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Does Liberalisation Reduce Labour Market Inequality? Caste and Occupational Outcomes in India

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Abstract

This paper investigates how trade liberalization reshaped caste-based occupational mobility in rural India. Using district-level exposure to the 1991 tariff reforms and nationally representative survey data, we provide the first causal evidence on how market integration affected labor market outcomes for Dalits (historically marginalized groups). We classify occupations by wages, skill intensity, task content, and international prestige scales to capture job quality. Our results show that while overall employment increased, Dalits in more liberalized districts were disproportionately excluded from high-prestige occupations and shifted into low-wage, insecure work. Education emerges as a key mechanism: tariff exposure improved Dalit literacy but reduced higher-education attainment, limiting access to skilled jobs. These effects were most pronounced in states with flexible labor laws, where discriminatory hiring and firing practices could more easily operate. The findings demonstrate that structural reforms can reinforce existing social hierarchies, highlighting the importance of considering inequality transmission and barriers to mobility in assessing the population-wide effects of globalization.

JEL Codes— J71, O24, J15

Keywords— Trade Liberalisation, caste, discrimination, occupational prestige, India

1 Introduction

Globalization is often expected to reduce discrimination by intensifying competition and eroding economic rents (Becker 2010). Yet in societies where social hierarchies shape access to resources, markets may instead reinforce inequality. This paper investigates whether India's 1991 trade liberalization—a landmark policy reform—reduced or reinforced caste-based occupational stratification in rural labor markets. Specifically, we ask: did districts more exposed to tariff cuts see greater mobility into high-prestige occupations for Dalits (historically marginalized castes), or did liberalization entrench their occupational disadvantage? In doing so, this study contributes to the global agenda of the Sustainable Development Goals (SDGs), particularly SDG 8 on inclusive growth and decent work and SDG 10 on reducing inequalities.

Caste is a deeply entrenched system of hierarchy that shapes opportunities and outcomes in India—a land of extreme contradictions. On one hand, India has been among the fastest-growing major economies, with significant growth since the 2000s when the per capita growth rates exceeded 6% per annum. On the other hand, this vibrant economic dynamism coexists with deeply regressive institutions: caste-based inequalities remain persistent in access to occupation, education, land, and wealth—resulting in a glaring disconnect between booming markets and enduring social exclusion. Against this backdrop, we ask whether trade liberalisation helped mitigate or entrenched caste-based occupational rigidity.

Should the expansion of market reduce group based inequality in the labour market? Economic theory offers competing predictions. On one hand, Becker's model of taste-based discrimination suggests that greater competition, by eroding economic rents, should reduce discriminatory practices (Becker 2010). On the other hand, more recent work highlights that the effects of markets on inequality and welfare are far from uniform. For example, (Gagnon and Goyal 2017) show that networks interact with market forces in ways that can sustain or even exacerbate inequality. Similarly, the literature on trade and inequality documents considerable heterogeneity in outcomes across countries, sectors, and groups (P. K. Goldberg and Nina Pavcnik 2010). These findings underscore that the relationship between market expansion and inequality is ultimately an empirical question, shaped by institutional contexts, social norms, and access to networks.

Building on these debates, there has been an interest among the scholars to study the linkage between trade and group based inequality. For example, trade liberalisation can influence gender gaps by altering the sectoral composition of employment, shifting demand for skills, and reshaping bargaining power within households and labour markets. For instance, increased integration into global value chains has been associated with rising female employment in export-oriented sectors, yet often under precarious and low-wage conditions (Gaddis and Pieters 2017). At the same time, evidence from India suggests that entrenched social norms and barriers to mobility can limit women's ability to benefit from new opportunities created by liberalisation (Gupta 2021). Similarly, studies on race show mixed results: in Brazil, exposure to international competition reduced racial wage gaps (Hirata and Soares 2020),

but liberalisation also widened racial inequality at the top of the wage distribution (Barros and Santos Silva 2020). These cases highlight that the effects of trade are mediated by pre-existing inequalities. In this paper, we extend this line of inquiry to caste in India by examining whether trade liberalisation reduced or reinforced occupational segregation.

The heterogeneous effects of trade liberalisation on employment and wages across countries, sectors, and worker characteristics has been well-documented in the literature. For instance, Kis-Katos and Sparrow (2015) find that reduced tariffs on intermediate goods in Indonesia increased labour force participation among low-skilled workers and raised wages for middle-skilled workers, whereas Dix-Carneiro and Kovak in (2017) document prolonged employment declines in Brazilian regions facing steep tariff cuts. Even within a single country, outcomes vary: Gaddis and Pieters (2017) show that tariff reductions in Brazil increased female employment and shifted jobs towards trade and services, though with greater insecurity and male unemployment; Ahsan and Mitra in (2014) report rising labour's revenue share in small, labour-intensive firms but a decline in larger, capital-intensive ones. Liberalisation, often accompanied by technological change, can also polarise labour markets, generating more "good" (skilled, high-wage, non-routine cognitive) and "bad" (low-skill, low-wage, manual) jobs at the expense of mid-level occupations (Goos, Manning, and Salomons 2009), consistent with the Stolper–Samuelson prediction (Stolper and Samuelson 1941) that unskilled-labour-abundant countries expand labour-intensive production. Where ICT replaces routine tasks, educated mid-level workers may upgrade to high-skill roles, while the less educated shift into lower-quality jobs. Empirical evidence of such patterns is found in Denmark (Keller and Utar 2023), Western Europe (Goos, Manning, and Salomons 2009), and Vietnam (Poole et al. 2017).

We study the impact of India's 1991 trade liberalisation on caste-based occupational segregation, focusing on whether Dalits (i.e. individuals of lower caste) gained access to "good quality" and prestigious occupations in rural districts. Occupational rigidity, wherein individuals are constrained to hereditary professions with little scope for social or economic mobility, constitutes one of the fundamental mechanisms through which caste hierarchy in India perpetuates structural inequality and reinforces intergenerational disadvantage (Deshpande 2011; Munshi 2019), and this hasn't changed despite market expansion in recent years (Mosse 2018).

Following P. Topalova (2010), we measure a district's exposure to trade liberalisation through its pre-reform industrial composition and the magnitude of tariff cuts in those industries. The reform's timing and scope were largely exogenous, providing a quasi-experimental setting to identify causal effects. We classify occupations into high- and low-prestige categories using multiple metrics: educational intensity (Ahsan and Mitra 2014), wage levels, task content, and the International Socio-Economic Index of occupational prestige and then compare changes in occupational outcomes for Dalits and non-Dalits between the pre-reform period (1987–88, NSSO 43rd round) and the post-reform period (1999–2000, NSSO 55th round). Our results reveal a nuanced picture. While districts with greater tariff reductions saw an increase in overall Dalit employment, there was a corresponding decline in Dalit employment in high-prestige occupations. The overall increase in employment was driven by an increase in low-prestige, low-wage

jobs.

Why should trade liberalisation reduce Dalit employment in high-prestige jobs while increasing low-prestige work? Various factors might play a role. For example, individuals from lower castes may not have well established networks that help seamless entry to the new opportunities (Munshi and Rosenzweig 2009). Additionally, Dalits, because of their historical exclusion from educational institutions (Munshi 2019) may not be able to upgrade their skills to meet the requirements of the new labour market. The increased productivity and skill upgrades noted by Khandelwal and P. Topalova (2011) and Shruti Sharma (2013) may hurt workers from Dalit background because of gaps in formal training. Also, the effect of trade liberalisation depended on how flexible the labour law implementation was, and how easy it was for new employers to hire and fire workers. (Saha, Sen, and Maiti 2013)

We test some of these mechanisms to understand why trade liberalisation may affect Dalit employment in these categories. In particular, we look at the effect of trade liberalisation on education attainment and its effects on our outcomes. We also look at the differentiated effect of flexible and strict labour laws on employment outcomes. We find that while exposure to tariff reduction increased Dalit literacy, it reduced access to higher education. Dalits' lower rates of higher education constrained their ability to move into newly created high-skill positions. These adverse effects are more pronounced in pro-employer states, where flexible labor laws amplified employers' ability to discriminate against disadvantaged workers.

We contribute to the literature on labour market hierarchy by examining the causal effect of market expansion on access to good quality occupations. We also contribute to the literature on group based discrimination focusing on the issue of caste, which has been understudied in economics. Finally, we contribute to the literature on occupational prestige in India where the institution of caste is profoundly linked to occupational prestige. To our knowledge there is no work looking at the effect of trade liberalisation on caste dynamics in the labour market. Our work is closely related to Ahsan and Chatterjee (2017) who have looked at inter-generational occupational mobility following trade liberalisation. They rank occupations by educational intensity and find that sons that live in urban Indian districts with greater exposure to the open market have higher probability of being in a better occupation than their fathers. We also use educational intensity as one of our definitions of prestige in occupation, but additionally incorporate wages, task content, and the international prestige scale. Unlike Ahsan and Chatterjee (2017) we are interested in comparing Dalits to Non-Dalits, and our sample is restricted to rural districts. To our knowledge no study has examined the effect of trade liberalisation on caste-based occupational rigidity, though Reddy (2015) find a decline in Dalit mobility in the same period, consistent with our results.

The remainder of the paper is organized into seven sections. Section 2 discusses the background- caste system in India and the implementation of trade liberalisation policies, while Section 3 provides a description of the data. Section 4 outlines the empirical strategy employed. The results are presented in Section 5, followed by robustness checks in Section 6. Section 7 explores mechanisms , and finally, Section 8 offers the conclusion.

2 Background

2.1 Caste based occupational hierarchy in India

Caste is a system of stratified hierarchy (Gang, Sen, and Yun 2017) that permeates all aspects of life in India. It shapes access to education, the marriage market, labour opportunities, and asset ownership. It is a system in which the dominant caste yields economic and political power caused by generations of structural discrimination and advantages that the more dominant castes received at the cost of the lower castes (Srinivas 1957). The system is perpetuated through occupational rigidity rooted in the textual ideas of *Varna* which imposes hierarchical order based on notions of purity and pollution, and locks people of Dalit backgrounds in manual, unskilled labor (Deshpande 2001; Borooah 2005; Kijima 2006; Gang, Sen, and Yun 2008).

There is a large literature that looks at the social and economic discrimination faced by individuals who belong to lower castes (Thorat and Neuman 2012; Deshpande 2011). In particular, scholars have noted the importance of castes in determining life opportunities that continue in the modern economy. Mosse (2018) noted that caste had a "continuing importance as a structure of advantage and of discrimination in the modern economy, especially post-liberalisation from the 1990s. He notes three caste effects that influence economic outcomes: 1) network effects, (2) exclusion and barriers and (3) the ranking of markets. The network effect of castes has been noted by various authors. Munshi and Rosenzweig (2009) for example finds that caste networks provide mutual insurance to members, resulting in low spatial and marital mobility in rural India. Similarly, there is a rich literature that looks at the role of exclusion, discrimination and barriers based on caste identities on market outcomes (Anderson 2011; Deininger, Jin, and Nagarajan 2013; Ito 2009; Madheswaran and Attewell 2007). Regarding the "ranking of markets" Mosse argued that "the more inferiorized the market, the more caste-linked to occupational pasts. Dalit business access to markets is correspondingly differentiated" (Page 429). Some sectors such as mining/quarrying, construction and transport are found to be relatively open to Dalits, while other sectors like health and education, food, hospitality, finance and the service sectors stigmatize Dalits and excludes them. In this paper we test whether the trade liberalisation reduced the caste-linkage with the ranking of the market. We rank occupations and industries by how prestigious they are (in terms of earnings, skills involved as well as the stigma associated with them), and see whether caste composition changed in the more prestigious occupations following trade liberalisation.

Our study contributes to a rich literature on caste based occupational hierarchies in India. Various authors have investigated the role of caste based discrimination on employment (Banerjee et al. 2009; Siddique 2011) and wage gap (Madheswaran and Attewell 2007; Ito 2009). Several studies have examined the period we are interested in, but the results are mixed. Hnatkovska, Lahiri, and Paul (2012) for example, found convergence of education, occupation distribution, wages and consumption levels of SC/STs toward non-SC/ST levels in the period between 1983 and 2005. The authors find that median of wage premium of Non-Dalit relative to Dalit has declined from 36% in 1983 to

21% in 2004-2005. They attribute this convergence to a similar convergence in education choice. Despite this trend towards convergence, evidence suggests that there is decline in intergenerational occupational mobility, especially in SC/ST groups (Reddy 2015). Deshpande and Ramachandran (2019) find that while gaps in years of education have either remained static (if measured in absolute terms) or decreased (if measured in relative terms), the returns to schooling have been in favour of upper castes. While there may be convergence of education choice, the returns to education is low for Dalit groups, and it reduced further in this period. A consequence of this may be that the caste wage gap is the greatest at the lower end of the distribution, a phenomenon Deshpande (2017) notes as the sticky floor effect.

To our knowledge no one has looked at the effect of exogenous trade liberalisation on caste based access to prestigious occupations. Our study draws upon Deshpande and Ramachandran in that we analyse whether the increased availability of higher skilled, higher waged, non routine cognitive jobs as a consequence of trade liberalisation has been less accessible to Dalits. Our evidence is in line with the Deshpande and Ramachandran's findings suggesting that people of lower caste have not been able to reap the benefits of trade liberalisation both in terms of employment. However, in slightly different results to the authors, while we find convergence in the literacy levels, we do not find any evidence of convergence of higher education achievements for Dalits and Non-Dalits as a consequence of trade liberalisation. This gap may explain the difference in employment outcomes between Dalits and Non-Dalits.

2.2 Trade Liberalisation in India

While caste significantly impacts occupational mobility and economic outcomes in India, the liberalisation reforms of the 1990s introduced a major exogenous shock to the labor market. The following section traces this policy shift as a foundation for our empirical analysis. Since independence in 1947, India had pursued a policy of import substitution. In the late 1980s, the average output tariff reached a remarkably high level of 150 percent, as depicted in Figure 1. Additionally, there were other forms of restrictions in place, such as non-tariff barriers in the form of import quotas. Although some partial liberalisation efforts had begun as early as 1980, it was not until 1991, when India faced a severe balance of payments crisis and sought assistance from the International Monetary Fund (IMF), that substantial tariff reductions were implemented.

As a part of the IMF's conditions, India introduced comprehensive economic reforms in 1991. These reforms encompassed significant reductions in tariffs across all industries. The average output tariffs plummeted from 150 % in 1987 to 50 % in 1999, as illustrated in Figure 1. Notably, the reductions in tariff levels were accompanied by a decrease in the variation of tariff rates across industries, with the most substantial declines occurring in industries with the highest initial tariff rates (Figure 2. P. Topalova (2010) documented that the initial round of tariff reductions was widespread and took many by surprise. While tariff reductions continued beyond 1999, Khandelwal and P. Topalova (2011) observed that later reforms were more aligned with specific industry characteristics. Consequently,

our analysis primarily focuses on the tariff reductions that transpired during the 1987-1999 period, which can be considered exogenous with respect to industry-specific traits. This exogeneity assumption holds significant importance in establishing causal relationships between trade reforms and various outcomes. The exogeneity of the trade policies have been used as an estimation strategy in various works including Law (2019), Hasan et al. (2012), Gupta (2021).

A substantial body of literature has looked at the impact of trade liberalisation policies on the economy. It resulted in several positive results, including enhanced productivity (as observed by Khandelwal and P. Topalova (2011)), improvements in the variety and quality of products (as noted by P. Goldberg et al. in 2010), and the upskilling of the workforce (S. Sharma 2012). Tejani (2016) argued that, in the post-reform era, India achieved significant increases in productivity levels without the need for a widespread expansion of labor-intensive sectors. Regarding socio-economic outcomes, Ahsan and Chatterjee (2017) found that exposure to tariff reduction raised intergenerational occupational mobility in urban areas with growing demand for high-skilled jobs. However, this growth in the industrial sector has often been labeled as "jobless growth" and P. Topalova (2010) found that districts exposed to significant tariff reductions experienced a slower decline in poverty and lower consumption growth. These dynamics raise the question of whether historically disadvantaged castes, particularly Dalits—long concentrated in low-prestige, low-skill, and stigmatised occupations—can break free from occupational barriers after the 1991 tariff reductions, or whether trade liberalisation reinforced caste segregation.

3 Data

3.1 Tariff Data

The tariff data was sourced from P. Topalova (2010), and we utilized district-level tariff exposure data for the years 1987 and 1999. This data covers 364 districts across the 18 major states in India. This data serves as the basis for determining how districts were affected by tariff reductions, as elaborated in the following discussion.

Historically, various sectors in India were typically clustered in specific geographic areas, and there was significant variation in the degree of tariff protection they received. As explained in Section 2.2, the 1990s saw a substantial reduction in tariff rates, and these reductions were standardized across different industries. Consequently, industries that had higher initial tariff levels experienced more substantial tariff reductions, as one can see in Figure 2.

Therefore, the difference in import tariffs at the industry level can be associated with specific districts by utilizing pre-reform industrial concentration data. In empirical research exploring the consequences of trade liberalisation in India, districts are regarded as the appropriate local labor markets due to restricted mobility of labor across district boundaries. This approach aligns with studies conducted in other countries that gauge the impact of trade liberalisation at the local labor market level including in works by D. H. Autor, Dorn, and Hanson (2013) and Kovak (2013).

We measure the district level exposure of trade reforms following P. Topalova 2010, defined as follows:

For district d, industry i and time t,

$$\text{tariff}_{d,t} = \sum_i w_{i,d} \times \text{tariff}_{i,t} \tag{1}$$

where,

$$w_{i,d} = \text{Emp}_{i,d} / \sum_i \text{Emp}_{i,d} \tag{2}$$

is the pre-liberalisation share of employment at the industry level within a district, and $\text{tariff}_{i,t}$ are national level tariffs in an industry at time t. We take t for 2 years. 1987 is taken as the pre-liberalisation year and 1999 is taken as the post year which is the same as (P. Topalova 2010).

Following Kovak (2013), we focus exclusively on industries in the traded sector. Kovak's rationale stems from a critique of neoclassical models that assume full employment and frictionless labor mobility. In such models, price changes in the non-tradable sector mirror a weighted average of price changes in the traded sector. However, in the Indian context the assumptions of perfect labour mobility across different industries within districts doesn't hold. Therefore, including the non-traded sector, which experiences zero tariff changes, would require assuming that there is no transmission of price changes from the traded to the non-traded sector, which isn't realistic in the Indian context. Moreover, incorporating the non-tradable sectors into the analysis would introduce endogeneity, as the measure would become highly sensitive to the proportion of workers in the non-traded sector, which largely consists of individuals engaged in low-income activities such as cereal and oilseed cultivation .P. Topalova (2010) addresses this endogeneity by employing an instrumental variable approach by using a traded-sector-only tariff measure as an instrumental. Instead we follow Kovak (2013) in estimating using a traded-sector tariff measure. We believe it is a well-defined and exogenous variable, making the interpretation of the estimates more straightforward.

To mitigate the potential bias introduced by districts with a higher proportion of workers in the non-traded sector, who may be less affected by tariff reductions, we incorporate controls for the pre-liberalisation employment share of the non-traded sector in all our estimations. Specifically, we account for the pre-reform district's share of workers engaged in activities related to agriculture, mining, manufacturing, trade, transport, and services. Table 1 presents the mean of the district-level tariff measure. On average, across all districts, tariff exposure declined from 0.88 to 0.30.

3.2 Employment Data

For our employment-related variables, we use the "thick rounds" of the NSS Employment and Unemployment Surveys: 1987–88 (43rd round) and 1999–2000 (55th round). The 43rd round represents the pre-reform period and the 55th round the post-reform period, following P. Topalova (2010). We exclude the 50th round (1993) because its

sampling design differs from that of the 43rd and 55th rounds, making it non-comparable. Moreover, it was conducted only three years after liberalisation, too soon for the full effects to emerge. We restrict the analysis to rural populations, since tariff exposure is measured at the district level and NSS urban samples are not representative at that level (P. Topalova 2010). We begin by examining employment across broad sectors—agriculture, manufacturing, construction, services, and trade—using the National Industrial Classification (NIC), before turning to the quality of occupations.

Scholars and international organisations such as the ILO and the World Bank have long examined job quality in both monetary and non-monetary terms, recognising its importance for productivity, self-sufficiency, and overall well-being (ILO 2012; Mundial 2013). Good-quality work is typically characterised by income, benefits, skill content, stability, and job satisfaction (Monteith and Giesbert 2017). Building on this literature, we define good-quality employment according to the following criteria.

First, to measure occupational skill, we follow Ahsan and Chatterjee (2017) and calculate the average education level for each occupation (by National Classification of Occupations or NCO code) in the 43rd round. Occupations are then grouped into the bottom 25th percentile, middle 50th percentile, and top 25th percentile of the skill distribution.

Second, we classify occupations by wage position. For each round, we compute the mean wage per occupation (by NCO code) and identify deciles and the top 5% of the wage distribution. To ensure comparability, we also construct wage classifications using pre-reform wages (from the 43rd round) and report both contemporaneous and pre-reform classifications in the results[1].

Third, since trade liberalisation is often accompanied by technological change favouring high-skilled workers in professional, managerial, and technical roles—while middle-skill jobs face automation risks—we examine "non-routine cognitive occupations." Historical marginalisation and limited access to social and cultural capital have restricted Dalit entry into such high-level jobs (Deshpande and Newman 2007), and this underrepresentation has persisted despite meritocratic claims under competitive capitalism (Jodhka and Newman 2007). Following Daron Acemoglu and D. Autor (2011) and Sarkar (2019), we identify these occupations based on task content, including roles involving "analysis, interpreting, thinking creatively, guiding, directing, [and] establishing relationships" (Sarkar 2019, p. 1424), corresponding to NCO codes for professional, technical, administrative, executive, and managerial work.

Fourth, recognising that stability is central to well-being, we consider employment type: salaried, self-employed, or casual.

Finally, we examine the incidence of low-quality, low-prestige employment. Low-prestige jobs are defined in two ways. First, we use the internationally comparable occupational status scale of Ganzeboom and Treiman (1996); occupations in the bottom quartile of this ranking are classified as low prestige. Second, we look at employment in the bottom decile waged occupations. Summary statistics for all employment variables are presented in Table 1.

Our analysis uses the "usual status" definition of employment and includes all individuals, including those outside

[1]In the main text, we report only the top 5% as good jobs and the bottom 10% as low-prestige jobs. In the online appendix we additionally examine jobs across finer wage cut-offs: top 5, 10, 20, 30, 40, and 50 percentiles, as well as bottom 40 and 10 percentiles.

the working-age group, since child and elderly labour are significant in India. Results remain robust when restricting the sample to the working-age population (18–59). "Dalit" refers to individuals categorised as Scheduled Castes (SC) or Scheduled Tribes (ST) in the NSS data. We cannot identify Other Backward Classes (OBC) in the 43rd round, as this information was not collected in that survey.

4 Empirical Strategy

This paper focuses on identifying the effect of trade liberalisation on the average probability of employment in the high and low prestige occupations for Dalit workers in comparison to non Dalit workers. We estimate the following equation

$$Y_{i,d,t} = \alpha + \beta_1(tariff_{d,t} \times dalit_i) + \beta_2 tariff_{d,t} + \beta_3 dalit_i + X_{i,t} + Z_{d,t} + \tau_t + \mu_d + (D_d \times \tau_t) + \epsilon_i \quad (3)$$

where $Y_{i,d,t}$ = is the outcome variables of interest for the individual i in district d at time t, indicating employment in the categories defined in Section 3.2. The NSSO data is collected as repeated cross section so we have pooled the the data from the pre- and the post- liberalisation rounds. Our main coefficient of interest β_1 is associated with the interaction between tariff exposure ($tariff_{d,t}$) and whether or not the individual is of Dalit background ($dalit_i$). A positive coefficient β_1 would mean that a bigger tariff drop in the district results in reduced employment in the relevant category for a Dalit worker in relation to a non Dalit worker in the same district [2].

We control for individual characteristics $X_{i,t}$ (age, sex and education level) and other district level reforms from the same period $Z_{d,t}$ (such as the removal of non-tariff barriers, removal of restrictions on foreign direct investments, removal of industrial licensing, and banking sector reforms, as included by P. Topalova (2010)). Time varying shocks common to all rural districts, is captured using a post-reform year fixed effect τ_t and time-invariant district characteristics are captured by district fixed effects μ_d.

Certain district-level variables might be correlated with tariffs as well as the outcome variables of interest. These could be educational facilities, factors related to geography, infrastructure, endowments, and accessibility. We include a vector of pre-reform district conditions interacted with a post-reform indicator ($D_d \times \tau_t$) to allow for differential trends according to these initial conditions. In these, we include the district's employment composition at a more aggregate level than the one used in the construction of the tariffs (namely the share of workers in agriculture, manufacturing, mining, trade, transport, and services, with construction workers being the omitted category) and the share of the population that is literate from the 43rd round of NSS as used in P. Topalova (2010).

Standard errors are clustered at the district level.

[2] For example, suppose tariffs in a district fall by 10 percentage points. If $\beta_1 = 0.02$, this implies that Dalits are 0.2 percentage points less likely than non-Dalits in the same district to be employed in high-prestige jobs following the reform.

5 Results

5.1 Summary Statistics

In Table 1, we present the summary statistics. As discussed earlier, average exposure declined sharply from 88% in 1989 to 30% in 2000. Employment rose slightly over the period, with 35% of the sample employed in 1989 compared to 37.5% in 2000. The agricultural sector remained the largest rural employer, accounting for 78% of all jobs in 1989 and 73% in 2000. Manufacturing, construction, and services all saw modest gains in employment, while trade experienced a small decline.

By skill level, employment in occupations in the bottom 25% of the 1988 skill distribution rose from 33% to 35%, whereas employment in the middle 50% declined from 60% to 55%. Employment in the top 25% of skilled occupations grew from 6% in 1989 to 10% in 2000, consistent with D. Acemoglu (2003)'s observation that specialization can polarize labor markets, increasing employment at both the top and bottom tiers.

High-prestige occupations also became more common: the share in the top 5% of wage earners (both contemporaneous and based on 1988 rankings) and in non-routine cognitive jobs all increased. In contrast, employment in the bottom 20% of the wage distribution fell from 47% to 41%, and employment in low-prestige occupations declined from 79% to 67%.

5.2 Overall Employment and Sectoral Shift

The primary objective of this paper is to examine the impact of trade liberalisation on Dalit employment outcomes. To this end, we analyze both overall employment and sectoral shifts following the implementation of trade reforms. Table 2 reports estimates of equation (3) for a range of employment outcomes, with each column representing a separate regression.

Column (1) considers overall employment, measured as an indicator for whether an individual is employed. The interaction between Dalit status and tariff is negative and statistically significant (coefficient of –0.015), indicating that trade liberalisation increased Dalit employment relative to non-Dalits. Given the average Dalit employment rate of 39.6%, the estimate implies that a 10 point reduction in tariffs is associated with a 0.15 percentage point increase in Dalit employment probability—about a 0.38% increase relative to the mean. This modest aggregate gain is driven primarily by agriculture, where average Dalit employment is 79.5%.

In contrast, the effects in non-agricultural sectors are mixed. Manufacturing and construction show no statistically significant change in Dalit employment, while trade and services show relative declines. A 10 percentage point tariff reduction is associated with a 0.17 percentage point decrease in the probability of Dalit employment in trade (coefficient –0.017), equivalent to about a 5.1% decline relative to the sectoral mean of 3.34%. For services, the corresponding decline is 0.11 percentage points (coefficient –0.011), or about 1.9% relative to the sectoral mean of

5.72%.

Overall, while aggregate Dalit employment changes little with tariff reductions, the results reveal notable sectoral shifts: Dalits in districts more exposed to liberalisation become more concentrated in agriculture, while their relative presence in trade and services declines. This pattern suggests that trade liberalisation may reinforce Dalit concentration in lower-paying agricultural work, at the expense of opportunities in potentially higher-paying non-agricultural sectors. To explore this possibility further, the next section examines the skill composition of occupations.

5.3 Skill Levels of Occupations

We analyze the average levels of education in occupations and categorize them as the highest quartile, middle 50 percent, or lowest quartile skilled according to the distribution of our sample in 1988. The results are shown in Table 3. Columns 1 and 2 focus on individuals in the bottom 25 percent and middle 50 percent of occupations, where the interaction term coefficients are not significant. However, in column 3, the coefficient of 0.013 is positive and significant. Given that the average level of Dalit employment is about 5.1%, a 10 percent decrease in tariff levels translates into a 2.6 percentage reduction relative to the sectoral mean in Dalit employment in the top-skilled occupations.

These findings suggest that trade liberalisation disproportionately affects Dalits' access to higher-skilled occupations. As a result, Dalits in more tariff-exposed districts may face greater barriers to upward occupational mobility, reinforcing existing inequalities.

5.4 Prestigious Occupations

Next we look at employment in jobs that are prestigious and those that are associated with low prestige. We define prestigious occupations as ones that are high-paid, and those with non-routine and cognitive task components. In this analysis, high paid is defined as jobs corresponding to the top 95 percentile pay bracket (both contemporaneous as well as the jobs that were 95 percentile pay in 1988). We also look at low prestige jobs- associated with the bottom 10 percentile pay bracket as well as those that are categorised in the lowest quartile of the international prestige scale. Additionally, in Table OA1 in the Online Appendix we look at employment in occupations across the wage distribution in 1988.

The results are presented in Table 4 and 5. Using the pre-reform categorisation of top 5% waged occupations, we find that 10 percent decrease in tariff levels result in 0.2 percent point fall in the probability of a Dalit individual getting a top wage occupation. Given that on average Dalit employment in such category is 0.4 percent, this translates to a 2.7 percentage fall relative to mean. Similarly, 10 percent point decrease in tariff level translates to a 5% (coefficient of 0.010 and average Dalit employment of 0.020) reduction in Dalit employment in non-routine cognitive occupations. These findings imply that trade liberalisation may disproportionately limit Dalits' access to

higher-paying and prestigious jobs.

We also examine low prestigious occupations, such as those in the bottom 10 % wage group and occupations with low international prestige. The results are presented in Table 5. In column 1, the interaction term is negative and significant, showing that a Dalit individual in a district with a 10 percentage increase in tariffs is 6.2% more likely to be employed in bottom 10% waged occupation and 7% percent more likely to be employed in an occupation considered low prestige by international scale. As mentioned earlier, in Table OA1, we look at occupations across the 1988 wage distribution. We find that Dalit individuals are more likely to be employed in the bottom-waged jobs and less likely to be in top waged jobs. We also find in Table 6 that Dalit individuals in districts that are exposed to tariff reduction are more likely to be self-employed and less likely to be employed in salaried occupations.

These findings suggest that trade liberalisation not only restricts Dalits' access to prestigious jobs but also increases their likelihood of being employed in lower-wage, less prestigious and more uncertain occupations.

6 Robustness Checks

In this section, we conduct a series of robustness checks to ensure that our findings are not driven by alternative explanations and can indeed be attributed to the effects of trade liberalisation. We address three specific concerns. First, we examine whether pre-reform employment trends could be driving the results, rather than tariff reductions themselves. Second, we assess whether another policy ensuring political reservations of Dalits during the period may have influenced our estimates. Finally, we test whether migration patterns could be responsible for the observed effects.

6.1 Pre-reform Trends

There may be concern that districts experiencing larger tariff reductions also differ in other ways that affect Dalit and non-Dalit employment differently. Ideally, we would examine pre-reform trends in employment across low- and high-tariff districts to address this concern. However, the pre-reform NSS rounds do not provide district-level data.

As an alternative, we conduct a state-level analysis to test whether Dalit employment trends differed from those of non-Dalits in earlier rounds, relative to the base year (1987–88, NSS Round 43). Specifically, Table A1 reports regressions where the dependent variable is employment in the occupation categories of interest. The key coefficients are the interactions between Dalit status and survey rounds 38 (1983) and 55 (2000), relative to Round 43. In addition, we include interactions of state-level tariff exposure with survey round and Dalit status. Standard errors are clustered at the state level.

The results show that, with the exception of casual employment and bottom-wage employment, the Dalit $\times$ Round 38x Tariff interactions are generally insignificant. This pattern suggests no consistent evidence of differential

pre-reform employment trends between Dalits and non-Dalits. While the state-level aggregation limits precision, these findings provide reassurance that our main results are not driven by pre-existing trends—except in the cases of casual employment and bottom-wage employment, where caution is warranted.

6.2 Political Reservation of Schedule Castes and Schedule Tribes

Affirmative Action policies targeting minority groups can significantly affect their well-being in multiple ways. These policies not only improve access to public services but also provide support during income or employment shocks. During the period of our study, a key reservation policy was in place that could have shaped how Dalit groups responded to the liberalization shock: the 73rd and 74th Constitutional Amendments of 1993, which mandated increased Dalit (SCST) representation at the local Panchayat level. In what follows, we examine how this policy may have influenced our results and test the robustness of our findings when accounting for these reservations.

Originally introduced in the 1950s for the lower house of Parliament, political reservations were extended to local governments under the 73rd and 74th Amendments. The policy requires that seats be reserved for Dalits in proportion to their share of the total population (Chin and Prakash 2011). A large body of work has evaluated the impact of these reservations on Dalit outcomes. The literature consistently finds that greater political representation for minority groups increases their access to public provisions. Documented benefits include expanded welfare programs, higher shares of state government jobs allocated to minorities Pande (2003), and improved public services for SC/ST households (Bardhan, Mookherjee, and Parra Torrado 2010; Beaman et al. 2011).

Political reservations may also mitigate the effects of exogenous shocks such as tariff reductions. Districts with higher Dalit representation could provide better educational opportunities, helping Dalits acquire the skills needed to adapt to the technological changes associated with trade liberalization. In addition, reservations may reduce discriminatory practices among new firms. To account for this, we re-estimate our baseline model with an additional interaction with political representation at the district level. Since reservations are proportional to population share, we use the pre-liberalization share of Dalits (SC/ST) as a proxy. Although the policy is implemented at the state level, we rely on district-level variation to capture more granular effects. Specifically, we estimate a triple interaction of Dalit status, tariff level, and the pre-liberalization Dalit population share.

The results of this extended specification are reported in Tables OA3–OA7 of the Online Appendix. In most cases, the direction and significance of the interaction between Dalit status and tariff level remain unchanged relative to our main results. The only exception arises for top-skilled and non-routine cognitive occupations, where the coefficients are no longer statistically significant.

6.3 Migration

Assumptions of perfect mobility may suggest that labour would respond to a wage shock by migrating, thus equalizing employment and wages across regions. One could argue that the differentiated access to prestigious jobs observed between Dalits and non-Dalits in response to trade liberalization could be partly explained by lower migration rates among Dalits.

India is generally characterized by low labor mobility for employment. P. Topalova (2010) notes that while about 20% of rural and 30% of urban residents do relocate, most of this movement reflects women migrating for marriage rather than for work. Importantly, migration rates did not increase following the 1991 reforms. The type of migration relevant for our study would involve short-term movement across districts or across sectors within districts (e.g., rural-to-urban or urban-to-rural shifts). She notes that a very small proportion of population (0.5 % of the population of rural and 4 % of population of urban) have moved for economic reasons.

To ensure that our findings are not driven by this small group of economic migrants, we re-estimate our regressions on a restricted sample of individuals who had not moved for economic reasons in the ten years prior to the survey interview. The results, presented in Tables OA8–OA12 of the Online Appendix, are very similar to those from the full sample, suggesting that migration does not drive our main findings.

7 Mechanisms

In this section, we investigate potential mechanisms underlying the differential effects of trade liberalization on Dalit and non-Dalit employment. First, we assess whether liberalization exacerbated pre-existing gaps in skill acquisition, thereby widening disparities in access to higher-quality occupations. Second, we examine whether variation in state-level labor regulations contributed to the observed employment differences.

7.1 Education Levels

Trade liberalization can create opportunities for high-quality employment, but only if the labor force upgrades its skills to meet new market demands. This typically requires greater investment in education. Historically disadvantaged groups—such as Dalits—may face constraints in adjusting their educational investment to match these rising skill requirements. Indeed, prior research on trade and educational attainment in developing countries (E. V. Edmonds, Petia Topalova, and Nina Pavcnik (2009); E. Edmonds, N. Pavcnik, and P. Topalova (2010); Atkin (2012)) finds persistent inequality in education, with Dalits in India being particularly disadvantaged.

Table 7 examines the effect of trade liberalization on educational attainment in our sample. Columns 1 and 2 show that greater tariff exposure reduces the probability of Dalit illiteracy. Specifically, a 10 percentage point tariff reduction increases the relative probability of literacy among Dalits by 2.5 percent (coefficient: -0.038; average Dalit

literacy rate: 15%). However, we find no effect on completing high school, and in fact, higher education attainment declines. Column 4 indicates that a 10-point tariff reduction is associated with a 9 percentage decline in the relative likelihood of Dalits completing higher education (coefficient: 0.008; average higher education rate: 0.9%). Thus, while more Dalits may have gained basic literacy, trade liberalization did not translate into sufficient educational advancement to enable participation in high-skill labor markets. The evidence suggests the opposite—higher education attainment fell.

Could this reduction in educational attainment help explain limited access to high-quality jobs? In Tables 2, 3, 4, 5, and 6, we show that the probability of securing "better" jobs—those requiring higher skills, offering higher wages, involving non-routine cognitive tasks, and paying salaries—rises with education, while the likelihood of obtaining "low-quality" jobs falls. Furthermore, Table A2 includes a triple interaction of education, tariff, and Dalit. Once this interaction is included, the Dalit × Tariff term loses significance for employment in skilled, prestigious, and non-prestigious occupations (except for low-skilled jobs, where it was never significant).

Taken together, these results suggest that one likely mechanism behind Dalits' limited access to better-quality occupations after trade liberalization is their inability to acquire the higher-level skills needed to compete effectively in a liberalized market.

7.2 Labour Laws

We also examine whether differences in state-level labour regulations influenced the impact of trade liberalisation on Dalit employment in high- and low-prestige occupations. Although India's labour regime is governed by the Industrial Disputes Act of 1947, state-level amendments have created substantial variation in implementation and enforcement (Besley and Burgess 2004). Some states adopted reforms making hiring and firing easier (hereafter flexible states), while others maintained stricter rules.

The expected impact of labour regulation on Dalit employment is theoretically ambiguous. On the one hand, stringent labour laws increase adjustment costs for firms, limiting their ability to downsize in response to adverse shocks. Firms may respond by relying more on temporary or contract workers—positions that are often low paid, precarious, and offer fewer protections. Workers with weaker labour market networks, including those from lower-caste backgrounds (Munshi and Rosenzweig 2009), may be overrepresented in such jobs. On the other hand, flexible regimes may allow employers greater discretion in dismissing workers, potentially making Dalits in better-quality jobs more vulnerable to discriminatory terminations.

We measure labour regulation using an index combining the strictness of employment protection legislation and enforcement intensity (measured as inspectors per thousand workers), following Sapkal (2016) and Adhvaryu, Chari, and Siddharth Sharma (2013). States below the median of this index—characterised by more lenient enforcement and easier dismissal rules—are classified as flexible labour law states; those above are strict labour law states. This

approach follows Gupta (2021). Flexible states include Andhra Pradesh, Assam, Gujarat, Jammu and Kashmir, Karnataka, Kerala, Rajasthan, Tamil Nadu, Uttar Pradesh, and Delhi. Strict states include Bihar, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, Punjab, and West Bengal.

We re-estimate our main equations separately for flexible and strict states. Results for skilled, high-prestige, and low-prestige occupations are reported in Tables A3. For skilled occupations, we find no significant differences in Dalit employment in bottom- or middle-skill jobs (results not shown), but in flexible states Dalits exposed to greater tariff reductions are 4 percentage points less likely to hold top-skilled jobs; the effect is insignificant in strict states.

For high-prestige jobs, coefficient signs and significance are similar across both groups of states, but magnitudes are larger in flexible states. For instance, in top wage jobs (measured contemporaneously), the coefficient is 0.022 in flexible states versus 0.014 in strict states. This implies that a 10 percentage point tariff reduction reduces the probability of a Dalit being in a top wage job by 33% in flexible states (average Dalit employment rate: 0.64%) and by 23% in strict states (average rate: 0.59%).

For bottom-wage jobs, the effect is significant in both groups, but again larger in flexible states. In low-prestige occupations, Dalits in flexible states exposed to greater tariff reductions are 13% more likely to be in such jobs (on an international prestige scale); the effect is insignificant in strict states. Finally, in strict states, tariff reductions significantly reduce the probability of Dalit salaried employment.

Although the evidence is not uniform, these results suggest that the patterns observed in Tables 3, 4, and 5 are more pronounced in states with more flexible hire-and-fire policies. This is consistent with the idea that Dalits are more vulnerable to dismissal in such states.

8 Conclusion

This study examines the impact of trade liberalization on caste-based occupational rigidity in India focusing on differences between Dalit and non-Dalit employment. The analysis utilized district-level data to assess the impact of trade policy changes on the employment of Dalit and non-Dalit populations in both prestigious and non-prestigious occupations. The findings reveal that districts with greater exposure to tariff reductions saw a decrease in Dalit employment in relation to non-Dalits in the very top tier jobs in terms of skill, wages and other definitions of prestige. We also find that, Dalit employment has also increased in the very low quality occupations. These findings suggest that Dalits have been largely excluded from the potential benefits of trade reform and instead face a reinforcement of occupational disadvantage.

To understand the mechanisms, we examine education and labour market institutions. We find, that while exposure to tariff reduction increased Dalit literacy, this didn't translate to gains in higher education. This indicates that Dalit workers may have failed to upgrade their skills to compete in the post reform labour market. We also find that while the effects of trade liberalisation on Dalit employment is visible in both pro-employer and non pro-employer

states, the effect is more pronounced in the pro-employer states. Faced with the exogenous shock of reduced tariff, Dalits are likely to struggle more to be employed in good quality jobs in states that have more flexible hire and fire policies.

These results highlight how trade liberalisation interacts with entrenched social hierarchies. We find that trade liberalisation has limited effectiveness in addressing caste-based disparities across the labour market. In fact, the effect may have been in the opposite direction, with trade liberalisation increasing caste based occupational hierarchies in some context. This study underscores the importance of considering the socio-economic implications of trade policies, especially in a country as diverse and complex as India, and suggests that additional measures may be necessary to address the persistent challenges of caste-based discrimination in the labor market. Further research in this area could provide valuable insights into potential policy interventions to promote greater equality and inclusivity in India's evolving economy.

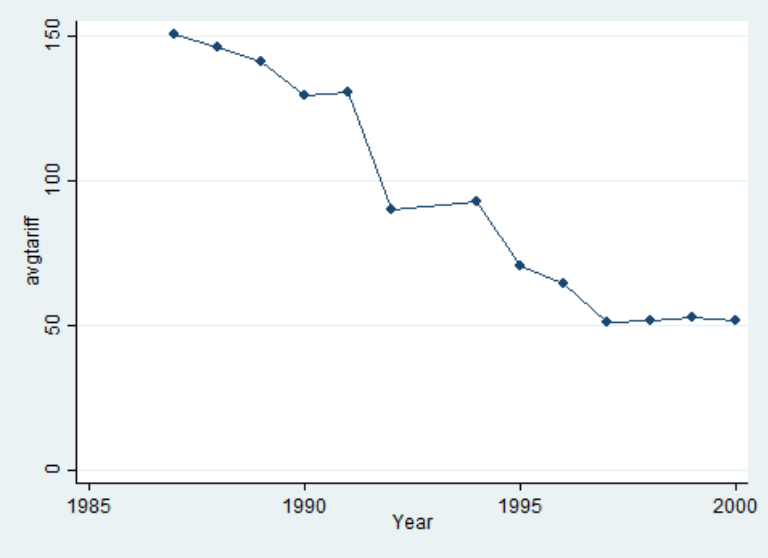

Figure 1: Change in average output tariff

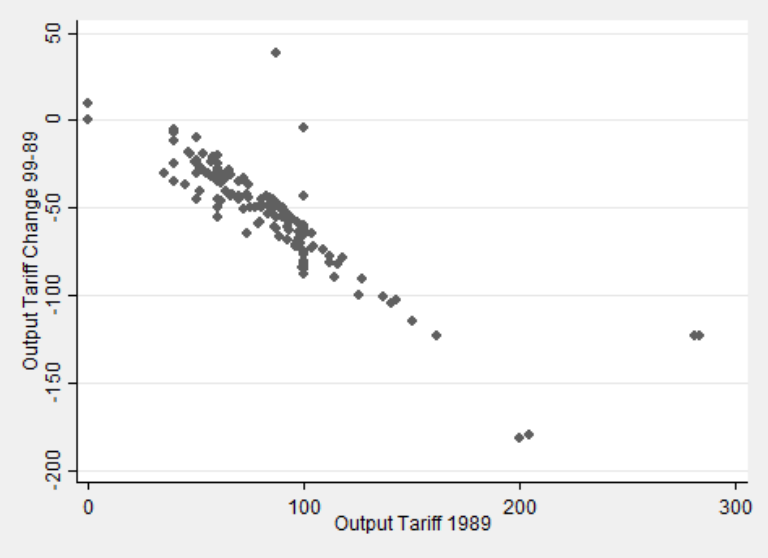

Figure 2: Change in output tariff and initial tariff levels

Table 1: Summary Statistics

	Round 43 (1989)			Round 55 (2000)		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Employment in:						
Any occupation	408,178	0.354	0.478	292,190	0.375	0.484
By sector						
Agriculture	119,108	0.786	0.410	108,007	0.735	0.441
Manufacturing	119,108	0.068	0.251	107,992	0.079	0.270
Construction	119,108	0.032	0.175	107,992	0.034	0.182
Services	119,094	0.053	0.225	107,992	0.094	0.292
Trade	119,095	0.059	0.236	107,992	0.056	0.230
By skill level of occupation (categorised by 1988 data)						
Bottom 25% skilled	119,108	0.332	0.471	107,875	0.348	0.476
Middle 50%	119,108	0.603	0.489	107,875	0.551	0.497
Top 25%	119,108	0.065	0.246	107,875	0.101	0.301
High prestige occupations						
Top 5% waged	119,108	0.005	0.073	108,007	0.019	0.136
Top 5% waged occupations (1988)	119,108	0.005	0.073	107,875	0.009	0.092
Non routine cognitive	119,108	0.029	0.166	108,007	0.048	0.214
By principal status						
Salaried	408,178	0.034	0.181	292,190	0.031	0.173
Self-employed	408,178	0.179	0.384	292,190	0.123	0.329
Casual	408,178	0.107	0.309	292,190	0.124	0.329
Low prestige occupations						
Bottom 10% waged	119,108	0.470	0.499	108,007	0.409	0.492
Low International Prestige Scale	117,860	0.795	0.404	292,190	0.271	0.445

Table 2: Effect of Tariff Reduction on Employment in Different Sectors

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Overall employment	Agriculture	Manufacturing	Construction	Trade	Services
DalitX Tariff	-0.015**	-0.037**	0.011	-0.003	0.017***	0.011*
	(0.007)	(0.016)	(0.010)	(0.007)	(0.005)	(0.006)
Tariff	0.056	0.059	-0.008	-0.010	-0.004	-0.038
	(0.040)	(0.093)	(0.032)	(0.023)	(0.032)	(0.044)
Dalit	0.060***	0.029***	-0.014**	0.026***	-0.034***	-0.006
	(0.005)	(0.011)	(0.006)	(0.005)	(0.004)	(0.005)
Education level (base level: Degree and above)						
Not Literate	-0.169***	0.433***	-0.006	0.021***	-0.044***	-0.406***
	(0.006)	(0.011)	(0.005)	(0.002)	(0.005)	(0.009)
Literate and pre-primary	-0.238***	0.373***	0.022***	0.020***	-0.019***	-0.397***
	(0.006)	(0.011)	(0.006)	(0.002)	(0.005)	(0.010)
Middle or Secondary	-0.119***	0.298***	0.017***	0.015***	0.008*	-0.338***
	(0.005)	(0.009)	(0.005)	(0.002)	(0.004)	(0.009)
Constant	0.726***	0.319***	0.049	0.058*	0.133***	0.446***
	(0.049)	(0.114)	(0.054)	(0.032)	(0.030)	(0.046)
Observations	668,771	200,597	200,583	200,583	200,570	200,569
R-squared	0.280	0.121	0.040	0.052	0.035	0.111
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
District pre	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Post liberalisation control	Yes	Yes	Yes	Yes	Yes	Yes
Mean (All)	0.363	0.753	0.0758	0.0327	0.0610	0.0767
Mean (Dalit)	0.396	0.795	0.0644	0.0481	0.0336	0.0572

Notes: Column (1) reports results for the dependent variable *Employed* (indicator for whether the individual is employed). Columns (2)–(6) report results for employment in specific sectors: Agriculture (2), Manufacturing (3), Construction (4), Trade (5), and Services (6). All estimations include individual controls (age, sex, education), pre-reform district controls, and fixed effects for district and year. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Effect of Tariff Reduction on Dalit Employment Across Skill Levels

VARIABLES	Bottom Skills	Mid Skills	Top Skills
Dalit × Tariff	0.009	-0.022	0.013**
	(0.021)	(0.022)	(0.006)
Tariff	0.106	-0.105	-0.001
	(0.088)	(0.089)	(0.031)
Dalit	0.195***	-0.176***	-0.018***
	(0.014)	(0.015)	(0.004)
Education level (base level: Degree and above)			
Not Literate	0.403***	0.107***	-0.510***
	(0.009)	(0.011)	(0.010)
Literate and pre-primary	0.268***	0.225***	-0.492***
	(0.008)	(0.011)	(0.011)
Middle or Secondary	0.130***	0.273***	-0.402***
	(0.006)	(0.009)	(0.010)
Constant	0.240***	0.254***	0.506***
	(0.092)	(0.087)	(0.040)
Observations	200,483	200,483	200,483
R-squared	0.207	0.137	0.168
Individual controls	Yes	Yes	Yes
District pre	Yes	Yes	Yes
District fixed effect	Yes	Yes	Yes
Post liberalisation control	Yes	Yes	Yes
Mean (All)	0.331	0.583	0.0862
Mean (Dalit)	0.501	0.448	0.0510

*Notes:*Each column reports results from a separate regression, where the dependent variable is an indicator for employment in occupations belonging to a given skill quartile, based on average years of education in the pre-reform period (1988). The bottom, middle, and top quartiles correspond to Columns 1–3, respectively. Occupations are ranked using the 1988 distribution and remain fixed over time. All regressions control for individual characteristics (age, sex, and education), pre-reform district characteristics, district and year fixed effects, and a post-liberalization indicator. Robust standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Effect of tariff reduction on prestigious employment

VARIABLES	(1) Top Wage	(2) Top wage (pre reform)	(3) Non routine cognitive
Dalit×Tariff	0.014***	0.002*	0.010**
	(0.002)	(0.001)	(0.004)
Tariff	-0.004	-0.008	-0.010
	(0.010)	(0.008)	(0.019)
Dalit	-0.011***	-0.001	-0.014***
	(0.002)	(0.001)	(0.003)
Education level (base level: Degree and above)			
Not Literate	-0.135***	-0.081***	-0.363***
	(0.006)	(0.004)	(0.009)
Literate and pre-primary	-0.134***	-0.081***	-0.354***
	(0.006)	(0.004)	(0.009)
Middle or Secondary	-0.126***	-0.071***	-0.316***
	(0.006)	(0.004)	(0.008)
Constant	0.136***	0.085***	0.324***
	(0.014)	(0.010)	(0.024)
Observations	200,597	200,483	200,597
R-squared	0.067	0.040	0.138
Individual controls	Yes	Yes	Yes
District pre	Yes	Yes	Yes
District fixed effect	Yes	Yes	Yes
Post liberalisation control	Yes	Yes	Yes
Mean (All)	0.0122	0.00728	0.0390
Mean (Dalit)	0.00619	0.00391	0.0201

Dependent variable in column (1) is individual is employed in a job corresponding to the top 5% of occupational wage levels of the relevant year. This is calculated by first calculating the mean wages of all NCO principal occupations (which we term as occupational wage), and then identifying all the occupations which have wages in the top 5% wages. In column (2) the dependent variable is whether or not the individual is employed in a job corresponding to the top 5% of occupational wage levels in the pre-reform period (1988). Column (3) corresponds to individual being employed in non routine cognitive occupations. Estimations include individual controls (age, sex and education level), pre reform district controls, district and year fixed effects. Robust standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5: Effect of tariff reduction on low prestige employment

VARIABLES	(1) Bottom 10% wage	(2) Low international prestige scale
Dalit×Tariff	-0.062***	-0.069***
	(0.023)	(0.015)
Tariff	-0.064	0.016
	(0.106)	(0.091)
Dalit	-0.139***	0.057***
	(0.016)	(0.010)
Education level (base level: Degree and above)		
Not Literate	0.072***	0.418***
	(0.012)	(0.010)
Literate and Pre- primary	0.145***	0.352***
	(0.011)	(0.011)
Middle or Secondary	0.186***	0.282***
	(0.009)	(0.009)
Constant	0.054	0.600***
	(0.106)	(0.110)
Observations	200,597	208,094
R-squared	0.144	0.126
Individual controls	Yes	Yes
District pre	Yes	Yes
District fixed effect	Yes	Yes
Post liberalisation control	Yes	Yes
Mean	0.442	0.726

Dependent variable in column (1) is individual is employed in the bottom 10 percentile waged occupation. This is calculated by first calculating the mean wages of all NCO principal occupations (which we term as occupational wage), and then identifying all the occupations which have wages in the bottom 10 percentile. Dependent variable in column (2) is individual is employed in occupation that is in the bottom quantile of the international prestige scale. Estimations include individual controls (age, sex and education level), pre reform district controls, district and year fixed effects. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effect of tariff reduction on Salaried, Self Employed and Casual employment

VARIABLES	(1) Salaried	(2) Self Employed	(3) casual
Dalit×Tariff	0.020**	-0.060***	-0.019
	(0.009)	(0.017)	(0.018)
Tariff	0.008	-0.102	0.053
	(0.044)	(0.112)	(0.065)
Dalit	-0.001	-0.089***	0.221***
	(0.006)	(0.010)	(0.013)
Education level (base level: Degree and above)			
Not Literate	-0.419***	0.061***	0.350***
	(0.010)	(0.008)	(0.010)
Literate and pre-primary	-0.415***	0.142***	0.244***
	(0.010)	(0.008)	(0.009)
Middle and Secondary	-0.354***	0.156***	0.134***
	(0.010)	(0.008)	(0.007)
Constant	0.533***	0.233**	0.233***
	(0.047)	(0.114)	(0.073)
Observations	244,706	244,706	244,706
R-squared	0.118	0.209	0.176
Individual controls	Yes	Yes	Yes
District pre	Yes	Yes	Yes
District fixed effect	Yes	Yes	Yes
Post liberalisation control	Yes	Yes	Yes
Mean (All)	0.0884	0.409	0.282
Mean (Dalit)	0.0762	0.296	0.448

Dependent variable in column (1) is individual is employed in salaried employment. In column (2) the dependent variable is self employed and in column (3) it is casual employment. Estimations include individual controls (age, sex and education level), pre reform district controls, district and year fixed effects. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 7: Effect of tariff reduction on educational attainment

VARIABLES	(1) Non literate	(2) literate	(3) school	(4) Higher Education
Dalit × Tariff	0.029**	-0.038***	0.002	0.008***
	(0.011)	(0.007)	(0.008)	(0.002)
Tariff	-0.123*	0.036	0.087*	-0.004
	(0.065)	(0.035)	(0.052)	(0.013)
Dalit	0.149***	-0.010**	-0.120***	-0.020***
	(0.008)	(0.005)	(0.007)	(0.001)
Constant	0.397***	0.248***	0.305***	0.052***
	(0.070)	(0.040)	(0.058)	(0.012)
Observations	669,298	669,298	668,771	668,771
R-squared	0.149	0.035	0.098	0.019
Individual controls	Yes	Yes	Yes	Yes
District pre	Yes	Yes	Yes	Yes
District fixed effect	Yes	Yes	Yes	Yes
Post liberalisation control	Yes	Yes	Yes	Yes
Mean (All)	0.540	0.171	0.269	0.0199
Mean (Dalit)	0.660	0.151	0.179	0.00916

Dependent variable in column (1) is 'individual is non literate'. In column (2) it is 'individual is literate but hasn't been to school'. In column (3) it is 'individuals have some education in school (upto Higher Secondard) and in column (4) it is 'individual has attained higher education (some degree or higher)'. Estimations include individual controls (age and sex), pre reform district controls, district and year fixed effects. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A1: Pre-reform trend test. Base year 1988 (NSSO Round 43)

VARIABLES	(1) agr	(2) man	(3) cons	(4) trade	(5) serv	(6) topskill	(7) topwage	(8) nonrout	(9) sal	(10) selfemp	(11) casual	(12) botwage
Tariff	0.682***	-0.135*	-0.218***	0.000	-0.307**	-0.041	-1.294*	-0.036	-0.150	0.384	0.583***	0.003
	(0.198)	(0.078)	(0.074)	(0.101)	(0.141)	(0.034)	(0.643)	(0.059)	(0.095)	(0.377)	(0.196)	(0.244)
Dalit	0.331	-0.206	-0.208	0.083	0.008	0.035	-0.261	0.051	0.262	-0.347	0.378	-0.268
	(0.373)	(0.214)	(0.154)	(0.101)	(0.096)	(0.022)	(0.192)	(0.042)	(0.174)	(0.319)	(0.364)	(0.547)
DalitXTariff	-0.382	0.228	0.263	-0.118	-0.001	-0.039	0.298	-0.060	-0.274	0.243	-0.211	0.096
	(0.431)	(0.242)	(0.181)	(0.117)	(0.111)	(0.025)	(0.223)	(0.048)	(0.199)	(0.373)	(0.421)	(0.639)
38th Round	-0.183	0.004	0.060	0.019	0.105	-0.010	-0.899*	-0.008	-0.013	0.039	0.285**	-0.601*
	(0.250)	(0.127)	(0.063)	(0.084)	(0.082)	(0.023)	(0.480)	(0.044)	(0.080)	(0.249)	(0.117)	(0.307)
55th Round	0.302*	-0.094	-0.150**	0.017	-0.068	-0.026	-1.335**	-0.013	-0.099	0.204	0.650***	-0.313
	(0.164)	(0.067)	(0.056)	(0.085)	(0.112)	(0.027)	(0.488)	(0.041)	(0.083)	(0.397)	(0.202)	(0.223)
38thXTariff	0.192	0.002	-0.074	-0.024	-0.101	0.019	0.788	0.018	0.022	-0.120	-0.326**	0.692*
	(0.283)	(0.143)	(0.071)	(0.095)	(0.095)	(0.027)	(0.545)	(0.050)	(0.091)	(0.291)	(0.129)	(0.351)
55thXTariff	0.132	0.101	0.105	-0.061	-0.258*	0.007	1.356**	0.005	-0.016	-0.525	-0.866**	0.767**
	(0.218)	(0.096)	(0.075)	(0.104)	(0.124)	(0.029)	(0.568)	(0.066)	(0.117)	(0.660)	(0.359)	(0.357)
DalitX38th	-0.057	0.209	0.002	-0.043	-0.115	0.011	0.220	0.000	-0.107	0.127	0.466**	-0.483**
	(0.285)	(0.135)	(0.172)	(0.103)	(0.085)	(0.023)	(0.263)	(0.041)	(0.112)	(0.134)	(0.180)	(0.181)
DalitX55	0.098	0.136	0.059	-0.152	-0.136	-0.042	0.376*	-0.073**	-0.436*	0.512	-0.552	0.828
	(0.315)	(0.201)	(0.127)	(0.100)	(0.084)	(0.029)	(0.214)	(0.035)	(0.213)	(0.378)	(0.483)	(0.603)
DalitX38thXTariff	0.095	-0.249	-0.015	0.051	0.121	-0.019	-0.272	-0.006	0.112	-0.140	-0.539**	0.568**
	(0.320)	(0.151)	(0.198)	(0.116)	(0.097)	(0.026)	(0.304)	(0.047)	(0.125)	(0.156)	(0.202)	(0.210)
DalitX55XTariff	-0.995**	-0.029	0.315*	0.255*	0.417**	0.061	-0.738**	0.106	0.859**	-1.098*	1.432	-2.411**
	(0.429)	(0.227)	(0.178)	(0.132)	(0.152)	(0.058)	(0.337)	(0.062)	(0.348)	(0.606)	(0.973)	(1.047)
Constant	-0.227	0.181**	0.227***	0.110	0.690***	0.291***	1.110*	0.378***	0.649***	-0.037	-0.298*	0.148
	(0.173)	(0.072)	(0.065)	(0.084)	(0.124)	(0.038)	(0.556)	(0.050)	(0.077)	(0.318)	(0.166)	(0.200)
Observations	346,459	346,443	346,443	346,394	346,390	346,154	398,009	346,459	398,314	398,314	398,314	346,459
R-squared	0.092	0.017	0.022	0.028	0.100	0.146	0.220	0.127	0.091	0.186	0.147	0.113

In this table we test whether there wewre pre- reform trends in Dalit employment in our various outcomes of interest. In the columns our dependent variables are respectively employment in agriculture (column (1)), manufacturing (2), construction (3), trade (4), services(5), top skill employment by 1988 distribution (6), top wage employment by 1988 distribution (7), non routine cognitive (8), salaried (9), self employed(10), casual (11) and bottom wage employment(12). The variables are aggregated at state level as district level data isn't available for the 38th round. Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2: Effect of exposure to tariff on different outcomes, interacted with education level

VARIABLES	(1) bot skill	(2) mid skill	(3) top skill	(4) top wage	(5) top wage(1988)	(6) nonrout cogn	(7) salaried	(8) self emp	(9) casual	(10) bot wage	(11) low pres
DalitX Tariff	0.088*	-0.014	-0.074	0.017	0.009	-0.085	-0.028	-0.039	0.013	-0.012	0.074
	(0.049)	(0.067)	(0.075)	(0.042)	(0.037)	(0.071)	(0.067)	(0.053)	(0.042)	(0.057)	(0.072)
Tariff	0.165*	-0.171*	0.006	-0.168***	-0.030*	0.003	0.113**	-0.335***	0.118*	-0.138	-0.012
	(0.088)	(0.097)	(0.043)	(0.020)	(0.016)	(0.032)	(0.051)	(0.112)	(0.066)	(0.110)	(0.094)
Dalit	0.070***	-0.135***	0.066	-0.017	-0.004	0.053	0.087**	-0.091***	0.105***	-0.137***	-0.072**
	(0.023)	(0.038)	(0.041)	(0.028)	(0.022)	(0.042)	(0.042)	(0.033)	(0.025)	(0.034)	(0.036)
Ed_1X Tariff	-0.050**	0.042	0.007	0.175***	0.024*	-0.002	-0.105***	0.257***	-0.053**	0.029	0.024
	(0.021)	(0.029)	(0.029)	(0.016)	(0.014)	(0.027)	(0.025)	(0.023)	(0.021)	(0.029)	(0.032)
Ed_2X Tariff	-0.075***	0.074**	0.001	0.166***	0.026*	-0.021	-0.120***	0.211***	-0.077***	0.087***	0.018
	(0.022)	(0.031)	(0.031)	(0.016)	(0.014)	(0.027)	(0.025)	(0.023)	(0.021)	(0.030)	(0.033)
Ed_3X Tariff	-0.058***	0.078***	-0.019	0.168***	0.022	-0.018	-0.111***	0.239***	-0.074***	0.097***	0.036
	(0.014)	(0.028)	(0.028)	(0.016)	(0.014)	(0.026)	(0.023)	(0.021)	(0.016)	(0.028)	(0.027)
Ed_1X TariffXDalit	-0.066	-0.015	0.081	-0.012	-0.009	0.092	0.054	-0.049	-0.024	-0.048	-0.148**
	(0.055)	(0.071)	(0.075)	(0.042)	(0.037)	(0.071)	(0.068)	(0.053)	(0.046)	(0.062)	(0.074)
Ed_2X TariffXDalitf	-0.129**	0.043	0.087	-0.004	-0.009	0.103	0.055	0.027	-0.090*	0.010	-0.155**
	(0.055)	(0.074)	(0.074)	(0.042)	(0.037)	(0.071)	(0.069)	(0.055)	(0.049)	(0.063)	(0.072)
Ed_2X TariffXDalit	-0.096*	0.010	0.085	-0.001	-0.006	0.090	0.049	-0.024	-0.035	-0.043	-0.134*
	(0.052)	(0.072)	(0.074)	(0.042)	(0.037)	(0.071)	(0.067)	(0.056)	(0.045)	(0.063)	(0.072)
Constant	0.217**	0.288***	0.495***	0.222***	0.097***	0.314***	0.465***	0.365***	0.207***	0.097	0.625***
	(0.093)	(0.092)	(0.043)	(0.018)	(0.012)	(0.028)	(0.050)	(0.113)	(0.073)	(0.107)	(0.111)
Observations	200,483	200,483	200,483	200,597	200,483	200,597	244,706	244,706	244,706	200,597	208,094
R-squared	0.207	0.138	0.168	0.075	0.040	0.138	0.119	0.210	0.176	0.144	0.126
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District pre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Post liberalisation control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean	0.331	0.583	0.0862	0.0122	0.00728	0.0390	0.0884	0.409	0.282	0.442	0.726

This table reports our main regression results with an additional interaction between Dalit status, tariff exposure, and education level.The reference category for education is Degree and above. Ed_1 denotes not literate. Ed_2 denotes literate and pre-primary and Ed_3 denotes middle and secondary level of education. Reported outcome variables are "bottom 25% skill" (column (1)), "middle 50% skill" (column (2)), "top 25% skill" (column (3)), "top 95% wages" (column (4)), "top 95% wages (categorised using 1988 data) (column (5)), "non routine cognitive" (column (6)), "salaried employment" (column (7)), "self employed" (column (8)),"casual" employment (column (9)), "bottom 20% wages" (column (10)), "low prestige by international scale" (column (11)); other outcomes are omitted due to space constraints. All regressions include individual controls (age and sex), pre-reform district controls, district fixed effects, year fixed effects, and education × Dalit interactions. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A3: Effect of Tariff Exposure on Different Outcomes, heterogeneous analysis by Labour Laws

	top skill		top wage		top (1988)		nonrout cog		salaried		bot wage		low prestige	
	flexible labour law	strict labour law	flexible labour law	strict labour law	flexible labour law	strict labour law	flexible labour law	strict labour law	flexible labour law	strict labour law	flexible labour law	strict labour law	flexible labour law	strict labour law
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
DalitXTariff	0.039***	0.012	0.022***	0.014***	0.006***	0.003**	0.025***	0.013**	0.022	0.029**	-0.114***	-0.061*	-0.126***	-0.037
	(0.009)	(0.008)	(0.004)	(0.003)	(0.002)	(0.002)	(0.007)	(0.006)	(0.014)	(0.012)	(0.033)	(0.034)	(0.021)	(0.023)
Tariff	0.033	0.002	-0.002	-0.000	0.002	-0.013	-0.006	-0.020	0.142**	-0.057	-0.184	0.184	0.074	0.004
	(0.053)	(0.028)	(0.019)	(0.010)	(0.012)	(0.010)	(0.031)	(0.019)	(0.072)	(0.044)	(0.162)	(0.126)	(0.160)	(0.095)
Dalit	-0.034***	-0.011*	-0.016***	-0.009***	-0.004**	-0.001	-0.021***	-0.012***	-0.007	0.005	-0.105***	-0.150***	0.093***	0.031**
	(0.007)	(0.006)	(0.003)	(0.002)	(0.002)	(0.001)	(0.005)	(0.005)	(0.010)	(0.006)	(0.022)	(0.023)	(0.014)	(0.015)
Constant	-0.137***	-0.132***	-0.027	-0.028***	-0.021**	-0.009	-0.099***	-0.108***	-0.181***	0.035	0.338**	0.075	0.960***	1.103***
	(0.047)	(0.028)	(0.016)	(0.010)	(0.010)	(0.009)	(0.029)	(0.019)	(0.063)	(0.041)	(0.139)	(0.109)	(0.141)	(0.095)
Obs	106,204	94,279	106,269	94,328	106,204	94,279	106,269	94,328	129,301	115,405	106,269	94,328	109,561	98,533
R-squared	0.126	0.113	0.034	0.027	0.022	0.019	0.070	0.071	0.090	0.070	0.151	0.120	0.114	0.126
Ind controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District pre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Post lib control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (All)	0.0938	0.0771	0.0134	0.0107	0.00794	0.00649	0.0421	0.0354	0.0904	0.0861	0.427	0.460	0.707	0.748
Mean (Dalit)	0.0566	0.0463	0.00648	0.00595	0.00395	0.00388	0.0228	0.0179	0.0729	0.0791	0.307	0.349	0.749	0.787

This table reports our main regression results separately for states with flexible and strict labour laws as defined in Section 7.2. Reported outcome variables are "top 25% skill" (column (1) and (2)),"top 95% wages" (column (3) and (4)), "top 95% wages (categorised using 1988 data) (column (5) and (6)), "non routine cognitive employment" (column (7) and (8)),"salaried employment" (column (9) and (10)), "bottom wage" (column (11) and (12))and "low prestige by international standard" employment (column (13) and (14)); other outcomes are omitted due to space constraints. All regressions include individual controls (age and sex), pre-reform district controls, district fixed effects, year fixed effects. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

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