.0229)	(0.0239)	(0.0231)	(0.0241)	(0.0379)	(0.0392)
College	0.172***	0.181***	0.173***	0.182***	0.170***	0.170***
	(0.0241)	(0.0254)	(0.0243)	(0.0256)	(0.0387)	(0.0402)
Graduate	0.184***	0.193***	0.187***	0.195***	0.159***	0.164***
	(0.0228)	(0.0237)	(0.0229)	(0.0239)	(0.0370)	(0.0382)
Caste (Base=Others)						
SC	0.0704***	0.0694***	0.0776***	0.0766***		
	(0.0148)	(0.0162)	(0.0151)	(0.0165)		
ST	0.160***	0.208***	0.164***	0.213***		
	(0.0222)	(0.0273)	(0.0222)	(0.0272)		
OBC	0.0140	0.00858	0.0220*	0.0161		
	(0.0129)	(0.0136)	(0.0130)	(0.0138)		
EPL		0.0635***		0.0648***		0.0447***
		(0.0147)		(0.0148)		(0.0167)
Pseudo R2	0.4916	0.4876	0.4887	0.4848	0.4789	0.4776
PCP	84.58%	84.74%	84.85%	84.94%	84.31%	84.32%
Observations	5,856	5,139	5,856	5,139	3,632	3,195

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.12: Average Marginal Effects for Public vs Unemployed Status Estimation including Time Trends

VARIABLES	(1) Public2	(2) Public2	(3) Public2	(4) Public2	(5) Public2	(6) Public2
Age	0.0251***	0.0254***	0.0251***	0.0253***	0.0273***	0.0272***
	(0.000524)	(0.000533)	(0.000524)	(0.000533)	(0.000668)	(0.000682)
Marital	0.123***	0.110***	0.123***	0.110***	0.114***	0.102***
	(0.0149)	(0.0162)	(0.0149)	(0.0162)	(0.0164)	(0.0177)
Urban	-0.00568	-0.00612	-0.00545	-0.00584	-0.00203	-0.00228
	(0.00944)	(0.0101)	(0.00945)	(0.0101)	(0.0126)	(0.0135)
Land	1.01e-05	9.71e-06	1.04e-05	9.98e-06	1.81e-05	1.63e-05
	(8.57e-06)	(9.39e-06)	(8.60e-06)	(9.42e-06)	(1.31e-05)	(1.29e-05)
Religion (Base=Hindu)						
Muslim	0.00134	-0.0138	0.00231	-0.0126	0.0178	-0.00698
	(0.0184)	(0.0196)	(0.0184)	(0.0195)	(0.0272)	(0.0287)
Christian	0.0108	0.00284	0.0104	0.00231	-0.0126	-0.0154
	(0.0157)	(0.0167)	(0.0157)	(0.0167)	(0.0214)	(0.0217)
Sikh	-0.00314	0.00986	-0.00292	0.0101	0.0250	0.0456
	(0.0310)	(0.0329)	(0.0310)	(0.0328)	(0.0357)	(0.0371)
Other	-0.0441	-0.0449	-0.0454	-0.0469	-0.0474	-0.0695
	(0.0325)	(0.0391)	(0.0327)	(0.0393)	(0.0405)	(0.0443)
Education (Base=No Education)						
Primary	0.0449*	0.0341	0.0447*	0.0338	0.00953	-0.0252
	(0.0268)	(0.0275)	(0.0268)	(0.0275)	(0.0460)	(0.0482)
Secondary	0.148***	0.144***	0.147***	0.143***	0.106***	0.0962**
	(0.0230)	(0.0239)	(0.0230)	(0.0239)	(0.0387)	(0.0402)
College	0.164***	0.172***	0.164***	0.171***	0.140***	0.139***
	(0.0242)	(0.0254)	(0.0242)	(0.0254)	(0.0396)	(0.0412)
Graduate	0.176***	0.185***	0.176***	0.184***	0.126***	0.131***
	(0.0229)	(0.0238)	(0.0229)	(0.0238)	(0.0378)	(0.0391)
Caste (Base=Others)						
SC	0.0709***	0.0689***	0.0689***	0.0664***		
	(0.0146)	(0.0158)	(0.0149)	(0.0161)		
ST	0.165***	0.196***	0.163***	0.194***		
	(0.0228)	(0.0286)	(0.0231)	(0.0289)		
OBC	0.0127	0.0114	0.00979	0.00810		
	(0.0134)	(0.0141)	(0.0138)	(0.0145)		
EPL		0.0710***		0.0708***		0.0679***
		(0.0177)		(0.0177)		(0.0200)
Pseudo R2	0.5188	0.5148	0.5189	0.5149	0.4981	0.4963
PCP	86.01%	85.97%	85.95%	85.87%	85.41%	85.49%
Observations	5,856	5,139	5,856	5,139	3,558	3,121

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Looking to Reservation2, a more accurate measure of the policy effect, Columns (3) and (4) in Table 2.13 show a positive and significant effect that reservation makes women in the Others caste group are more likely to be in public employment rather then unemployed. When adding the EPL measure, it decreases the likelihood by 0.7%, a minor difference. When taking into account time trends , Columns (3) and (4) in Table 2.14 shows a negative but insignificant effect. Finally, in order to make sure the counter-factual control group are as similar as possible to the treatment group, Columns (5) and (6) in both tables show the marginal effects when restricting the sample to those in the Others caste category only. In Table 2.13, Reservation2 has a positive and significant effect on women entering public employment. This decreases slightly by 0.4% when adding in the EPL measure. When accounting for time varying unobserved heterogeneity, Column (5) in Table 2.14 also shows a positive effect of 14.4% , however, when including the EPL measure, Column (6) shows that the magnitude is low and is still insignificant. This indicates that when accounting for all possible heterogeneity, and restricting the sample to just the Others caste group, reservation policy has little to no effect on the likelihood of women going into public employment, rather then being in unemployment.

Table 2.13: Average Marginal Effects for Public vs Unemployed Status Estimation

VARIABLES	(1) Public2	(2) Public2	(3) Public2	(4) Public2	(5) Public2	(6) Public2
Reservation	0.140***	0.130***				
	(0.0261)	(0.0266)				
Reservation2			0.0799***	0.0728**	0.126***	0.122***
			(0.0300)	(0.0305)	(0.0348)	(0.0352)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.4916	0.4876	0.4887	0.4848	0.4789	0.4776
PCP	84.58%	84.74%	84.85%	84.94%	84.31%	84.32%
Observations	5,856	5,139	5,856	5,139	3,632	3,195

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.14: Average Marginal Effects for Public vs Unemployed Status Estimation including Time Trends

VARIABLES	(1) Public2	(2) Public2	(3) Public2	(4) Public2	(5) Public2	(6) Public2
Reservation	0.188**	-0.175**				
	(0.0875)	(0.0752)				
Reservation2			-0.0295	-0.0315	0.144	0.000655
			(0.0383)	(0.0393)	(0.117)	(0.0662)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.5188	0.5148	0.5189	0.5149	0.4981	0.4963
PCP	86.01%	85.97%	85.95%	85.87%	85.41%	85.49%
Observations	5,856	5,139	5,856	5,139	3,558	3,121

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

2.6.4 Public Employment vs Domestic Duties

Domestic duties is the most common reported status in the NSS survey when individuals were asked about their work status. Even more so than choosing a status that put them as unemployed, most women were put down as attending to domestic duties. As a result, the final estimation here looks at whether women reservation policy aids in bringing women out of these domestic duties into the public workforce.

Table 2.15 and 2.16 show the control variables of interest for the Public3 estimation, without and with time trends, respectively. Results are mostly similar to the previous results presented in Section 2.6.1. A notable difference is found when looking at the Married variable is negative and significant in both tables at approximately 2-3%, indicating that married women are more likely to be in domestic duties then in public employment. This may represent the cultural norm of women not working after marriage, one of the supply-side issues of associated with low FLPR in India.

Table 2.15: Average Marginal Effects for Public vs Domestic Duties Status Estimation

VARIABLES	(1) Public3	(2) Public3	(3) Public3	(4) Public3	(5) Public3	(6) Public3
Age	0.00135***	0.00128***	0.00135***	0.00128***	0.00155***	0.00146***
	(3.22e-05)	(3.30e-05)	(3.22e-05)	(3.30e-05)	(4.75e-05)	(4.86e-05)
Marital	-0.0248***	-0.0232***	-0.0248***	-0.0232***	-0.0298***	-0.0282***
	(0.00151)	(0.00153)	(0.00151)	(0.00153)	(0.00194)	(0.00199)
Urban	-0.00292***	-0.00339***	-0.00290***	-0.00338***	-0.00431***	-0.00503***
	(0.000807)	(0.000824)	(0.000807)	(0.000824)	(0.00115)	(0.00119)
Land	-7.24e-07***	-7.53e-07***	-7.27e-07***	-7.60e-07***	-8.61e-07**	-9.52e-07***
	(2.61e-07)	(2.58e-07)	(2.65e-07)	(2.62e-07)	(3.38e-07)	(3.46e-07)
Religion (Base=Hindu)						
Muslim	-0.00569***	-0.00604***	-0.00571***	-0.00601***	-0.00489**	-0.00530**
	(0.00113)	(0.00115)	(0.00113)	(0.00116)	(0.00191)	(0.00211)
Christian	0.00300	0.00216	0.00299	0.00212	-0.000184	-0.00117
	(0.00189)	(0.00184)	(0.00189)	(0.00184)	(0.00244)	(0.00235)
Sikh	-0.00217	-0.00154	-0.00217	-0.00153	-0.000704	0.000211
	(0.00168)	(0.00171)	(0.00168)	(0.00171)	(0.00226)	(0.00228)
Other	-0.00582***	-0.00600***	-0.00581***	-0.00601***	-0.00983***	-0.0147***
	(0.00140)	(0.00159)	(0.00140)	(0.00159)	(0.00317)	(0.00399)
Education (Base=No Education)						
Primary	0.00245***	0.00252***	0.00244***	0.00251***	0.0164***	0.0108***
	(0.000404)	(0.000430)	(0.000403)	(0.000430)	(0.00385)	(0.00388)
Secondary	0.0278***	0.0241***	0.0278***	0.0240***	0.0601***	0.0522***
	(0.00103)	(0.00104)	(0.00103)	(0.00104)	(0.00329)	(0.00325)
College	0.0888***	0.0792***	0.0887***	0.0792***	0.0843***	0.0751***
	(0.00382)	(0.00396)	(0.00382)	(0.00396)	(0.00354)	(0.00353)
Graduate	0.185***	0.173***	0.185***	0.173***	0.102***	0.0925***
	(0.00511)	(0.00523)	(0.00511)	(0.00523)	(0.00355)	(0.00352)
Caste (Base=Others)						
SC	0.0234***	0.0238***	0.0231***	0.0235***		
	(0.00174)	(0.00180)	(0.00174)	(0.00181)		
ST	0.0366***	0.0395***	0.0361***	0.0389***		
	(0.00306)	(0.00339)	(0.00308)	(0.00341)		
OBC	0.00429***	0.00382***	0.00396***	0.00344***		
	(0.00100)	(0.000997)	(0.00103)	(0.00103)		
EPL		-0.000858		-0.000812		-0.00225
		(0.000976)		(0.000975)		(0.00146)
Pseudo R2	0.3129	0.2973	0.3128	0.2974	0.3109	0.3000
PCP	98.06%	98.18%	98.06%	98.18%	97.76%	97.90%
Observations	167,069	153,926	167,069	153,926	94,136	86,172

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.16: Average Marginal Effects for Public vs Domestic Duties Status Estimation including Time Trends

VARIABLES	(1) Public3	(2) Public3	(3) Public3	(4) Public3	(5) Public3	(6) Public3
Age	0.00136***	0.00129***	0.00136***	0.00129***	0.00155***	0.00147***
	(3.22e-05)	(3.29e-05)	(3.22e-05)	(3.29e-05)	(4.75e-05)	(4.86e-05)
Marital	-0.0248***	-0.0234***	-0.0248***	-0.0234***	-0.0301***	-0.0286***
	(0.00151)	(0.00153)	(0.00151)	(0.00153)	(0.00193)	(0.00198)
Urban	-0.00280***	-0.00330***	-0.00280***	-0.00330***	-0.00396***	-0.00481***
	(0.000812)	(0.000829)	(0.000810)	(0.000828)	(0.00116)	(0.00120)
Land	-8.15e-07***	-8.38e-07***	-8.19e-07***	-8.44e-07***	-8.79e-07**	-8.96e-07***
	(2.68e-07)	(2.68e-07)	(2.71e-07)	(2.71e-07)	(3.51e-07)	(3.47e-07)
Religion (Base=Hindu)						
Muslim	-0.00570***	-0.00613***	-0.00559***	-0.00604***	-0.00459**	-0.00540**
	(0.00113)	(0.00115)	(0.00114)	(0.00115)	(0.00192)	(0.00210)
Christian	0.00261	0.00203	0.00255	0.00194	-0.000669	-0.00145
	(0.00186)	(0.00182)	(0.00185)	(0.00182)	(0.00248)	(0.00239)
Sikh	-0.00185	-0.00126	-0.00182	-0.00123	-0.000547	0.000273
	(0.00170)	(0.00173)	(0.00170)	(0.00173)	(0.00226)	(0.00229)
Other	-0.00582***	-0.00617***	-0.00586***	-0.00629***	-0.0109***	-0.0143***
	(0.00139)	(0.00157)	(0.00138)	(0.00156)	(0.00330)	(0.00397)
Education (Base=No Education)						
Primary	0.00250***	0.00250***	0.00248***	0.00248***	0.0167***	0.0112***
	(0.000407)	(0.000430)	(0.000406)	(0.000429)	(0.00386)	(0.00389)
Secondary	0.0279***	0.0241***	0.0278***	0.0239***	0.0605***	0.0526***
	(0.00103)	(0.00104)	(0.00103)	(0.00104)	(0.00331)	(0.00327)
College	0.0887***	0.0794***	0.0883***	0.0791***	0.0845***	0.0753***
	(0.00381)	(0.00396)	(0.00380)	(0.00395)	(0.00357)	(0.00355)
Graduate	0.185***	0.173***	0.184***	0.173***	0.103***	0.0928***
	(0.00511)	(0.00527)	(0.00511)	(0.00526)	(0.00358)	(0.00354)
Caste (Base=Others)						
SC	0.0233***	0.0237***	0.0221***	0.0227***		
	(0.00173)	(0.00179)	(0.00175)	(0.00181)		
ST	0.0368***	0.0391***	0.0351***	0.0374***		
	(0.00309)	(0.00337)	(0.00308)	(0.00339)		
OBC	0.00430***	0.00406***	0.00315***	0.00310***		
	(0.00102)	(0.00102)	(0.00107)	(0.00108)		
EPL		0.00173		0.00173		0.000421
		(0.00144)		(0.00144)		(0.00194)
Pseudo R2	0.3167	0.2998	0.3169	0.3000	0.3157	0.3030
PCP	98.06%	98.18%	98.06%	98.18%	97.76%	97.90%
Observations	167,069	153,926	167,069	153,926	94,121	86,172

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.17 and 2.18 show the marginal effects of Reservation1 and Reservation2 without and with time trends, respectively. Table 2.17, for nearly all sample and regressions, give insignificant results. This, changes when adding time trends as shown in Table 2.18. Column (1) shows that women who are eligible for reservation are 2.6% more likely to be in public employment rather then in domestic duties. This effect is lessened when taking into account differing state labour reforms as shown in column (2).

When just looking at those from the Others caste category against the rest of the sample population, Columns (3) and (4) show an insignificant effect in Table 2.17 and a significant but low magnitude in Table 2.18. However, when reducing the sample size to compare those in the Others caste category who are eligible for caste reservation against those in the Others caste category who aren't eligible, columns (5) in Table 2.18 shows that reservation leads to a 4.1% increase in likelihood of being in public employment rather then in domestic duties. When taking into account the EPL measure, this decreases the magnitude to 2.5% but remains highly significant. Thus, women reservation policy increases the likelihood of women going into public employment when coming from an out of labour force background. However, the magnitude is very low when compared to the previous results on public vs private employment. The likelihood in movement from private to public sector is far higher then a movement from domestic duties to public employment. This is a fundamental issue when looking at FLPR, which have not increased and could be due to the poor targeting properties of women reservation policy.

Table 2.17: Average Marginal Effects for Public vs Domestic Duties Status Estimation

VARIABLES	(1) Public3	(2) Public3	(3) Public3	(4) Public3	(5) Public3	(6) Public3
Reservation	0.00264*	0.00125				
	(0.00148)	(0.00142)				
Reservation2			-0.00159	-0.00168	0.00308	0.00167
			(0.00156)	(0.00149)	(0.00214)	(0.00206)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.3129	0.2973	0.3128	0.2974	0.3109	0.3000
PCP	98.06%	98.18%	98.06%	98.18%	97.76%	97.90%
Observations	167,069	153,926	167,069	153,926	94,136	86,172

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 2.18: Average Marginal Effects for Public vs Domestic Duties Status Estimation including Time Trends

VARIABLES	(1) Public3	(2) Public3	(3) Public3	(4) Public3	(5) Public3	(6) Public3
Reservation	0.0263***	0.0141***				
	(0.00752)	(0.00456)				
Reservation2			-0.00527***	-0.00407**	0.0441***	0.0258**
			(0.00190)	(0.00182)	(0.0136)	(0.0102)
EPL Included	No	Yes	No	Yes	No	Yes
Restricted Sample	No	No	No	No	Yes	Yes
Pseudo R2	0.3167	0.2998	0.3169	0.3000	0.3157	0.3030
PCP	98.06%	98.18%	98.06%	98.18%	97.76%	97.90%
Observations	167,069	153,926	167,069	153,926	94,121	86,172

State and Year dummies included in all regressions, Standard errors in parentheses
PCP refers to " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

2.7 Conclusion

The results presented in this chapter suggest that women's reservation policy is helping to increase the likelihood of women going into public employment. In particular, those from a domestic duties background or from private sector employment are more likely to be in public employment if eligible for women reservation policy. When taking into account time varying unobserved heterogeneity, the effects of the control variables do not change, however, it makes a significant change for the Reservation variables in some of the estimations.

Due to a limited repeated cross sectional data set, it is difficult to control for all characteristics that can effect women's likelihood of going into public employment at an individual level. It's also important to keep caveats in mind when interpreting these results as the same female could not be tracked over time. Changes in their marital status and other personal aspects could have affected their likelihood of taking up public employment over time. Nonetheless, an estimation using the data available is conducted using various controls for overall changes in characteristics, such as education and marital status. State and year interactions also control for any unobserved time varying heterogeneity to ensure the analysis is robust.

For all of the regressions that included the time trends, Reservation policy increased the likelihood of going into public employment relative to the base category. This changed when isolating the Reservation variable to just those eligible for women reservation and not caste reservation, where there was generally no positive and significant effect found. However, when further isolating the dataset to compare those in the Others caste category in treatment and control groups alone, there is again a positive a significant effect suggesting that women reservation makes it more

likely that women in treatment states are more likely to be in public employment then those in control states in the Others category. This isolation of the policy effect is the most significant finding as it solely compares those eligible for women reservation and removes any potential bias causes by caste reservation. The positive and significant average marginal effects of the caste groups in the estimations show the strong influence of caste reservation on the likelihood of being in public employment and so it was important to make the distinction.

The aim of the policy to increase women's participation in public employment is shown to be working with the results presented in this study, however, the results also indicate that the policy may not be targeting the right cohort of women. In particular, the biggest increase in likelihood came from the public vs private employment estimation, where women were just under 40% more likely to be in public employment then private employment if eligible for women reservation policy in the Others caste group. The policy aim is attempting to increase the participation of women in the labour force and these results indicate that women are simply taking advantage of the policy by moving from one active employment into another, which would not affect the overall FLPR. Thus, the targeting properties of the policy may need to be adjusted in order to provide incentive for those in domestic duties, not those already employed in professional private sector jobs, to move into public employment and increase their likelihood from the current 2.6%.

In addition to this, although small, the positive impact of the policy on moving women out of domestic duties and into public employment provides justification for the policy to be extended into the private sector, which has seen the biggest increase in FLPR as shown previously in Figures 2.3-2.5. Women reservation policy in the private sector could greatly increase the overall FLPR and also potentially decrease the movement

from private to public employment through the policy. Overall, there is a positive impact of the policy on the likelihood of women going into public employment. The extension of this into the private sector and also more distinction between those eligible for caste and women reservation could help target the right cohort of women that would then increase the FLPR of India and lead to further economic development.

Chapter 3

Affirmative Action and Domestic Violence

Abstract

Reservation for women in public employment is used in order to increase female participation rates in the labour force. However, various male-backlash theories suggest that a consequence of an increase in women empowerment could potentially lead to an increase in domestic violence (Gelles (1999), Goode (1971)). Data is used from the National Family and Health Survey (NFHS-3), and reservation policy is used as a measure of female friendly states in order to evaluate the effect of reservation policy on domestic violence/controlling behaviour. The relationship between women's working status and domestic violence/controlling behaviour is also assessed and potential endogeniety of women's working status is taken into account using an Instrumental Variable (IV) method. Various controls are included in the analysis, including relative spousal income and results indicate that women's working status has no significant effect on domestic violence unless they are earning more then their husband, where there is a positive and significant impact. Reservation policy makes it much less likely that women would suffer from domestic violence but has no significant impact on controlling behaviour. Any male backlash effect appears to come from relative wage difference, not from women working per se. This highlights the importance of female friendly policies and also suggests that male-backlash theories hold true when males feel threatened by women's earning power.

Keywords: Domestic violence, sexual violence, physical violence, emotional violence, controlling behaviour, women's working status, endogeniety, relative spousal income.

3.1 Introduction

Domestic violence towards women and lack of female empowerment is an ongoing problem in India (Iyengar and Ferrari (2011), Kimuna et al. (2013), Klasen and Lenze (2017)). In particular, incidents of spousal violence towards women have been evaluated in order to assess determinants and factors that effect the probability of suffering from partner violence. The effect of women's working status on domestic violence has been at the forefront of these studies (Bhattacharyya et al. (2011), Klasen and Lenze (2017), Dalal and Lindqvist (2012), Begum et al. (2015)), where results have been ambiguous and highly dependent on the methodology used. This study sets out to quantify the indirect consequence of affirmative action policies on the occurrence of domestic violence by analysing the effect on male attitudes after reservation policy has been in place for a number of years.

Chapter 2 analysed the effect of women's reservation policy on the likelihood of women going into public employment. This kind of policy helps to empower women by allowing them to earn their own income, thus providing a source of empowerment. Theory suggests that as women's wages increase, or indeed, once they start to earn an income, their bargaining power within the household also increases and levels of domestic violence decreases (Aizer (2010)). However, contrasting "male-backlash" theories state that as a female's wages increase, violence against them increases as males feel emasculated and social norms of household dynamics are challenged. In this chapter, women's reservation policy is used as a proxy for more female friendly states, where literature has shown that once women are put in a position of power, male's perceptions and attitudes towards women start to change (Chattopadhyay and Duflo (2004)).

Due to the limitations of data, it is impossible to know whether women started employment due to or through the reservation policy, as take up is voluntary and employee information of this sort is normally kept anonymous. However, we can still control for women's working status through a separate dichotomous variable. Many researchers have pointed out the potential endogeneity issues that arise from including this variable (Bhattacharyya et al. (2011) Klasen and Lenze (2017)) in regression analysis. Women working could induce violence from their partner as they use it as means of trying to keep dominance within the household (male-backlash theories), which is threatened due to women's heightened working status. At the same time, domestic violence could also reduce the likelihood of women keeping a stable job and staying in employment (Lloyd (1997)), where women work less due to domestic violence causing a potential simultaneous effect between domestic violence and women's working status. Therefore, an Instrumental Variable (IV) method is employed in order to take into account of this simultaneity.

This research adds to the current literature in four ways. Firstly, in the context of India, nationally conducted research on the relationship between women's working status and domestic violence and the potential endogeniety issues have yet to be addressed, to my knowledge. This research sets out to conduct a robust estimation of this relationship taking into account this two way causal issue. Secondly, the indirect link between policies that promote female employment, in this case reservation policy, and incidences of domestic violence is studied to assess whether attitudes of males towards females change as structural barriers into employment lowers.

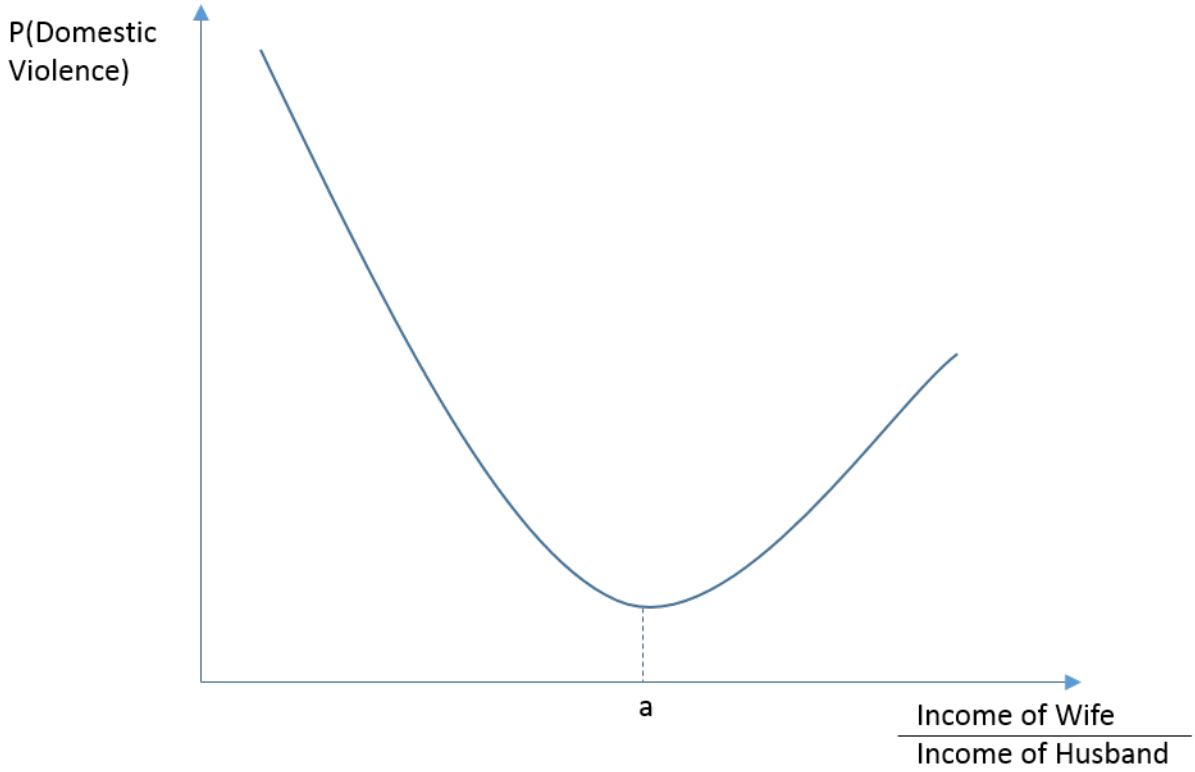
Thirdly, the aspect of controlling behaviour from husband to wives is also analysed as part of this study, which previous studies on India have not considered. This demonstrates a different form of psychological and emotional abuse that can be

used by spouses in order to dominate within the household without using other, more traditional, forms of domestic violence. This kind of behaviour is important to assess as there are no formal legal consequence of such behaviour and this may lead to a more frequent use of such action in order for the husband to keep control within the household. Our results indicate that reservation policy has no significant effect on controlling behaviour. However, once endogeneity is controlled for, women's working status has a negative effect on controlling behaviour. This suggests that women working decreases the probability of husband's using controlling behaviour, suggesting male-backlash effect is not a dominant effect. No significant effect is found when looking at domestic violence.

Finally, this is one of the first studies to also include controls that account for earning differences between spouses. A wife's income relative to husband income can play an important part in levels of domestic violence within the relationship (Angelucci (2008)), where male backlash theories suggest that men can feel threatened and if their wife is earning a similar amount or more than themselves and,thus, are more likely to inflict acts of violence or controlling behaviour against their wife. This kind of trend in domestic violence and relative income can be seen in Figure 3.1. As relative income increases and women's income begin to overtake their husbands, the probability of domestic violence starts to increase at point "a" [1]. The results presented in this chapter support this theory and add to the current literature on domestic violence and women's working status in identifying spousal income differences as a strong source of violence .

[1]Figure 3.1 is a general overview of what appears to be occuring in accordance with the results of this study. Point "a" is not defined in value as the dataset used in this chapter provides no figures on incomes and the graph is based on a question asked to women in regards to whether they earn more, less, the same or are the sole earner than their husband.

Figure 3.1: Trends in Relative Income and Domestic Violence



Overall, there are three main hypotheses that we set out to analyse,

1. Do women's reservation policy in employment (used as a proxy for female friendly states) lead to a lower likelihood of domestic violence and/or controlling behaviour?

2. Once endogeneity is controlled for, does women's working status lead to a higher or lower likelihood of domestic violence and/or controlling behaviour?

3. Do spousal income differences effect the likelihood of domestic violence and/or controlling behaviour?

An interaction term between women's working status and reservation policy was also considered to be included in the regression analysis, in order to capture the effect of women working in female friendly states on domestic violence and/or controlling

behaviour. However, due to the non-linear estimation and employing an IV type method on women's working status, this wasn't believed to be appropriate. This is discussed further in Section 3.3.2.

The main results in this chapter show that, after controlling for endogeneity of women's working status, both reservation policy and women's working status have a negative effect on domestic violence. This goes against male-backlash theories and suggests that women who work are less likely to suffer from violence due to female empowerment. This is also true when looking at controlling behaviour. Women who live in states with reservation policy in place are also less likely to suffer from violence but no significant effect is found when looking at controlling behaviour after removal of states that may already be female friendly. Results also show that the main source of male-backlash does not come from women's working status per se, but from differences in spousal income. When wives earn more than their husbands or are the sole earner, women are much more likely to suffer from violence. This is an interesting finding and could help in improving future policies that target a reduction in domestic violence.

The rest of this chapter is as follows. Section 3.2 presents both the theoretical and empirical literature on women's working status and domestic violence, as well as, empirical articles on women empowerment and female friendly policies. Section 3.3 then describes the data and specification used to carry out the analysis in this chapter. Section 3.4 provides some descriptive statistics of both the questions used to construct the dependent variables and the distribution of violence by certain household and individual characteristics. The results are then presented in Section 3.5 and are discussed in detail. This is followed by a number of robustness checks in Section 3.6, which take into account potential problems with clustering standard errors because

of analysing only a few states and also the issue of bias in the treatment states if they were already considered female friendly before the introduction of reservation policy. Section 3.7 concludes this chapter with implications for future research and policies.

3.2 Literature Review

3.2.1 Theoretical Background

The relationship between women's working status and domestic violence has been studied extensively in the literature. Two streams of literature propose different theories in whether women's working status reduces or increases incidences of domestic violence. The so-called "male-backlash" theories suggest that women's working status increases the likelihood of domestic violence within the household. Gelles (1999) outlined a number of sociological theories that set out to explain why men use violence against women in the household. Generally, male backlash theories suggest that men use violence as a means to retain dominance in the household. This is especially true in circumstances where this dominance is threatened by a heightened status of the women in the household or when the men have a lack of education and/or income that affects their own job prospects (Goode (1971)).

Feminist theories hold that gender and power within intimate relationships is the main cause of male to female violence (Yllo (2005)). However, criticism of this approach points out that the structural dynamic and other social factors such as social class and race are not considered (Anderson (1997)). Taking note of this, empirical findings control for a host of other social characteristics. Tolman and Wang (2005) explain that, despite these factors that are not considered, feminist theory can directly explain the impact of domestic violence on employment, whereby men would wish to hold back women through lack of employment or advancement in their employment through means of violence. It is also rightly noted that the attempt of men to use violence as a means to dominate the woman can also be used in other contexts, such as suppressing free speech that challenges the male (Dobash and Dobash (1979))

Resource theory discusses the relationship between domestic violence and the resources available to the abuser. If the abuser has higher income and education levels and thus more resources to dominate the partner in the relationship, physical and sexual violence would be used less frequently. However, if the abuser has relatively lower socioeconomic resources then violence is much more likely to be used (Anderson (1997)). Goode (1971) argued that, generally, women who have more autonomy were less likely to suffer from intimate partner violence than those who had less socioeconomic resources. Eswaran and Malhotra (2011) develop a non-cooperative bargaining model that goes against Goode (1971) resource theory and suggest that an increase in women's socioeconomic power and status can lead to partners using violence to gain the upper hand in the relationship. This is especially the case when the husband's socioeconomic status is low (low reservation utility) and violence is their only option to retain control.

Divorce-threat barginning models (Farmer and Tiefenthaler (1997), Tauchen et al. (1991)) find that an increase in women's income increases her welfare and also her reservation utility that, in turn, decreases the incidences of domestic violence. However, they do not take into account the impact of social isolation on divorced victims, especially the context of developing countries such as India, where divorce rates are low and there is a strong social stigma attached to divorce for women (Aizer (2010), Bhattacharyya et al. (2011) Klasen and Lenze (2017)) [2].

3.2.2 Empirical Findings

3.2.2.1 Domestic Violence and Women's Working Status

A number of studies have assessed the relationship between domestic violence and women's working status. Overall, the results are mixed.

[2]Jordan was used in the Klasen and Lenze (2017) study, where divorce rates are extremely low and divorce is unusual

Krishnan et al. (2010) analysed the effect of a change in spousal employment status on incidences of physical violence using data from Bangalore in India. They used both a logistic regression and multinominal logistic regression to gain odd ratios on indicator variables that they found to be relevant to measuring domestic violence. Results indicated that changes in spousal employment status from not working to working was highly significant and led to an 80% increases in odds ratio of violence. They also found a significant effect on husband's employment status, where women suffered higher incidences of violence if the husband is not in employment. Both outcomes support the "male-backlash" theories discussed previously.

Various studies (Dalal and Lindqvist (2012), Begum et al. (2015)) use the National Family Health Survey (NFHS-3) to assess the characteristics and status of women who are more likely to be effected by domestic violence. Using the same questions used in this study to create a measure of domestic violence, they found that poverty and working status of women were among the most important factors that determined incidences of domestic violence. Kimuna et al. (2013) find similar results using the same dataset but slightly different covariates and found that women's working status is an important factor in probability of domestic violence occurring. In particular, they categorised women's working status into various occupations and found at all levels of employment, from agricultural work to professional employment, it was more likely that the spouse would experience physical and sexual violence from their partner. Dalal (2011) further found that women's working status was not a protective determinant against domestic violence when running regression analysis for working women and non-working women separately and comparing the outcomes.

Although the studies discussed all support "male-backlash" theories, endogeniety of

women's working status is not taken into account in their estimation models. This is an important limitation to these studies as both Lloyd (1997) and Tolman and Wang (2005) show that domestic violence can effect women's employment status, thus confirming that reverse causality should be considered. Lloyd (1997) used data from Humboldt Park in Chicago, USA to conduct a qualitative study on domestic violence and its impact on women's employment status. Only women were interviewed and results highlighted the effect domestic violence had on women's ability to keep a stable job. Tolman and Wang (2005) empirically test three waves of Women's Employment Study (WEM) in the US in order to assess how domestic violence affect the annual number of hours worked by women. Once controlling for factors such as mental and physical health, they find a significant effect on domestic violence, where an increase in domestic violence leads to a decrease in the number of hours worked.

To control for the reverse causality between domestic violence and women's employment status, Bhattacharyya et al. (2011) used data collected from Uttar Pradesh, India in rural villages to assess the relationship between property status and working status of women on spousal violence and took into account the endogeniety of women's working status. Using various instrumental variables, including caste, number of children and family type [3], they find that women who are in regularly paid employment are less likely to suffer from domestic violence. This differs from findings by Klasen and Lenze (2017), who conduct a similar study using data from the Jordan Population and Family Health Survey of 2007 and calculate an instrument using the cluster

[3]In Bhattacharyya et al. (2011), caste and the number of dependents (or children) in the household were found to have a significant effect on domestic violence, even when controlling for household characteristics as Bhattacharyya et al. (2011) did. Although they did not find a statistical significance of them, their study size is isolated to one part of India and may not be representative of the whole population. Furthermore, previous studies mentioned that use the same dataset as this study (Dalal and Lindqvist (2012)) also find a significant effect of caste on domestic violence and so it is included as a control in estimations.

average of women's working status [4]. They find that, once endogeniety is controlled for, there is no statistical significance of women's working status on domestic violence. However, only 155 observations were included in the regression analysis and, thus may not be representative of the overall population.

Differences in spousal income is also found to be important when looking at the effect of women's working status on domestic violence.Angelucci (2008) analysed the effect of a policy intervention programme, "Oportunidades", in Mexico that provides cash transfers and human capital investment for women on probability of domestic violence and alcohol abuse. Their study shows that while small increases in the wife's income led to a reduction in violence, large increases in wife's income led to an increase in domestic violence. This finding suggests that there is some threshold level of wife's income beyond which the effect of on domestic violence changes. This is particularly true when husbands were less open-minded and of lower education levels. Indeed, their results back up the hypotheses illustrated in Figure 3.1, where a shift towards more domestic violence is seen as income differences start to decrease. Our study also controls for spousal income differences to assess whether the same affect is seen in the Indian context. As well as this, it is anticipated that reservation policy reduces the male backlash effect seen in Angelucci (2008), where treated states are more female friendly. Further literature on the effect of women friendly policies on male attitudes are discussed in the following section.

3.2.2.2 Women Friendly Policies and Male Attitudes Towards Women

With the introduction of women reservations to promote and increase female labour force participation, it is important to assess whether this has had an indirect effect in changing the attitudes of males towards women. In this case, changes in the

[4]Our study also uses a the approach of Klasen and Lenze (2017) to construct an instrument, Average Working Rate, for women's working status.

incidence of domestic violence in States where the policy has been implemented. Previous literature on this indirect effect does not exist. However, research into the effect of women as political figureheads through political reservation and the effect it has on male perceptions of the efficiency of women has been evaluated.

Beaman et al. (2009b) conducted a field study in 495 villages across one district in West Bengal and assessed the attitudes of males when a woman was in political power at the village level. Their findings suggest that males reduce their bias for men in leadership roles when a woman is in power. Although, their preferences do not change when it comes to female leaders (male leaders are still preferred), results from Implicit Association Tests (IAT) tests show that male's perceptions of the effectiveness of female leaders improve. In regards to the research conducted in this chapter, male-backlash theories suggest that men may increase violence towards women if their dominance is threatened. However, female friendly policies that encourage women into a position of decision making power could alter their attitudes. Unfortunately, due to data limitations, we cannot directly assess the effect of women's reservation policy on the attitudes of males. However, it is important to keep this in mind when discussing the results and also for future analysis.

In addition to this, research into the Mahatma Gandhi National Rural Employment Guarantee Scheme (NREGS) in India by Amaral et al. (2015) discusses the effect this programme has had on total gender based violence. NREGS has increased employment opportunities for women and their results indicate that this has led to an increase in domestic violence. This may suggest that reservation policy may result in similar increases in violence against women as male-backlash theory hypothesises. However, as concluded in the study, it is important to note that female empowerment through more employment opportunities can lead to an increase in higher reporting

rates rather then an actual increase in violence itself. Women feel more confident to speak out against the violence. This study doesn't use official reported crime rates but anonymous survey answers instead and so women are more likely to answer truthfully.

Although this push in increasing women's labour force participation rate is important towards giving women empowerment, it may not be as effective unless other female friendly policies are introduced. It is important for further policies to be implemented that complement women's reservation policy in order to bring about long-term change (Duflo (2012)).

3.3 Identification

3.3.1 Data

The data used in this study is the third round of the National Family Health Survey in 2005-06 (NFHS-3). This comprehensive dataset asks a variety of questions to households that provide a variety of individual and household characteristics that can be controlled for in the estimations. This particular round of the survey also asks questions on domestic violence and was chosen due to the fact that it is after women's reservation policy was in place for at least 3 years. This enables each state time to adjust to the new policy and also gives a period of time for attitudes and behaviour towards women to change as more women gain employment. The data were restricted to only include working women between the ages of 18-50 and removed anyone in full-time or part-time education. Only husband to wife domestic violence type incidences are considered in this study due to data limitations, thus, only married women were included in the final dataset. The regressions were also re-estimated after removing women whose interview was interrupted by another member of the household in order to help in removing issues related to truthful reporting and results

did not differ from the ones presented in this chapter.

Questions from the domestic violence section of the NFHS-3 survey were used in order to construct the dependent variables and are presented in Table 3.1. The survey was very thorough different types of questions asked on violence and gave us a good overview of the type of violence wives suffered from at the hands of their spouse. All the dependent variables are dichotomous and are equal to 1 if any of the relevant questions were answered with a yes from the respondent [5].

3.3.2 Estimation

In order to capture the effect of women working in reservation states on domestic violence, the following baseline model is estimated using a variety of methodologies. The dependent Variable (DV) is defined as either Domestic Violence, Emotional Violence, Physical Violence, Sexual Violence or Controlling Behaviour.

$$DV = \alpha_i + \beta_i X_i + \gamma_i WomenWorking_i + \delta_i Reservation + \epsilon_i \tag{3.1}$$

X_i = (Women's Age, Age Difference, Husband Working, Urban, Religion, Women Years of Education, Husband Years of Education, Women Years of Education Sq, Husband Years of Education Sq, OtherWives, Wealth Index, Total number of dependents in the household, Caste, Husband drinks alcohol, Whether wife thinks beating is justified, Wife earns more than Husband)

The DV is equal to 1 if any of the questions related to physical, emotional or sexual violence is answered with a "yes" and 0 otherwise. A Kaiser-Meyer-Olkin measure

[5]It is important to also note that only those who responded yes to the questions and indicated that it occurred in the last 12 months were included in this study. This was done in order to fully analyse the effect of reservation policy on male attitudes after the policy was put in place. As this was 2001 for Maharashtra, this gave a least 3 years for the policy to come into effect.

Table 3.1: List of Questions from NFHS-3 that were Used to Construct Dependent Variables

Emotional Violence (0 if answered No to all questions) (1 if answered Yes to at least one of the questions)	**1. Spouse has humiliated respondent 2. Spouse has threatened respondent with harm 3. Spouse has insulted or make respondent feel bad**
Physical Violence (0 if answered No to all questions) (1 if answered Yes to at least one of the questions)	1. Spouse ever pushed, shook or threw something 2. Spouse ever slapped 3. Spouse ever punched with fist or something harmful 4. Spouse ever kicked or dragged 5. Spouse ever tried to strangle or burn 6. Spouse ever threatened or attacked with knife/gun or other 7. Spouse ever twisted her arm or pull her hair
Sexual Violence (0 if answered No to all questions) (1 if answered Yes to at least one of the questions)	1. Spouse ever physically forced sex when not wanted 2. Spouse ever forced other sexual acts when not wanted
Domestic Violence	If any of the 3 types of violence are equal to 1, this variable is also equal to 1.
Controlling (0 if answered No to all questions) (1 if answered Yes to at least one of the questions)	1. Husband jealous if respondent talks with other men 2. Husband accuses respondent of unfaithfulness 3. Husband does not permit respondent to meet her girl friends 4. Husband tries to limit respondent contact with family 5. Husband insists on knowing where respondent is 6. Husband doesn't trust respondent with money

Source: National Family Health Survey (NFHS-3)

of sampling adequacy was also undertaken on the data to assess its suitability for Principal Component Analysis (PCA). The measure was 0.574 and indicated that the data may not be suitable for PCA. Therefore, the proposed method of creating the DV follows the methodology used by Klasen and Lenze (2017). This allows comparison between our results and Klasen and Lenze (2017), who study domestic violence and women's working status in Jordan.

Women Working is a binary variable that is equal to 1 if the woman is working and 0 otherwise. Age and the difference between husband's age and the wife's age (AgeDiff) is also included as a control. A higher age difference may result in more violence being used as the husband would tend to be older and may use violence or controlling behaviour in order to control their younger bride. The number of wives or number of times a husband has been married is also controlled for, as well as, the total number of dependents (those below the age of 16) in the household, both of which are continuous variables. Wife's and husband's education is included in the regression, as well as, the square of these continuous variables, as there can be a non-linear effect of education on domestic violence Klasen and Lenze (2017). Caste is also included in the regression, essentially as a control for differences between the caste groups that could make them more prone to domestic violence. Wealth is controlled for using the NFHS-3 constructed wealth index and provides a measure of poverty and income of the households, which are known factors in prevalence of domestic violence Kimuna et al. (2013)).

Whether the husband drinks alcohol or not is added to the baseline estimation to assess whether wives suffer from higher rates of domestic violence that could be fueled by alcohol drinking. The wife's opinion of whether beating is justified or not is then added to the estimation in order to control for any heterogeneous impacts that

their opinions may have. If they believe that a beating is justified, then likelihoods of violence may be higher for these women as it is accepted and men may continue to use such violence. It is expected that a positive response to any of these questions will be associated with higher incidence of domestic violence. Finally, a variable that controls for whether the wife earns more, about the same or is the sole earner in the household is also added to the regression. This is a crucial variable that can distinguish whether higher wife income leads to higher incidences of domestic violence.

As previously discussed, a two-way causality arises between domestic violence and women's working status. Women may work less or be less likely to keep a stable job if they suffer from violence within the household. At the same time, they could also be suffering from domestic violence due to their working status. In order to control for this source of endogeniety, an Instrumental Variable (IV) method is implemented using an appropriate instrument that is constructed by calculating the average of women's working status in each cluster (the primary sampling units) of the survey. In order to avoid any in-built correlation, the calculation excludes the individual when estimating the average for that individual. In addition to this, all available variables that are considered to be economically relevant to this chapter were included in the regression analysis as controls in order to minimise any omitted variable bias.

As this is a binary outcome with an endogenous binary regressor, the standard 2SLS for a probit will not produce consistent estimates (Wooldridge (2010), Baum et al. (2012)). However, the 2SLS method for linear regression models is still estimated and presented in this paper as it provides a number of tests on the strength of the instrument used. As an alternative to this model, a bivariate probit model is also carried out, as suggested by Wooldridge (2010) as a way of handling this type of estimation. Here, two probit models are estimated simultaneously and allows

$\text{Corr}(\epsilon_{1i}, \epsilon_{2i}) > 0$. This type of estimation is specified as follows,

$$DV = \alpha_{1i} + \beta_{1i}X_{1i} + \gamma_{1i}WomenWorking_{1i} + \delta_i Reservation_{1i} + \epsilon_{1i} \tag{3.2}$$

$$WWS = \alpha_{2i} + \beta_{2i}X_{2i} + \gamma_{2i}PSUAverageWorkingRate_{2i} + \epsilon_{2i} \tag{3.3}$$

Where, DV is the Dependent Variable. Primary Sampling Unit (PSU) Average Working Rate is the average of women's working status in each PSU and is the instrument used for Women's Working Status (WWS) estimated in equation (3.3). The results for equation (3.2) are presented in the results tables, as well as, the (PSU) Average Working Rate results in equation (3.3). This average is presented in order to check if it significantly related to women's working status, an indication of an appropriate instrument. This variable will henceforth be called the Average Working Rate (AWR).

Ideally, an interaction term between women's working status and women's reservation policy would also be estimated in equation (3.2). However, both variables are binary and interpreting the interaction term coefficient would be particularly difficult. Converting the coefficient into an average marginal effect would provide a more meaningful understanding. Karaca-Mandic et al. (2012) outlines the issues regarding calculating marginal effects with non-linear interaction terms and suggests a number of ways to rightfully calculate and interpret them. As such, Women's working status could be set at it's two values, 0 and 1, and the marginal effect of the interaction between reservation policy and women's working status could be calculated. However, as women's working status is treated as endogenous, this provides further difficulty in setting it's value when calculating the marginal effect of the interaction term,

especially when using a bivariate probit model [6] . Thus, an interaction term between these two variables is not included in the regression analysis.

3.4 Descriptive Statistics

In this section, a variety of descriptive statistics are provided in order to gain a better understanding of the distribution of violence across area of residence, education level and women working status.

3.4.1 Explanatory Variables

Table 3.2 presents summary statistics of the explanatory variables used in this analysis. Age is restricted to those aged between 18-50, with the average age being around 32. This shows a good distribution of all age groups being represented in this study. The age difference between husband and wife is quite wide, where the majority of men are older then the woman by an average of 5.6 years. Over 55% of the women included in this study reside in rural areas and very few men have more than one wife (less than 2%). The total number of dependents living in the household is an average of 2. Nearly all of the respondents' husbands work, with over 98% in employment. Women have an average education level of 5.2 years, while the husband has a higher average of 7.3 years.

Looking at the Religion variable, most women are from the Hindu faith, while the biggest minority (13%) is from the Muslim faith. Just under 40% of those interviewed are part of the Others caste category, with the next largest caste group being the OBC group. The wealth quintiles suggest that a majority of households are part of the

[6]The capability of current software to compute the average marginal effects of an interaction term in a bivariate probit model is limited. Greene (2010) paper analyses the method advocated by Norton et al. (2004) to calculating the marginal effect of an interaction term in a standard logit and probit model. He concludes that statistical hypothesis testing of Norton et al. (2004) predicted margins isn't wholly appropriate and a better method would be to look at the graphical analysis. Thus, the statistical testing and significance of the average marginal effect of an interaction term in a simpler logit or probit model is also troublesome to correctly calculate.

richest quintile, while the smallest proportion are part of the poorest quintile. The proportions increase as wealth increases to the next quintile level. A third of those interviewed said that their husbands drank alcohol. All of the responses from wives to whether beating is justifying/acceptable for each of the reasons listed were all below 35% of the population. Most women thought that neglecting children was a beatable offense and accepted if their husband was violent. However, only 13% thought that refusing to have sex with their husband was justified, showing that a majority of the women interviewed would deem sexual violence as unacceptable. 33.2% of women interviewed were in employment and 23.5% were part of the treatment states that implemented women's reservation policy in public employment. In order to get a better understanding of the distribution of violence, the following section analsyes the questions asked to form the variables and the percentage breakdown of responses by different factors.

Table 3.2: Summary Statistics of Explanatory Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	40,181	31.6142	7.83797	18	49
AgeDiff	40,181	5.607949	4.223494	-20	60
Urban	40,181	.4149723	.4927234	0	1
Husband Working	40,082	.9840826	.1251575	0	1
Women's Education	40,181	5.276897	5.258602	0	22
Husband's Education	40,181	7.326647	5.242316	0	23
Other Wives	40,100	.0156608	.1241611	0	1
Total No. of Dependents	40,181	2.001543	1.455819	0	9
Religion					
Hindu	40,120	.7819292	.4129409	0	1
Muslim	40,120	.1318544	.3383367	0	1
Christian	40,120	.0237039	.1521269	0	1
Sikh	40,120	.0294616	.1690986	0	1
Others	40,120	.0330508	.1787716	0	1
Caste					
Others	39,060	.3919867	.4882	0	1
SC	39,060	.1830517	.3867139	0	1
ST	39,060	.1001024	.3001403	0	1
OBC	39,060	.3248592	.4683282	0	1
Wealth					
Poorest	40,181	.1522859	.3593023	0	1
Poorer	40,181	.1601005	.3667038	0	1
Middle	40,181	.1761529	.3809549	0	1
Richer	40,181	.2217217	.41541	0	1
Richest	40,181	.2897389	.4536468	0	1
Husband Drinks Alcohol	40,152	.3305688	.4704238	0	1
Wife Justifies Beating					
Goes out without Permission	39,966	.2558925	.4363672	0	1
Neglects Children	40,005	.3154356	.4646949	0	1
Argues with Husband	39,865	.2698859	.4439059	0	1
Refuses Sex	39,493	.1303775	.3367226	0	1
Burns Food	39,933	.1806776	.3847557	0	1
Earns More					
Less Than Husband	9,835	.7497712	.4331667	0	1
More Than Husband	9,835	.1121505	.3155675	0	1
About Same	9,835	.1148958	.3189123	0	1
Sole Earner	9,835	.0231825	.1504905	0	1
Women Working	40,110	.3317876	.470861	0	1
Reservation	40,181	.2347876	.4238713	0	1

3.4.2 Domestic Violence and Controlling Behaviour

Figures 3.2-3.5 represents the responses of women who were interviewed as part of the domestic violence aspect of the NFHS-3 survey. Figure 3.2 shows the responses for all the emotional violence questions that were asked and only those who replied with a no or yes were included as part of this study [7]. A majority of women answered no to all three questions. The biggest percentage to answer yes came from those who were humiliated by their husband at 7.72%. The smallest response of yes came from those who felt their husband had threatened them with harm within the last 12 months.

The largest number of questions asked in the survey were with respect to physical harm and the responses of wives are represented in Figure 3.3. Similar to the responses on emotional violence, a majority of women answered no to questions related to physical violence. The smallest yes response came from those whose husbands had ever threatened to tried to strangle or burn them or used a knife, gun or similar weapon. This kind of physical harm is on the more extreme end of violence that could be used and less than 1% of women responded with a yes for each question. When asked if the husband has ever slapped them, women responded with yes the most when compared with the other questions asked, with over 15% answering yes. Although, a majority of the those who answered yes said that this kind of harm only happened sometimes indicating that it was not frequent occurrence [8].

Only two questions were asked on sexual violence and over 94% of women answered at least one of them with a no response. Figure 3.4 shows that more women answered yes to whether their husband ever physically forced sex when not wanted by the wife

[7]Those who answered "I don't know" or had missing entries were not included as their response was ambiguous and represented less than 0.5% of women in the whole data set.

[8]This, however, is subject to what the women interviewed perceived as being infrequent, which can vary drastically from female to female.

than to whether their husband ever forced other kinds of sexual acts upon them when not wanted. However, overall, not many women responded yes to sexual violence and so sexual violence doesn't appear to as prevalent in husband and wife relationships.

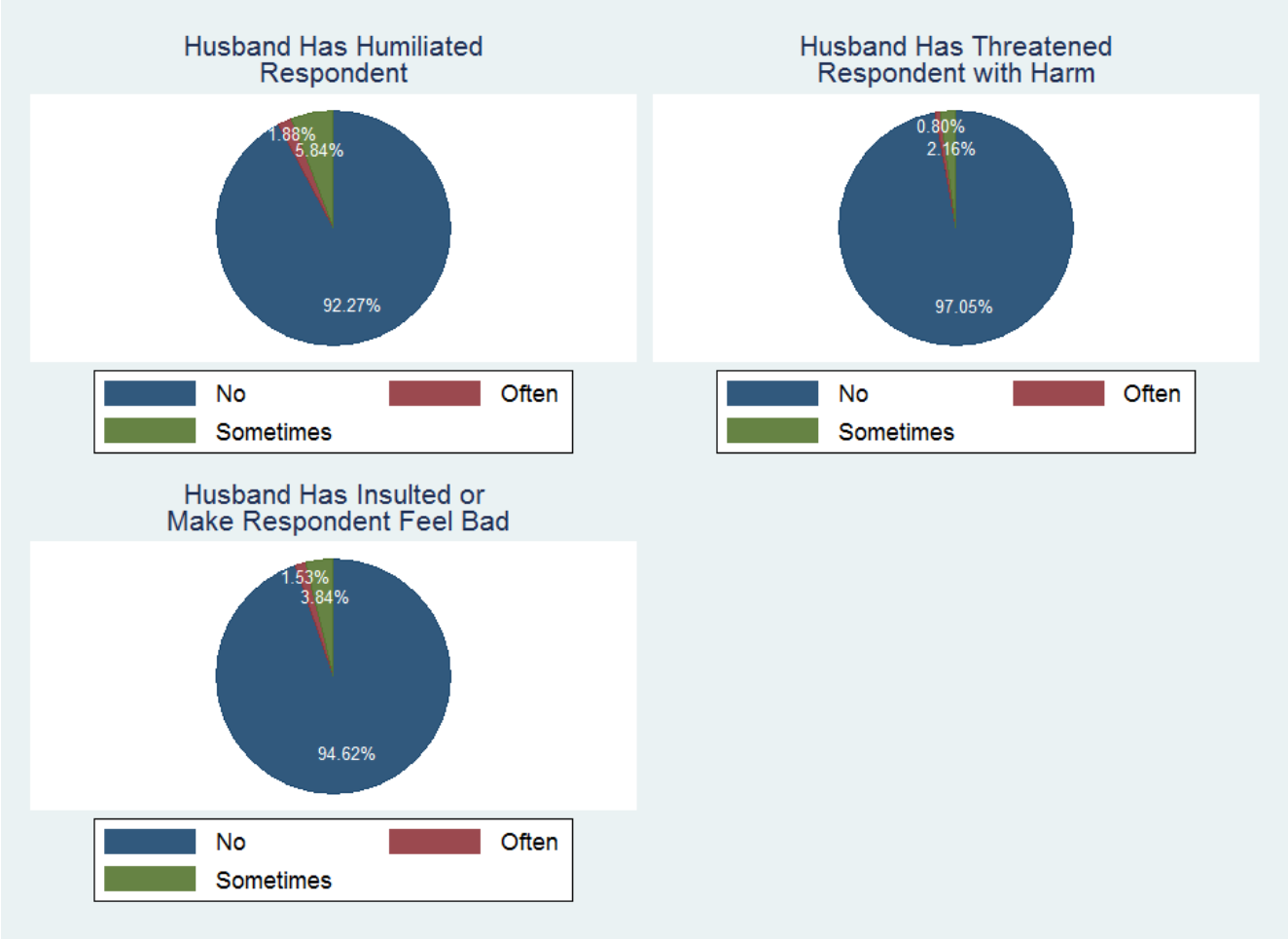
Finally, Figure 3.5 represents the the responses to questions regarding controlling behaviour by the husbands. The yes response rate was much higher for these questions than the other types of violence and suggests that more husbands use controlling behaviour as a means of keeping control of their wives. However, there was still over 75% response rate of no to at least one of the questions asked. Response rates that responded yes suggest that 21.6% of husbands would be jealous if their wives spoke to other men and 18.45% do not trust their spouse with money. This indicates that they would use controlling behaviour to prevent their wives from speaking to other men and not allow them to make household financial decisions. Just over 15% would not allow their wives to see their girl friends and just over 11% would insist on knowing where their wife is at all times. Comparing Figure 3.5 with Figures 3.2-3.4 on different types of domestic violence, controlling behaviour appears to be the most concerning problem.

Figures 3.6, 3.7 and 3.8 break down violence and controlling behaviour by working status, area of residence and education level. Figure 3.6 shows that a majority of violence or controlling behaviour occurs to women who are not working and this doesn't change by much when breaking down domestic violence into different types of violence. Emotional violence is less prevalent among those who are not working when compared with sexual violence, where just under 64% answered yes to the sexual violence questions asked in the NFHS-3. With those who answered yes to controlling behaviour, 64.68% were not working, the highest proportion when compared to the forms of violence. Figure 3.7 shows the breakdown by area of residence and a majority

of those who experience violence and/or controlling behaviour reside in rural areas. This does not change very much from the different types of violence.

Figure 3.8 shows the break down by education level, where the majority of violence and/or controlling behaviour is suffered by those with no education. Interestingly, the next educational level group with the highest proportion are those with secondary education, an indication of potential male-backlash where men are feeling threatened by their wives' increased education level. Those with higher education suffer the least amount of violence, with controlling behaviour being at 5% of women who answered yes. The proportions tend not to vary across violence types and controlling behaviour, however, just over half of women who responded yes to controlling behaviour had a primary education or above, indicating that controlling behaviour is more widespread across education levels.

Figure 3.2: Spouse's Response to Emotional Violence Questions

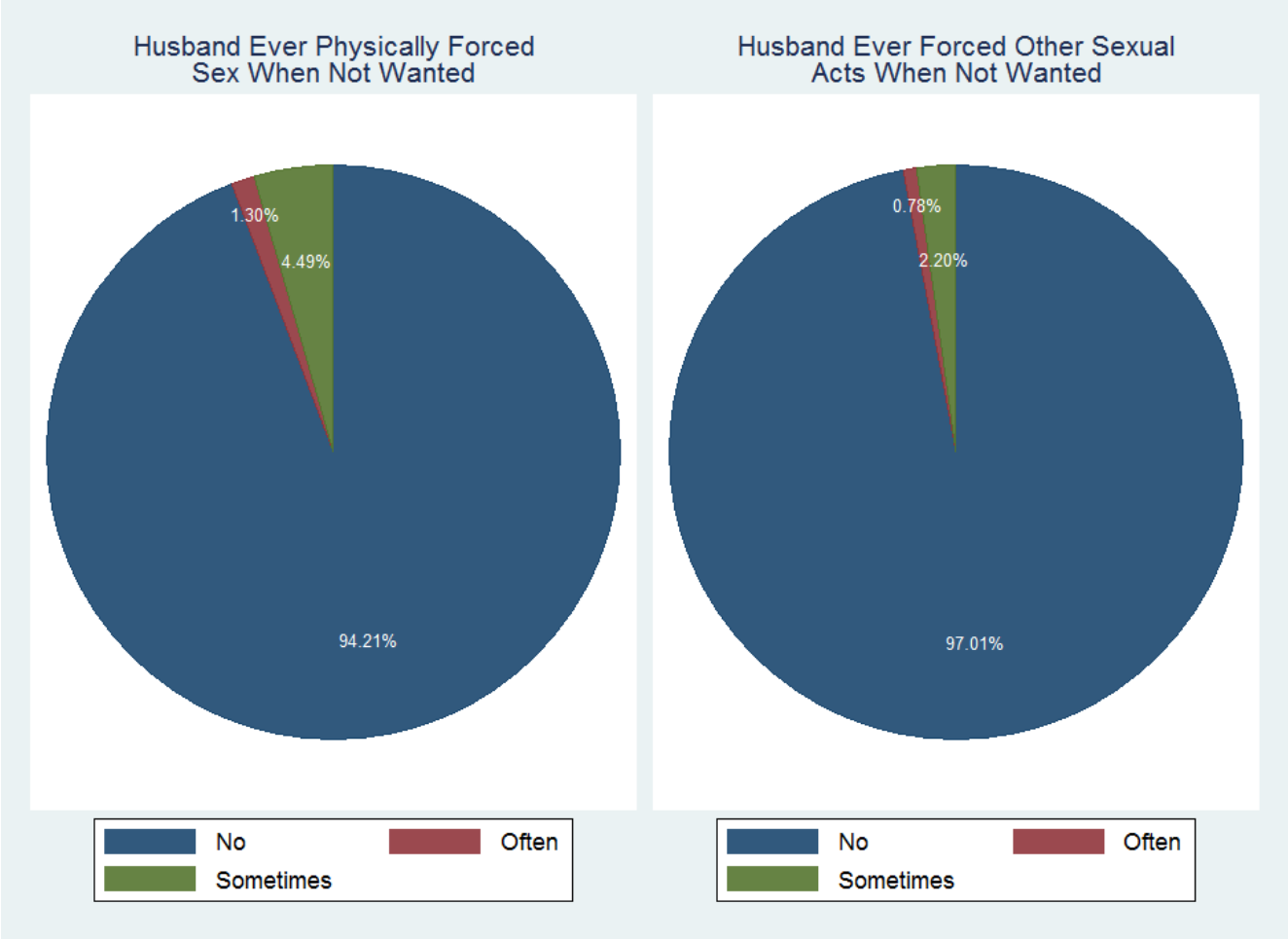


Source: Calculations based on National Family Health Survey (NFHS-3)

Figure 3.3: Spouse's Response to Physical Violence Questions

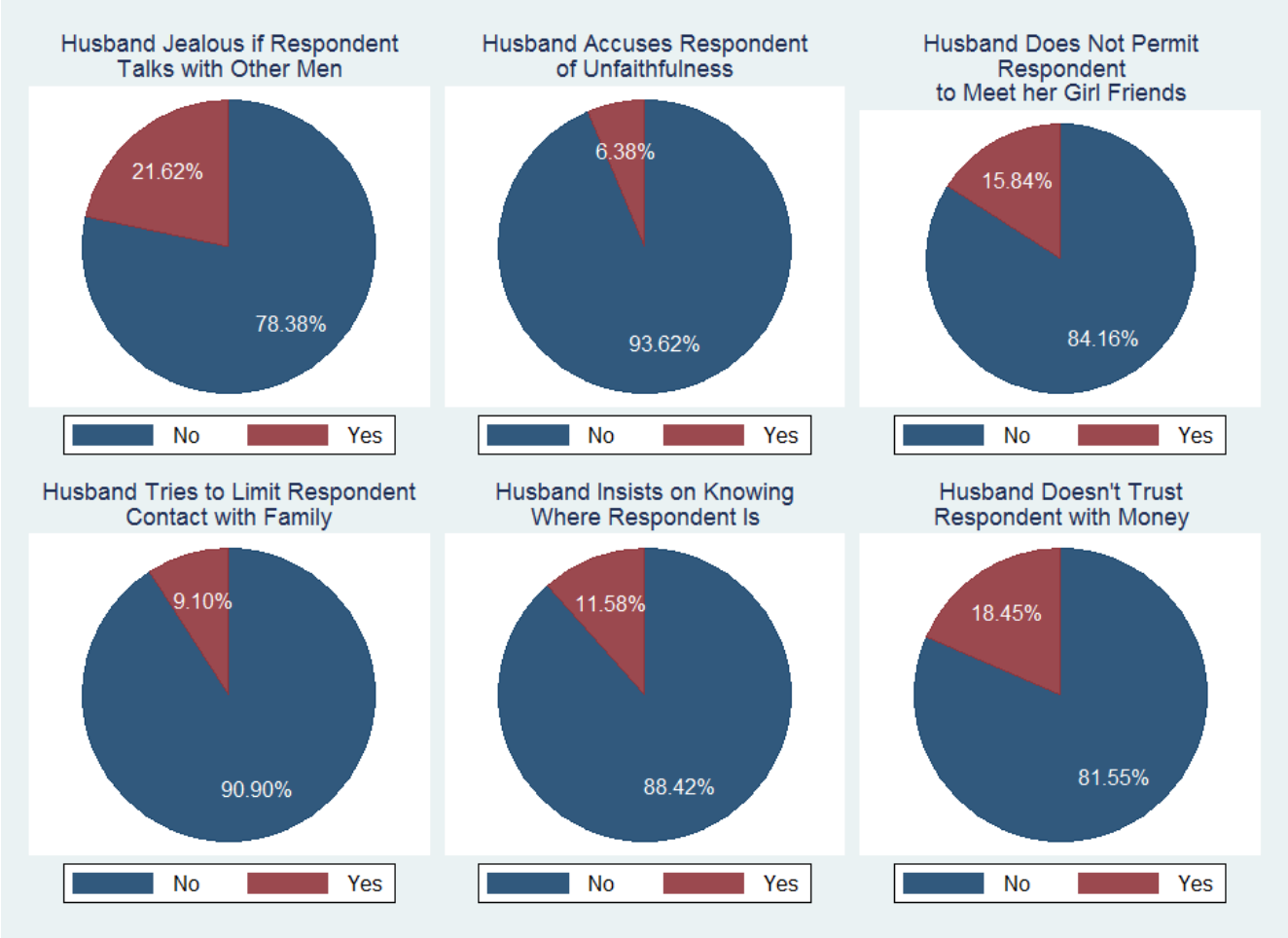
Source :Calculations based on National Family Health Survey (NFHS-3)

Figure 3.4: Spouse's Response to Sexual Violence Questions



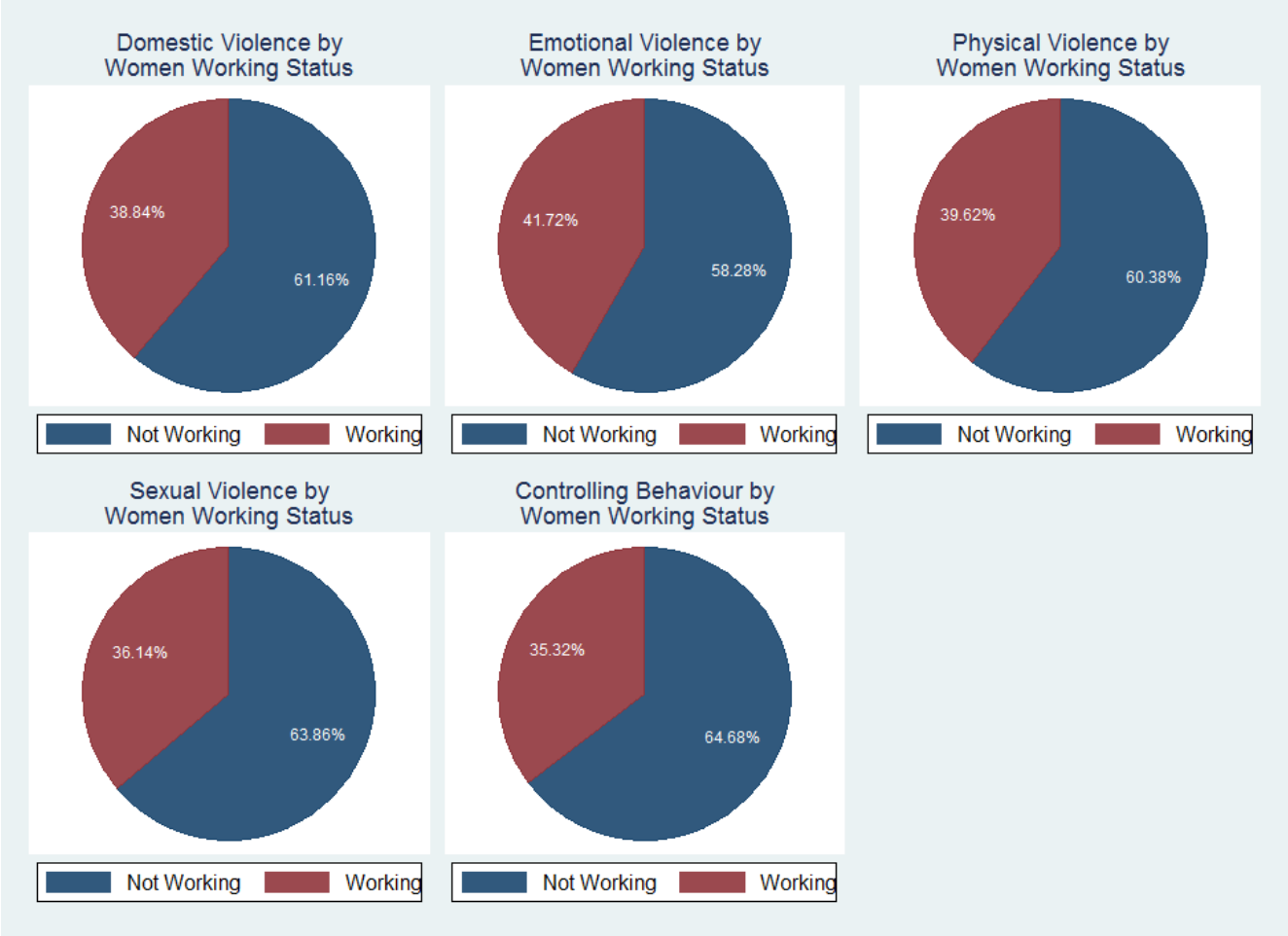
Source:Calculations based on National Family Health Survey (NFHS-3)

Figure 3.5: Spouse's Response to Controlling Behaviour Questions



Source: Calculations based on National Family Health Survey (NFHS-3)

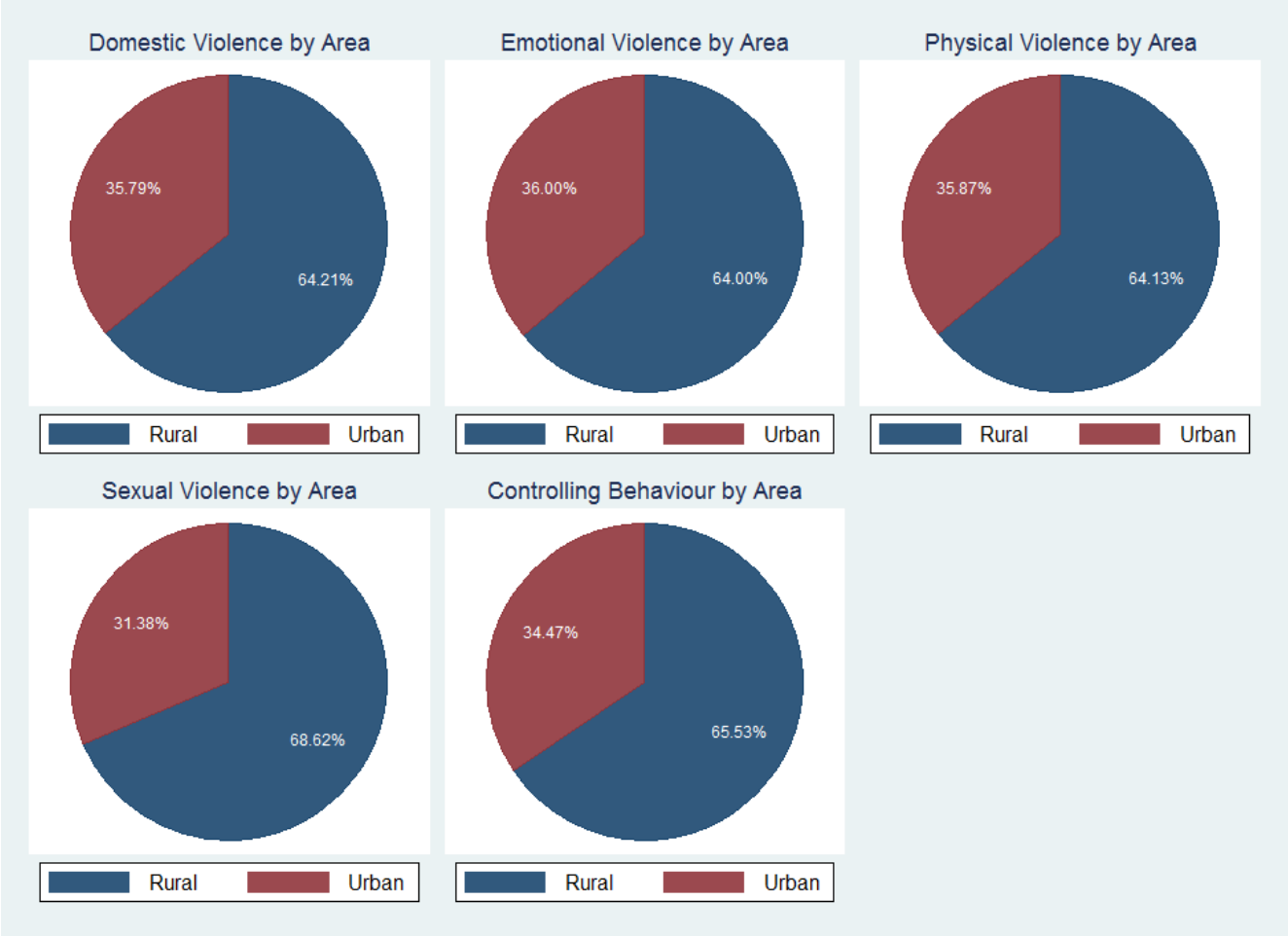
Figure 3.6: Domestic Violence and Controlling Behaviour Breakdown by Women's Working Status



Source: Calculations based on National Family Health Survey (NFHS-3)

NOTE: Each of the graphs above represent those women who answered yes to any of the relevant questions for that type of violence or controlling behaviour

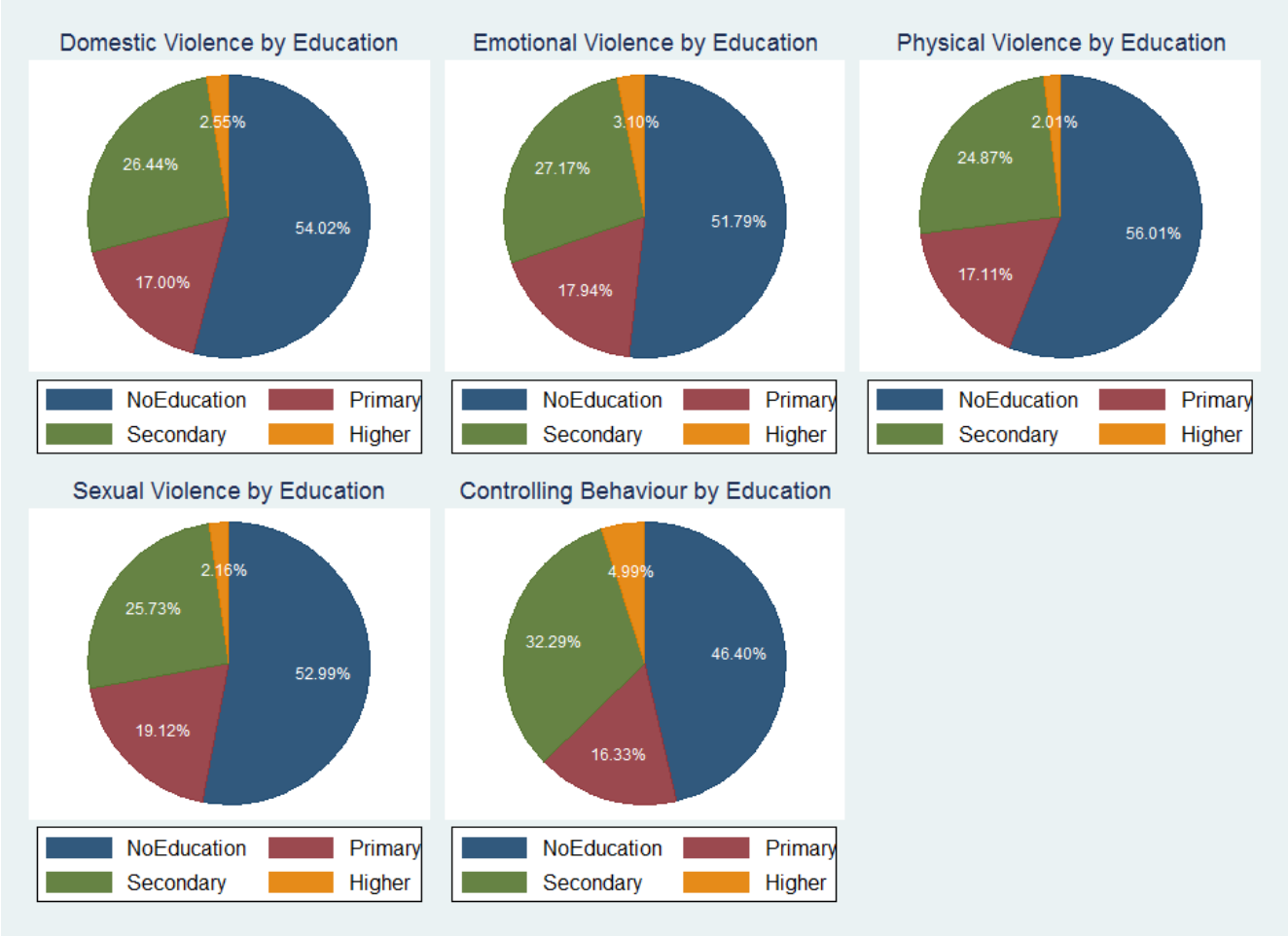
Figure 3.7: Domestic Violence and Controlling Behaviour Breakdown by Area of Residence



Source: Calculations based on National Family Health Survey (NFHS-3)

NOTE: Each of the graphs above represent those women who answered yes to any of the relevant questions for that type of violence or controlling behaviour

Figure 3.8: Domestic Violence and Controlling Behaviour Breakdown by Education Level



Source: Calculations based on National Family Health Survey (NFHS-3)

NOTE: Each of the graphs above represent those women who answered yes to any of the relevant questions for that type of violence or controlling behaviour

3.5 Results

3.5.1 Baseline Model: Probit Regression

3.5.1.1 Control Variables

Table 3.3 provides the average marginal effects of the baseline probit model for domestic violence. The estimation results for the individual types of domestic violence and controlling behaviour are presented in Appendix C.1. The results for the control variables do not vary much when compared to Table 3.3, and so, the following analysis of the control variables would also hold for those in Appendix C.1 [9].

It should also be noted that although a variable was available that enables spousal earning differences to be measured, the number of women who responded to the question in regards to this variable was considerably lower then the overall sample size. In particular, there are only 7,948 respondents of the spousal earning differences question and, as a result, the sample size of those who also responded "yes" to any of the types of violence and controlling behaviour was significantly reduced. The results for emotional violence and sexual violence should also be taken with caution as less than 150 respondents earned more than the husband and suffered violence. Nonetheless, the domestic violence regression and controlling behaviour results are based on a more balanced dataset and presents a general overview of the effect women's reservation policy and women's working status have on these outcomes. Therefore, conclusions made in this chapter will be based mainly on these results [10].

[9] The only distinguishing difference is when looking at the categorical variable where the wife earns more then the husband. In controlling behaviour, this is insignificant in column (4), whereas there is some significance in the other regression results for emotional, sexual and physical violence.

[10] The sub-categories of violence results are presented to assess whether there are any fundamental differences that can be captured between different types of violence.

Table 3.3: Probit Model: Average Marginal Effects for Domestic Violence

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
Age	-0.000289	-0.000316	-0.000413	-0.00189***
	(0.000456)	(0.000377)	(0.000379)	(0.000611)
AgeDiff	8.28e-05	0.000268	0.000379	0.000944
	(0.000724)	(0.000692)	(0.000721)	(0.00128)
Urban	0.0441***	0.0262***	0.0304***	0.0246*
	(0.00921)	(0.00979)	(0.00980)	(0.0128)
HusbandWorking	-0.0119	-0.0146	-0.0122	-0.0168
	(0.0199)	(0.0206)	(0.0207)	(0.0393)
WomEduc	-0.00287***	-0.00248***	-0.00191**	0.00243
	(0.000910)	(0.000868)	(0.000908)	(0.00168)
HusEduc	-0.00477***	-0.00295***	-0.00306***	-0.00292**
	(0.000711)	(0.000718)	(0.000726)	(0.00137)
OtherWives	0.101***	0.0859***	0.0739***	0.0618**
	(0.0210)	(0.0212)	(0.0224)	(0.0282)
TotalNumDep	0.0160***	0.0136***	0.0135***	0.0130***
	(0.00280)	(0.00269)	(0.00266)	(0.00459)
Religion (Base=Hindu)				
Muslim	0.0190	0.0601**	0.0576**	0.0656*
	(0.0259)	(0.0264)	(0.0254)	(0.0361)
Christian	-0.0265	-0.00721	-0.00572	-0.0575**
	(0.0168)	(0.0282)	(0.0295)	(0.0292)
Sikh	0.0117	-0.00807	-0.00372	0.0286
	(0.0144)	(0.00962)	(0.0123)	(0.0325)
Others	0.0208	0.0121	0.0175	0.0194
	(0.0229)	(0.0223)	(0.0209)	(0.0338)
Caste (Base=Others)				
SC	0.0502***	0.0391***	0.0376***	0.0363**
	(0.0147)	(0.0131)	(0.0127)	(0.0181)
ST	0.0217	-0.00772	-0.00785	0.00101
	(0.0158)	(0.0153)	(0.0158)	(0.0178)
OBC	-0.00194	0.000452	-0.000841	0.00516
	(0.0118)	(0.0111)	(0.0111)	(0.0142)
Wealth (Base=Poorest)				
Poorer	0.00508	0.00762	0.0107**	0.00573
	(0.00548)	(0.00522)	(0.00420)	(0.0150)
Middle	-0.0230**	-0.0222**	-0.0191**	-0.0239**
	(0.00927)	(0.00917)	(0.00834)	(0.00999)
Richer	-0.0557***	-0.0515***	-0.0456***	-0.0461**
	(0.0127)	(0.0114)	(0.0102)	(0.0197)
Richest	-0.127***	-0.118***	-0.108***	-0.104***
	(0.0126)	(0.0107)	(0.00917)	(0.0262)
Husband drinks Alcohol		0.161***	0.160***	0.186***
		(0.00921)	(0.00905)	(0.00681)
Wife Justifies Beating				
Goes out without permission			0.0192**	0.0188
			(0.00941)	(0.0120)
Neglects Children			0.0309**	0.0258
			(0.0128)	(0.0237)
Argues with Husband			0.0296**	0.00483
			(0.0122)	(0.0227)
Refuses Sex			0.00354	0.0134
			(0.0126)	(0.0222)
Burns Food			-0.000794	0.0158
			(0.00915)	(0.0145)
Earns More (Base=Less Than Husband)				
More than Husband				0.0492***
				(0.0122)
About same				0.0129
				(0.0187)
Sole earner				0.0906**
				(0.0440)
Pseudo R2	0.1175	0.1422	0.1479	0.1443
PCP	72.23%	73.32%	73.48%	69.64%
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
PCP refers to the "Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 3.3 in Column (1) gives the basic model for domestic violence, excluding variables that relate to husband's drinking, wife's opinion on beating and spousal income differences. The age and age difference variables are insignificant or less than 1% in magnitude, suggesting that domestic violence is not more or less likely as age increases. The Urban variable is significant, where there is a 4.4% increase in probability of domestic violence. This is unusual and goes against what was seen in the descriptive statistics earlier. However, Kimuna et al. (2013) found similar findings using the same data and investigated by re-running the estimation with the urban variable and each of the control variables. They found that the wealth index changes the relationship between urban residences and violence. A similar check was done in this study and the causal effect of living in an urban residence and levels of violence became insignificant when wealth index was removed. This suggests that poverty, which is captured in the wealth index variables, is a driving factor in levels of domestic violence and when this is controlled for, women living in urban areas are more likely to experience incidences of domestic violence.

If a husband is working, no significant result are found, suggesting that their working status doesn't play an important role in the probability of women suffering from domestic violence[11]. Women's education has a negative and significant effect on domestic violence, emotional violence, physical violence and controlling behaviour but the magnitude is very low. Husband's education is negative and significant but is also low in magnitude. This suggests that husband's education does not effect the likelihood of violence within the household.

If the husband has other wives, there is a positive and significant likelihood of 10.1%

[11]There is a significant effect when looking at sexual violence as shown in Table C.1.3 in Appendix C.1. This coincides with results found by Bhattacharyya et al. (2011) and Klasen and Lenze (2017), where the negative effect is associated with less stress and resentment on the husband when the wife is working relative to the husband not working.

in Column (1) on the incidence of violence and controlling behaviour. This was also found by Klasen and Lenze (2017) and reported as one of the reasons women felt they suffered from gender based violence from their husband in a study in Nepal, a closely associated neighbour with India (Paudel (2007)). The total number of dependents in the household, those who are under the age of 18, has a significant and positive effect. If the number of total dependents increases by one, there is an increase in probability of domestic violence of 1.6%. This is what we would have expected as increase in the number of children and place strain on household income and increase stress levels of the father.

When looking at different religions, relative to Hindus, all the results are insignificant, except when looking at Muslims. They are 6.6% more likely to suffer from domestic violence when looking at Column (4) that is the full specification. When controlling for caste, Scheduled Castes (SC) are more likely to suffer from domestic violence while the Scheduled Tribes (ST) and Other Backward Classes (OBC) groups have no significant effect. The wealth index indicates that wealth is always significant when looking at those in the richer and richest quintiles, where there is an negative and significant effect on domestic violence. The magnitudes of the average marginal effects also increase as wealth increases, with a 12.7% decrease in likelihood of domestic violence if a woman is from the richest quintile, relative to the poorest quintile, as shown in column (1). This supports findings by Kimuna et al. (2013) who find similar results using the same data.

Column (2) in Table 3.3 adds a control variable for whether the husband drinks alcohol or not and results indicates that drinking makes it much more likely (over 16%) that the wife will suffer from domestic violence, relative to husbands who do not drink. Previously discussed control variables do not vary much, except when looking

at Muslims, who are now 6% more likely to suffer from domestic violence. Column (3) in Table 3.3 further adds control variables for wife's opinion on whether beating is justified for various reasons. The marginal effects suggest that if women think that beating is justified for going out without permission, neglecting their children or arguing with their husband, then they are also more likely to suffer from domestic violence. This suggests that men may use more violence if they feel that women also agree that it is justified and would allow violence to occur without much resistance.

Finally, Column (4) of Table 3.3 provides the full baseline model that includes variables on spousal income differences, which is the difference between husbands and wife's earnings. Previously discussed results on the other control variables do vary somewhat, with age and being Christian becoming negative and significant suggesting that a higher age or being Christian leads to less domestic violence. All of the "wife justifies beating" variables become insignificant, suggesting that, once spousal income is controlled for, the opinion of wives doesn't have an effect on levels of violence. The spousal income differences variables themselves show that if a wife is earning more or is the sole earner in the household, then they are more likely to experience domestic violence. This is especially true for those who are sole earners where probability of violence increases by 9.1%.

Differing types of violence and controlling behaviour regression tables in the appendix show similar results with few differences to the discussed results. Notable differences include when looking at sexual violence or controlling behaviour in Tables C.1.3 and C.1.4, respectively, where the significance on "wife justifies beating" remains in Column (4) suggesting that women who think beating is justified are more likely to suffer from violence or controlling behaviour. Spousal income differences are also similar except when looking at sexual violence in Table C.1.3, where there is no

significant effect of earning more on the probability of violence. Controlling behaviour in Table C.1.4 also shows a positive and significant likelihood when looking at those who earn about the same as their husbands, suggesting that controlling behaviour is more sensitive to earning differences. Overall, results suggest that spousal income differences are important towards understanding violent behaviour from husbands when women are working.

3.5.1.2 Women's Working Status and Women Reservation Policy

Tables 3.4-3.8 provide us with the average marginal effects for the variables of interest; Women Working and Reservation for each estimation of domestic violence after adding various controls for domestic violence, emotional violence, physical violence, sexual violence and controlling behaviour respectively. Firstly, when looking at the women reservation policy variable, women who lived in states with reservation policy in place were much less likely to experience both violence and controlling behaviour relative to other states in all regressions. Women in reservation states are 23% less likely to suffer from domestic violence in Table 3.4 and 31% less likely to suffer from controlling behaviour in Table 3.8. This is a strong indication that having women friendly policies in place greatly reduces incidences of domestic violence.

Secondly, looking at the Women Working variable, results suggest that there is a strongly significant and positive affect of women's working status on the likelihood of all types of violence. This is consistent with findings of Klasen and Lenze (2017) and Kimuna et al. (2013) when not controlling for the possible endogeniety of women's working status. This suggests that women who work are more likely to suffer from intimate partner violence and supports male-backlash theories. In order to keep dominance in the household, husbands use violence as a means of keeping control. However, there is no significant effect when controlling for earning differences as shown in column (4) of Table 3.4-3.7, further suggesting that the main source of

violence that is associated with women's working status comes from whether the wife is earning more or less than the man. With respect to controlling behaviour in Table 3.8, only when controlling for earning differences does women's working status become significant and also negative. This goes against traditional backlash theories that suggest women working status leads to a increase in controlling behaviour.

The pseudo R-squared in each of the estimations is low, with a value 0.1443 for the overall regression for domestic violence and 0.0926 for the controlling behaviour regression in Tables 3.4 and 3.8 , respectively. However, the use of pseudo R-squared should be taken with care and should be used in conjunction with other measures of goodness of fit in order to get a overall view of fit Hagle and Mitchell (1992). As a result, the "percent correctly predicted (PCP)" is also calculated, as used by Klasen and Lenze (2017), and is presented below the pseudo R squared in Table 3.3 [12] As all of the percentages are above 60%, with a percentage of 89% in Table 3.5 when looking at emotional violence, we can say that our estimations account for a suitable amount of variables that affect incidences of domestic violence [13] The next section describes the results from taking into account endogeniety.

[12]The "percent correctly predicted" is calculated by calculating the predicted probability of each observation and creating a variable equal to 1 if this probability is above or equal to 0.5 and 0 otherwise. This variable is then subtracted from the dependent variable to calculate differences in predicted and actual values. If there is no difference then the difference is 0 and -1 or 1 otherwise. The number of zeros is added up and divided by the total number of observations and multiplied by 100 to give a percent of correctly predicted observations.

[13]It should be noted that the PCP does decrease slightly when looking at column (4) when controlling for earning differences. The number of observations also drop due to data constraints

Table 3.4: Probit Model: Domestic Violence

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
WomenWorking	0.0404***	0.0321***	0.0316***	-0.0378
	(0.00776)	(0.00687)	(0.00733)	(0.0246)
Reservation	-0.230***	-0.214***	-0.226***	-0.233***
	(0.00602)	(0.00567)	(0.00448)	(0.00853)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Pseudo R2	0.1175	0.1422	0.1479	0.1443
PCP	72.23%	73.32%	73.48%	69.64%
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
PCP refers to the "Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 3.5: Probit Model: Emotional Violence

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
WomenWorking	0.0242***	0.0194***	0.0194***	-0.00564
	(0.00373)	(0.00322)	(0.00287)	(0.00911)
Reservation	-0.0456***	-0.0367***	-0.0407***	-0.0531***
	(0.00526)	(0.00512)	(0.00521)	(0.00882)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Pseudo R2	0.0642	0.0901	0.0946	0.0993
PCP	89.89%	89.88%	89.85%	86.22%
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
PCP refers to the " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 3.6: Probit Model: Physical Violence

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
WomenWorking	0.0409***	0.0329***	0.0320***	-0.0194
	(0.00835)	(0.00769)	(0.00790)	(0.0276)
Reservation	-0.195***	-0.180***	-0.188***	-0.195***
	(0.00607)	(0.00589)	(0.00450)	(0.00843)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Pseudo R2	0.1253	0.1521	0.1572	0.1512
PCP	74.90%	75.64%	75.87%	71.43%
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
PCP refers to the " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 3.7: Probit Model: Sexual Violence

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
WomenWorking	0.00918***	0.00639**	0.00643**	-0.0117
	(0.00283)	(0.00291)	(0.00299)	(0.00849)
Reservation	-0.120***	-0.114***	-0.118***	-0.162***
	(0.00160)	(0.00169)	(0.00206)	(0.00608)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Pseudo R2	0.1018	0.1231	0.1271	0.1374
PCP	93.72%	93.71%	93.69%	92.30%
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
PCP refers to the " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

Table 3.8: Probit Model: Controlling Behaviour

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
Women Working	0.00635	0.00314	0.000695	-0.0589***
	(0.0135)	(0.0133)	(0.0134)	(0.0219)
Reservation	-0.300***	-0.294***	-0.306***	-0.308***
	(0.0126)	(0.0128)	(0.0117)	(0.0124)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Pseudo R2	0.0666	0.0694	0.0767	0.0926
PCP	64.97%	65.18%	65.30%	65.40%
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
PCP refers to the " Percent Correctly Predicted"
*** p<0.01, ** p<0.05, * p<0.1

3.5.2 Instrumental Variable Estimation: Bivariate Probit Model

Table 3.9 presents the results for the bivariate probit model for domestic violence calculating both probit estimates (equations (3.2) and (3.3)) simultaneously. As suggested by Wooldridge (2010), this kind of modeling technique can be used to provide consistent and efficient estimates when handling non-linear estimation with a binary endogenous variable [14]. Similar to the baseline model, the estimation outcomes for emotional violence, physical violence, sexual violence and controlling behaviour yield similar results for the control variables. Thus, any conclusions made using Table 3.9 also hold for all other estimations of sub violence categories and controlling behaviour [15]. Looking at the control variables, the significance and magnitudes do not change by much when taking into account endogeniety of women's working status. Generally the magnitudes of the variables have lessened but still remain significant.

[14] As a robustness check, additional instrumental variable methods were evaluated, which also provided further tests on the instrument used. These include a linear Two-Stage Least Squares (2SLS); an instrumental variable 2SLS where the reduced form is estimated using an Ordinary Least Squares (OLS) method and the second stage is calculated using a probit estimation; and a proposed Two-Stage Residual Inclusion (2SRI) method as proposed by Terza et al. (2008). The 2SRI method was used by Klasen and Lenze (2017) when estimating the effect of women's working status on domestic violence in Jordan. However, Wooldridge (2010) points out that if the residual included is significant, then the estimates from 2SRI are inconsistent and thus a bivariate probit model is more suitable. Nonetheless, the 2SRI provides a well-defined test for exogeniety of women's working status. These methods and results are discussed further in the Robustness section of this chapter.

[15] These results can be seen in Appendix C.2

Table 3.9: Bivariate Probit Model: Average Marginal Effects for Domestic Violence

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
Age	-8.11e-05	-0.000132	-0.000164	-0.00135**
	(0.000468)	(0.000400)	(0.000414)	(0.000560)
AgeDiff	-1.22e-05	0.000187	0.000268	0.000802
	(0.000726)	(0.000685)	(0.000727)	(0.00121)
Urban	0.0414***	0.0238**	0.0274***	0.0277**
	(0.00893)	(0.0101)	(0.0101)	(0.0124)
HusbandWorking	-0.0154	-0.0176	-0.0158	-0.0180
	(0.0201)	(0.0206)	(0.0206)	(0.0382)
WomEduc	-0.000432	-0.000181	0.000313	0.00260
	(0.00201)	(0.00172)	(0.00180)	(0.00644)
HusEduc	-0.00211**	-0.000351	-0.000637	0.00397
	(0.000881)	(0.00108)	(0.00116)	(0.00254)
OtherWives	0.105***	0.0892***	0.0779***	0.0647**
	(0.0210)	(0.0205)	(0.0220)	(0.0267)
TotalNumDep	0.0166***	0.0141***	0.0142***	0.0147***
	(0.00261)	(0.00250)	(0.00243)	(0.00429)
Religion (Base=Hindu)				
Muslim	0.0138	0.0556**	0.0519**	0.0587*
	(0.0248)	(0.0258)	(0.0249)	(0.0356)
Christian	-0.0258	-0.00640	-0.00461	-0.0599**
	(0.0166)	(0.0274)	(0.0284)	(0.0271)
Sikh	0.00884	-0.0107	-0.00736	0.0232
	(0.0155)	(0.0109)	(0.0138)	(0.0317)
Others	0.0200	0.0113	0.0162	0.0202
	(0.0224)	(0.0217)	(0.0201)	(0.0315)
Caste (Base=Others)				
SC	0.0518***	0.0405***	0.0394***	0.0315*
	(0.0147)	(0.0130)	(0.0127)	(0.0168)
ST	0.0285*	-0.00215	-0.00109	-0.000632
	(0.0158)	(0.0144)	(0.0150)	(0.0167)
OBC	0.000220	0.00244	0.00167	0.00517
	(0.0115)	(0.0106)	(0.0106)	(0.0132)
Wealth (Base=Poorest)				
Poorer	0.00240	0.00528	0.00828*	0.00965
	(0.00600)	(0.00553)	(0.00457)	(0.0154)
Middle	-0.0276***	-0.0262***	-0.0237**	-0.0145
	(0.0104)	(0.00984)	(0.00923)	(0.0118)
Richer	-0.0603***	-0.0556***	-0.0506***	-0.0308
	(0.0141)	(0.0126)	(0.0115)	(0.0200)
Richest	-0.132***	-0.123***	-0.114***	-0.0819***
	(0.0148)	(0.0131)	(0.0118)	(0.0275)
Husband drinks Alcohol		0.162***	0.162***	0.182***
		(0.00989)	(0.00969)	(0.00711)
Wife Justifies Beating				
Goes out without Permission			0.0194**	0.0171
			(0.00927)	(0.0117)
Neglects Children			0.0311**	0.0230
			(0.0129)	(0.0233)
Argues with Husband			0.0292**	0.00716
			(0.0124)	(0.0209)
Refuses Sex			0.00444	0.0157
			(0.0127)	(0.0209)
Burns Food			-0.000274	0.0183
			(0.00920)	(0.0144)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0534***
				(0.0119)
About Same				0.0250
				(0.0199)
Sole Earner				0.0888**
				(0.0443)
Second Probit Regression				
PSU Average Working Rate	0.6058***	0.6047***	0.6042***	0.1877***
	(0.02090)	(0.02115)	(0.02028)	(0.02624)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Endogeniety is controlled for by using the Average Working Rate (AWR) as it is expected that this is uncorrelated with domestic violence as it is a measure of the local labour market conditions and internal bias is removed by removing the observation in question when calculating the average for each individual (Klasen and Lenze (2017)). To check whether the AWR is a suitable instrument, the second probit average marginal effect for this variable is shown at the bottom of Table 3.9. There is a highly significant and positive effect of AWR working on an individual women's working status, which is expected [16].

Tables 3.10-3.14 provide the average marginal effects of the bivariate probit models for women's working status and reservation policy for domestic violence, emotional violence, physical violence, sexual violence and controlling behaviour, respectively. Firstly, looking at reservation policy, this remains significant and positive for all types of violence and behaviour, with the magnitudes slightly dampened when controlling for endogeniety of women's working status. This is very strong evidence that women friendly policies in the form of mandated quotas, reduce the incidence of domestic violence and controlling behaviour and also goes against traditional male backlash theories. By encouraging women to work through legal state level policy, women gain incentive to go into employment and the results suggests that this changes the attitudes of men towards women. Although this mechanism is difficult to analyse due to lack of data, past literature suggests that policies enabling women into work can change men's attitudes in the long run (Beaman et al. (2009b)). However, the magnitude differs greatly between different types of violence. In Table 3.11, the policy only has around a 4% decrease in probability of emotional violence, while physical violence in Table 3.12, shows around a 17% decrease if a woman is from a treated

[16]Further tests on endogeniety are limited when using a bivariate probit model and past literature suggests the use of the linear probability model (LPM) in two-stage least squares estimation as a way of checking the validity of instruments (Bhattacharyya et al. (2011)). Various other robustness checks, including running a LPM is also conducted.

female friendly policy state. This is important to note for future research as the effect other different female friendly policies can impact difference aspects of violence in different ways, depending on it's targeting properties. It could be argued that emotional violence is easier for husbands to use in states that encourage women into employment than physical violence as there are no physical scars to show the type of violence being endured and could be the more preferred method of violence from men. However, the overall decrease in probability of violence associated with reservation policy in all types of violence is significant.

The most striking difference between the baseline model and the instrumental variable model is women's working status in columns (1) - (3) in Tables 3.10-3.13 for domestic violence and it's sub categories. Once endogeniety is controlled for, women's working status becomes insignificant. Results suggest that not controlling for endogeniety leads to an upward bias in the estimates of the coefficients based on the baseline model. However, unlike previous studies, this study also takes into account differences in spousal earnings and when this is controlled for, as shown in column (4) for Tables 3.10-3.13, and the results becomes highly significant and negative. This suggests that male-backlash theories do not hold in the Indian context and that a woman working or not has no affect on the likelihood of suffering from violence or controlling behaviour, coinciding with findings by Klasen and Lenze (2017). This also reinforces the importance of controlling for earning differences between spouses as the results suggest that this is an important the source of violence, rather then women's working status alone. In fact, results suggest that women working and those who earn less then their spouse are much less likely to suffer from violence. It is only when earnings become more equalised or go in favour of the wife do the trends in violence start to increase, as shown in Figure 3.1. To further check the robustness of the results and the validity of the instrument used, the following section re-runs the estimations

using other techniques and carries out endogeniety tests on the instrumental variable.

Table 3.10: Bivariate Probit Model: Average Marginal Effects for Domestic Violence

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
WomenWorking	0.00477	0.000309	-0.00921	-0.230***
	(0.0251)	(0.0287)	(0.0296)	(0.0479)
Reservation	-0.223***	-0.208***	-0.217***	-0.204***
	(0.00889)	(0.00948)	(0.00822)	(0.00959)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table 3.11: Bivariate Probit Model: Average Marginal Effects for Emotional Violence

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
WomenWorking	0.00411	0.000753	-0.00187	-0.130***
	(0.0161)	(0.0173)	(0.0160)	(0.0440)
Reservation	-0.0414***	-0.0326***	-0.0360***	-0.0400***
	(0.00362)	(0.00372)	(0.00342)	(0.00979)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table 3.12: Bivariate Probit Model: Average Marginal Effects for Physical Violence

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
WomenWorking	0.00623	0.00210	-0.00558	-0.194***
	(0.0226)	(0.0256)	(0.0274)	(0.0492)
Reservation	-0.189***	-0.174***	-0.180***	-0.170***
	(0.00864)	(0.00950)	(0.00855)	(0.0112)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table 3.13: Bivariate Probit Model: Average Marginal Effects for Sexual Violence

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
WomenWorking	-0.0160	-0.0182	-0.0235	-0.187***
	(0.0304)	(0.0324)	(0.0332)	(0.0124)
Reservation	-0.114***	-0.109***	-0.111***	-0.148***
	(0.00662)	(0.00685)	(0.00591)	(0.00740)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table 3.14: Bivariate Probit Model: Average Marginal Effects for Controlling Behaviour

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
WomenWorking	-0.0679	-0.0703	-0.0792	-0.194*
	(0.0517)	(0.0543)	(0.0555)	(0.113)
Reservation	-0.279***	-0.273***	-0.284***	-0.288***
	(0.0230)	(0.0241)	(0.0234)	(0.0311)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

3.6 Robustness

3.6.1 Specification and Instrument Validity

In order to check if the baseline model is robust, a Linear Probability Model (LPM) is estimated and results are shown in Appendix C.3 in Tables C.3.1-C.3.5. All the coefficients are between 0 and 1, an indication that the LPM is a good model for the non-linear estimations (Horrace and Oaxaca (2006)) . The results are very similar to the probit regression results and implies that the baseline model yields robust results. Using LPM as an alternative specification, a two-stage least square (2SLS) estimation is also implemented and results are shown in Appendix C.4 in Tables C.4.1-C.4.5, where a LPM is run on both the first and second stage regressions as follows,

$$FS : WWS = \alpha_{1i} + \beta_{1i}X_{1i} + \gamma_i PSUAverageWorkingRate_i + \epsilon_{1i} \tag{3.4}$$

$$SS : DV = \alpha_{2i} + \beta_{2i}X_{2i} + \gamma_i WomenWorking_i + \epsilon_{2i} \tag{3.5}$$

The results are very similar to the bivariate probit estimation in Table 2.4 and indicate that results are robust to specification. The AWR for women is significant in each estimation in all tables and positively related to women's working status, which is to be expected and shows the instrument is strongly related to women's working status. Underneath this, the Kleibergen-Paap Wald F statistic is presented as a weak identification test [17]. The test statistic is above 10 and also statistically significant with a p value (not shown in tables) below 0.1% for all specifications, indicating that the instrument used is not considered weak. Furthermore, the Kleibergen-Paap rank LM statistic for under-identification is significant with a p value of 0.001 and so the null hypothesis that the specification is under-identified can be rejected. Thus the

[17]The Kleibergen-Paap Wald F statistic is robust when hesteroskedastic robust errors or clustered errors are used and the i.i.d. is relaxed Kleibergen and Paap (2006).

specification is identified.

To check if women working is indeed endogenous, a two-stage residual inclusion method is estimated as follows Terza et al. (2008),

$$FS : WWS = \alpha_{1i} + \beta_{1i}X_{1i} + \gamma_i PSUAverageWorkingRate_i + \epsilon_{1i}$$
$$SS : DV = \alpha_{2i} + \beta_{2i}X_{2i} + \gamma_i WomenWorking_i + \hat{v}_i + \epsilon_{2i}$$

This method suggests a control function type approach to dealing with a non-linear endogenous regressor (Burnett (1997)), where the first stage is estimated and the residuals of that regression be included in the second stage. This, in essence, cancels out any endogeniety carried by women working as it is now accounted for in the residuals. However, as pointed out by Wooldridge (2010) if the residuals are significant in the second stage, then the coefficients and subsequent average partial effects are inconsistent and thus this methodology is not appropriate in an endogenous explanatory regressor setting. It does, nonetheless, provide a test for exogeniety of the endogenous regressor and Tables C.5.1-C.5.5 in Appendix C.5 show the main variables of interest when carrying out this estimation. As the residuals are significant, there is an endogeniety issue present and thus an IV method is better suited in order to control for this. Thus, we can confidently conclude that endogeniety is present in the baseline model and AWR for women is a valid instrument.

In addition to checking the validity of the instrument, it is important to also ensure that the reservation policy as a measure of women friendly states is correctly specified. If other states were female friendly regardless of reservation, then this could cause an omitted variable bias issue. There is, unfortunately no standard measure of women friendly states or policies, however, it is known that Kerala has high development

outcomes with respect to women (Amaral (2017), Ross (2006)). It is also noted in Amaral (2017) that other female friendly reforms would normally be made in conjunction with reservation policy if a state is female friendly. The most well known female friendly policies were nationally enforced in 1993 through the women's reservation bill where women were given a quota of 1/3 of all village level political seats, however, most states implemented the policy before the national law was imposed and thus, should not affect the results found in this study.

Other female-friendly reforms that could effect results include the amendments to the Hindu Succession Act (HSA) that certain states changed before the nationwide reform in 2005. Amaral (2017) indicate that Maharashtra, Andhra Pradesh, Tamil Nadu and Karnataka are four states that made amendments to the HSA before 2005 [18]. Andhra Pradesh and Tamil Nadu were already removed from the dataset as they implemented the women reservation policy in public employment during the same time as the HSA and can be considered as women friendly. Maharashtra and Karnataka are both included in this study, thus issues can arise to the validility of the outcomes. As a result, the estimations were ran again with Maharashtra and Karnataka removed from the dataset [19], as well as, Kerala . The main results of estimating the bivariate probit model with the potential problematic states removed are available in Appendix C.6 in Tables C.6.1-C.6.5.

Most of the results are similar to what we found earlier with slight differences in magnitude and significance, however the most noticeable differences can be seen in the emotional violence and controlling behaviour regression results in Tables C.6.2 and C.6.5. Emotional violence loses significance in column (4) when accounting for

[18]Maharashtra and Karnataka in 1994, Andhra Pradesh in 1986 and Tamil Nadu in 1989.

[19]This means the estimation was ran using Gujarat as the only treatment state as there is no known knowledge that Gujarat was a female friendly state before women reservation policy in employment was implemented

spousal earning differences, suggesting that reservation policy effect on male attitudes has no impact and that women's working status also does not impact the probability of emotional violence. Although, this is in column (4) only and, as stated previously, the number of those who answer with a yes to emotional violence after adding in a variable to control for spousal earning differences greatly reduces, which could be affecting the quality of these results [20].

When looking at controlling behaviour after removing states that could have been female friendly, the reservation variable loses it significance in all specifications while the effect of women's working status becomes negative and significant. In particular, column (4) shows that women's working status reduces the probability of controlling behaviour by 29.2% when taking into account spousal earning differences. This suggests that less female friendly states with reservation policy do not effect controlling behaviour among husbands but the employment status of the wife is fundamental. Although controlling behaviour is not a form of violence, it is an important variable to evaluate as it affects female empowerment within the household and the mechanisms of this, from these results, suggest that it is different to traditional forms of violence. The lack of significance of reservation policy on controlling behaviour does not necessarily indicate that female friendly policies do not effect this outcome, but more so that reservation policy does not effect husband's controlling behaviour due to the policy's targeting properties on encouraging women into employment. This may change violent behaviour but controlling behaviour may still be used for husbands to exert dominance within the household without the use of violence when women are working.

[20]This is even further reduced as the number of states is also reduced so even fewer women responded to reports of emotional violence

3.6.2 Standard Errors

All standard errors in each regression are clustered at the state level, in accordance with guidance from Bertrand et al. (2004), who suggest that the likelihood of false positives decreases with clustered standard errors. Due to the few number of clusters used in this study (15 states/clusters) asymptotic properties may not hold. As a result, Cameron and Miller (2015) and Cameron et al. (2008) recommend using bootstrap methods to obtain standard errors and p-values. They suggest the use of bootstrap methods with asymptotic refinement as they work better to account for within state correlation in the case of few clusters. In particular, wild bootstrapping method is the advised method to obtain standard errors. However, the wild bootstrap method cannot be undertaken with non-linear data estimated with a probit model due to the residuals not being well-defined (Roodman et al. (2017)).
Kline et al (2014) suggested extended wild bootstrapping to non-linear estimation techniques called score bootstrapping. This kind of wild bootstrapping is computationally less heavy and suits estimations that use complex non-linear techniques.

Tables C.7.1-C.7.5 in Appendix C.7 present the coefficients for the main variables of interest after estimating a bivariate probit model. The p-values generated from clustering at the state level and the score bootstrapping method p-values are shown under the coefficients.[21]. The score bootstrap method p-values match the p-values from clustering at the state level for most of the coefficients. The level of significance is slightly reduced but still remain significant for all but Column (4) in Table C.7.2 for emotional violence. The significance of reservation policy on emotional violence is lost, however, due to the small sample size when running the specification in column

[21]It is important to note that the current capability to implement the score bootstrapping on STATA involves using the *boottest* command as created by Roodman et al. (2017). Their programme requires a null hypothesis to be imposed in order to gain the score bootstrapped p-values. The null hypothesis tested whether $\beta_{WomenWorking} = 0$ in the probit model for domestic violence. It is tested using a Wald test and the reported p-value for this test is presented in the tables.

(4), this could be effecting the overall results for this subcategory of violence. Overall, the results suggest that clustering at the state level is robust with few clusters in this chapter.

3.7 Conclusion

This chapter set out to assess whether women's reservation policy impacts the attitudes of men, such that domestic violence and controlling behaviour decreases among spousal relationships. Simultaneously, it evaluates the impact of women's working status on the same outcomes and also takes into account potential endogeniety when using women's working status as an explanatory variable in the estimation. Results indicate that female friendly policies reduce the likelihood of domestic violence. However, once removing states that may have historically been female friendly prior to the implementation of women reservation policy, there is no significant effect found when looking at controlling behaviour.

When looking at spousal earning differences, results suggest that the source of violence outlined in male backlash theories does not come from women working but from wife's income relative to the husbands. In specifications where spousal earnings were accounted for, women's working status actually decreased the probability of violence, indicating that violence is reduced when women are working and earn less than their husband. The use of female friendly policies in reducing incidences of domestic violence and understanding the source of violence is vital to future interventions, where it is important to have other policies alongside these that complement them so progress in a reduction in spousal violence can continue effectively. These policies could be related to informative programmes that help to reduce incidences of violence seen in this chapter when women earn more then their husbands.

There is also scope to assess the effect of women's working status within the household by looking at violence from other members of the household towards the wife and other female occupants. Wife to husband violence could also be assessed in further

research in order to understand how much empowerment women's working status gives to women where they feel they can use domestic violence and controlling behaviour to exert dominance, themselves. However, the latter is more difficult to measure as, to my current knowledge, no data is available on such violence. Overall, this chapter illustrates the importance of female friendly policies in reducing incidences of domestic violence and women's empowerment through working in reducing controlling behaviour by the husband. Future policies and research should target women who are higher earners within the household and better understand the mechanisms behind the increase in likelihood of violence seen in this chapter.

Appendix

C.1 Probit Model Results

Table C.1.1: Probit Model: Average Marginal Effects for Emotional Violence

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
Age	9.62e-05	0.000118	7.69e-05	-0.000824
	(0.000284)	(0.000279)	(0.000289)	(0.000568)
AgeDiff	0.000506	0.000624	0.000604	0.00157***
	(0.000469)	(0.000478)	(0.000514)	(0.000482)
Urban	0.0224**	0.0122	0.0136	0.0130
	(0.00943)	(0.00964)	(0.00892)	(0.0120)
HusbandWorking	-0.0134	-0.0149	-0.0138	0.0190
	(0.0112)	(0.0122)	(0.0127)	(0.0269)
WomEduc	0.000537	0.000748	0.000936	0.00262**
	(0.000687)	(0.000673)	(0.000707)	(0.00130)
HusEduc	-0.00187***	-0.000883*	-0.000931*	-0.000978
	(0.000409)	(0.000455)	(0.000483)	(0.000840)
OtherWives	0.0663***	0.0587***	0.0558***	0.0444**
	(0.0126)	(0.0123)	(0.0125)	(0.0226)
TotalNumDep	0.00214*	0.00100	0.00102	-1.97e-05
	(0.00121)	(0.00107)	(0.00106)	(0.00353)
Religion (Base=Hindu)				
Muslim	0.00789	0.0321***	0.0323***	0.0456***
	(0.00554)	(0.00550)	(0.00555)	(0.0155)
Christian	-0.0124	-0.00147	0.000450	0.00193
	(0.0159)	(0.0141)	(0.0144)	(0.0235)
Sikh	0.0358***	0.0230***	0.0200***	-0.00325
	(0.00800)	(0.00722)	(0.00609)	(0.0131)
Others	-0.00924	-0.0134	-0.0116	-0.00916
	(0.0124)	(0.0120)	(0.0110)	(0.0132)
Caste (Base=Others)				
SC	0.0182***	0.0125*	0.0119*	0.0279***
	(0.00686)	(0.00721)	(0.00702)	(0.00762)
ST	-8.33e-05	-0.0141	-0.0149	-0.0142
	(0.0100)	(0.00952)	(0.00949)	(0.00877)
OBC	0.00477	0.00665	0.00624	0.0259***
	(0.00700)	(0.00693)	(0.00685)	(0.00547)
Wealth (Base=Poorest)				
Poorer	0.00968*	0.0115*	0.0132**	0.00517
	(0.00574)	(0.00590)	(0.00527)	(0.0131)
Middle	-0.00851	-0.00782	-0.00563	-0.0102
	(0.00773)	(0.00793)	(0.00715)	(0.0105)
Richer	-0.0392***	-0.0370***	-0.0339***	-0.0394***
	(0.00713)	(0.00735)	(0.00575)	(0.0135)
Richest	-0.0599***	-0.0554***	-0.0494***	-0.0531***
	(0.00968)	(0.0102)	(0.00828)	(0.0188)
Husband drinks Alcohol		0.0821***	0.0820***	0.111***
		(0.00258)	(0.00264)	(0.00657)
Wife Justifies Beating				
Goes out without Permission			0.00893	-0.00628
			(0.00850)	(0.0128)
Neglects Children			0.0167***	0.0197*
			(0.00618)	(0.0120)
Argues with Husband			0.00942*	0.0196*
			(0.00487)	(0.0116)
Refused Sex			-0.00708	-0.00226
			(0.00770)	(0.00900)
Burns Food			0.0123*	0.0132
			(0.00715)	(0.0130)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0548**
				(0.0261)
About Same				0.00978
				(0.00989)
Sole Earner				0.0881**
				(0.0370)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.1.2: Probit Model: Average Marginal Effects for Physical Violence

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
Age	8.10e-05	7.43e-05	1.62e-05	-0.00186***
	(0.000421)	(0.000356)	(0.000361)	(0.000691)
AgeDiff	-6.33e-05	0.000120	0.000227	0.000823
	(0.000799)	(0.000686)	(0.000715)	(0.00112)
Urban	0.0536***	0.0360***	0.0396***	0.0304**
	(0.00854)	(0.00927)	(0.00924)	(0.0121)
HusbandWorking	-0.00168	-0.00429	-0.00229	-0.00759
	(0.0195)	(0.0191)	(0.0197)	(0.0339)
WomEduc	-0.00326***	-0.00288***	-0.00241**	0.000833
	(0.000984)	(0.000934)	(0.000966)	(0.00156)
HusEduc	-0.00482***	-0.00308***	-0.00318***	-0.00215
	(0.000787)	(0.000773)	(0.000781)	(0.00145)
OtherWives	0.106***	0.0909***	0.0806***	0.0643**
	(0.0202)	(0.0198)	(0.0204)	(0.0251)
TotalNumDep	0.0179***	0.0155***	0.0157***	0.0164***
	(0.00235)	(0.00226)	(0.00218)	(0.00478)
Religion (Base=Hindu)				
Muslim	0.0175	0.0581***	0.0553**	0.0577*
	(0.0223)	(0.0225)	(0.0219)	(0.0320)
Christian	-0.0330***	-0.0137	-0.0138	-0.0610
	(0.0103)	(0.0237)	(0.0257)	(0.0381)
Sikh	0.0102	-0.00873	-0.00256	0.0179
	(0.0142)	(0.00998)	(0.0117)	(0.0216)
Others	0.0298	0.0213	0.0270	0.0423
	(0.0235)	(0.0229)	(0.0216)	(0.0339)
Caste (Base=Others)				
SC	0.0469***	0.0360***	0.0344***	0.0298*
	(0.0149)	(0.0129)	(0.0124)	(0.0167)
ST	0.0212	-0.00753	-0.00695	-0.00632
	(0.0148)	(0.0146)	(0.0149)	(0.0155)
OBC	-0.00632	-0.00415	-0.00474	-0.00561
	(0.00946)	(0.00896)	(0.00882)	(0.0148)
Wealth (Base=Poorest)				
Poorer	-0.000204	0.00235	0.00456	0.00256
	(0.00775)	(0.00710)	(0.00662)	(0.0175)
Middle	-0.0218***	-0.0210***	-0.0188**	-0.0179
	(0.00805)	(0.00792)	(0.00743)	(0.0134)
Richer	-0.0544***	-0.0504***	-0.0465***	-0.0417*
	(0.0126)	(0.0114)	(0.0104)	(0.0219)
Richest	-0.125***	-0.116***	-0.108***	-0.109***
	(0.0132)	(0.0123)	(0.0119)	(0.0262)
Husband drinks Alcohol		0.155***	0.154***	0.185***
		(0.00989)	(0.00986)	(0.0106)
Wife Justifies Beating				
Goes out without Permission			0.0165**	0.0167*
			(0.00707)	(0.00862)
Neglects Children			0.0199*	0.0239
			(0.0119)	(0.0216)
Argues with Husband			0.0318**	0.00239
			(0.0130)	(0.0204)
Refuses Sex			0.000695	0.0113
			(0.0108)	(0.0209)
Burns Food			-0.00612	0.00472
			(0.00769)	(0.0131)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0402***
				(0.0102)
About the Same				0.00768
				(0.0208)
Sole Earner				0.0888*
				(0.0487)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.1.3: Probit Model: Average Marginal Effects for Sexual Violence

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
Age	-0.00163***	-0.00159***	-0.00164***	-0.00198***
	(0.000210)	(0.000210)	(0.000214)	(0.000540)
AgeDiff	-5.40e-05	4.06e-05	4.59e-05	0.000895**
	(0.000347)	(0.000333)	(0.000323)	(0.000435)
Urban	0.00392	-0.00219	-0.000604	-0.00321
	(0.00639)	(0.00672)	(0.00660)	(0.0104)
HusbandWorking	-0.0187*	-0.0187**	-0.0172*	-0.0166
	(0.00960)	(0.00942)	(0.0102)	(0.0283)
WomEduc	-0.000104	7.76e-05	0.000258	0.000677
	(0.000717)	(0.000694)	(0.000744)	(0.00147)
HusEduc	-0.00132**	-0.000735	-0.000694	-0.000582
	(0.000544)	(0.000539)	(0.000535)	(0.00126)
OtherWives	0.0444***	0.0391***	0.0388***	0.0193*
	(0.00806)	(0.00755)	(0.00819)	(0.0110)
TotalNumDep	0.00236***	0.00151*	0.00171**	-0.00134
	(0.000842)	(0.000860)	(0.000828)	(0.00244)
Religion (Base=Hindu)				
Muslim	0.00447	0.0197*	0.0191*	0.0178*
	(0.0111)	(0.0119)	(0.0110)	(0.00975)
Christian	-0.0111	-0.00431	-0.000464	-0.0166
	(0.0119)	(0.00784)	(0.00749)	(0.0286)
Sikh	-0.0119	-0.0165**	-0.0145	-0.0205
	(0.00999)	(0.00818)	(0.00954)	(0.0199)
Others	0.00437	0.00303	0.00197	0.0128
	(0.0102)	(0.00961)	(0.0104)	(0.0104)
Caste (Base=Others)				
SC	0.000268	-0.00307	-0.00347	-0.0143*
	(0.00388)	(0.00434)	(0.00442)	(0.00743)
ST	-0.0173***	-0.0263***	-0.0266***	-0.0298***
	(0.00462)	(0.00466)	(0.00460)	(0.00775)
OBC	-0.00673**	-0.00589**	-0.00714**	-0.00603
	(0.00300)	(0.00296)	(0.00301)	(0.00847)
Wealth (Base=Poorest)				
Poorer	0.00509	0.00581	0.00656*	-0.00457
	(0.00321)	(0.00356)	(0.00354)	(0.00729)
Middle	0.000317	0.000185	0.000880	-0.00646
	(0.00434)	(0.00424)	(0.00388)	(0.00925)
Richer	-0.0142***	-0.0132**	-0.0114**	-0.0125
	(0.00530)	(0.00575)	(0.00563)	(0.0137)
Richest	-0.0299***	-0.0279***	-0.0258***	-0.0254*
	(0.00469)	(0.00452)	(0.00437)	(0.0132)
Husband drinks Alcohol		0.0505***	0.0504***	0.0620***
		(0.00292)	(0.00273)	(0.00474)
Wife Justifies Beating				
Goes out without Permission			0.00679	-0.00444
			(0.00515)	(0.0112)
Neglects Children			0.00651	0.0169
			(0.00546)	(0.0115)
Argues with Husband			0.00200	-0.0197**
			(0.00766)	(0.00959)
Refuses Sex			0.0161**	0.0265***
			(0.00650)	(0.00777)
Burns Food			0.00125	0.0175**
			(0.00516)	(0.00750)
Earns More (Base=Less Than Husband)				
More Than Husband				0.00797
				(0.0124)
About the Same				-0.0140
				(0.0110)
Sole Earner				0.0377
				(0.0286)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.1.4: Probit Model: Average Marginal Effects for Controlling Behaviour

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
Age	-0.00143***	-0.00147***	-0.00143***	-0.00247***
	(0.000385)	(0.000352)	(0.000383)	(0.000513)
AgeDiff	0.00125*	0.00131*	0.00138**	0.000132
	(0.000671)	(0.000685)	(0.000660)	(0.00120)
Urban	-0.0520**	-0.0583***	-0.0555***	-0.0584**
	(0.0205)	(0.0205)	(0.0196)	(0.0255)
HusbandWorking	-0.0153	-0.0161	-0.0112	0.0357
	(0.0246)	(0.0246)	(0.0217)	(0.0428)
WomEduc	-0.00249***	-0.00235***	-0.00142*	-0.000591
	(0.000743)	(0.000712)	(0.000758)	(0.00250)
HusEduc	-0.00151*	-0.000773	-0.000852	0.000211
	(0.000808)	(0.000854)	(0.000928)	(0.00144)
OtherWives	0.0748***	0.0691***	0.0679***	0.0599**
	(0.0138)	(0.0149)	(0.0164)	(0.0265)
TotalNumDep	0.00763**	0.00669**	0.00645**	0.00181
	(0.00319)	(0.00308)	(0.00308)	(0.00516)
Religion (Base=Hindu)				
Poorer	0.0427*	0.0584**	0.0555**	0.0511**
	(0.0241)	(0.0244)	(0.0219)	(0.0253)
Christian	-0.00174	0.00374	0.00643	-0.0334
	(0.0248)	(0.0294)	(0.0291)	(0.0285)
Sikh	0.00964	0.00191	0.00754	0.0330
	(0.0288)	(0.0270)	(0.0288)	(0.0547)
Others	-0.00533	-0.00846	-0.00453	-0.0249
	(0.0341)	(0.0351)	(0.0352)	(0.0320)
Caste (Base=Others)				
SC	0.00927	0.00535	0.00527	-0.0107
	(0.0145)	(0.0150)	(0.0162)	(0.0219)
ST	-0.0250	-0.0356	-0.0361	-0.0510
	(0.0315)	(0.0326)	(0.0355)	(0.0353)
OBC	-0.0192	-0.0178	-0.0182	-0.0323***
	(0.0148)	(0.0148)	(0.0145)	(0.0102)
Wealth (Base=Poorest)				
Poorer	0.0186	0.0194	0.0219	0.0352*
	(0.0155)	(0.0158)	(0.0160)	(0.0211)
Middle	-0.00967	-0.00948	-0.00690	-0.00280
	(0.0200)	(0.0206)	(0.0204)	(0.0231)
Richer	-0.0453**	-0.0442**	-0.0408**	-0.0398
	(0.0205)	(0.0210)	(0.0205)	(0.0259)
Richest	-0.0817***	-0.0783***	-0.0666***	-0.0546*
	(0.0225)	(0.0232)	(0.0225)	(0.0289)
Husband drinks Alcohol		0.0653***	0.0645***	0.0904***
		(0.00729)	(0.00778)	(0.0104)
Wife Justifies Beating				
Goes out without Permission			0.0121	0.0315*
			(0.0119)	(0.0188)
Neglects Children			0.0567***	0.0371**
			(0.0136)	(0.0175)
Argues with Husband			0.0356**	0.0231
			(0.0154)	(0.0241)
Refuses Sex			0.00344	0.0156
			(0.0162)	(0.0234)
Burns Food			0.000911	0.00376
			(0.00992)	(0.0181)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0940***
				(0.0214)
About the Same				0.0503**
				(0.0235)
Sole Earner				0.0712*
				(0.0378)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

C.2 Bivariate Probit Model Results

Table C.2.1: Bivariate Probit Model: Average Marginal Effects for Emotional Violence

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
Age	0.000224	0.000241	0.000218	-0.000520
	(0.000334)	(0.000331)	(0.000332)	(0.000580)
AgeDiff	0.000458	0.000581	0.000552	0.00150***
	(0.000455)	(0.000466)	(0.000504)	(0.000511)
Urban	0.0208**	0.0107	0.0120	0.0149
	(0.00913)	(0.00943)	(0.00883)	(0.0112)
HusbandWorking	-0.0152	-0.0165	-0.0156	0.0179
	(0.0106)	(0.0117)	(0.0121)	(0.0266)
WomEduc	0.00153	0.00141	0.00175	0.00466
	(0.00142)	(0.00141)	(0.00149)	(0.00361)
HusEduc	-0.00122	-0.000376	-0.000528	0.000770
	(0.000906)	(0.00103)	(0.00109)	(0.00241)
OtherWives	0.0682***	0.0605***	0.0577***	0.0467**
	(0.0126)	(0.0120)	(0.0121)	(0.0221)
TotalNumDep	0.00250**	0.00132	0.00139	0.00121
	(0.00125)	(0.00111)	(0.00110)	(0.00349)
Religion (Base=Hindu)				
Muslim	0.00475	0.0291***	0.0288***	0.0423***
	(0.00489)	(0.00547)	(0.00564)	(0.0138)
Christian	-0.0121	-0.00100	0.00107	-0.000441
	(0.0164)	(0.0141)	(0.0143)	(0.0247)
Sikh	0.0343***	0.0216***	0.0182***	-0.00586
	(0.00710)	(0.00616)	(0.00568)	(0.0127)
Others	-0.00961	-0.0137	-0.0121	-0.00821
	(0.0119)	(0.0116)	(0.0105)	(0.0118)
Caste (Base=Others)				
SC	0.0191***	0.0133*	0.0129*	0.0256***
	(0.00677)	(0.00708)	(0.00679)	(0.00714)
ST	0.00352	-0.0112	-0.0116	-0.0149*
	(0.0112)	(0.0102)	(0.00997)	(0.00826)
OBC	0.00590	0.00772	0.00748	0.0259***
	(0.00679)	(0.00658)	(0.00649)	(0.00561)
Wealth (Base=Poorest)				
Poorer	0.00830	0.0104*	0.0121**	0.00782
	(0.00570)	(0.00582)	(0.00526)	(0.0137)
Middle	-0.0111	-0.0101	-0.00804	-0.00462
	(0.00712)	(0.00735)	(0.00686)	(0.0119)
Richer	-0.0418***	-0.0394***	-0.0365***	-0.0312**
	(0.00542)	(0.00582)	(0.00476)	(0.0145)
Richest	-0.0627***	-0.0580***	-0.0524***	-0.0428**
	(0.00835)	(0.00928)	(0.00807)	(0.0196)
Husband drinks Alcohol		0.0827***	0.0827***	0.112***
		(0.00295)	(0.00292)	(0.00666)
Wife Justifies Beating				
Goes out without Permission			0.00912	-0.00714
			(0.00838)	(0.0128)
Neglects Children			0.0168***	0.0187
			(0.00619)	(0.0119)
Argues with Husband			0.00926*	0.0210*
			(0.00505)	(0.0112)
Refuses Sex			-0.00664	-0.000421
			(0.00761)	(0.00851)
Burns Food			0.0125*	0.0149
			(0.00718)	(0.0135)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0583**
				(0.0260)
About the Same				0.0168
				(0.0115)
Sole Earner				0.0877**
				(0.0370)
Second Probit Regression				
PSU Average Working Rate	0.6059***	0.6047***	0.6042***	0.1835***
	(0.02082)	(0.02108)	(0.02019)	(0.02563)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.2.2: Bivariate Probit Model: Average Marginal Effects for Physical Violence

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
Age	0.000282	0.000251	0.000242	-0.00139**
	(0.000447)	(0.000399)	(0.000411)	(0.000672)
AgeDiff	-0.000165	3.32e-05	0.000114	0.000706
	(0.000806)	(0.000693)	(0.000735)	(0.00107)
Urban	0.0511***	0.0336***	0.0368***	0.0335***
	(0.00845)	(0.00956)	(0.00960)	(0.0118)
HusbandWorking	-0.00502	-0.00727	-0.00569	-0.00910
	(0.0202)	(0.0196)	(0.0202)	(0.0341)
WomEduc	0.000551	0.000810	0.000740	0.00118
	(0.00215)	(0.00208)	(0.00212)	(0.00594)
HusEduc	-0.00163*	7.56e-05	-2.85e-05	0.00689***
	(0.000978)	(0.00107)	(0.00120)	(0.00261)
OtherWives	0.109***	0.0942***	0.0844***	0.0677***
	(0.0205)	(0.0195)	(0.0204)	(0.0251)
TotalNumDep	0.0185***	0.0161***	0.0164***	0.0179***
	(0.00220)	(0.00213)	(0.00202)	(0.00464)
Religion (Base=Hindu)				
Muslim	0.0126	0.0540**	0.0501**	0.0523
	(0.0221)	(0.0229)	(0.0224)	(0.0320)
Christian	-0.0325***	-0.0130	-0.0129	-0.0642*
	(0.00994)	(0.0228)	(0.0246)	(0.0363)
Sikh	0.00731	-0.0114	-0.00602	0.0126
	(0.0150)	(0.0107)	(0.0126)	(0.0216)
Others	0.0290	0.0206	0.0258	0.0428
	(0.0231)	(0.0224)	(0.0210)	(0.0317)
Caste (Base=Others)				
SC	0.0486***	0.0374***	0.0361***	0.0254
	(0.0150)	(0.0130)	(0.0125)	(0.0158)
ST	0.0277*	-0.00218	-0.000719	-0.00811
	(0.0148)	(0.0139)	(0.0144)	(0.0151)
OBC	-0.00418	-0.00218	-0.00236	-0.00545
	(0.00937)	(0.00860)	(0.00843)	(0.0139)
Wealth (Base=Poorest)				
Poorer	-0.00279	8.88e-05	0.00221	0.00617
	(0.00799)	(0.00727)	(0.00681)	(0.0170)
Middle	-0.0262***	-0.0248***	-0.0231***	-0.00951
	(0.00891)	(0.00858)	(0.00809)	(0.0138)
Richer	-0.0590***	-0.0544***	-0.0511***	-0.0281
	(0.0134)	(0.0123)	(0.0111)	(0.0205)
Richest	-0.130***	-0.121***	-0.115***	-0.0906***
	(0.0138)	(0.0131)	(0.0122)	(0.0265)
Husband drinks Alcohol		0.156***	0.155***	0.182***
		(0.0103)	(0.0103)	(0.0111)
Wife Justifies Beating				
Goes out without Permission			0.0167**	0.0151*
			(0.00698)	(0.00883)
Neglects Children			0.0202*	0.0212
			(0.0120)	(0.0214)
Argues with Husband			0.0314**	0.00454
			(0.0131)	(0.0187)
Refuses Sex			0.00160	0.0134
			(0.0109)	(0.0198)
Burns Food			-0.00557	0.00764
			(0.00773)	(0.0130)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0438***
				(0.00990)
About the Same				0.0191
				(0.0213)
Sole Earner				0.0872*
				(0.0492)
Second Probit Regression				
PSU Average Working Rate	0.6057***	0.6046***	0.6041***	0.1878***
	(0.02090)	(0.02118)	(0.02029)	(0.02621)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.2.3: Bivariate Probit Model: Average Marginal Effects for Sexual Violence

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
Age	-0.00146***	-0.00143***	-0.00145***	-0.00170***
	(0.000323)	(0.000332)	(0.000332)	(0.000537)
AgeDiff	-0.000118	-2.04e-05	-3.25e-05	0.000802*
	(0.000375)	(0.000349)	(0.000342)	(0.000444)
Urban	0.00283	-0.00333	-0.00197	3.29e-05
	(0.00611)	(0.00664)	(0.00653)	(0.0106)
HusbandWorking	-0.0205*	-0.0206*	-0.0194	-0.0162
	(0.0111)	(0.0110)	(0.0118)	(0.0295)
WomEduc	0.00254	0.00243	0.00288	-0.00205
	(0.00190)	(0.00189)	(0.00189)	(0.00540)
HusEduc	-0.00100	-0.000464	-0.000464	0.00246
	(0.00150)	(0.00155)	(0.00157)	(0.00323)
OtherWives	0.0478***	0.0422***	0.0426***	0.0236*
	(0.00760)	(0.00681)	(0.00747)	(0.0121)
TotalNumDep	0.00280***	0.00190*	0.00221**	0.000239
	(0.00102)	(0.00106)	(0.00106)	(0.00249)
Religion (Base=Hindu)				
Muslim	0.00105	0.0164	0.0150	0.0150
	(0.00954)	(0.0107)	(0.00996)	(0.0116)
Christian	-0.0110	-0.00404	-7.10e-06	-0.0224
	(0.0124)	(0.00819)	(0.00790)	(0.0321)
Sikh	-0.0139	-0.0185*	-0.0172	-0.0270
	(0.0115)	(0.00994)	(0.0118)	(0.0210)
Others	0.00386	0.00251	0.00122	0.0142
	(0.00942)	(0.00905)	(0.00967)	(0.0109)
Caste (Base=Others)				
SC	0.00154	-0.00192	-0.00206	-0.0187**
	(0.00388)	(0.00450)	(0.00444)	(0.00761)
ST	-0.0136**	-0.0232***	-0.0230***	-0.0341***
	(0.00657)	(0.00596)	(0.00565)	(0.00733)
OBC	-0.00524*	-0.00441*	-0.00536**	-0.00694
	(0.00275)	(0.00266)	(0.00253)	(0.00868)
Wealth (Base=Poorest)				
Poorer	0.00423	0.00508	0.00585	2.17e-05
	(0.00319)	(0.00351)	(0.00358)	(0.00793)
Middle	-0.00198	-0.00202	-0.00163	0.00177
	(0.00465)	(0.00427)	(0.00418)	(0.0105)
Richer	-0.0173***	-0.0163***	-0.0150**	-0.00364
	(0.00551)	(0.00547)	(0.00595)	(0.0148)
Richest	-0.0346***	-0.0325***	-0.0314***	-0.0163
	(0.00785)	(0.00758)	(0.00836)	(0.0150)
Husband drinks Alcohol		0.0520***	0.0523***	0.0660***
		(0.00368)	(0.00371)	(0.00507)
Wife Justifies Beating				
Goes out without Permission			0.00694	-0.00634
			(0.00501)	(0.0121)
Neglects Children			0.00665	0.0154
			(0.00556)	(0.0114)
Argues with Husband			0.00162	-0.0181**
			(0.00794)	(0.00900)
Refuses Sex			0.0170**	0.0301***
			(0.00708)	(0.00772)
Burns Food			0.00171	0.0206**
			(0.00532)	(0.00822)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0118
				(0.0135)
About the Same				-0.00644
				(0.0127)
Sole Earner				0.0428
				(0.0272)
Second Probit Regression				
PSU Average Working Rate	0.6057***	0.6046***	0.6040***	0.1779***
	(0.02085)	(0.02115)	(0.02027)	(0.02349)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.2.4: Bivariate Probit Model: Average Marginal Effects for Controlling Behaviour

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
Age	-0.000929**	-0.000971**	-0.000879**	-0.00209***
	(0.000437)	(0.000433)	(0.000434)	(0.000353)
AgeDiff	0.00107	0.00113	0.00117	5.48e-05
	(0.000765)	(0.000773)	(0.000757)	(0.00124)
Urban	-0.0552***	-0.0618***	-0.0593***	-0.0548**
	(0.0204)	(0.0206)	(0.0199)	(0.0247)
HusbandWorking	-0.0202	-0.0209	-0.0162	0.0352
	(0.0243)	(0.0243)	(0.0212)	(0.0424)
WomEduc	-0.000781	-0.000749	-0.000214	0.000108
	(0.00210)	(0.00210)	(0.00231)	(0.00829)
HusEduc	-0.000973	-0.000274	-0.000270	0.00371
	(0.00167)	(0.00175)	(0.00196)	(0.00389)
OtherWives	0.0834***	0.0773***	0.0764***	0.0625**
	(0.0142)	(0.0149)	(0.0168)	(0.0263)
TotalNumDep	0.00871***	0.00770**	0.00760**	0.00320
	(0.00326)	(0.00315)	(0.00319)	(0.00569)
Religion (Base=Hindu)				
Muslim	0.0332	0.0498*	0.0459*	0.0470*
	(0.0254)	(0.0257)	(0.0235)	(0.0269)
Christian	-0.000184	0.00546	0.00840	-0.0371
	(0.0245)	(0.0291)	(0.0287)	(0.0257)
Sikh	0.00423	-0.00374	0.000989	0.0303
	(0.0296)	(0.0277)	(0.0295)	(0.0549)
Others	-0.00631	-0.00951	-0.00607	-0.0236
	(0.0325)	(0.0336)	(0.0334)	(0.0302)
Caste (Base=Others)				
SC	0.0124	0.00822	0.00836	-0.0142
	(0.0124)	(0.0129)	(0.0140)	(0.0233)
ST	-0.0143	-0.0257	-0.0254	-0.0524
	(0.0288)	(0.0294)	(0.0324)	(0.0347)
OBC	-0.0149	-0.0136	-0.0137	-0.0325***
	(0.0151)	(0.0151)	(0.0151)	(0.00992)
Wealth (Base=Poorest)				
Poorer	0.0164	0.0173	0.0198	0.0376*
	(0.0155)	(0.0158)	(0.0159)	(0.0193)
Middle	-0.0163	-0.0159	-0.0136	0.00294
	(0.0206)	(0.0211)	(0.0210)	(0.0248)
Richer	-0.0546**	-0.0533**	-0.0503**	-0.0295
	(0.0225)	(0.0230)	(0.0226)	(0.0252)
Richest	-0.0959***	-0.0923***	-0.0817***	-0.0394
	(0.0262)	(0.0268)	(0.0263)	(0.0321)
Husband drinks Alcohol		0.0684***	0.0677***	0.0904***
		(0.00776)	(0.00836)	(0.0102)
Wife Justifies Beating				
Goes out without Permission			0.0122	0.0297
			(0.0117)	(0.0192)
Neglects Children			0.0564***	0.0349**
			(0.0135)	(0.0169)
Argues with Husband			0.0343**	0.0247
			(0.0159)	(0.0232)
Refuses Sex			0.00488	0.0168
			(0.0162)	(0.0228)
Burns Food			0.00207	0.00582
			(0.0101)	(0.0184)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0967***
				(0.0218)
About the Same				0.0590**
				(0.0260)
Sole Earner				0.0717*
				(0.0370)
PSU Average Working Rate	0.6056***	0.6045***	0.6039***	0.1860***
	(0.02069)	(0.02095)	(0.02001)	(0.03086)
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

C.3 Linear Probability Model as Alternative to Probit Model

Table C.3.1: Linear Probability Model: Domestic Violence

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
Age	-0.000422	-0.000495	-0.000580	-0.00204***
	(0.000475)	(0.000401)	(0.000400)	(0.000669)
AgeDiff	-2.77e-05	0.000118	0.000227	0.000685
	(0.000751)	(0.000702)	(0.000737)	(0.00128)
Urban	0.0468***	0.0309***	0.0354***	0.0346**
	(0.00996)	(0.00977)	(0.00994)	(0.0120)
HusbandWorking	-0.0101	-0.0119	-0.00835	-0.0176
	(0.0204)	(0.0206)	(0.0206)	(0.0371)
WomEduc	0.00233	0.00278*	0.00288*	0.00685**
	(0.00162)	(0.00153)	(0.00153)	(0.00314)
WomEducSq	-0.000662***	-0.000673***	-0.000610***	-0.000788***
	(0.000136)	(0.000134)	(0.000124)	(0.000228)
HusEduc	-0.00560**	-0.00476**	-0.00451**	-0.000337
	(0.00191)	(0.00175)	(0.00179)	(0.00343)
HusEducSq	2.77e-05	0.000105	7.71e-05	-0.000272
	(0.000115)	(0.000111)	(0.000119)	(0.000212)
OtherWives	0.116***	0.101***	0.0863***	0.0698**
	(0.0223)	(0.0228)	(0.0234)	(0.0304)
TotalNumDep	0.0181***	0.0156***	0.0156***	0.0147**
	(0.00356)	(0.00343)	(0.00339)	(0.00517)
Religion (Base=Hindu)				
Muslim,	0.0191	0.0592**	0.0565**	0.0657*
	(0.0267)	(0.0258)	(0.0252)	(0.0364)
Christian	-0.0182	-0.00611	-0.00447	-0.0412
	(0.0159)	(0.0247)	(0.0262)	(0.0244)
Sikh	0.0138	-0.00645	-0.00224	0.0270
	(0.0125)	(0.00825)	(0.0104)	(0.0284)
Others	0.0203	0.0127	0.0178	0.0192
	(0.0230)	(0.0232)	(0.0223)	(0.0371)
Caste (Base=Others)				
SC	0.0512***	0.0406**	0.0394**	0.0365*
	(0.0158)	(0.0138)	(0.0135)	(0.0171)
ST	0.0208	-0.00848	-0.00866	-0.000935
	(0.0166)	(0.0161)	(0.0172)	(0.0181)
OBC	-0.00104	0.00133	3.81e-05	0.00598
	(0.0112)	(0.0106)	(0.0106)	(0.0121)
Wealth (Base=Poorest)				
Poorer	-0.00132	0.00153	0.00475	0.00163
	(0.00712)	(0.00674)	(0.00570)	(0.0162)
Middle	-0.0355***	-0.0350***	-0.0325***	-0.0347**
	(0.0109)	(0.0110)	(0.0107)	(0.0118)
Richer	-0.0689***	-0.0660***	-0.0606***	-0.0611**
	(0.0125)	(0.0117)	(0.0106)	(0.0213)
Richest	-0.134***	-0.126***	-0.115***	-0.118***
	(0.0106)	(0.00960)	(0.00753)	(0.0276)
Husband drinks Alcohol		0.173***	0.173***	0.195***
		(0.0118)	(0.0117)	(0.00900)
Wife Justifies Beating				
Goes out without Permission			0.0205*	0.0190
			(0.0112)	(0.0131)
Neglects Children			0.0305**	0.0246
			(0.0141)	(0.0252)
Argues with Husband			0.0336**	0.00639
			(0.0136)	(0.0252)
Refuses Sex			0.00194	0.0139
			(0.0134)	(0.0240)
Burns Food			0.000711	0.0187
			(0.00979)	(0.0161)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0468***
				(0.0120)
About the Same				0.0128
				(0.0177)
Sole Earner				0.0942*
				(0.0440)
WomenWorking	0.0440***	0.0356***	0.0350***	-0.0411
	(0.00844)	(0.00764)	(0.00818)	(0.0261)
Reservation	-0.274***	-0.257***	-0.269***	-0.256***
	(0.00689)	(0.00707)	(0.00615)	(0.00843)
Constant	0.609***	0.541***	0.517***	0.601***
	(0.0413)	(0.0399)	(0.0398)	(0.0552)
Observations	33,227	33,206	32,259	7,948
R-squared	0.130	0.157	0.163	0.163

Standard errors clustered at state level in parentheses, state dummies included

*** p<0.01, ** p<0.05, * p<0.1

Table C.3.2: Linear Probability Model: Emotional Violence

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
Age	6.26e-05	2.56e-05	2.79e-07	-0.000957
	(0.000272)	(0.000261)	(0.000273)	(0.000592)
AgeDiff	0.000508	0.000594	0.000582	0.00159**
	(0.000500)	(0.000500)	(0.000536)	(0.000542)
Urban	0.0248**	0.0164	0.0182*	0.0216
	(0.0106)	(0.0102)	(0.00947)	(0.0125)
HusbandWorking	-0.0145	-0.0154	-0.0130	0.0238
	(0.0115)	(0.0124)	(0.0127)	(0.0274)
WomEduc	0.00281**	0.00306**	0.00295**	0.00397*
	(0.00123)	(0.00120)	(0.00127)	(0.00209)
WomEducSq	-0.000277***	-0.000283***	-0.000241***	-0.000300**
	(7.58e-05)	(7.29e-05)	(7.95e-05)	(0.000120)
HusEduc	-0.00263**	-0.00217**	-0.00189*	0.000507
	(0.00106)	(0.000996)	(0.00100)	(0.00241)
HusEducSq	4.28e-05	8.34e-05	5.62e-05	-0.000136
	(5.67e-05)	(5.25e-05)	(5.41e-05)	(0.000165)
OtherWives	0.0935***	0.0857***	0.0813***	0.0556*
	(0.0226)	(0.0226)	(0.0222)	(0.0314)
TotalNumDep	0.00250*	0.00119	0.00125	-0.000310
	(0.00132)	(0.00119)	(0.00114)	(0.00398)
Religion (Base=Hindu)				
Muslim	0.00714	0.0284***	0.0281***	0.0374***
	(0.00522)	(0.00488)	(0.00520)	(0.0124)
Christian	-0.0124	-0.00600	-0.00417	-0.00102
	(0.0174)	(0.0136)	(0.0139)	(0.0206)
Sikh	0.0289***	0.0182**	0.0158**	-0.00443
	(0.00647)	(0.00651)	(0.00541)	(0.0139)
Others	-0.0120	-0.0160	-0.0133	-0.00907
	(0.0144)	(0.0158)	(0.0140)	(0.0181)
Caste (Base=Others)				
SC	0.0176**	0.0121*	0.0116*	0.0237***
	(0.00646)	(0.00656)	(0.00643)	(0.00632)
ST	-0.000485	-0.0159	-0.0166	-0.0259**
	(0.0128)	(0.0127)	(0.0128)	(0.0109)
OBC	0.00515	0.00652	0.00619	0.0209***
	(0.00710)	(0.00708)	(0.00716)	(0.00488)
Wealth (Base=Poorest)				
Poorer	0.00783	0.00931	0.0109	0.00309
	(0.00700)	(0.00712)	(0.00671)	(0.0152)
Middle	-0.0132	-0.0131	-0.0114	-0.0163
	(0.00808)	(0.00832)	(0.00770)	(0.0113)
Richer	-0.0445***	-0.0431***	-0.0405***	-0.0480***
	(0.00741)	(0.00745)	(0.00585)	(0.0148)
Richest	-0.0642***	-0.0599***	-0.0535***	-0.0641***
	(0.00916)	(0.00924)	(0.00706)	(0.0200)
Husband drinks Alcohol		0.0917***	0.0913***	0.118***
		(0.00781)	(0.00778)	(0.0121)
Wife Justifies Beating				
Goes out without Permission			0.0100	-0.00936
			(0.0104)	(0.0145)
Neglects Children			0.0162**	0.0210
			(0.00746)	(0.0131)
Argues with Husband			0.0115*	0.0220
			(0.00591)	(0.0132)
Refuses Sex			-0.00909	-0.00385
			(0.0105)	(0.0114)
Burns Food			0.0153	0.0159
			(0.00896)	(0.0161)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0534*
				(0.0280)
About the Same				0.0102
				(0.00989)
Sole Earner				0.0936**
				(0.0402)
WomenWorking	0.0269***	0.0224***	0.0223***	-0.00554
	(0.00456)	(0.00415)	(0.00383)	(0.00984)
Reservation	-0.0647***	-0.0557***	-0.0598***	-0.0792***
	(0.00507)	(0.00502)	(0.00520)	(0.00816)
Constant	0.197***	0.161***	0.146***	0.167***
	(0.0201)	(0.0211)	(0.0193)	(0.0331)
Observations	33,227	33,206	32,259	7,948
R-squared	0.040	0.058	0.061	0.073

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.3.3: Linear Probability Model: Physical Violence

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
Age	-3.88e-05	-0.000110	-0.000151	-0.00198**
	(0.000415)	(0.000360)	(0.000360)	(0.000741)
AgeDiff	-0.000111	3.34e-05	0.000140	0.000580
	(0.000812)	(0.000690)	(0.000725)	(0.00108)
Urban	0.0559***	0.0404***	0.0442***	0.0396***
	(0.00996)	(0.00962)	(0.00986)	(0.0114)
HusbandWorking	9.52e-07	-0.00175	0.00149	-0.0103
	(0.0195)	(0.0183)	(0.0187)	(0.0312)
WomEduc	-0.000187	0.000241	0.000414	0.00242
	(0.00165)	(0.00156)	(0.00160)	(0.00273)
WomEducSq	-0.000506***	-0.000516***	-0.000472***	-0.000583**
	(0.000125)	(0.000123)	(0.000119)	(0.000209)
HusEduc	-0.00529**	-0.00446**	-0.00432**	-0.000151
	(0.00209)	(0.00196)	(0.00201)	(0.00310)
HusEducSq	-5.27e-06	7.07e-05	5.10e-05	-0.000235
	(0.000130)	(0.000127)	(0.000133)	(0.000180)
OtherWives	0.125***	0.111***	0.0975***	0.0743**
	(0.0230)	(0.0228)	(0.0225)	(0.0279)
TotalNumDep	0.0209***	0.0184***	0.0187***	0.0189***
	(0.00326)	(0.00313)	(0.00305)	(0.00554)
Religion (Base=Hindu)				
Muslim	0.0176	0.0569**	0.0539**	0.0579*
	(0.0225)	(0.0208)	(0.0207)	(0.0312)
Christian	-0.0253*	-0.0135	-0.0133	-0.0418
	(0.0121)	(0.0198)	(0.0216)	(0.0287)
Sikh	0.0128	-0.00700	-0.00117	0.0155
	(0.0117)	(0.00866)	(0.0100)	(0.0201)
Others	0.0293	0.0218	0.0269	0.0417
	(0.0238)	(0.0239)	(0.0233)	(0.0380)
Caste (Base=Others)				
SC	0.0485**	0.0381**	0.0368**	0.0299*
	(0.0167)	(0.0145)	(0.0141)	(0.0162)
ST	0.0190	-0.00962	-0.00910	-0.0109
	(0.0149)	(0.0148)	(0.0155)	(0.0157)
OBC	-0.00553	-0.00321	-0.00380	-0.00533
	(0.00897)	(0.00854)	(0.00846)	(0.0122)
Wealth (Base=Poorest)				
Poorer	-0.00705	-0.00426	-0.00189	-0.00131
	(0.00920)	(0.00851)	(0.00787)	(0.0186)
Middle	-0.0344***	-0.0340***	-0.0325***	-0.0283*
	(0.0101)	(0.0103)	(0.0102)	(0.0148)
Richer	-0.0667***	-0.0639***	-0.0605***	-0.0565**
	(0.0121)	(0.0114)	(0.0107)	(0.0236)
Richest	-0.130***	-0.122***	-0.115***	-0.120***
	(0.0120)	(0.0122)	(0.0122)	(0.0289)
Husband drinks Alcohol		0.170***	0.169***	0.196***
		(0.0118)	(0.0118)	(0.0130)
Wife Justifies Beating				
Goes out without Permission			0.0180*	0.0162
			(0.00894)	(0.00987)
Neglects Children			0.0185	0.0215
			(0.0128)	(0.0227)
Argues with Husband			0.0364**	0.00427
			(0.0152)	(0.0232)
Refuses Sex			-0.00112	0.0117
			(0.0114)	(0.0232)
Burns Food			-0.00582	0.00702
			(0.00830)	(0.0142)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0377***
				(0.00991)
About the Same				0.00673
				(0.0193)
Sole Earner				0.0910*
				(0.0494)
WomenWorking	0.0449***	0.0367***	0.0357***	-0.0210
	(0.00927)	(0.00857)	(0.00887)	(0.0301)
Reservation	-0.244***	-0.227***	-0.236***	-0.218***
	(0.00613)	(0.00622)	(0.00615)	(0.00891)
Constant	0.532***	0.466***	0.445***	0.517***
	(0.0404)	(0.0386)	(0.0378)	(0.0533)
Observations	33,227	33,206	32,259	7,948
R-squared	0.130	0.158	0.163	0.162

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.3.4: Linear Probability Model: Sexual Violence

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
Age	-0.00168***	-0.00170***	-0.00175***	-0.00227***
	(0.000388)	(0.000359)	(0.000379)	(0.000606)
AgeDiff	-0.000286	-0.000235	-0.000223	0.000683
	(0.000427)	(0.000398)	(0.000376)	(0.000500)
Urban	0.00441	-0.000861	0.00102	0.000672
	(0.00741)	(0.00768)	(0.00753)	(0.0115)
HusbandWorking	-0.0182	-0.0188*	-0.0164	-0.0195
	(0.0107)	(0.0103)	(0.0112)	(0.0310)
WomEduc	0.000379	0.000524	0.000596	9.63e-05
	(0.00124)	(0.00121)	(0.00128)	(0.00214)
WomEducSq	-0.000109*	-0.000113*	-9.37e-05	-8.75e-05
	(5.97e-05)	(5.92e-05)	(5.86e-05)	(0.000101)
HusEduc	-0.00195	-0.00169	-0.00157	-0.000851
	(0.00162)	(0.00161)	(0.00163)	(0.00276)
HusEducSq	3.15e-05	5.76e-05	4.90e-05	-2.05e-05
	(7.93e-05)	(8.01e-05)	(8.25e-05)	(0.000168)
OtherWives	0.0635***	0.0586***	0.0572***	0.0259
	(0.0176)	(0.0165)	(0.0166)	(0.0197)
TotalNumDep	0.00202*	0.00118	0.00131	-0.00211
	(0.00104)	(0.000939)	(0.000927)	(0.00289)
Religion (Base=Hindu)				
Muslim	0.00815	0.0213	0.0213	0.0197
	(0.0142)	(0.0145)	(0.0140)	(0.0135)
Christian	-0.00583	-0.00186	0.00175	-0.00953
	(0.0136)	(0.00925)	(0.00855)	(0.0220)
Sikh	-0.0106	-0.0173*	-0.0145	-0.0299
	(0.0101)	(0.00874)	(0.00926)	(0.0203)
Others	0.00278	0.000311	-0.000310	0.00445
	(0.00554)	(0.00664)	(0.00712)	(0.00788)
Caste (Base=Others)				
SC	0.00153	-0.00200	-0.00218	-0.0153
	(0.00448)	(0.00471)	(0.00484)	(0.00975)
ST	-0.0222***	-0.0320***	-0.0325***	-0.0368**
	(0.00659)	(0.00883)	(0.00948)	(0.0127)
OBC	-0.00577	-0.00502	-0.00619	-0.00686
	(0.00401)	(0.00350)	(0.00373)	(0.00748)
Wealth (Base=Poorest)				
Poorer	0.00213	0.00309	0.00389	-0.0105
	(0.00398)	(0.00411)	(0.00431)	(0.00889)
Middle	-0.00541	-0.00515	-0.00504	-0.0128
	(0.00466)	(0.00456)	(0.00434)	(0.0110)
Richer	-0.0217***	-0.0207***	-0.0197***	-0.0226
	(0.00491)	(0.00534)	(0.00548)	(0.0151)
Richest	-0.0310***	-0.0282***	-0.0261***	-0.0276*
	(0.00452)	(0.00450)	(0.00460)	(0.0149)
Husband drinks Alcohol		0.0570***	0.0566***	0.0655***
		(0.0100)	(0.00983)	(0.0113)
Wife Justifies Beating				
Goes out without Permission			0.00825	-0.00396
			(0.00604)	(0.0117)
Neglects Children			0.00702	0.0193
			(0.00658)	(0.0152)
Argues with Husband			0.00132	-0.0233*
			(0.00859)	(0.0129)
Refuses Sex			0.0177**	0.0291**
			(0.00725)	(0.0103)
Burns Food			0.00101	0.0191**
			(0.00598)	(0.00847)
Earns More (Base=Less Than Husband)				
More Than Husband				0.00487
				(0.0107)
About the Same				-0.0132
				(0.0111)
Sole Earner				0.0382
				(0.0236)
WomenWorking	0.00852**	0.00577*	0.00572*	-0.0181
	(0.00297)	(0.00282)	(0.00292)	(0.0121)
Reservation	-0.131***	-0.125***	-0.130***	-0.199***
	(0.00406)	(0.00480)	(0.00409)	(0.00549)
Constant	0.250***	0.228***	0.221***	0.335***
	(0.0197)	(0.0167)	(0.0198)	(0.0461)
Observations	33,227	33,206	32,259	7,948
R-squared	0.048	0.058	0.060	0.073

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.3.5: Linear Probability Model: Controlling Behaviour

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
Age	-0.00145***	-0.00149***	-0.00144***	-0.00260***
	(0.000383)	(0.000350)	(0.000378)	(0.000522)
AgeDiff	0.00128*	0.00134*	0.00141*	0.000244
	(0.000696)	(0.000704)	(0.000674)	(0.00117)
Urban	-0.0528**	-0.0590**	-0.0562**	-0.0592**
	(0.0210)	(0.0212)	(0.0202)	(0.0259)
HusbandWorking	-0.0154	-0.0161	-0.0113	0.0357
	(0.0249)	(0.0247)	(0.0217)	(0.0436)
WomEduc	0.00380**	0.00402**	0.00430**	0.00495
	(0.00156)	(0.00153)	(0.00181)	(0.00374)
WomEducSq	-0.000615***	-0.000623***	-0.000550***	-0.000676***
	(0.000163)	(0.000160)	(0.000174)	(0.000192)
HusEduc	0.000270	0.000607	0.000929	0.00352
	(0.00180)	(0.00177)	(0.00182)	(0.00432)
HusEducSq	-0.000127	-9.84e-05	-0.000126	-0.000283
	(0.000102)	(0.000101)	(0.000109)	(0.000309)
OtherWives	0.0797***	0.0741***	0.0730***	0.0646**
	(0.0143)	(0.0154)	(0.0168)	(0.0277)
TotalNumDep	0.00765**	0.00672**	0.00645*	0.00168
	(0.00318)	(0.00308)	(0.00309)	(0.00522)
Religion (Base=Hindu)				
Muslim	0.0422*	0.0575**	0.0547**	0.0500*
	(0.0238)	(0.0239)	(0.0213)	(0.0255)
Christian	0.00546	0.0100	0.0132	-0.0231
	(0.0203)	(0.0247)	(0.0243)	(0.0243)
Sikh	0.00908	0.00135	0.00697	0.0328
	(0.0287)	(0.0271)	(0.0289)	(0.0559)
Others	-0.00602	-0.00898	-0.00536	-0.0257
	(0.0340)	(0.0351)	(0.0353)	(0.0342)
Caste (Base=Others)				
SC	0.00914	0.00514	0.00511	-0.0101
	(0.0149)	(0.0153)	(0.0166)	(0.0223)
ST	-0.0259	-0.0368	-0.0372	-0.0527
	(0.0344)	(0.0356)	(0.0388)	(0.0381)
OBC	-0.0191	-0.0179	-0.0182	-0.0307***
	(0.0143)	(0.0142)	(0.0138)	(0.0100)
Wealth (Base=Poorest)				
Poorer	0.0184	0.0192	0.0215	0.0351
	(0.0159)	(0.0163)	(0.0165)	(0.0221)
Middle	-0.0109	-0.0108	-0.00841	-0.00527
	(0.0207)	(0.0214)	(0.0212)	(0.0244)
Richer	-0.0484**	-0.0473**	-0.0442*	-0.0436
	(0.0209)	(0.0214)	(0.0210)	(0.0271)
Richest	-0.0838***	-0.0803***	-0.0685***	-0.0572*
	(0.0228)	(0.0234)	(0.0229)	(0.0296)
Husband drinks Alcohol		0.0661***	0.0653***	0.0916***
		(0.00729)	(0.00785)	(0.0111)
Wife Justifies Beating				
Goes out without Permission			0.0126	0.0316
			(0.0127)	(0.0198)
Neglects Children			0.0579***	0.0383*
			(0.0146)	(0.0185)
Argues with Husband			0.0376**	0.0241
			(0.0163)	(0.0256)
Refuses Sex			0.00403	0.0187
			(0.0170)	(0.0250)
Burns Food			0.00125	0.00370
			(0.0105)	(0.0189)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0957***
				(0.0226)
About Same				0.0510**
				(0.0235)
Sole Earner				0.0727*
				(0.0388)
WomenWorking	0.00710	0.00392	0.00138	-0.0591**
	(0.0138)	(0.0135)	(0.0136)	(0.0220)
Reservation	-0.313***	-0.307***	-0.320***	-0.314***
	(0.0115)	(0.0116)	(0.0104)	(0.0119)
Constant	0.802***	0.776***	0.742***	0.793***
	(0.0283)	(0.0275)	(0.0297)	(0.0574)
Observations	33,227	33,206	32,259	7,948
R-squared	0.086	0.090	0.099	0.118

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

C.4 2-SLS as Alternative to Bivariate Probit Model

Table C.4.1: IV Regression: 2SLS Domestic Violence

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
Age	-0.000219	-0.000311	-0.000317	-0.000571
	(0.000512)	(0.000460)	(0.000467)	(0.000700)
AgeDiff	-0.000102	5.20e-05	0.000132	0.000239
	(0.000730)	(0.000672)	(0.000718)	(0.00121)
Urban	0.0455***	0.0295***	0.0335***	0.0456***
	(0.00957)	(0.00982)	(0.00999)	(0.0135)
HusbandWorking	-0.0119	-0.0136	-0.0106	-0.0128
	(0.0200)	(0.0199)	(0.0199)	(0.0376)
WomEduc	0.00155	0.00207	0.00187	0.00833**
	(0.00192)	(0.00170)	(0.00169)	(0.00349)
WomEducSq	-0.000595***	-0.000612***	-0.000523***	-0.000839***
	(0.000167)	(0.000157)	(0.000150)	(0.000221)
HusEduc	-0.00585***	-0.00497***	-0.00483**	-0.00228
	(0.00197)	(0.00183)	(0.00188)	(0.00364)
HusEducSq	2.97e-05	0.000108	8.13e-05	-0.000159
	(0.000115)	(0.000112)	(0.000121)	(0.000225)
OtherWives	0.119***	0.104***	0.0906***	0.0857***
	(0.0218)	(0.0214)	(0.0224)	(0.0312)
TotalNumDep	0.0186***	0.0160***	0.0161***	0.0203***
	(0.00323)	(0.00314)	(0.00307)	(0.00504)
Religion (Base=Hindu)				
Muslim	0.0157	0.0564**	0.0524**	0.0555
	(0.0248)	(0.0244)	(0.0239)	(0.0383)
Christian	-0.0174	-0.00529	-0.00323	-0.0576**
	(0.0158)	(0.0238)	(0.0251)	(0.0274)
Sikh	0.0118	-0.00837	-0.00515	0.00837
	(0.0130)	(0.00908)	(0.0113)	(0.0299)
Others	0.0199	0.0122	0.0171	0.0217
	(0.0215)	(0.0217)	(0.0205)	(0.0315)
Caste (Base=Others)				
SC	0.0524***	0.0416***	0.0408***	0.0207
	(0.0154)	(0.0135)	(0.0133)	(0.0165)
ST	0.0247	-0.00519	-0.00403	-0.0132
	(0.0170)	(0.0156)	(0.0165)	(0.0187)
OBC	0.000478	0.00273	0.00202	0.00263
	(0.0108)	(0.0100)	(0.0101)	(0.0111)
Wealth (Base=Poorest)				
Poorer	-0.00189	0.00104	0.00418	0.0199
	(0.00721)	(0.00672)	(0.00571)	(0.0208)
Middle	-0.0377***	-0.0371***	-0.0352***	-0.00495
	(0.0111)	(0.0107)	(0.0105)	(0.0184)
Richer	-0.0725***	-0.0692***	-0.0650***	-0.0204
	(0.0131)	(0.0119)	(0.0109)	(0.0278)
Richest	-0.140***	-0.131***	-0.123***	-0.0733**
	(0.0128)	(0.0118)	(0.0102)	(0.0362)
Husband drinks Alcohol		0.175***	0.175***	0.203***
		(0.0119)	(0.0118)	(0.00824)
Wife Justifies Beating				
Goes out without Permission			0.0207*	0.0143
			(0.0107)	(0.0148)
Neglects Children			0.0306**	0.0194
			(0.0138)	(0.0250)
Argues with Husband			0.0331**	0.0138
			(0.0134)	(0.0227)
Refuses Sex			0.00265	0.0220
			(0.0131)	(0.0222)
Burns Food			0.00132	0.0274
			(0.00945)	(0.0173)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0605***
				(0.0136)
About Same				0.0489**
				(0.0229)
Sole Earner				0.106**
				(0.0465)
WomenWorking	0.0151	0.00925	-0.00239	-0.605***
	(0.0295)	(0.0331)	(0.0334)	(0.120)
Reservation	-0.266***	-0.250***	-0.259***	-0.181***
	(0.00823)	(0.00931)	(0.00759)	(0.0140)
Constant	0.615***	0.546***	0.523***	0.956***
	(0.0414)	(0.0395)	(0.0395)	(0.0867)
First Stage Regression				
PSUAverageWomWorkEx	0.6680***	0.6669***	0.6656***	0.1837***
	(0.01866)	(0.01933)	(0.01891)	(0.03878)
LM Stat	11.12***	11.11***	11.08***	7.63***
F-stat	1281.41***	1190.95***	1238.53***	22.44***
R-squared	0.130	0.157	0.163	0.163
Observations	33,227	33,206	32,259	7,948

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.4.2: IV Regression: 2SLS Emotional Violence

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
Age	0.000213	0.000166	0.000161	0.000151
	(0.000358)	(0.000340)	(0.000345)	(0.000665)
AgeDiff	0.000453	0.000543	0.000523	0.00125**
	(0.000466)	(0.000468)	(0.000507)	(0.000608)
Urban	0.0238**	0.0154	0.0170*	0.0299***
	(0.00967)	(0.00939)	(0.00879)	(0.0115)
HusbandWorking	-0.0159	-0.0167	-0.0144	0.0274
	(0.0105)	(0.0114)	(0.0116)	(0.0263)
WomEduc	0.00223*	0.00252**	0.00233*	0.00509**
	(0.00129)	(0.00119)	(0.00120)	(0.00242)
WomEducSq	-0.000228***	-0.000237***	-0.000188**	-0.000338**
	(8.14e-05)	(7.29e-05)	(7.37e-05)	(0.000139)
HusEduc	-0.00281***	-0.00233***	-0.00208**	-0.000958
	(0.000921)	(0.000869)	(0.000890)	(0.00243)
HusEducSq	4.43e-05	8.52e-05	5.87e-05	-5.12e-05
	(5.64e-05)	(5.22e-05)	(5.44e-05)	(0.000168)
OtherWives	0.0962***	0.0882***	0.0840***	0.0676**
	(0.0218)	(0.0216)	(0.0212)	(0.0298)
TotalNumDep	0.00280**	0.00146	0.00158	0.00389
	(0.00134)	(0.00120)	(0.00119)	(0.00412)
Religion (Base=Hindu)				
Muslim	0.00457	0.0262***	0.0256***	0.0298***
	(0.00454)	(0.00474)	(0.00506)	(0.00915)
Christian	-0.0118	-0.00539	-0.00341	-0.0134
	(0.0170)	(0.0131)	(0.0134)	(0.0259)
Sikh	0.0275***	0.0168***	0.0140***	-0.0184
	(0.00498)	(0.00493)	(0.00410)	(0.0114)
Others	-0.0123	-0.0163	-0.0138	-0.00712
	(0.0134)	(0.0148)	(0.0130)	(0.0128)
Caste (Base=Others)				
SC	0.0185***	0.0128**	0.0124**	0.0118*
	(0.00627)	(0.00627)	(0.00604)	(0.00628)
ST	0.00238	-0.0134	-0.0137	-0.0351***
	(0.0140)	(0.0135)	(0.0134)	(0.0132)
OBC	0.00628	0.00758	0.00741	0.0184***
	(0.00686)	(0.00675)	(0.00686)	(0.00577)
Wealth (Base=Poorest)				
Poorer	0.00741	0.00894	0.0106	0.0168
	(0.00683)	(0.00692)	(0.00657)	(0.0206)
Middle	-0.0149**	-0.0146*	-0.0131*	0.00605
	(0.00738)	(0.00760)	(0.00721)	(0.0159)
Richer	-0.0472***	-0.0455***	-0.0432***	-0.0174
	(0.00554)	(0.00572)	(0.00461)	(0.0214)
Richest	-0.0686***	-0.0639***	-0.0581***	-0.0305
	(0.00796)	(0.00831)	(0.00710)	(0.0255)
Husband drinks Alcohol		0.0927***	0.0924***	0.124***
		(0.00784)	(0.00783)	(0.0124)
Wife Justifies Beating				
Goes out without Permission			0.0101	-0.0129
			(0.0100)	(0.0141)
Neglects Children			0.0162**	0.0171
			(0.00729)	(0.0130)
Argues with Husband			0.0112*	0.0276**
			(0.00597)	(0.0121)
Refuses Sex			-0.00866	0.00223
			(0.00998)	(0.0107)
Burns Food			0.0157*	0.0225
			(0.00868)	(0.0175)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0637**
				(0.0278)
About Same				0.0374***
				(0.0142)
Sole Earner				0.102**
				(0.0417)
WomenWorking	0.00545	0.00233	-0.000565	-0.430***
	(0.0226)	(0.0232)	(0.0217)	(0.0945)
Reservation	-0.0593***	-0.0504***	-0.0539***	-0.0227
	(0.00359)	(0.00416)	(0.00378)	(0.0154)
Constant	0.201***	0.164***	0.149***	0.434***
	(0.0163)	(0.0179)	(0.0167)	(0.0634)
First Stage Regression				
PSUAverageWomWorkEx	0.6680***	0.6669***	0.6656***	0.1837***
	(0.01866)	(0.01933)	(0.01891)	(0.03878)
LM Stat	11.12***	11.11***	11.08***	7.63***
F-stat	1281.41***	1190.95***	1238.53***	22.44***
Observations	33,227	33,206	32,259	7,948
R-squared	0.039	0.057	0.060	-0.060

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.4.3: IV Regression: 2SLS Physical Violence

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
Age	0.000134	4.41e-05	6.88e-05	-0.000472
	(0.000480)	(0.000450)	(0.000458)	(0.000777)
AgeDiff	-0.000174	-2.21e-05	6.06e-05	0.000125
	(0.000797)	(0.000679)	(0.000726)	(0.00112)
Urban	0.0548***	0.0393***	0.0427***	0.0508***
	(0.00961)	(0.00949)	(0.00981)	(0.0133)
HusbandWorking	-0.00158	-0.00317	-0.000386	-0.00539
	(0.0193)	(0.0180)	(0.0184)	(0.0334)
WomEduc	-0.000852	-0.000351	-0.000430	0.00394
	(0.00177)	(0.00164)	(0.00169)	(0.00344)
WomEducSq	-0.000449***	-0.000465***	-0.000399***	-0.000635***
	(0.000138)	(0.000132)	(0.000130)	(0.000214)
HusEduc	-0.00549***	-0.00464**	-0.00459**	-0.00214
	(0.00209)	(0.00198)	(0.00203)	(0.00340)
HusEducSq	-3.58e-06	7.27e-05	5.45e-05	-0.000120
	(0.000129)	(0.000126)	(0.000133)	(0.000189)
OtherWives	0.128***	0.113***	0.101***	0.0905***
	(0.0226)	(0.0218)	(0.0218)	(0.0310)
TotalNumDep	0.0213***	0.0187***	0.0191***	0.0246***
	(0.00302)	(0.00294)	(0.00284)	(0.00570)
Religion (Base=Hindu)				
Muslim	0.0147	0.0545***	0.0504**	0.0476
	(0.0218)	(0.0206)	(0.0206)	(0.0340)
Christian	-0.0247**	-0.0128	-0.0123	-0.0586*
	(0.0120)	(0.0189)	(0.0205)	(0.0313)
Sikh	0.0111	-0.00861	-0.00361	-0.00347
	(0.0119)	(0.00892)	(0.0104)	(0.0223)
Others	0.0289	0.0214	0.0262	0.0443
	(0.0225)	(0.0226)	(0.0217)	(0.0318)
Caste (Base=Others)				
SC	0.0494***	0.0389***	0.0379***	0.0137
	(0.0165)	(0.0143)	(0.0141)	(0.0164)
ST	0.0223	-0.00688	-0.00523	-0.0234
	(0.0154)	(0.0145)	(0.0151)	(0.0186)
OBC	-0.00424	-0.00204	-0.00214	-0.00875
	(0.00890)	(0.00830)	(0.00825)	(0.0110)
Wealth (Base=Poorest)				
Poorer	-0.00753	-0.00467	-0.00237	0.0173
	(0.00898)	(0.00829)	(0.00761)	(0.0208)
Middle	-0.0362***	-0.0357***	-0.0348***	0.00199
	(0.0102)	(0.0100)	(0.00983)	(0.0202)
Richer	-0.0697***	-0.0666***	-0.0641***	-0.0149
	(0.0124)	(0.0117)	(0.0107)	(0.0282)
Richest	-0.136***	-0.127***	-0.121***	-0.0746**
	(0.0129)	(0.0133)	(0.0127)	(0.0358)
Husband drinks Alcohol		0.171***	0.170***	0.204***
		(0.0116)	(0.0117)	(0.0115)
Wife Justifies Beating				
Goes out without Permission			0.0181**	0.0114
			(0.00857)	(0.0138)
Neglects Children			0.0185	0.0162
			(0.0124)	(0.0229)
Argues with Husband			0.0360**	0.0118
			(0.0148)	(0.0209)
Refuses Sex			-0.000528	0.0199
			(0.0113)	(0.0209)
Burns Food			-0.00531	0.0159
			(0.00802)	(0.0158)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0516***
				(0.0115)
About Same				0.0436**
				(0.0216)
Sole Earner				0.103*
				(0.0538)
WomenWorking	0.0204	0.0147	0.00443	-0.597***
	(0.0264)	(0.0296)	(0.0313)	(0.123)
Reservation	-0.238***	-0.222***	-0.228***	-0.141***
	(0.00781)	(0.00906)	(0.00867)	(0.0145)
Constant	0.537***	0.469***	0.450***	0.880***
	(0.0399)	(0.0378)	(0.0371)	(0.0773)
First Stage Regression				
PSUAverageWomWorkEx	0.6680***	0.6669***	0.6656***	0.1837***
	(0.01866)	(0.01933)	(0.01891)	(0.03878)
LM Stat	11.12***	11.11***	11.08***	7.63***
F-stat	1281.41***	1190.95***	1238.53***	22.44***
Observations	33,227	33,206	32,259	7,948
R-squared	0.129	0.158	0.162	0.029

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.4.4: IV Regression: 2SLS Sexual Violence

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
Age	-0.00148***	-0.00151***	-0.00150***	-0.00154***
	(0.000436)	(0.000406)	(0.000419)	(0.000563)
AgeDiff	-0.000359	-0.000306	-0.000312	0.000460
	(0.000459)	(0.000419)	(0.000399)	(0.000456)
Urban	0.00309	-0.00227	-0.000738	0.00619
	(0.00720)	(0.00758)	(0.00744)	(0.0107)
HusbandWorking	-0.0200*	-0.0206*	-0.0185	-0.0171
	(0.0117)	(0.0113)	(0.0121)	(0.0310)
WomEduc	-0.000397	-0.000228	-0.000345	0.000840
	(0.00154)	(0.00146)	(0.00150)	(0.00224)
WomEducSq	-4.30e-05	-4.86e-05	-1.25e-05	-0.000113
	(9.71e-05)	(9.37e-05)	(9.49e-05)	(0.000107)
HusEduc	-0.00220	-0.00191	-0.00186	-0.00183
	(0.00183)	(0.00181)	(0.00187)	(0.00301)
HusEducSq	3.35e-05	6.01e-05	5.29e-05	3.59e-05
	(8.24e-05)	(8.37e-05)	(8.74e-05)	(0.000183)
OtherWives	0.0671***	0.0620***	0.0613***	0.0338
	(0.0168)	(0.0156)	(0.0158)	(0.0216)
TotalNumDep	0.00243**	0.00156	0.00181	0.000684
	(0.00121)	(0.00112)	(0.00112)	(0.00320)
Religion (Base=Hindu)				
Muslim	0.00471	0.0183	0.0175	0.0146
	(0.0118)	(0.0125)	(0.0120)	(0.0154)
Christian	-0.00504	-0.000995	0.00290	-0.0177
	(0.0139)	(0.00955)	(0.00887)	(0.0266)
Sikh	-0.0126	-0.0193*	-0.0173	-0.0392*
	(0.0111)	(0.00996)	(0.0108)	(0.0220)
Others	0.00239	-0.000133	-0.00101	0.00575
	(0.00467)	(0.00585)	(0.00609)	(0.00587)
Caste (Base=Others)				
SC	0.00267	-0.000971	-0.000882	-0.0232**
	(0.00431)	(0.00454)	(0.00452)	(0.00992)
ST	-0.0184**	-0.0285***	-0.0282***	-0.0429***
	(0.00763)	(0.00894)	(0.00914)	(0.0136)
OBC	-0.00427	-0.00354	-0.00434	-0.00854
	(0.00376)	(0.00319)	(0.00326)	(0.00780)
Wealth (Base=Poorest)				
Poorer	0.00157	0.00257	0.00336	-0.00137
	(0.00391)	(0.00395)	(0.00422)	(0.0116)
Middle	-0.00761	-0.00728*	-0.00756*	0.00204
	(0.00484)	(0.00438)	(0.00432)	(0.0134)
Richer	-0.0252***	-0.0241***	-0.0238***	-0.00219
	(0.00512)	(0.00493)	(0.00564)	(0.0185)
Richest	-0.0369***	-0.0339***	-0.0330***	-0.00522
	(0.00780)	(0.00717)	(0.00779)	(0.0188)
Husband drinks Alcohol		0.0583***	0.0583***	0.0695***
		(0.00991)	(0.00974)	(0.0111)
Wife Justifies Beating				
Goes out without Permission			0.00838	-0.00632
			(0.00570)	(0.0132)
Neglects Children			0.00706	0.0167
			(0.00643)	(0.0136)
Argues with Husband			0.000898	-0.0196*
			(0.00855)	(0.0109)
Refuses Sex			0.0184**	0.0332***
			(0.00721)	(0.00979)
Burns Food			0.00157	0.0235**
			(0.00582)	(0.00989)
Earns More (Base=Less Than Husband)				
More Than Husband				0.0117
				(0.0115)
About Same				0.00490
				(0.0106)
Sole Earner				0.0440**
				(0.0216)
WomenWorking	-0.0202	-0.0222	-0.0291	-0.301***
	(0.0340)	(0.0347)	(0.0348)	(0.0866)
Reservation	-0.123***	-0.118***	-0.121***	-0.161***
	(0.0108)	(0.0112)	(0.0102)	(0.0157)
Constant	0.256***	0.233***	0.227***	0.512***
	(0.0224)	(0.0194)	(0.0223)	(0.0754)
First Stage Regression				
PSUAverageWomWorkEx	0.6680***	0.6669***	0.6656***	0.1837***
	(0.01866)	(0.01933)	(0.01891)	(0.03878)
LM Stat	11.12***	11.11***	11.08***	7.63***
F-stat	1281.41***	1190.95***	1238.53***	22.44***
Observations	33,227	33,206	32,259	7,948
R-squared	0.045	0.056	0.057	-0.026

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

Table C.4.5: IV Regression: 2SLS Controlling Behaviour

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
Age	-0.000828*	-0.000871*	-0.000777*	-0.00146***
	(0.000450)	(0.000445)	(0.000448)	(0.000549)
AgeDiff	0.00105	0.00112	0.00117	-9.99e-05
	(0.000767)	(0.000767)	(0.000748)	(0.00131)
Urban	-0.0569***	-0.0634***	-0.0610***	-0.0507**
	(0.0205)	(0.0209)	(0.0201)	(0.0238)
HusbandWorking	-0.0211	-0.0218	-0.0170	0.0394
	(0.0242)	(0.0240)	(0.0209)	(0.0435)
WomEduc	0.00141	0.00165	0.00175	0.00609
	(0.00256)	(0.00257)	(0.00280)	(0.00434)
WomEducSq	-0.000411*	-0.000420*	-0.000330	-0.000716***
	(0.000238)	(0.000242)	(0.000254)	(0.000221)
HusEduc	-0.000470	-0.000109	0.000121	0.00202
	(0.00211)	(0.00205)	(0.00212)	(0.00422)
HusEducSq	-0.000120	-9.04e-05	-0.000115	-0.000196
	(0.000109)	(0.000108)	(0.000117)	(0.000297)
OtherWives	0.0909***	0.0849***	0.0840***	0.0768***
	(0.0149)	(0.0154)	(0.0172)	(0.0287)
TotalNumDep	0.00891***	0.00791**	0.00781**	0.00598
	(0.00321)	(0.00312)	(0.00318)	(0.00562)
Religion (Base=Hindu)				
Muslim	0.0316	0.0480**	0.0442**	0.0422
	(0.0245)	(0.0245)	(0.0222)	(0.0265)
Christian	0.00790	0.0128	0.0163	-0.0357
	(0.0191)	(0.0234)	(0.0231)	(0.0220)
Sikh	0.00310	-0.00509	-0.000412	0.0185
	(0.0291)	(0.0274)	(0.0293)	(0.0546)
Others	-0.00724	-0.0104	-0.00725	-0.0237
	(0.0308)	(0.0321)	(0.0320)	(0.0282)
Caste (Base=Others)				
SC	0.0126	0.00836	0.00863	-0.0223
	(0.0121)	(0.0126)	(0.0137)	(0.0234)
ST	-0.0141	-0.0258	-0.0255	-0.0621*
	(0.0300)	(0.0308)	(0.0338)	(0.0375)
OBC	-0.0144	-0.0132	-0.0132	-0.0333***
	(0.0139)	(0.0138)	(0.0138)	(0.0100)
Wealth (Base=Poorest)				
Poorer	0.0167	0.0176	0.0201	0.0492**
	(0.0153)	(0.0157)	(0.0159)	(0.0211)
Middle	-0.0177	-0.0175	-0.0153	0.0176
	(0.0205)	(0.0210)	(0.0209)	(0.0298)
Richer	-0.0594***	-0.0581**	-0.0553**	-0.0122
	(0.0223)	(0.0227)	(0.0223)	(0.0343)
Richest	-0.102***	-0.0981***	-0.0873***	-0.0227
	(0.0263)	(0.0267)	(0.0260)	(0.0409)
Husband drinks Alcohol		0.0703***	0.0697***	0.0978***
		(0.00806)	(0.00874)	(0.0142)
Wife Justifies Beating				
Goes out without Permission			0.0129	0.0280
			(0.0121)	(0.0205)
Neglects Children			0.0580***	0.0342*
			(0.0145)	(0.0175)
Argues with Husband			0.0365**	0.0298
			(0.0163)	(0.0237)
Refuses Sex			0.00582	0.0249
			(0.0167)	(0.0245)
Burns Food			0.00279	0.0104
			(0.0103)	(0.0198)
Earns More (Base=Less Than Husband)				
More Than Husband				0.106***
				(0.0247)
About Same				0.0788***
				(0.0302)
Sole Earner				0.0818**
				(0.0388)
WomenWorking	-0.0813	-0.0842	-0.0934	-0.494**
	(0.0582)	(0.0609)	(0.0621)	(0.225)
Reservation	-0.291***	-0.284***	-0.296***	-0.256***
	(0.0202)	(0.0212)	(0.0198)	(0.0325)
Constant	0.819***	0.792***	0.758***	1.067***
	(0.0334)	(0.0318)	(0.0332)	(0.171)
First Stage Regression				
PSUAverageWomWorkEx	0.6680***	0.6669***	0.6656***	0.1837***
	(0.01866)	(0.01933)	(0.01891)	(0.03878)
LM Stat	11.12***	11.11***	11.08***	7.63***
F-stat	1281.41***	1190.95***	1238.53***	22.44***
Observations	33,227	33,206	32,259	7,948
R-squared	0.080	0.084	0.092	0.050

Standard errors clustered at state level in parentheses, state dummies included
*** p<0.01, ** p<0.05, * p<0.1

C.5 Endogeniety Test using 2RI Method

Table C.5.1: 2-Stage Residual Inclusion Coefficients: Domestic Violence

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
WomenWorking	-0.0197	-0.0312	-0.0773	-1.608***
	(0.0802)	(0.0788)	(0.0836)	(0.372)
Reservation	-0.726***	-0.697***	-0.732***	-0.545***
	(0.0442)	(0.0430)	(0.0457)	(0.108)
Residuals	0.0672*	0.0617*	0.0816**	0.593***
	(0.0345)	(0.0338)	(0.0359)	(0.147)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.5.2: 2-Stage Residual Inclusion Coefficients: Emotional Violence

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
WomenWorking	-0.0389	-0.0565	-0.0776	-1.610***
	(0.101)	(0.0985)	(0.102)	(0.451)
Reservation	-0.235***	-0.189***	-0.210***	-0.0598
	(0.0518)	(0.0536)	(0.0543)	(0.122)
Residuals	0.0813*	0.0778*	0.0872**	0.633***
	(0.0438)	(0.0426)	(0.0441)	(0.181)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.5.3: 2-Stage Residual Inclusion Coefficients: Physical Violence

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
WomenWorking	-0.00879	-0.0192	-0.0600	-1.566***
	(0.0819)	(0.0821)	(0.0855)	(0.380)
Reservation	-0.657***	-0.627***	-0.651***	-0.450***
	(0.0446)	(0.0439)	(0.0468)	(0.110)
Residuals	0.0675*	0.0613*	0.0783**	0.600***
	(0.0352)	(0.0352)	(0.0367)	(0.150)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.5.4: 2-Stage Residual Inclusion Coefficients: Sexual Violence

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
WomenWorking	-0.222*	-0.239**	-0.305**	-2.120***
	(0.118)	(0.119)	(0.124)	(0.529)
Reservation	-1.006***	-0.979***	-0.999***	-1.014***
	(0.0701)	(0.0693)	(0.0725)	(0.148)
Residuals	0.134***	0.131**	0.160***	0.817***
	(0.0505)	(0.0517)	(0.0532)	(0.213)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.5.5: 2-Stage Residual Inclusion Coefficients: Controlling Behaviour

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
WomenWorking	-0.275***	-0.280***	-0.315***	-1.049***
	(0.0733)	(0.0722)	(0.0770)	(0.364)
Reservation	-0.778***	-0.764***	-0.801***	-0.762***
	(0.0425)	(0.0420)	(0.0450)	(0.110)
Residuals	0.129***	0.127***	0.140***	0.350**
	(0.0314)	(0.0311)	(0.0331)	(0.143)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

C.6 Removal of Problematic States

Table C.6.1: Bivariate Probit Model: Average Marginal Effects for Domestic Violence with States Removed

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
WomenWorking	0.0229	0.0190	0.0111	-0.188***
	(0.0231)	(0.0267)	(0.0266)	(0.0567)
Reservation	-0.230***	-0.187***	-0.204***	-0.169***
	(0.00816)	(0.0102)	(0.00809)	(0.0119)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	24,127	24,115	23,478	5,135

Karnataka, Maharashtra and Kerala are removed from the dataset
Standard errors clustered at the state level in parentheses, state dummies included.
*** p<0.01, ** p<0.05, * p<0.1

Table C.6.2: Bivariate Probit Model: Average Marginal Effects for Emotional Violence with States Removed

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
WomenWorking	0.0130	0.00959	0.00716	-0.0938
	(0.0231)	(0.0240)	(0.0212)	(0.0588)
Reservation	-0.0243***	0.00210	-0.00615	-0.0157
	(0.00483)	(0.00555)	(0.00522)	(0.0114)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	24,127	24,115	23,478	5,135

Karnataka, Maharashtra and Kerala are removed from the dataset
Standard errors clustered at the state level in parentheses, state dummies included.
*** p<0.01, ** p<0.05, * p<0.1

Table C.6.3: Bivariate Probit Model: Average Marginal Effects for Physical Violence with States Removed

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
WomenWorking	0.0197	0.0160	0.00942	-0.165***
	(0.0246)	(0.0275)	(0.0290)	(0.0625)
Reservation	-0.238***	-0.195***	-0.210***	-0.170***
	(0.00789)	(0.00957)	(0.00778)	(0.0155)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	24,127	24,115	23,478	5,135

Karnataka, Maharashtra and Kerala are removed from the dataset
Standard errors clustered at the state level in parentheses, state dummies included.
*** p<0.01, ** p<0.05, * p<0.1

Table C.6.4: Bivariate Probit Model: Average Marginal Effects for Sexual Violence with States Removed

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
WomenWorking	-0.0109	-0.0125	-0.0174	-0.232***
	(0.0394)	(0.0411)	(0.0415)	(0.0193)
Reservation	-0.0821***	-0.0634***	-0.0671***	-0.0983***
	(0.0114)	(0.0119)	(0.0116)	(0.00748)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	24,127	24,115	23,478	5,135

Karnataka, Maharashtra and Kerala are removed from the dataset
Standard errors clustered at the state level in parentheses, state dummies included.
*** p<0.01, ** p<0.05, * p<0.1

Table C.6.5: Bivariate Probit Model: Average Marginal Effects for Controlling Behaviour with States Removed

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
WomenWorking	-0.0895*	-0.0918*	-0.103**	-0.292***
	(0.0460)	(0.0488)	(0.0515)	(0.0790)
Reservation	-0.0183	-0.00162	-0.0226	-0.0175
	(0.0190)	(0.0212)	(0.0205)	(0.0199)
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	24,127	24,115	23,478	5,135

Karnataka, Maharashtra and Kerala are removed from the dataset
Standard errors clustered at the state level in parentheses, state dummies included.
*** p<0.01, ** p<0.05, * p<0.1

C.7 Bivariate Probit Model and Score Bootstrapping P-values

Table C.7.1: Bivariate Probit Model: Domestic Violence P-Values Cluster State/Score Bootstrapping Robustness Check

VARIABLES	(1) Domestic Violence	(2) Domestic Violence	(3) Domestic Violence	(4) Domestic Violence
WomenWorking	0.0198	0.00534	-0.0284	-0.746*** [***]
	(0.810)	(0.956)	(0.777)	(1.37e-06)
	[0.8225]	[0.9575]	[0.7955]	[0.0085]
Reservation	-0.726***[***]	-0.698***[***]	-0.732***[***]	-0.637***[**]
	(0.000)	(0.000)	(0.000)	(0.000)
	[0.0020]	[0.0025]	[0.0015]	[0.0445]
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.7.2: Bivariate Probit Model: Emotional Violence P-Values Cluster State/Score Bootstrapping Robustness Check

VARIABLES	(1) Emotional Violence	(2) Emotional Violence	(3) Emotional Violence	(4) Emotional Violence
WomenWorking	0.0258	0.00551	-0.0115	-0.666***[*]
	(0.787)	(0.959)	(0.907)	(0.00179)
	[0.7850]	[0.9560]	[0.9055]	[0.0760]
Reservation	-0.241***[**]	-0.195***[**]	-0.215***[**]	-0.183***
	(0.000)	(0.000)	(0.000)	(0.000313)
	[0.0205]	[0.0400]	[0.0230]	[0.2215]
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.7.3: Bivariate Probit Model: Physical Violence P-Values Cluster State/Score Bootstrapping Robustness Check

VARIABLES	(1) Physical Violence	(2) Physical Violence	(3) Physical Violence	(4) Physical Violence
WomenWorking	0.0269	0.0128	-0.0161	-0.646***[***]
	(0.736)	(0.892)	(0.872)	(8.90e-05)
	[0.7485]	[0.9005]	[0.8690]	[0.0050]
Reservation	-0.657***[***]	-0.626***[***]	-0.651***[***]	-0.556***[**]
	(0.000)	(0.000)	(0.000)	(0.000)
	[0.0020]	[0.0055]	[0.0025]	[0.0490]
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.7.4: Bivariate Probit Model: Sexual Violence P-Values Cluster State/Score Bootstrapping Robustness Check

VARIABLES	(1) Sexual Violence	(2) Sexual Violence	(3) Sexual Violence	(4) Sexual Violence
WomenWorking	-0.144	-0.167	-0.215	-1.343***[*]
	(0.583)	(0.556)	(0.454)	(0.000)
	[0.6745]	[0.6315]	[0.5325]	[0.0890]
Reservation	-1.002***[***]	-0.973***[***]	-0.991***[***]	-1.095***[***]
	(0.000)	(0.000)	(0.000)	(0.000)
	[0.0015]	[0.0045]	[0.0045]	[0.0090]
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C.7.5: Bivariate Probit Model: Controlling Behaviour P-Values Cluster State/Score Bootstrapping Robustness Check

VARIABLES	(1) Controlling Behaviour	(2) Controlling Behaviour	(3) Controlling Behaviour	(4) Controlling Behaviour
WomenWorking	-0.190	-0.197	-0.224	-0.546
	(0.194)	(0.200)	(0.159)	(0.101)
	[0.2090]	[0.2125]	[0.1810]	[0.2095]
Reservation	-0.779***[**]	-0.765***[**]	-0.802*** [**]	-0.817***[**]
	(0.000)	(0.000)	(0.000)	(0.000)
	[0.0130]	[0.0185]	[0.0105]	[0.0200]
Added Controls				
Husband Drinks	No	Yes	Yes	Yes
Acceptable to Beat	No	No	Yes	Yes
Earns More	No	No	No	Yes
Observations	33,227	33,206	32,259	7,948

Robust pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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