

Labor Regulations and Job Quality: Evidence from India

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Abstract. This study examines whether measures of job quality in India's manufacturing sector differ systematically across states with varying types of labor regulation. The analysis uses repeated cross sections of India's NSSO household survey data from 1983 to 2004 merged with data on state-level regulations affecting employment adjustment and dispute resolution. Results from a differences-in-differences procedure show that restrictions on employment adjustment and dispute settlement in a pro-worker direction contribute to improved job quality for women for most measures. However, such regulations yield mixed results for men; results indicate that higher wages come at the expense of fewer hours, substitution toward in-kind compensation, and less job security. We conclude that India's labor legislation does have a silver lining with respect to job quality, but that silver lining applies selectively.

JEL Classification Codes: J52, K31, J31, O14, O12

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I. INTRODUCTION

Discussions of labor regulations often take place in a framework that highlights the cost of compliance. In such a framework, firms may hire fewer workers, substitute toward labor-saving technologies, and take on more casual home-based workers in an effort to reduce labor costs. Several studies have found empirical support for these arguments including Botero *et al.* (2004) which found that more highly regulated labor markets are associated with greater unemployment and more informal sector activity. Similarly, Amin (2009) found that retail stores in India responded to the cost of stricter labor laws by substituting away from workers to computers. In contrast, stronger rights for workers can have beneficial macroeconomic effects by enhancing labor market stability which helps to foster domestic and foreign investment. Investment, in turn, spurs economic growth and the creation of new jobs in the formal sector (Stiglitz 2002; Rodrik 1999). These contrasting effects of regulations may be mediated by competitive pressures introduced through liberalization and globalization (Standing 1999). For example, even though developing country workers gain new employment opportunities from increased integration with global markets, the jobs are often temporary, casual, flexible, and characterized by poor working conditions.

India constitutes an interesting case study in this debate on the costs and benefits of strong labor market regulations against a backdrop of market-oriented macroeconomic reforms. As a federal constitutional republic, India's labor market exhibits substantial variation across its twenty-eight geographical states in terms of the regulatory environment. Labor regulations have historically fallen under the purview of states, a system that has allowed state governments to decide whether to enact labor legislation that gives employers more flexibility (pro-business) or gives workers greater protection (pro-worker). Furthermore, starting in the early-1990s, India

underwent sweeping deregulation in trade and industry mainly in response to external pressures that emanated from a balance of payments crisis.

The payments crisis and India's relatively slow economic growth in the preceding two decades had many roots, one of which was the prevalence of a restrictive labor market regime. To test if regulations had adverse impacts, Besley and Burgess (2004) used detailed manufacturing-sector data for India from 1958 to 1992 and found that states which adopted relatively pro-worker industrial relations policies had lower output, productivity, investment, and employment in the formal sector. This conclusion has subsequently received mixed support. In a study supporting these results, Sanyal and Menon (2005) argued that pro-worker policies may manifest themselves in greater instances of labor turmoil. The authors found that states with a relatively high number of strikes, number of man-days lost in work-stoppages, and percentage of unionized workers, experienced less domestic investment. Also finding negative effects, Hasan *et al.* (2003) used the Besley and Burgess measure of labor laws to analyze how labor market adjustments to trade liberalization varied across states. They found that states with restrictive labor regulations experienced smaller increases in labor demand elasticities following India's trade reforms compared to states with more flexible labor markets, implying that firms in the more restrictive states were at a competitive disadvantage in their ability to adjust their inputs in response to growing integration in world markets. However, Bhattacharjea (2006) characterized these earlier results as fragile since the Besley and Burgess measure of pro-employer and pro-worker reforms did not disentangle cross-state variations in labor regulations from differences in industrial relations and investment climates. What matters more, according to Bhattacharjea's critique, is the actual enforcement of labor laws and the judicial interpretation of India's Industrial Disputes Act (IDA) of 1947.

Within this broader context, our objective is to study the association between labor regulations and job quality in India. The analysis adds to the debate on India's strict labor laws by examining whether measures of job quality differ systematically across states with variations in statutory laws that govern industrial and labor relations. The empirical work uses five waves of household survey data spanning the 1983-2004 period, merged together with an updated database on employment regulation in India's manufacturing sector that takes Bhattacharjea (2006)'s critique into account. As indicators of job quality, the analysis focuses specifically on wages, intensity of work activity (likelihood of working full-time), mode of payment (likelihood of being paid in cash only), job security (whether engaged in subsidiary work), and the residual gender wage gap. Note that because cash is fungible, payment in cash only is considered the preferred outcome as compared to the other modes of compensation among India's manufacturing sector workers in our data (in-kind compensation only or a combination of cash and in-kind payments).

States that took a pro-employer stance in their amendments to labor regulations are expected to exhibit downward pressure on wages, lower rates of full-time work, payment in-kind, and greater job insecurity. In contrast, labor law amendments in a relatively pro-worker direction are expected to have had positive effects on measures of job quality. A priori, we expect that India's employment protection would have more beneficial effects for female workers as compared to male workers. As the objective behind employment legislation is often to protect those who are relatively vulnerable, if women have less bargaining power, we would expect legislation to be put in place to protect them.

Results from a differences-in-differences-in-differences procedure are consistent with these expectations. In particular, regulations associated with employment adjustment in a pro-

worker direction and with prolonging the length of dispute settlement have large positive impacts on job quality across the board for women as measured by real wages, the probability of working full-time, working for cash only, and having a secure job. The results for men are more mixed. While men's wages rise and their job security improves following regulatory changes that make it more difficult for employers to adjust the size of their workforce, men may be bearing the costs of these regulations through fewer working hours and a substitution from cash to in-kind compensation. Similarly, regulations that extend the duration of dispute resolution raise men's wages and increase the likelihood of having full-time work but at the cost of job security. Finally, our results indicate that these adjustment and dispute regulations do not affect the residual gender wage gap. These results show that amendments in a pro-worker direction can be welfare-enhancing in terms of job quality, with relatively more benefits for women than for men.

II. LABOR REGULATIONS AND THE BUSINESS ENVIRONMENT

Like many developing countries in the post-WWII era, India based its economic development and trade policies on an import substitution strategy.¹ The country had some of the highest tariff rates and most restrictive non-tariff barriers in the region. Yet in 1990 and early 1991, a series of external, political, and macroeconomic shocks—including an oil price hike spurred by the Gulf War, a reduction in remittances from Indians employed in the Middle East, a shake-up in investor confidence following the assassination of Rajiv Gandhi, and growing fiscal and trade deficits—precipitated a financial crisis. The Indian government requested stand-by assistance from the International Monetary Fund in August 1991, and in return, agreed to what had become a fairly standard policy prescription of stabilization and structural adjustment policies. The government aimed to reduce tariff levels on a wide range of imported products, lower the variation across sectors in tariff rates, simplify the tariff structure, and remove many of

the exemptions. Several new waves of reforms occurred in 1994 and 1997, with a slowdown in the pace of trade liberalization after 1997 as pressures from outside agencies subsided.

This period of economic liberalization followed several decades of statutory activity at the state level in interpreting and amending provisions of the 1947 IDA. These actions have been the topic of several empirical studies in the economics literature, with Ahsan and Pagés (2009) providing the most recent assessment of amendments of state-level regulations on job security, labor disputes, and contract labor laws. The authors focused specifically on three regulatory categories: employment adjustment, dispute resolution, and a specific provision in the IDA known as Chapter 5b. All state-level regulations passed between 1949 and 1989 (the last year in which a state passed a labor law amendment) are shown in Appendix Table 1.

The first category, labeled as “Adjustment”, measures the cumulative direction of changes in laws affecting firms’ employment adjustment capacity. As one can see from the statutory changes in Appendix Table 1, this category relates primarily to laws that affect the ability of firms to hire and fire workers in response to changing business conditions. In terms of coding these regulatory changes into a quantitative indicator, all amendments in each year that strengthen workers’ job security (and limit the ability of firms to adjust employment) are coded as +1. As shown in the Appendix, such amendments include reductions in firms’ ability to retrench, increases in the cost of layoffs, and restrictions on firm closures. For example, in 1987 the state of Andhra Pradesh passed an amendment stating that if a closed firm were to re-open, it must give preference to workers who were retrenched from that firm in any hiring decisions. All amendments in each year that weaken workers’ job security and strengthen the capacity of firms to adjust employment are coded as -1. A state is assigned a 0 for each year in which there was no legislative change affecting employment adjustment (neutral legislation).

As the final step in the construction of the Adjustment variable and similar to the strategy in Ahsan and Pagés (2009), we added these values of +1, 0, and -1 over time to create a cumulative indicator of net amendments as of each year of data in the analysis. This summation was implemented in order to construct a measure that would evaluate a state's overall exposure to particular regulations passed in preceding years (in our empirical framework, labor law amendments passed in a year affect outcomes in subsequent years).

The distribution across states of these amendments over time in affecting employers' ability to adjust their workforce is shown in Figure 1. One can readily see that the majority of states had no net changes over time to regulations affecting the ability of firms to hire and fire workers. Of the seven states that did have such changes, all made regulatory changes that favored workers rather than employers. Maharashtra and West Bengal in particular stand out for changing the regulatory environment in a pro-worker direction.

Insert Figure 1 Here

A similar procedure was followed to construct the second category of regulatory changes labeled "Disputes." In particular, in each year, any state amendment that made it easier for workers to initiate and sustain an industrial dispute or that lengthened the resolution of industrial disputes was coded as +1. An example of this type of legislation is the state of Rajasthan, which passed an amendment in 1984 saying that union representatives must be involved in negotiations concerning retrenchment; their involvement was not initially stipulated under the IDA (Appendix Table 1). Conversely, any state amendment that limited the capacity of workers to initiate and sustain an industrial dispute or that facilitated the resolution of industrial disputes was coded as -1. For example, several states stipulated that in cases of public emergency, the state could designate some industries as public utilities, which have fewer strikes and lock-outs. In years

when there were no changes in laws related to procedures for resolving industrial disputes, states were assigned a 0. Again, as the final step in the construction of the Disputes variable, these values of +1, 0, and -1 were added to create a cumulative indicator of net changes as of each year of the analysis.²

The distribution of these net changes over time across states in laws on procedures for the resolution of industrial disputes is shown in Figure 2. In contrast to trends in the Adjustment variable, regulatory changes over time to procedures for the resolution of disputes tended to favor employers and not workers, especially in Andhra Pradesh, Rajasthan, and Tamil Nadu. Note that West Bengal which was prominent for having pro-worker regulatory changes affecting firms' employment adjustment capacity also stands out for having pro-worker changes on procedures for resolving industrial disputes.

Insert Figure 2 Here

The third category of regulatory actions, "Chapter 5b", captures the cumulative direction of amendments to Chapter 5b of the IDA. In sum, Chapter 5b prohibits firms that employ a certain threshold number of workers to cease operations without permission from the state. In 1947, Chapter 5b applied to all firms with 300 or more workers. While this provision is one of many laws affecting firms' capacity to adjust the number of their employees (coded above as "Adjustment"), this particular provision has stood out over time as the most contentious. Any amendment that set a lower threshold for firms would be coded as +1, since the lower threshold would be pro-worker in the sense of widening the coverage to more firms who would be constrained in their ability to lay-off workers at will. For example, in 1988 the state of Karnataka passed an amendment stipulating that restrictions on dismissing workers would apply to seasonal establishments and those with 100 or more workers. Similarly, raising the threshold would

necessitate a coding of -1, reflecting a change in a pro-employer direction (no state actually implemented such a change). Finally, a state is assigned a 0 for each year in which there were no legislative changes affecting the firm size threshold in state legislation relating to Chapter 5b. As before, we added these values of +1, 0, and -1 over time to create a cumulative indicator of the net directions of “Chapter5b” amendments as of each year of the analysis. The results are depicted in Figure 3.

Insert Figure 3 Here

One can readily see that five states had amendments in the pro-worker direction to Chapter 5b of the IDA. Each of these states set a lower firm size threshold for the application of Chapter 5b, thus preventing a larger population of firms from retrenching workers at will. For example, in 1981, the state of Maharashtra passed an amendment to Chapter 5b that extended the prohibition to terminate workers without government permission from firms with 300 employees to firms with 100 employees.

Figures 1 – 3 provide a graphical description of the regulatory climate in India. Placing India’s labor regulations into a broader context, fairly recent information on India’s overall business environment indicates that states with the best perceived business environment include Maharashtra, Gujarat, New Delhi, Tamil Nadu, and Karnataka (Table 1). This ranking of business environments by state is based on the World Bank’s 2005 Enterprise Survey for India which contains information on how the business environment is perceived by individual firms, and what firms see as the major impediments to performance.³ The business environment includes various features related to the economic, financial, regulatory and investment climate. The high rankings for these states are consistent with results in Mitra *et al.* (2002), which found these states to be the most industrialized and also the best equipped in terms of infrastructure. In

contrast to the states with favorable business climates, the states with the worse business environments in Table 1 are Bihar, Orissa, West Bengal, Kerala, Jharkhand, and Uttar Pradesh, with Bihar having by far the largest proportion of negative responses. Note that in a set of consistency checks with additional questions in the survey, for states with the top five business environments, respondents overwhelmingly responded that these states had both a better general business environment and a better environment for their particular industry compared to the state in which they were located. In contrast, business owners overwhelmingly preferred their own state compared to the states with the worse business environments.

Insert Table 1 Here

The World Bank data on business environments also indicate that the most important reason cited for locating an enterprise in a particular state was because the owners were from that state: 80 percent of business owners responded that a reason for locating their establishment in a particular state was that they were from that state. Another common reason was natural resources: slightly more than half of owners cited raw materials as an important reason for selecting a particular state. Favorable tax policies appeared to play a smaller role in attracting new enterprise: just 30 percent of owners said they chose a particular state for their enterprise location because the state gave concessions and benefits. Among those who found state concessions and benefits to be important, owners were dispersed geographically with some concentration of owners in the cities of Kolkata (West Bengal) and Jaipur (Rajasthan). Both these states have relatively poor business environments, implying that authorities may have used tax breaks as incentives.

III. METHODOLOGY AND DATA

Our analysis uses an empirical specification adapted from Ahsan and Pagés (2009) and Gruber (1994) that relates a set of job quality outcomes to worker characteristics and labor regulations across states over time. This specification assesses how job quality changed over time and across states with different regulatory environments, while controlling for worker characteristics and state macroeconomic indicators. Similar to the methodology in Gruber (1994), we employ a differences-in-differences-in-differences (DDD) approach in order to identify the effects of labor law amendments. The impact of labor laws on job quality indicators is identified by controlling for differences across implementation of regulations, across states, and across time (years). The DDD approach controls for state and time heterogeneity that might otherwise contaminate results.

We express the determinants of job quality for individual workers as follows:

$$y_{ijt} = a + \beta_1 X_{ijt} + \beta_2 P_{jt} + \beta_3 R_{jt} + \beta_4 S_j + \beta_5 \tau_t + \beta_6 S_j \tau_t + \beta_7 R_{jt} S_j + \beta_8 R_{jt} \tau_t + \beta_9 R_{jt} S_j \tau_t + \vartheta_{ijt} \quad \text{--- (1)}$$

where i denotes an employee, j denotes a state, and t denotes time. The dependent variable y_{ijt} represents a job quality indicator for individual i in state j in year t . The notation X_{ijt} is a set of individual and household characteristics that influences workers' wages and terms of employment. As described in Appendix Table 2, these characteristics include gender, education level attained, years of potential experience and its square, whether the worker has any technical education, marital status, membership in a disadvantaged group, religion, household headship, rural versus urban residence, and the number of pre-school children in the household. Most of these variables, including the number of pre-school children, marital status, and household headship, are fairly standard control variables in wage regressions across countries. Specific to India, wages may be lower for individuals belonging to castes that are perceived as deprived and

for individuals who are not Hindu.⁴ The matrix P_{jt} represents a set of control variables for state-level indicators of public finance including net state domestic product per capita, state total expenditures per capita, and state development expenditures (expenditures on health and education) per capita.

The notation R_{jt} is a set of variables representing the regulatory environment in the labor market across states and over time. The notation s_j is a state-specific effect that is common to all individuals in each state, and τ_t is a time-specific effect that is common to all individuals in each year. The three-way interaction (β_9) is the DDD term which isolates the effect of labor law amendments on job quality net of changes across states and over time. Finally, ϑ_{ijt} is a worker-specific idiosyncratic error term.

Regressions are performed with repeated cross-section data at the worker level for the first four measures of job quality: wage levels, working full-time, paid in cash only, and having a secure job. All regressions at the worker level are estimated separately for men and women. For the fifth measure - residual gender wage gaps - regressions are performed at the aggregate level with state averages over time. Although the residual gender wage gaps are constructed from worker level data, these are averaged to the state and year level in order to assess the impact of labor regulations on this commonly-used measure of discrimination where labor regulations and measures of public finance vary at the state and time level. All models are estimated with linear methods.⁵ All regressions are weighted using sample weights provided in the NSSO data for the relevant years; the weights correct for the fact that the proportion of individuals and households in the sample for each year differs from the proportion in the true population. In addition, we report robust standard errors clustered at the state and year level.

The study draws on five cross sections of household survey data collected by the National Sample Survey Organization (NSSO) in India to estimate the regressions. As shown in Appendix Table 2, the data include the years 1983 (38th round), 1987-1988 (43rd round), 1993-1994 (50th round), 1999-2000 (55th round), and 2004 (60th round). For each round, we utilize the Employment and Unemployment module - Household Schedule 10. These surveys have detailed information on wages; hours worked; intensity of work; form of remuneration; work in subsidiary occupations; and other details on worker characteristics including age, education, gender, and religion. Each cross-section of data was appended by year to create a sample of repeated cross-sections of workers from 1983, 1987, 1993, 1999 and 2004.

To construct the labor force sample, we retain all employees of prime working age (ages 15-60) with positive weekly total wages in the manufacturing sector and with measured values for all indicators in the empirical analysis, resulting in 75,018 observations in the pooled sample. Indicators of job quality include real wage levels; intensity of work activity (as measured by the likelihood of engaging in full-time work); mode of payment (whether payment is in cash); job security (as measured by a worker not engaged in subsidiary employment); and wage inequality (as measured by the residual gender wage gap).⁶ For the residual wage gap regressions, all the variables in the labor force sample are aggregated to the state-level using state codes provided by the NSSO. This step entailed reconciling changes over time in NSSO state codes that arose, in part, from the creation of new states in India (such as the creation of Jharkhand from southern Bihar in 2000). Newly created states were combined with the original states from which they were created in order to maintain a consistent set of state codes across the years of analysis. In addition, consistent with previous studies on India that condition on state-level indicators, Union Territories were combined with the states to which they are closest geographically.

Sample statistics in Table 2 indicate that real weekly wages rose during the 1983 to 2004 period for both men and women, with men earning substantially higher real weekly wages than women. Moreover, a very high percentage of workers in India's manufacturing sector were employed full-time throughout the period, with men experiencing an advantage relative to women in this measure of job intensity, especially by 2004. Similarly, the vast majority of employees work for cash only. In 1983 women showed a slightly higher percentage than men in this measure of compensation, but this small differential had disappeared by 2004. The table does show a considerable gender gap in the percentage of workers having secure jobs; in 1983, just 79 percent of female workers had a secure job compared to 88 percent of male workers. By 2004 this gap had shrunk due to a small decline for men and a small increase for women.

Insert Table 2 Here

Table 2 further indicates considerable variation in the educational attainment of male and female workers. In 1983, 22 percent of male workers were illiterate as compared to 60 percent of female workers, while 25 percent of male workers and 7 percent of female workers had at least a secondary school education. These percentages changed markedly over time, especially for women. By 2004, the percentage of illiterate female workers had dropped to 43 percent, and the percentage of female workers with at least secondary school had risen to 23 percent. Among the other indicators, the data show a large gender differential in geographical residence. While fewer than half of male workers lived in rural areas in both years, the majority of female workers lived in rural areas. Moreover, the bulk of the sample, both male and female, was married, had no technical education, lived in households headed by men, and claimed Hinduism as their religion. Finally, on average, about one quarter to one fifth of workers belonged to the scheduled castes and scheduled tribes.

Merged into the repeated cross-section data on worker characteristics is a separate database of public finance variables at the state level that serve as controls. The variables cover 16 states for each of the five years for which we have NSSO data (1983, 1987, 1993, 1999, and 2004), and include net state domestic product per capita, state total revenue expenditures per capita, and state development expenditures per capita. Development expenditures include health and education expenditures at the state level. These public finance variables are constructed from data in the Economic Organization and Public Policy Program's *Indian States Data Base*, which is available through the London School of Economics and Political Science (EOPP 2011).⁷

Also merged into the repeated cross-section data is information on labor regulations over time and across states from Ahsan and Pagés (2009). This data was used to construct the three variables on Adjustment, Disputes, and Chapter 5b, as discussed in the previous section. The main model of interest includes the Adjustment and the Disputes variables, as well as worker characteristics, public finance variables, state dummies, and year dummies. Sensitivity tests are conducted in which the Adjustment variable is replaced with the measure of cumulative amendments to Chapter 5b. Because Chapter 5b constitutes a subset of the regulations affecting employment adjustment, the Adjustment and Chapter 5b variables are included separately in the models.

Note that as a consequence of employing a DDD procedure, we are confident that the direction of causality underlying the results is from labor regulations to the job quality measures. Providing further support for the argument that reverse causality is not a concern, state governments have passed no amendments to the IDA since 1989. Given that most of the data in this study were collected after that year, the direction of causality is most plausibly from regulations to the job quality measures.⁸ Closely related, we are confident that the selection of

workers into and out of states with pro-labor or pro-employer legislative activity is not an issue since migration rates across states of India are extremely low (Munshi and Rosenzweig 2009).

IV. RESULTS

Job Quality Determinants for Male and Female Workers

Table 3 presents the regression results for the determinants of men's job quality in India's manufacturing sector. As additional controls not reported in the table but specified in Equation (1), all regressions include state and year dummies; two-way interaction terms between regulations, state, and year; and state public finance variables. The regulation results in the table represent coefficient estimates from the three-way interaction terms (the DDD estimator). The positive coefficients in the first row of the table indicate that regulations associated with employment adjustment that are in a pro-worker direction have a positive impact on men's job quality as measured by wages and the probability of having a secure job. More specifically, a legislative amendment to any of the IDA's regulations on employment adjustment in a pro-worker direction contributes to a wage increase of 6 percent for men, and a 3 percent increase in the probability of holding a secure job.

Insert Table 3 Here

In contrast, regulations associated with employment adjustment that are in a pro-worker direction have a negative impact on the probability of men working full-time and working for cash only. Results show that the likelihood that men work full-time falls by 3 percent and the likelihood that men work for cash-only falls by 5 percent for a unit increase in the Adjustment variable. Hence men benefit in terms of wages and job security from regulations restricting employers from adjusting the size of their workforces at will, but employers may circumvent

these costs by passing on to workers the additional expense of these regulations by reducing hours and by substituting away from cash payments.

Labor law amendments that prolong the time it takes to settle disputes also yield both benefits and costs for men. Extending the time it takes to settle labor disputes raises men's wages by 9 percent and leads to a 3 percent increase in the likelihood of working full-time, but has a negative effect on the probability of having a secure job. Estimates indicate that for a unit increase in the Disputes variable, the probability of having a secure job declines by 4 percent.

In terms of the other determinants of men's job quality, higher levels of schooling are associated with higher pay and greater job security. Strikingly, men with graduate school are 4 percent less likely to work full-time. Manufacturing sector work is likely to be blue-collar in nature; these results suggest that individuals with advanced levels of schooling are more likely to take on white-collar service sector positions. Experience has the expected positive but non-linear effect on wages, while lack of technical education has strong negative impacts on wages and the probability of full-time work. Moreover, married men are more likely to earn higher wages and work on a full-time basis, whereas men belonging to the disadvantaged groups in India are 6 percent less likely to work full-time. Finally, job security is about 17 percent lower in rural areas.

Table 4 presents results for the determinants of job quality for women workers. In contrast to the mixed results for men, the Adjustment and Disputes variables have positive effects on all four measures of women's job quality. The positive coefficients on the Adjustment variable in these regressions indicate that a unit increase in regulations on employers' ability to adjust their workforce in a pro-worker direction is associated with substantially higher wages and increases of 10 to 29 percent in the probability of full-time work, working for cash only, and holding a secure job.

Insert Table 4 Here

These marginal effects are considerably larger in absolute value than the effects reported for men, suggesting not only that women experience a greater variety of benefits in terms of different measures of job quality, but also that women's job quality is more responsive to labor law changes as compared to men. Similar conclusions apply to the effects of regulations that prolong the duration of dispute resolution, with positive and statistically significant effects for women's wages levels and for the probability of working full-time, being compensated in cash only, and having a secure job. These results demonstrate that women's pay and other measures of job quality are relatively more responsive to labor law amendments, perhaps because of a regulatory environment which is tailored to safeguard their rights. As shown from the table of sample means, women's average base wages are substantially lower than men, which would help to explain why firms substitute away from male hours, cash payments, and secure terms of employment, while they do not make similar substitutions for female workers.

In terms of the other determinants of women's job quality, higher levels of schooling are associated with higher pay and somewhat greater job security. However, women workers with higher levels of schooling are less likely to work full-time although they would command substantially higher wages if they chose to do so. Table 4 indicates that women with graduate school are about 36 percent less likely to be employed full-time and likely to earn wages that are over 100 percent higher as compared to women without any schooling. Potential experience has the expected positive yet non-linear effect on women's wages; experience also reduces the probability of women having full-time work. In particular, an additional year of experience reduces the probability of full-time work by about 1 percent. Some of this result may reflect child-care trends as women of child-bearing age and relatively older women workers are more

likely to work part-time in an effort to combine work with family responsibilities. The lack of technical education also has a negative effect on women's likelihood of working full-time, and married women are 14 percent more likely to work on a full-time basis conditional on the number of pre-school children in the household. The positive association between marriage and full-time work may be explained by the fact that households in India do not tend to be unitary in nature, thus older relatives are likely to be present to provide assistance with childcare. Moreover, women belonging to the disadvantaged social groups in India are approximately 10 percent less likely to work full-time. Finally, in keeping with the results for men in rural India, women workers are about 15 percent less likely to have secure jobs.

Focus on Chapter 5b

As a specification test for the results in Tables 3 and 4, we replaced the Adjustment variable with the measure of cumulative amendments to Chapter 5b with the reasoning that Chapter 5b constitutes a subset of the regulations affecting employment adjustment. These results are reported in Table 5. The positive and statistically significant impacts of regulations affecting employment adjustment on men's wages and on men's job security in the original model (Model 1) are retained in the alternative specification (Model 2). For instance, a unit increase in the Chapter 5b variable is associated with a 14 percent increase in wages and a 3 percent increase in the likelihood of having job security. However, amendments to Chapter 5b reduce the likelihood that men work full-time and work for cash only (by 6 percent and 2 percent, respectively). These conclusions are similar in substance to those from the broader Adjustment variable in Model 1. Hence, while Chapter 5b may have caused more contention than other provisions of the IDA, the results suggest that such amendments improved some measures of job quality for male workers in the manufacturing sector.

Insert Table 5 Here

As with the results for men, the coefficients on the Chapter 5b variable (Model 2) for women in Table 5 are similar in sign, statistical significance, and relative magnitude as the coefficients on the broader Adjustment variable (Model 1) in all cases except wages. Amendments to Chapter 5b have no statistically significant impact on wages, suggesting that the large impact of Adjustment regulations on wages arises from regulations other than Chapter 5b. The most likely explanation is that women are more likely to work in very small enterprises that were not affected by amendments to Chapter 5b that deal specifically with terminating workers. As noted in Hasan and Jandoc (2010), a very high proportion of India's manufacturing sector workers (85 percent in 2005) are employed in enterprises with fewer than 50 workers. So the lack of an effect of the Chapter 5b variable on women's wages yet a positive effect on men's wages could be explained by a greater likelihood of men working in enterprises with 50 or more workers as compared to women.⁹ In contrast, amendments to Chapter 5b do have a positive and statistically significant impact on women's probability of full-time work, probability of being compensated in cash, and job security. These results are in contrast to those for men for full-time work and compensation in cash, suggesting that there may be some substitution of women for men. Such substitution may also be at play in terms of job security since the coefficient on Chapter 5b for women in Model 2 is about four times the magnitude of the coefficient for men in Model 2. These results indicate that for the most part, amendments to Chapter 5b in a pro-worker direction had beneficial effects for women workers.

Residual Gender Wage Gaps

The final test considers the impact of labor regulations on the residual wage gap between men and women with results reported in Table 6. The residual wage gap is estimated using the

Oaxaca-Blinder decomposition procedure, a technique that decomposes the wage gap in a particular year into a portion explained by average group differences in productivity characteristics and a residual portion that is often attributed to discrimination (Oaxaca 1973; Blinder 1973). Results in Table 6 for Models 1 and 2 show no statistically significant evidence that amending regulations in a pro-worker direction affects the residual wage gap between men and women. There is some evidence (t-statistic greater than 1) in both models that regulations that extend the duration of dispute resolution play a role in widening residual gaps, but this evidence is weak at best. These findings indicate that labor regulations in India do not affect relative wage biases against women; this is consistent with our prior that such legislation plays an employment protection role for them.

Insert Table 6 Here

V. CONCLUSION

This study has examined the extent to which India's regulatory environment in the labor market affects various measures of job quality across states. Results confirm that measures of job quality are indeed sensitive to state-level statutory laws that govern industrial and labor relations in India's manufacturing sector, and these responses differ along gender lines. Labor law amendments affecting employment adjustment, dispute settlement, and Chapter 5b of the IDA have pronounced impacts on wages, probabilities of full-time work, probabilities of being compensated in cash, and job security. In particular, restrictions on employment adjustment in a pro-worker direction result in substantially higher wages for men and women, and they contribute to increases in the probability of having a secure job of 3 percent for men and 29 percent for women. Women gain further from restrictions on employment adjustment in terms of the likelihood of working full-time and working for cash only, while men experience set-backs in

these two indicators. Further, regulations that make it easier for workers to initiate and sustain industrial disputes do not affect the residual gender wage gap, a commonly-used measure of wage discrimination against women.

The most contentious of all labor regulations, Chapter 5b, has mixed effects on the four measures of job security for men, and mostly positive effects for women when law-makers legislate in a pro-worker direction. For example, Chapter 5b amendments increase job security by 3 percent for men, and the corresponding estimate for women is about four times larger. In contrast, Chapter 5b amendments have a dampening effect on the likelihood that men will work full-time and work for cash only, while these effects are positive for women. Although previous researchers argue that this particular provision of the IDA reduced investment, employment, and output, our results highlight that workers, especially women workers, may have indeed experienced gains in job quality from this regulation. Overall, this study's estimates indicate that employment protection legislation can bring positive effects to workers but the benefits do not apply across the board. Hence when employers face restrictions on modes of adjusting their workforce and settling labor disputes, workers experience some gains in terms of job quality but also bear some of the additional costs of the restrictions.

The finding that India's employment protection has relatively greater benefits for women fits into a framework in which groups of workers who have relatively weak bargaining power and lower workplace status are protected through legislation. This conclusion is supported by earlier studies that have found substantial gender wage gaps even after controlling for detailed skill characteristics (Duraismy and Duraismy 1996; Kingdon and Unni 2001; Glinskaya and Lokshin 2007). Moreover, Indian women in particular appear to be placed in a vulnerable position as firms compete in the global market place. Menon and Rodgers (2009) documented

women's relatively weak position in India's labor market with findings that India's post-1991 trade liberalization policies led to a reduction in women's relative pay. Female workers may have less bargaining power and limited wage gains as compared to their male counterparts for a number of reasons. In particular, a survey of female manufacturing workers in India indicates that women are clustered into low-wage jobs, and when they do hold the same job as men, they are still paid less (South Asian Research and Development Initiative 1999). This source also reports that women are not as likely as men to receive overtime pay when they work additional hours, and they have restricted access to training and promotion. In addition, union leaders and members tend to be predominately male, and union meetings are usually held at night when women are engaged in child care. These examples provide context for why protective labor regulation may manifest itself in improving the quality of women's work.

These findings make a notable contribution to the literature on employment regulation because previous work, by and large, has found surprisingly few benefits from regulations that restrict labor market flexibility and make it more difficult for employers to control the size and composition of their workforce. Freeman (2009)'s review of this literature finds that employment protection legislation and laws regulating the ability of employers to adjust their workforce and control disputes result in the shift of output and employment away from the formal sector toward the informal sector. Specific to India, Freeman concluded that it was difficult to find any gains for workers from such legislation. Moreover, when viewing such legislation through the lens of international trade and globalization, regulations that tie the hands of employers in their ability to adjust to competitive forces are seen as doing more harm than good.¹⁰ However, these earlier studies focused mostly on the quantity of jobs rather than the quality of those jobs. Recent scholarly and policy discourse has been paying more attention to job quality and how "good

jobs” can contribute not only to short-term individual well-being but also to longer-term collective benefits such as poverty reduction and productivity growth (World Bank 2011). In considering job quality, our results indicate that employment protection legislation has a silver lining, particularly for women workers.

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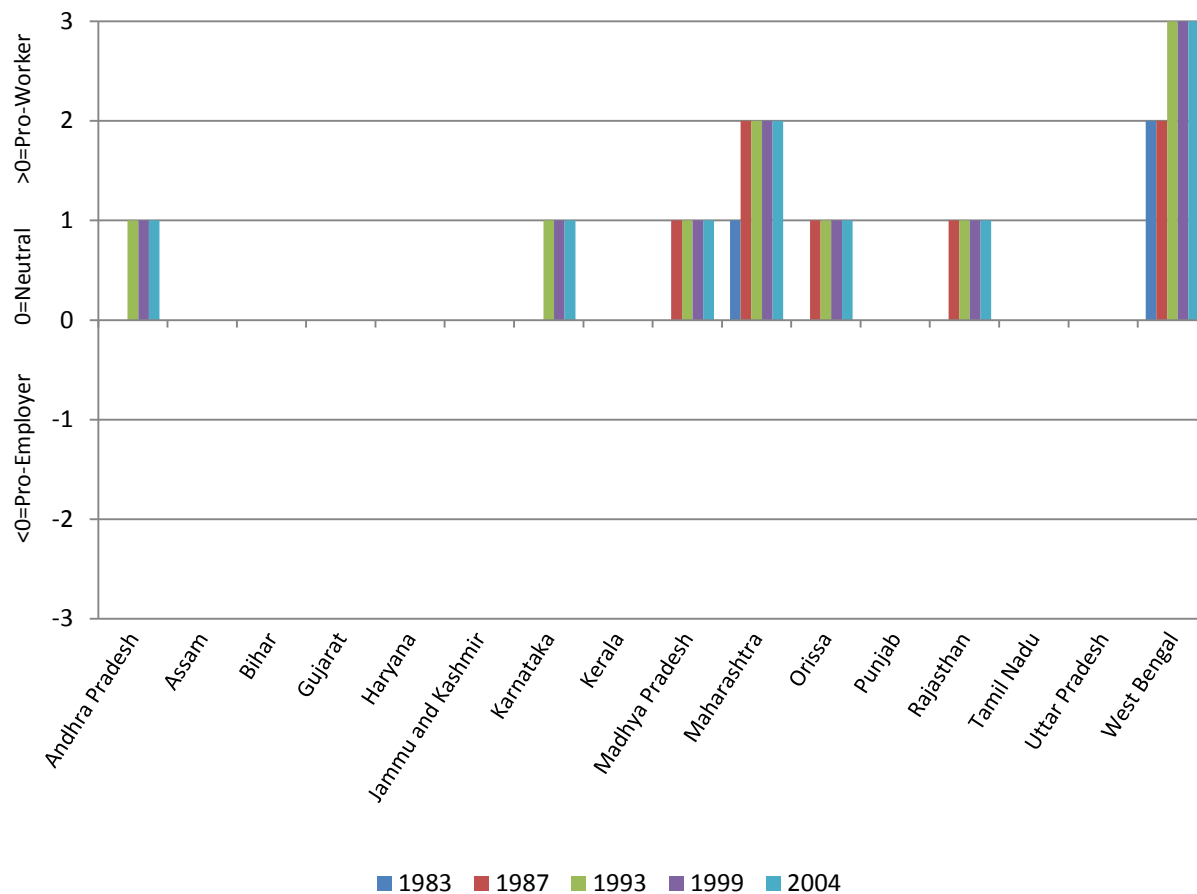
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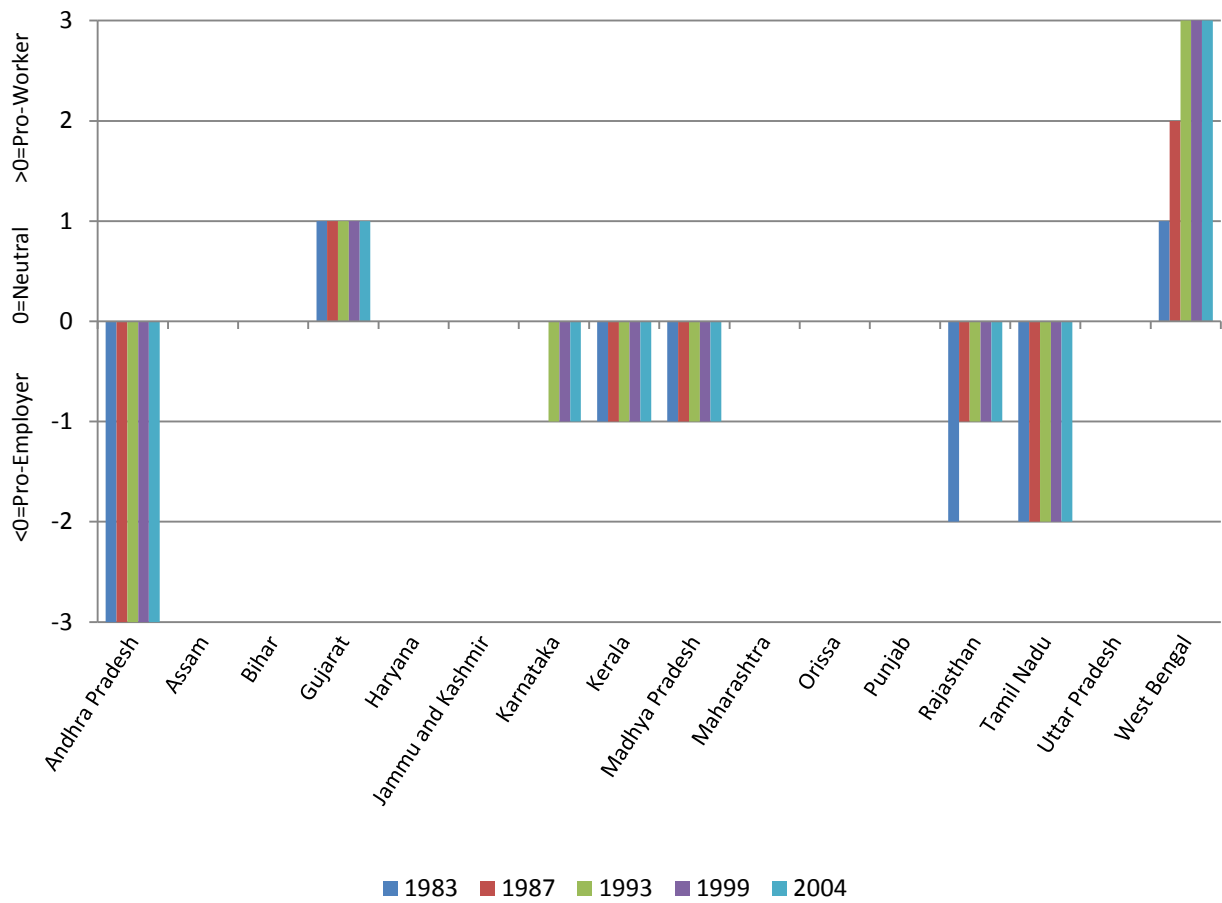
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Figure 1. Changes in Laws Affecting Firms' Employment Adjustment Capacity, 1983-2004



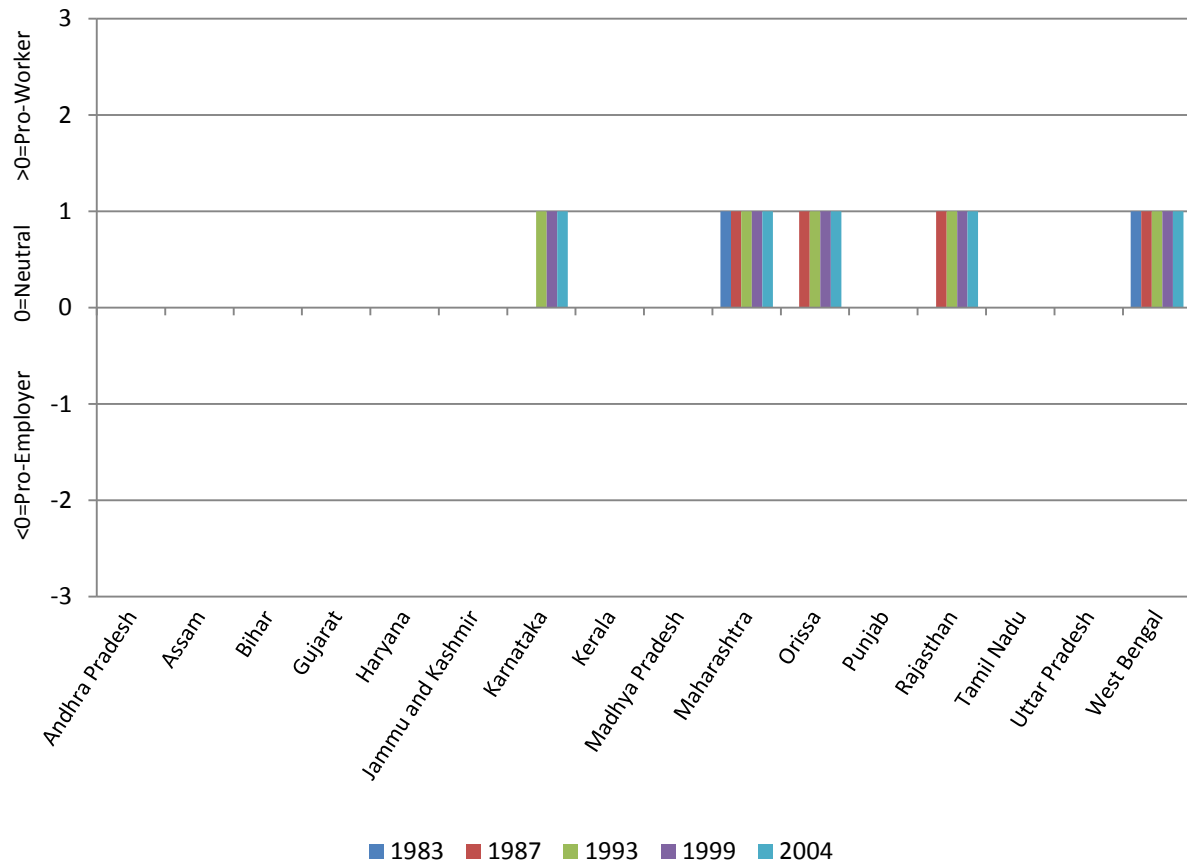
Source: Authors calculations using data on state regulations from Ahsan and Pagés (2009).

Figure 2. Changes in Laws on Procedures for Resolution of Industrial Disputes, 1983-2004



Source: Authors calculations using data on state regulations from Ahsan and Pagés (2009).

Figure 3. Amendments to Chapter 5b of the Industrial Disputes Act, 1983-2004



Source: Authors calculations using data on state regulations from Ahsan and Pagés (2009).

Table 1. Best and Worst Business Environments in India by State, 2005

<i>Best Environment</i>	<i>% of Firm Responses</i>	<i>Worst Environment</i>	<i>% of Firm Responses</i>
Maharashtra	23.7	Bihar	65.0
Gujarat	22.7	Orissa	7.4
New Delhi	13.0	West Bengal	6.9
Tamil Nadu	8.3	Kerala	5.9
Karnataka	4.7	Jharkhand	3.7
Andhra Pradesh	3.5	Uttar Pradesh	3.2
Haryana	3.5	Rajasthan	1.5
Punjab	3.4	Punjab	0.9
Jharkhand	3.1	New Delhi	0.8
Uttar Pradesh	2.8	Andhra Pradesh	0.8
West Bengal	2.3	Haryana	0.7
Kerala	2.3	Tamil Nadu	0.7
Rajasthan	1.9	Madhya Pradesh	0.7
Madhya Pradesh	1.9	Gujarat	0.6
Orissa	1.5	Maharashtra	0.5
Bihar	0.4	Assam	0.2
Chhattisgarh	0.4	Karnataka	0.2
Uttaranchal	0.2	Chhattisgarh	0.1
Himachal Pradesh	0.1	Himachal Pradesh	0.1
Pondicherry	0.1	Jammu and Kashmir	0.1
Goa	0.1		
Assam	0.1		
Meghalaya	0.1		

Source: World Bank (2005).

Table 2. Sample Means by Gender, 1983 and 2004

	1983		2004	
	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
Log real weekly cash wages in rupees	3.955 (1.162)	3.124 (1.159)	4.650 (0.872)	3.941 (0.972)
Works full-time	0.923 (0.267)	0.912 (0.284)	0.964 (0.186)	0.885 (0.320)
Works for cash only	0.957 (0.202)	0.970 (0.171)	0.860 (0.347)	0.861 (0.346)
Has secure job (no subsidiary job needed)	0.881 (0.324)	0.789 (0.408)	0.869 (0.338)	0.794 (0.405)
Educational attainment				
Illiterate	0.215 (0.411)	0.602 (0.489)	0.180 (0.384)	0.432 (0.496)
Less than primary school	0.150 (0.357)	0.114 (0.318)	0.085 (0.279)	0.060 (0.237)
Primary school	0.206 (0.405)	0.152 (0.359)	0.171 (0.376)	0.154 (0.361)
Middle school	0.183 (0.387)	0.061 (0.239)	0.256 (0.436)	0.124 (0.330)
Secondary school	0.182 (0.385)	0.059 (0.236)	0.192 (0.394)	0.108 (0.310)
Graduate school	0.064 (0.245)	0.012 (0.109)	0.117 (0.321)	0.123 (0.328)
Potential experience in years	20.568 (12.007)	21.449 (12.597)	19.200 (11.679)	21.792 (12.881)
Potential experience squared/100	5.672 (6.009)	6.187 (6.577)	5.050 (5.563)	6.406 (6.317)
Age in years	32.571 (10.926)	29.847 (11.279)	32.376 (10.677)	32.849 (10.770)
No technical education	0.933 (0.250)	0.980 (0.141)	0.912 (0.283)	0.937 (0.243)
Currently married	0.725 (0.446)	0.596 (0.491)	0.701 (0.458)	0.699 (0.459)
Scheduled tribe/scheduled caste	0.176 (0.381)	0.208 (0.406)	0.219 (0.413)	0.286 (0.452)
Hindu	0.827 (0.378)	0.768 (0.422)	0.844 (0.363)	0.859 (0.348)
Household headed by a man	0.961 (0.193)	0.785 (0.411)	0.940 (0.238)	0.812 (0.391)
Rural	0.299 (0.458)	0.535 (0.499)	0.432 (0.495)	0.584 (0.493)
No. of pre-school children in household	0.634 (0.861)	0.623 (0.876)	0.502 (0.792)	0.396 (0.721)

Note: Standard deviations are in parentheses, and sample means are weighted. All means are expressed in percentage terms unless otherwise noted.

Table 3. Determinants of Job Quality in India's Manufacturing Sector for Men

	<i>Log Wages</i>	<i>Works Full-Time</i>	<i>Works for Cash Only</i>	<i>Has Secure Job</i>
Amendments to Labor Regulations:				
Adjustment	0.057*** (0.009)	-0.034*** (0.002)	-0.045*** (0.003)	0.027*** (0.002)
Disputes	0.087*** (0.012)	0.027*** (0.003)	-0.005 (0.005)	-0.042*** (0.003)
Education (reference group = illiterate)				
Less than primary school	0.132** (0.052)	-0.004 (0.018)	-0.006 (0.012)	0.038** (0.018)
Primary school	0.105 (0.064)	-0.017 (0.017)	-0.011 (0.014)	0.053*** (0.014)
Middle school	0.272*** (0.072)	-0.0003 (0.012)	0.013 (0.019)	0.048*** (0.016)
Secondary school	0.522*** (0.086)	-0.017 (0.014)	0.030 (0.019)	0.097*** (0.022)
Graduate school	1.057*** (0.100)	-0.036** (0.016)	0.018 (0.043)	0.095*** (0.014)
Years of potential experience	0.042*** (0.002)	-0.002** (0.001)	0.001 (0.001)	-0.0003 (0.002)
Potential experience squared/100	-0.058*** (0.003)	0.003 (0.002)	-0.003 (0.003)	0.001 (0.003)
No technical education	-0.342*** (0.057)	-0.054*** (0.010)	0.002 (0.026)	-0.004 (0.014)
Currently married	0.105*** (0.034)	0.228*** (0.032)	0.008 (0.007)	-0.050*** (0.016)
Scheduled tribe/scheduled caste	-0.017 (0.028)	-0.063*** (0.011)	0.006 (0.018)	0.006 (0.014)
Hindu	-0.054** (0.026)	-0.019 (0.015)	0.032* (0.018)	-0.025** (0.010)
Household headed by a man	0.148* (0.076)	-0.133*** (0.022)	-0.022 (0.025)	0.011 (0.019)
Rural	-0.010 (0.033)	-0.004 (0.014)	-0.010 (0.020)	-0.166*** (0.029)
No. of pre-school children in household	-0.006 (0.016)	-0.005 (0.005)	0.004 (0.008)	-0.015* (0.009)

Notes: Weighted to national level with weights provided by the NSSO in each year. Standard errors, in parentheses, are clustered by state and year. The notation *** is $p < 0.01$, ** is $p < 0.05$, * is $p < 0.10$. All regressions are estimated with OLS and include state dummies, year dummies, two-way interaction terms, state public finance controls, and a constant. There are 63,592 observations at the individual level.

Table 4. Determinants of Job Quality in India's Manufacturing Sector for Women

	<i>Log Wages</i>	<i>Works Full-Time</i>	<i>Works for Cash Only</i>	<i>Has Secure Job</i>
Amendments to Labor Regulations:				
Adjustment	1.653*** (0.067)	0.103*** (0.024)	0.243*** (0.010)	0.288*** (0.026)
Disputes	0.507*** (0.080)	0.053* (0.032)	0.128*** (0.011)	0.208*** (0.030)
Education (reference group = illiterate)				
Less than primary school	0.015 (0.095)	-0.064** (0.029)	-0.013 (0.021)	-0.005 (0.042)
Primary school	0.048 (0.061)	-0.088 (0.060)	-0.030 (0.022)	0.069*** (0.024)
Middle school	0.182 (0.115)	-0.134** (0.065)	-0.003 (0.017)	0.022 (0.024)
Secondary school	0.435*** (0.100)	-0.121** (0.051)	0.009 (0.027)	0.019 (0.031)
Graduate school	1.194*** (0.180)	-0.355*** (0.075)	0.038 (0.028)	0.036 (0.070)
Years of potential experience	0.021*** (0.005)	-0.009** (0.004)	0.002 (0.002)	-0.005* (0.003)
Potential experience squared/100	-0.035*** (0.009)	0.010 (0.007)	-0.003 (0.002)	0.008 (0.005)
No technical education	0.005 (0.091)	-0.205** (0.099)	-0.006 (0.012)	0.043 (0.031)
Currently married	0.051 (0.042)	0.141*** (0.027)	-0.001 (0.013)	-0.035 (0.028)
Scheduled tribe/scheduled caste	0.049 (0.045)	-0.102* (0.055)	-0.005 (0.014)	0.019 (0.017)
Hindu	0.058 (0.098)	0.038 (0.050)	-0.001 (0.016)	0.008 (0.025)
Household headed by a man	-0.096 (0.070)	-0.242*** (0.033)	0.011 (0.027)	0.086 (0.076)
Rural	-0.002 (0.070)	-0.028 (0.030)	0.031 (0.019)	-0.146*** (0.030)
No. of pre-school children in household	0.066** (0.030)	0.031 (0.019)	0.003 (0.008)	-0.013 (0.019)

Notes: Weighted to national level with weights provided by the NSSO in each year. Standard errors, in parentheses, are clustered by state and year. The notation *** is $p < 0.01$, ** is $p < 0.05$, * is $p < 0.10$. All regressions are estimated with OLS and include state dummies, year dummies, two-way interaction terms, state public finance controls, and a constant. There are 11,426 observations at the individual level.

Table 5. Effects of Labor Law Amendments on Job Quality: Specification Test Results

	<i>MEN</i>		<i>WOMEN</i>	
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 1</i>	<i>Model 2</i>
Log Wages				
Adjustment	0.057*** (0.009)	--	1.653*** (0.067)	--
Chapter 5b	--	0.144*** (0.011)	--	-0.100 (0.061)
Disputes	0.087*** (0.012)	0.070*** (0.007)	0.507*** (0.080)	-0.219*** (0.020)
Works Full-Time				
Adjustment	-0.034*** (0.002)	--	0.103*** (0.024)	--
Chapter 5b	--	-0.064*** (0.003)	--	0.423*** (0.029)
Disputes	0.027*** (0.003)	0.003 (0.004)	0.053* (0.032)	-0.011 (0.020)
Works for Cash Only				
Adjustment	-0.045*** (0.003)	--	0.243*** (0.010)	--
Chapter 5b	--	-0.019*** (0.005)	--	0.313*** (0.006)
Disputes	-0.005 (0.005)	-0.077*** (0.005)	0.128*** (0.011)	0.012** (0.005)
Has Secure Job				
Adjustment	0.027*** (0.002)	--	0.288*** (0.026)	--
Chapter 5b	--	0.029*** (0.004)	--	0.115*** (0.029)
Disputes	-0.042*** (0.003)	-0.001 (0.006)	0.208*** (0.030)	0.046*** (0.011)

Notes: Weighted to national level with weights provided by the NSSO in each year. Standard errors, in parentheses, are clustered by state and year. The notation *** is $p < 0.01$, ** is $p < 0.05$, * is $p < 0.10$. All regressions are estimated with OLS and include individual and household characteristics, state dummies, year dummies, two-way interaction terms, state public finance controls, and a constant. There are 63,592 observations at the individual level for men and 11,426 observations for women.

Table 6. Residual Wage Gap Covariates at the State Level: Alternative Models

	<i>Model 1</i>	<i>Model 2</i>
Residual Wage Gap		
Adjustment	0.023 (0.042)	--
Chapter 5b	--	0.053 (0.093)
Disputes	0.025 (0.020)	0.025 (0.022)

Notes: Weighted to national level with weights provided by the NSSO in each year. Standard errors, in parentheses, are clustered by state and year. The notation *** is $t \geq 2.58$, ** is $t \geq 1.96$, * is $t \geq 1.64$. All regressions have 80 observations at the state-year level and are estimated with OLS. Residual wage gaps are constructed with the full pooled dataset of 75,018 observations and include controls for worker productivity characteristics, state dummies, year dummies, and state and year interaction terms.

Appendix Table 1. Summary of Labor Law Amendments by State and Year

<i>State</i>	<i>Year</i>	<i>Reform</i>	<i>A</i>	<i>D</i>	<i>C5b</i>
Andhra Pradesh	1949	Pro-employer changes to disputes: (1) In cases of emergency, state can designate industries as public utilities with fewer strikes and lock-outs; (2) Employer or majority of workers may refer disputes to a Tribunal without intermediation by state.	0	-1	0
	1968	Pro-employer change to disputes: State can designate health services as public utilities with fewer strikes and lock-outs.	0	-1	0
	1982	Pro-employer change to disputes: A Labor Court or Tribunal is granted power of a Civil Court in executing settlements.	0	-1	0
	1987	Pro-worker changes to adjustment: (1) Workers must be compensated prior to closure of a firm; (2) Retrenched workers from same unit must be given preference in rehiring decisions if a closed firm is re-opened; (3) Workers reinstated by award of a Labor Court must be paid from the date in the award; (4) Changes in the terms of employment require 42 days notice instead of 21.	1	0	0
	1987	Pro-employer changes to disputes: (1) More restrictions on strikes and lockouts to secure public safety; (2) Failure to comply with state order to constrain dispute is punishable with jail and a fine.	0	-1	0
	1987	Pro-worker changes to disputes: (1) Workers have right to apply to a Labor Court for adjudication; (2) Chief Magistrates given power to collect back wages from employers.	0	1	0
Assam	..	No regulatory amendments.	0	0	0
Bihar	..	No regulatory amendments.	0	0	0
Gujarat	1973	Pro-worker change to disputes: Failure of employer to nominate representatives to firm Councils punishable by fine.	0	1	0
Haryana	..	No regulatory amendments.	0	0	0
Jammu and Kashmir	..	No regulatory amendments.	0	0	0
Karnataka	1988	Pro-worker change to adjustment: Restrictions on letting go workers apply to seasonal establishments and those with 100+ workers; previously restrictions applied only to permanent establishments and those with 300+ workers.	1	0	1
	1988	Pro-employer changes to disputes: (1) Stricter requirements for attendance at dispute hearings and for producing documents; (2) State can transfer pending disputes from one Tribunal to another; (3) State can prevent public utility from closing to secure public safety.	0	-1	0
	1988	Pro-worker change to disputes: Workers have right to apply to Labor Court for adjudication.	0	1	0
Kerala	1979	Pro-employer changes to disputes: (1) state can prevent public utility from closing to secure public safety; (2) Failure to comply with state order to constrain dispute is punishable with jail and a fine.	0	-1	0
Madhya Pradesh	1982	Pro-employer changes to disputes: (1) Greater power for Labor Court to try offences covered by IDA and by other labor acts; (2) Labor Court given power to deal with every offence punishable under	0	-1	0

		IDA and under other labor acts; (3) Labor Court given Magistrate-level powers in criminal cases.			
	1983	Pro-worker change to adjustment: Construction projects no longer exempt from procedures for closure of firms, and state government charged with handling negotiations over closure of firms.	1	0	0
Maharashtra	1981	Pro-worker changes to adjustment: (1) Interruption of power supply can justify lay-offs, for which workers will be compensated; (2) Layoffs for other reasons require 100% of wages instead of 50%; (3) Restrictions on letting go workers apply to seasonal establishments and those with 100+ workers; previously restrictions applied only to permanent establishments and those with 300+ workers.	1	0	1
	1983	Pro-worker change to adjustment: Anyone affected by enterprise closure has 30 days to appeal to a Tribunal to overturn decision.	1	0	0
Orissa	1983	Pro-worker changes to adjustment: (1) Restrictions on letting go workers apply to establishments with 100+ workers; previously restrictions applied only to establishments with 300+ workers; (2) Anyone affected by enterprise closure has 30 days to appeal to a Tribunal to overturn decision.	1	0	1
Punjab	..	No regulatory amendments.	0	0	0
Rajasthan	1960	Pro-employer changes to disputes: (1) More exact definition of a union member; (2) More exact definition of the Registrar of unions in the bargaining process; (3) More exact definition of a trade union in the bargaining process; (4) State has to appoint a Registrar of unions and may appoint Assistant Registrars.	0	-1	0
	1960	Pro-worker change to disputes: Contractors included in definition of employer in context of disputes.	0	1	0
	1970	Pro-employer changes to disputes: (1) state has right to refer dispute to Tribunal in case of public interest; (2) State can prevent public utility from closing to secure public safety; (3) Failure to comply with order by state punishable with imprisonment or fine; (4) Defines supervisory duties of the Registrar of unions and rules for union registration.	0	-1	0
	1970	Pro-worker change to disputes: Wider scope of awards for which workers can obtain help with securing money owed by employer.	0	1	0
	1984	Pro-employer change to adjustment: Employer no longer needs permission to continue a lay-off beyond 30 days in cases of a mining emergency.	-1	0	0
	1984	Pro-worker changes to adjustment: (1) Restrictions on letting go workers apply to seasonal establishments and those with 100+ workers; previously restrictions applied only to permanent establishments and those with 300+ workers; (2) Union representatives must be involved in negotiations concerning retrenchment; their involvement not stipulated under IDA; (3) Construction projects no longer exempt from procedures for closure of firms; (4) increased penalty for laying off workers without permission; (5) lay-off procedures in Chapter V-A of IDA apply to seasonal establishments and those with 100+ workers.	1	0	1
	1984	Pro-worker change to disputes: Union representatives must be involved in negotiations concerning retrenchment; their involvement not stipulated under IDA.	0	1	0
Tamil Nadu	1949	Pro-employer changes to disputes: (1) In cases of emergency, state can designate industries as public	0	-1	0

		utilities with fewer strikes and lockouts; (2) Employer or majority of workers may refer disputes to a Tribunal without intermediation by state.			
	1982	Pro-employer changes to disputes: (1) state can prevent public utility from closing to secure public safety; (2) Failure to comply with state order to constrain dispute is punishable with jail and a fine.	0	-1	0
	1988	Pro-employer change to disputes: Greater power for conciliation officer to enforce attendance at dispute hearings and production of documents.	0	-1	0
	1988	Pro-worker change to disputes: Workers have right to apply to a Labor Court for adjudication.	0	1	0
Uttar Pradesh	..	No regulatory amendments.	0	0	0
West Bengal	1974	Pro-worker change to adjustment: Any worker who is present and given work for that day cannot be laid off for that day.	1	0	0
	1980	Pro-worker changes to adjustment: (1) Sales workers included in definition of workers; (2) Retrenchment now includes workers laid off for ill-health; (3) Remove 45-day limit for workers receiving 50% of their wages if laid-off (4) for lay-offs more than 7 days worker needs to report just once a week to still receive compensation; (5) Workers must be compensated prior to closure of a firm; (6) Retrenched workers from same unit must be given preference in rehiring decisions if a closed firm is re-opened; (7) Workers reinstated by award of a Labor Court must be paid from the date in the award; (8) Restrictions on letting go workers apply to establishments with 50+ workers; previously restrictions applied only to establishments with 300+ workers; (9) Employer must wait 3 rather than 2 months to commence layoffs if the state has not responded; (10) Changes in the terms of employment require 42 days notice instead of 21.	1	0	1
	1980	Pro-employer change to disputes: A Labor Court or Tribunal is granted power of a Civil Court in executing settlements.	0	-1	0
	1980	Pro-worker changes to disputes: (1) Sales workers included in definition of workers; (2) Report from conciliation proceedings must be submitted within 60 days rather than 14 days; (3) Greater flexibility in the start of the conciliation proceedings; (4) state has right to change any award made by a Labor Court or Tribunal; (5) Chief Magistrates given power to collect back wages from employers.	0	1	0
	1986	Pro-worker change to disputes: More details provided on Labour Courts and Tribunals in cases of worker dismissals.	0	1	0
	1989	Pro-worker change to adjustment: Employers must demonstrate ability to discharge their liability for wage payments in application to close enterprise.	1	0	0
	1989	Pro-worker changes to disputes: (1) If dispute is not settled then worker has right to apply to refer dispute to Labor Court; (2) Addition of "refusal of employment" to grounds for a worker to enter into industrial dispute.	0	1	0

Source: Summarized from detailed list of state amendments and coding in Ahsan and Pagés (2009).

Appendix Table 2. Variable Descriptions and Data Sources

<i>Name of variable</i>	<i>Description</i>	<i>Source</i>	<i>Years</i>
<i>Dependent variables:</i>			
Log wages	Log real weekly cash wages in rupees	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Works full-time	If intensity of work is 100% for first five days of week	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Works for cash only	Received wages in cash only and did not receive any wages in-kind	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Has secure job	Worker does not have a subsidiary activity	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
<i>Independent variables:</i>			
Male	Worker is male	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Illiterate	Worker is not literate	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Less than primary school	Worker is literate without formal schooling or literate but below primary	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Primary school	Worker is primary schooled	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Middle school	Worker is middle schooled	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Secondary school	Worker is secondary schooled	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Graduate school	Worker is graduate and above in agriculture, engineering technology, medicine, and other subjects	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Potential experience	Age - years of schooling - six	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Age	Age of the worker	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
No technical education	Worker has no additional diploma or certificate in agriculture, engineering, technology, medicine, crafts, or other subjects.	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Currently married	Worker is currently married	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Scheduled tribe/scheduled caste	Worker's household belongs to scheduled tribe or scheduled caste	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Hindu	Worker's household religion is Hinduism	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004

Household headed by man	Head of worker's household is a man	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Rural	Worker's household is situated in a rural area	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Number of pre-school children	Number of children who are four years of age or younger in the worker's household	NSSO - Employment & Unemployment Survey	1983, 87, 93, 99, 2004
Population	State-level rural and urban population in 1000 people	Economic Organization and Public Policy Program Database	1983, 87, 93, 99, 2002
Net state domestic product	State level net state domestic product for all sectors, agriculture, non- agriculture, construction and manufacturing	Economic Organization and Public Policy Program Database and Reserve Bank of India Handbook 2011	1980, 87, 93, 99, 2004
Total expenditure	Total revenue expenditures in 100,000 Rupees	Economic Organization and Public Policy Program Database	1983, 87, 93, 99
Total development expenditure	Total expenditures on education, arts and research, medical, and public health in 100,000 Rupees	Economic Organization and Public Policy Program Database	1983, 87, 93, 99

Note: For the population variable, the 2002 value was used to proxy for 2004. For both of the total expenditure variables, the value for 2004 was imputed based on state-level average growth rates from 1999 onwards.

ENDNOTES

¹ This paragraph on India's economic liberalization is based on information in Krishna and Mitra (1998), Topalova (2007), and Edmonds, Pavcnik, and Topalova (2007).

² If a state had multiple amendments (with both +1 and -1) in a particular year, we counted that year as neutral, +1, or -1, depending on whether a legislation type was more dominant. This numerical assignment follows the procedure in Ahsan and Pagés (2009).

³ The survey was administered through interviews with business owners and managers, so all information is at the firm level, with 2,286 observations.

⁴ For more discussion of wage differentials among religious groups in India, see Bhaumik and Chakrabarty (2009).

⁵ We attempted to run all models that have a non-linear dependent variable (as is the case for indicators of full-time, cash only, and secure job) using logit regressions. However, the large number of independent variables from the differences-in-differences approach led to problems with model convergence. Hence these specifications were estimated as linear probability models.

⁶ Whether a worker engaged in subsidiary work was used to proxy for job security because the NSSO data had no questions on how long someone had held his or her current job.

⁷ Note that the EOPP source did not include values for 2004 so we constructed in-sample projections for this final year.

⁸ We conducted a robustness check in which we restricted the sample to years after 1989. Our substantive conclusions remained the same.

⁹ This argument is also supported with evidence in Deshpande and Deshpande (1992) that small enterprises employ a higher proportion of women workers than large enterprises.

¹⁰ Freeman's conclusions for India are based primarily on results in Besley and Burgess (2004), Hasan *et al.* (2007) and Ahsan and Pagés (2009).