Labor Conflict and Foreign Investments: An Analysis of FDI in India*

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Abstract:
This paper analyzes patterns of foreign direct investment in India. We investigate how labor conflict, credit constraints, and indicators of a state’s economic health influence location decisions of foreign firms. We account for the possible endogeneity of labor conflict variables in modeling the location decisions of foreign firms. This is accomplished by using a state-specific fixed effects framework that captures the presence of unobservables, which may influence investment decisions and labor unrest simultaneously. Results indicate that labor unrest is highly endogenous across the states of India, and has a strong negative impact on foreign investment.

Keywords: Foreign Direct Investment, Labor Disputes, Developing Countries, India.

J.E.L. Classification: L2, L5, O2

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Section 1: Introduction

With the initiation of liberalization policies and economic reforms in India in 1991\(^1\), the role of private investment in economic growth has gained significant importance. States now compete with one another by instituting policies to attract new investment, especially from foreign sources. It is evident that states benefit from the presence of foreign investment, both in terms of increased productivity and other spillover effects. This is clear from Table 2 (these simple regressions are used to motivate our study, we implement a more rigorous approach below), where the number and shares of foreign firms appear to have clear positive effects on net value-added and the net income of states. In the light of this evidence, inter-state competition across the regions of India has heightened. This paper studies some of the factors that influence foreign direct investment (FDI) across the states of India. These factors include labor conflicts, credit and market conditions, and other state-level economic indicators. We find that overseas investment is particularly sensitive to variables that measure labor conflict at the state level.

Although labor unrest, credit availability, and other measures of the “economic health” of states exert a substantial influence on the location decisions of new foreign investment, it is unlikely that the effect of these variables is exogenous. In particular, labor laws in India fall under the purview of state governments. This introduces variation in labor statutes across the different states, and also allows for the possibility that state governments may manipulate labor laws in order to attract more investment from abroad. Hence for example, state governments may influence the location decisions of foreign companies by providing incentives in the form of subsidies and tax-breaks, or by introducing amendments

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\(^1\) India started major economic reforms and nationwide liberalization in 1991 in response to a fiscal and balance of payments crisis. These reforms encompassed all major areas – like industrial policy, trade and exchange rate policy, tax reforms and public sector policies.
that make labor legislation within the state more pro-employer (and consequently, less pro-worker).

In this paper, we consider the effect of labor conflicts on the location choice of foreign firms, and implement an approach that allows us to control for the possible non-random nature of labor unrest. Our method is unique in that it not only allows us to confirm the presence of endogeneity; it also allows us to sign the direction of the bias that results when the heterogeneous nature of labor unrest is not taken into account. We implement our method in two steps. First, we use a state-fixed effects model to account for the effect of unobservables that may influence location decisions of new foreign firms and the labor conflict variable simultaneously. Second, we extract estimated measures of state-level unobservables from the first step. These are then used as determinants of labor unrest across the various states of India. Results from the second step confirm the non-random nature of our labor conflict variable.

We find striking evidence that new foreign investment in India is negatively influenced by state-level labor unrest, and positively affected by state-level credit and market features. Real gross domestic product exerts a positive influence on shares of FDI, whereas planned outlay and state-support for research and development have the hypothesized effects (although these are insignificant). Furthermore, results of our two-step estimation confirm that the influence of labor unrest is not exogenous. In fact, states with high latent FDI location propensities (this term is discussed in detail below) experience lower levels of labor unrest.

The paper is organized as follows. Section 2 discusses previous literature in the area. This includes a review of studies that have analyzed the determinants of FDI location in both developed and developing countries. Section 3 provides a detailed theoretical background
for the technique used in the paper, and section 4 discusses our data. The results of our estimations are also presented in Section 4. Section 5 concludes with policy implications. All tables and figures are provided at the end of the paper.

Section 2: Literature Review

Governments do much to attract foreign direct investment (FDI) since domestic firms operating in local markets benefit from the productivity and knowledge spillovers generated by foreign owned firms and their subsidiaries. Recent research has documented that productivity differences across countries are tied to variations in foreign and domestic innovation (Keller, 2002, Eaton and Kortum, 1999), and that flows of foreign direct investment significantly predict international technology transfers. The extent to which FDI is valued may be gauged by considering the incentives offered by governments to attract the flow of foreign funds. For example, the U.S. state of Alabama spent $230 million to influence the location of a Mercedes plant in 1994. ²

Incentives to attract FDI are not provided by the governments of developed countries alone. Developing countries, particularly in East Asia, have managed to spur economic growth by harnessing the power of foreign direct investment. Researchers argue that the adoption of FDI-friendly policies was responsible for China’s ability to maintain a growth rate that exceeded 10 percent per annum in the 1990s³, and that by tapping into foreign capital, technology and markets, Malaysia was able to transform itself from an exporter of

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raw-materials to an exporter of manufactured commodities. Other Asian countries that have recognized the importance of FDI include Indonesia and Thailand.

Since tangible evidence exists to suggest that increased flow of funds from overseas influences economic growth in the receiving economy, FDI has been linked to poverty reduction also. Economic growth is a necessary but not a sufficient condition for economic development and poverty alleviation. Although distribution of wealth created by economic growth is important in the fight against poverty, clearly, growth lays the foundation for improved well-being for all by increasing the “size-of-the-pie”. With its positive effect on growth, FDI is key to poverty reduction initiatives. Moreover, foreign enterprises may have indirect effects on poverty by incrementing human capital. When foreign firms hire local workers, the latter benefit from the training and other human resource improvements that may be offered by the foreign firm. This has additional positive income effects over and above those already created by productivity and technology spillovers. That FDI is an important ingredient in poverty reduction initiatives cannot be disputed.

Despite these well-documented truths about FDI, India has lagged in terms of attracting its share of foreign capital. In discussing manufacturing firms in developing countries, Tybout (2000) summarizes that “…because of institutional entry barriers, labor market regulations, poorly functioning financial markets and limited domestic demand, the industrial sectors of developing countries are often described as insulated, inefficient oligopolies”.4 This was particularly true of India before 1991. After 1991, India adopted a policy of economic openness that liberalized banking, substantially reduced entry barriers primarily through a reduction in tariffs and the increased ability of foreign firms to repatriate profits overseas, and removed bureaucratic red-tape associated with foreign equity

ownership in domestic firms of up to 51% (before 1991, foreign firms were allowed to own a maximum of 40% equity in Indian firms\(^5\), after 1991, they were allowed controlling ownership). Such measures significantly improved the flows of foreign capital into the country, although levels are still far from optimal. For example, the ratio of actual FDI as a proportion of FDI approved from 1991 to 1998 was only 21.7%\(^6\) in India, as opposed to China, Malaysia, Indonesia and Thailand, where this ratio was substantially higher.

Researchers have documented several obstacles to increased flows of FDI into India. These include the fact that foreign ownership of more than 51% equity still requires government approval (which involves substantial lags of time), tariff rates continue to remain high by international standards, there is a lack of decentralized decision-making at the level of state governments, exit barriers still exist (for example, a firm that hires over one hundred workers needs to get approval from the state government before it can shut down operations), banking and insurance systems are not competitive, and finally, labor laws are overly stringent. In this paper, we consider how labor conflicts and other indicators of a state’s “economic health” (these indicators include share of disbursements from the Investment Credit and Industrial Corporation of India (ICICI) Bank, amount of loans disbursed by the Export Import (EXIM) Bank, support for research and development, and so on) influence the location of overseas investment projects in India.

In our study, we focus on the role of labor conflicts (among other variables) for two reasons. First, labor laws fall under the jurisprudence of state governments in India. Thus, as observed before, states may use labor laws as instruments to attract (or deter) foreign


direct investment. On a more general level, heterogeneity in labor regulations at the state level in India arises from two sources. First, depending on the (political) nature of the government in power, states pass amendments to labor laws that are either more pro-worker or more pro-employer. Second, the implementation of laws may be affected by other considerations. For example, in a state like West Bengal, the Communist party has been in power for the past twenty years. It is common knowledge that the party has a pro-worker bias. This may affect outcomes of collective bargaining, disputes, and strikes, even without any formal changes in labor policies at the state government level. Given costs of locating in India (exit barriers, lack of adequate infrastructure, and other factors mentioned above), it is likely that foreign firms will veer away from states that have a pro-worker bias (pro-worker bias may be signaled by a large number of labor conflicts/disputes) since such biases may translate into higher production costs, and thus, reduced profits. In this context, it is important to note that labor laws are subject to manipulation by state governments, but variables such as ICICI and EXIM loans (which we use as proxies of a state’s overall “economic health”) are not. It is our hypothesis that such manipulations result in the fact that labor laws influencing employer-employee relations can no longer be treated exogenously. Other variables that are not under the control of state governments (such as our proxies for a state’s overall economic climate) are considered to be exogenous in our estimations. (Note that our use of a state-fixed effects approach corrects for omitted variable bias; we are thus confident that such biases do not contaminate variables in the estimation that are treated exogenously). Hence, our study of endogeneity in the two-step framework mentioned above focuses on labor dispute variables alone.

Our second reason for considering the influence of labor laws in addition to other indicators of state-level economic activity stems from other work (Sanyal and Menon,
2003), where it is shown that such factors significantly influence the location of new private and public plants in India from 1995-2000. If Indian private and public plants are influenced by industrial regulations at the state level, then it is conceivable that foreign private plants are even more sensitive to these issues. Given their lack of knowledge of ground realities and the additional rules that foreign enterprises may need to operate under, investment from overseas will be particularly cognizant of labor laws and other indicators of economic activity within a state.

To the best of our knowledge, our study is the first to evaluate how foreign direct investment responds to measures of labor disputes and other state-level economic indicators in India. In the context of developed economies, several researchers have studied the influence of industrial and labor relations on U.S. foreign direct investment. Cook (1997) examines outflows of funds from the U.S. to nineteen OECD countries. He finds empirical evidence to conclude that foreign direct investment from the U.S. is negatively affected by “…the presence of high levels of union penetration, centralized collective bargaining structures, stiff government restrictions on layoffs, and pervasive contract extension policies”\(^7\) in the receiving economies. Karier (1995) considers whether the average rate of unionization across ten geographic regions predicts outward flows of investment from the United States. His study does not find a significant relationship between levels of union activity and foreign direct investment.

Contrary to Karier’s (1995) conclusion, our results suggest that foreign direct investment in India is very sensitive to measures of labor disputes. Our specification provides consistent evidence to demonstrate that states with large numbers of work stoppages and labor courts deter the location of foreign plants. Other variables such as loans

from banking institutions, support for research and development (R&D) by state
governments, volume of software exports from the state, and input cost variables, also have
predictive power. Furthermore, results from our fixed effects technique confirm that
measures of labor conflicts are endogenous in an analysis of FDI location in India. We find
strong empirical evidence to substantiate our hypothesis that labor disputes across states of
India arise in a non-random fashion – states may ‘subdue’ pro-worker legislations in order to
attract foreign direct investment.

Section 3: Theoretical Background

Section 3.1: The Fixed Effects Model

We justify our use of a fixed effects model by first presenting a linear Ordinary Least
Squares (OLS) regression. Thus, where $f_{jt}$ denotes the share of foreign projects in location
(state) $j$ at time $t$, $X_{ijt}$ is a matrix of exogenous variables where $i$ denotes a particular
variable, $j$ denotes a location, and $t$ denotes time, $L_{ijt}$ is a matrix of labor dispute variables
for $j$, $t$ defined above, $i'$ denotes a particular labor conflict variable, and $\nu_{jt}$ is an
idiosyncratic error term,

$$f_{jt} = \gamma_{i'} L_{i'jt} + \beta_i X_{ijt} + \nu_{jt} \quad \quad (1)$$

Equation (1) relates the share of FDI projects in state $j$ at time $t$ to labor conflict and
other variables in $X_{ijt}$, under the assumption that the right hand side variables in (1) are
exogenous.

Next, we implement a Durbin-Wu-Hausman test to check that $L_{ijt}$ is indeed
exogenous in (1). In order to accomplish this, $L_{ijt}$ is hypothesized to be a function of
regional dummy variables (list of regional dummies is provided at the end of the paper), and \(X_{ijt}\) in equation (1). This is the standard format of the Durbin-Wu-Hausman test. The p-value from this test (results for this test are provided at the end of the paper) is 0.0234 (F-value \([1,73]=5.36\)), thus we strongly reject the null hypothesis at the 95% level that OLS provides consistent results. Test results indicate that our labor dispute variable \(L_{ijt}\) is endogenous, that is, it is correlated with a systematic component of the error term in equation (1). Given the fact that states benefit from the location of FDI projects, and thus may manipulate labor laws to reduce the incidence of labor conflicts, we hypothesize that \(\nu_{jt}\) consists of a state specific component \(\mu_j\), and an idiosyncratic component \(\epsilon_{jt}\).

Equation (1) is modified to account for such state-specific heterogeneity. This leads to the following specification:

\[
f_{jt} = \gamma_{ijt}L_{ijt} + \beta_{ijt}X_{ijt} + \mu_j + \epsilon_{jt} - - - (2)
\]

Equation (2) is a fixed effects regression that controls for state-specific unobservables that influence the labor variable \(L_{ijt}\). The other (exogenous) variables in \(X_{ijt}\) that are believed to influence the location of FDI projects across the various states of India include loans from ICICI Bank, loans from Exim Bank, real value of growth state domestic product, state support for R & D, volume of software exports, and other input cost variables such as wage levels and power rates.

Although the Durban-Wu-Hausman test provides evidence that our labor dispute variable cannot be treated exogenously, we are explicitly interested in the sign of the correlation between the labor variable and the state-specific error component in (2). This is because the sign gives us information on the strategy that states use to attract FDI. In particular, if the sign is negative, then we have statistical evidence that states may try to
reduce the incidence of labor conflicts in order to influence the location of new FDI projects. Our methodology for analyzing the direction of such correlations is highlighted in the next section.

Section 3.2: Estimating the Endogeneity of Labor Regulations

Consider the following relationship between the labor variable and the measure of state-level heterogeneity, $\mu_j$.

$$L_{ijt} = \theta_t Z_{ijt} + \delta_t \mu_j + \eta_{ijt}$$

Equation (3) shows that the labor variable is a function of a set of exogenous determinants ($Z_{ijt}$), which include state specific measures such as the literacy rate, the proportion of urban male workers, measures of inequality, and regional dummy variables. As discussed before, since states benefit from having FDI projects, the presence of $\mu_j$ in (3) captures the notion that some states may influence labor laws in order to attract more FDI projects. These influences may be over and above those exerted by the variables in $Z_{ijt}$, and are unobserved by the researcher since they are not measured in the data. These unobserved influences are captured by the correlation of $L_{ijt}$ with the systematic part of the error term in (3), $\mu_j$. Therefore, as long as $\delta_t \neq 0$ in (3), $L_{ijt}$ is endogenous in (2). Thus an estimation of (2) that does not correct for this endogeneity will give biased and inconsistent measures of $\hat{\gamma}_f$, the effect of the labor disputes variable on the share of FDI projects in a state.

With observations on variables across time, equation (2) may be estimated consistently by using a Least Squares Dummy Variable (LSDV) technique. An advantage of the LSDV approach is that it allows us to measure location specific effects, net of labor variables, loans from ICICI Bank, loans from EXIM Bank, inputs, and other variables in
equation (2). This is of use in assessing correlations between state specific unobservables and labor measures in equation (3). Hence, we estimate equation (2) using the LSDV approach, and then extract estimates of the $\mu_j$ (denoted as $\hat{\mu}_j$) parameters from (2) for use as independent variables in equation (3). These extracted $\hat{\mu}_j$ are interpreted as latent FDI location propensities for each state $j$, net of labor and other variables.

A potential problem with the $\hat{\mu}_j$ estimated from equation (2) is that they are likely to be measured with error (Pitt, Rosenzweig, and Gibbons (1993), Pitt, Rosenzweig, and Hassan (1990)). The nature of the measurement error problem is as follows. If FDI shares and labor regulation variables are measured inaccurately (as they may be), then the derived estimates of $\hat{\mu}_j$ are contaminated with the errors that affect the FDI and labor regulation variables of equation (2). This implies that in assessing the effects of $\hat{\mu}_j$ on labor measures in equation (3), a simple linear model (such as OLS) would lead to inconsistent results. In fact, as is well known, measurement error in a right hand side variable in a least squares framework causes the true effect of that variable to be biased downwards (attenuation bias – the coefficient is biased towards zero).

Consistent estimates may still be obtained given errors in variables by using an instrumental variables technique. As noted in Pitt, Rosenzweig, and Hassan (1990), variables that may be used as instruments include repeated observations (over time) on the variable that is measured with error ($\hat{\mu}_j$). Repeated observations on the variable that is measured with error are valid instruments as long as errors are uncorrelated across time periods. Given that there have been no dramatic changes across states in the time periods

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8 Pitt, Rosenzweig, and Hassan (1990) provide a detailed discussion of how the measurement error problem arises on pp. 1145-1146.
we consider, we do not believe that the assumption of uncorrelated errors is an overly restrictive one. Furthermore, we present tests for the validity of our instruments in table 4B below.

Since repeated observations on the measured with error variable may be used as instruments, we instrument for \( \hat{\mu}_j \) from 1996-1997 using the \( \hat{\mu}_j \) from 1998-2000. Equation (3) is then estimated using an instrumental variables technique, where the variables in \( Z_{ijt} \) (as noted above) include regional dummies, the literacy rate in 1991, the proportion of urban male workers, and an urban gini variable from 1995. A significant \( \hat{\delta}_r \) coefficient from the instrumental variables estimation of equation (3) provides evidence that the labor variable in equation (2) is endogenous.

A brief discussion on the expected sign of \( \hat{\delta}_r \) is warranted. If \( \hat{\delta}_r > 0 \), this would support a state government policy where regions with high \( \hat{\mu}_j \) also see an increase in labor unrest. Alternatively, if \( \hat{\delta}_r < 0 \), then net of labor and other variables, states with high \( \hat{\mu}_j \) experience low magnitudes of labor activity. Since our labor variable measures labor disputes in the state, a negative sign on \( \hat{\delta}_r \) suggests a decline in labor unrest in regions where FDI location propensities are high. This may occur when state governments “subdue” labor laws in the hopes of translating high latent FDI location propensities into actual sizeable numbers of FDI projects within that state. Indirect evidence for this may be obtained by considering the location of the seven export processing zones (EPZs) in India – five of these EPZs are located in states that were at the forefront of enacting reforms to encourage foreign direct investment (Gujarat, Kerala, Maharashtra, Uttar Pradesh, and
Andhra Pradesh). Given the fact that states value the presence of FDI, our prior is that the sign of $\delta_i$ is negative.

Section 4: Data and Results

Section 4.1: Variables and Data

From 1996 to 2001, the total number of FDI projects in India (as reported by the Ministry of Commerce and Industry) was 10,401. We use data on the state-wise number of FDI projects by year, from the “SIA Newsletter 2001” (Annual Issue, Dept. of Industrial Policy and Promotion, Ministry of Commerce & Industry, Govt. of India). Figure 1 shows the total number of FDI projects by state during 1996 – 2001.

Section 4.1.1: Labor Conflict Variables

Labor variables capture “on the ground” labor conditions. We consider several alternatives including the number of labor courts in the state, number of strikes and lockouts in the state, number of unions registered in the state, and number of man-days lost in the state due to strikes and lockouts. The data are derived from the “Indian Labor Statistics, 1994”, and the “Pocket Book of Labor Statistics 1999”, Labor Bureau, (Ministry of Labor, Govt. of India). Table 1 provides the summary statistics of all variables. Figure 2 depicts the main labor regulation variables used in the estimations (these have been normalized by gross state product). The figures show an inverse relationship between new FDI and the pro-worker stance of the state (as captured by the number of unions on register and the number of man-days lost in disputes resulting in work stoppages).

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10 We mention the original sources for the majority of our data, even though we use the electronic versions put together by Indiastat, a web based data vendor specializing in Indian data.
Section 4.1.2: Indicators of State “Economic Health”

We use state-level economic characteristics like gross state domestic product (Central Statistical Organization of India) and (normalized) measures of research and development expenditures (from 1995) by the state government (“Research and Development Statistics” - Ministry of Science and Technology, Govt. of India), as indicators of a state’s “economic health”. We hypothesize that FDI prefers to locate in states with high levels of social and economic development. Alternatively, high input costs should have a negative impact on location propensities.

Another important determinant of FDI is the availability of credit. In order to measure credit availability, we use several variables including (state) government’s planned outlay for manufacturing, loans provided by ICICI Bank, and financial allocations by the EXIM Bank. Data on state-wise financial allocations by ICICI (both the amount sanctioned and disbursed) and the assistance sanctioned for setting up of “export oriented units” by EXIM Bank are obtained from the “Report on Development Banking in India 2000-01”, (Industrial Development Bank of India). Information on outlays of planned expenditures by states comes from the “Handbook of Industrial Policy and Statistics, 2000” (Ministry of Commerce & Industry, Govt. of India). The structure of corporate taxes is also important; we control for the effect of taxes by including a variable that measures the corporate tax rate across states. Information on tax rates is obtained directly from Indiastat11.

We hypothesize that the impact of the variables listed above differs for foreign and domestic firms. Information asymmetries would imply that such indicators would influence FDI more than domestic firms, as the former uses these variables to assess the overall attractiveness (from a perspective of potentially locating there) of the state. For example,

11 The original source is: Lok Sabha Unstarred Question No. 5103, dated 25.08.2000
the availability of loans from EXIM bank should have a large impact on overseas investment since a large number of FDI projects have an export orientation.

Section 4.2: Empirical Results

As discussed in detail above, the labor conflict variable is potentially endogenous. Such endogeneity results from the fact that local governments may modify regulations in the hopes of making their states more attractive for FDI. If location specific unobservables are correlated with regulations, and if these unobservables are not appropriately controlled for, then we cannot measure the true effect of labor regulations. We adopt a state-fixed effects model to correct for such endogeneity.

Table 3(A) reports the results of the fixed effects estimation (standard errors in parenthesis). From the various specifications (columns 1 – 4), we find that lagged man-days lost has a significant negative impact on the share of FDI projects that a state receives. Loan disbursements from ICICI and EXIM bank, and the income level of a state have strong positive effects on FDI. Planned outlays and research expenditures by states have no effects on the dependent variable.

Table 3(A) provides measures of the estimated state-specific fixed effects. We observe that for the basic model, most of the state-specific fixed effects are significant. This suggests that it is important to consider state-specific unobservables in the estimation (a test that these state-level effects are jointly zero is strongly rejected).

To investigate the influence of state-level heterogeneity on labor regulations, we estimate models similar to the basic specification in table 3(A) separately for 1996-1997 and for 1998 – 2000. Estimates of state fixed effects are obtained from both sets of regressions. As discussed above, estimates of fixed effects from 1998-2000 are uses as instruments for the fixed effects from 1996-1997. The results of the instrumental variables (two stage least
squares) estimation are presented in table 3(B). The first stage (column 1) uses the derived state fixed effects from 1996-1997 as the dependent variable, and the derived state-effects from 1998-2000, an urban Gini coefficient, the literacy rate, an urban male workforce participation rate, and regional dummies as independent variables. Predicted values of the 1996-1997 state-specific effects from the first stage are then used as exogenous determinants of man-days lost due to work stoppage (the dependent variable) in the second stage. Tests of instrument validity are included.

The second column of table 3(B) shows that the predicted (instrumented) value of state-level unobservables has a significant negative impact on the labor conflict variable. This negative sign suggests that in states where location propensities are high, governments may modify labor regulations (make them more pro-employer) in the hopes of translating high latent propensities to actual increasing amounts of FDI project location. Ignoring such correlations will induce a downward bias in the labor coefficient, that is, the estimated effect will be smaller than its true value (note that the true effect of the labor conflict variable on shares of FDI is negative).

**Section 5: Conclusions**

This paper investigates the sensitivity of overseas investment to labor conflict across states of in India, using a location fixed effects approach. We find that foreign direct investment tends to veer away from states that have high incidences of labor conflict, particularly as measured by the number of man-days lost due to work stoppages. Furthermore, results of our fixed effects technique confirm that measures of labor conflicts are endogenous in an analysis of FDI location in India. We find striking empirical evidence that labor disputes across states of India arise in a systematic fashion – state-level
heterogeneity measures have significant negative impacts on our labor conflict variable. This indicates that states ‘muffle’ pro-worker legislations in the hopes of attracting new foreign direct investment.

This research has important implications for policy. Since the presence of foreign direct investment has significant positive benefits for a state (as seen from estimates of table 2 and from a poverty amelioration perspective), local governments that seek to encourage investments from abroad should be given a free hand (within reasonable limits) to modify labor laws and regulations. Moreover, states in which location propensities are low either due to poor infrastructure, lack of educated workers, or the presence of a political climate that favors an overly militant workforce, should be provided with adequate incentives by the central government to move to fostering an environment more hospitable to investment from overseas. Such strategies would be welfare improving from all perspectives for a developing country like India.
References


**Table 1**

Summary Statistics for Fixed Effects Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of FDI projects (normalized)</td>
<td>80</td>
<td>0.0625</td>
<td>0.0682</td>
<td>0.0016</td>
<td>0.2980</td>
</tr>
<tr>
<td>Man-days lost in disputes resulting in work stoppage (normalized)</td>
<td>80</td>
<td>2.0032</td>
<td>2.8690</td>
<td>0</td>
<td>18.8793</td>
</tr>
<tr>
<td>Number of Strikes (1995)</td>
<td>80</td>
<td>0.0444</td>
<td>0.0641</td>
<td>0</td>
<td>0.2993</td>
</tr>
<tr>
<td>Number of union members (1995)</td>
<td>80</td>
<td>0.4747</td>
<td>1.0752</td>
<td>0</td>
<td>6.0419</td>
</tr>
<tr>
<td>ICICI Disbursement Share (1995)</td>
<td>80</td>
<td>0.0601</td>
<td>0.0789</td>
<td>0.0002</td>
<td>0.3611</td>
</tr>
<tr>
<td>Exim Bank Disbursed Loans Share (1994)</td>
<td>80</td>
<td>0.0639</td>
<td>0.0818</td>
<td>0</td>
<td>0.3079</td>
</tr>
<tr>
<td>Real Gross State Product</td>
<td>80</td>
<td>616.1555</td>
<td>403.2261</td>
<td>31.6243</td>
<td>2007.8480</td>
</tr>
<tr>
<td>Planned Outlay Share</td>
<td>80</td>
<td>0.0554</td>
<td>0.1362</td>
<td>0</td>
<td>0.7236</td>
</tr>
<tr>
<td>State-wise support to R&amp;D Projects</td>
<td>80</td>
<td>11.0959</td>
<td>6.1438</td>
<td>0</td>
<td>25.7124</td>
</tr>
</tbody>
</table>

Note: Data Range: 1996 - 2000

**Table 2**

Effect of FDI on Selected State Outcomes

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Net Value Added (Normalized)</th>
<th>Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regressors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of FDI projects (normalized)</td>
<td>720.23 *</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(373.95)</td>
<td></td>
</tr>
<tr>
<td>Share of FDI projects</td>
<td>-</td>
<td>3776.83 **</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(774.46)</td>
</tr>
<tr>
<td>Man-days lost in disputes resulting in</td>
<td>-27.36</td>
<td>-8.770</td>
</tr>
<tr>
<td>work stoppage (normalized)</td>
<td>(24.64)</td>
<td>(15.99)</td>
</tr>
<tr>
<td>Planned Outlay (normalized)</td>
<td>0.608</td>
<td>-0.075</td>
</tr>
<tr>
<td></td>
<td>(4.232)</td>
<td>(2.446)</td>
</tr>
<tr>
<td>R2</td>
<td>0.032</td>
<td>0.534</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Observations</td>
<td>64</td>
<td>64</td>
</tr>
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</table>

Note: A simple random effects model is used to estimate the above specifications. Both specifications include a time trend as well. Standard errors in parenthesis. * Denotes significance at the 10% level, ** denotes significance at the 5% level.
Table 3(A)
Fixed Effects Estimation: Basic Model & Sensitivity Analyses

<table>
<thead>
<tr>
<th>Variable</th>
<th>Basic Model</th>
<th>Sensitivity Analyses</th>
<th>Sensitivity Analyses</th>
<th>Sensitivity Analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Man-days lost due to work stoppage (Lagged 1 Year)</td>
<td>-0.002 **</td>
<td>-0.002 **</td>
<td>-0.002 **</td>
<td>-0.002 **</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Number of Strikes</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.005</td>
</tr>
<tr>
<td>Number of union members</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>(0.027)</td>
</tr>
<tr>
<td>ICICI Disbursement Share</td>
<td>0.179 **</td>
<td>0.230 **</td>
<td>0.235 **</td>
<td>0.207 **</td>
</tr>
<tr>
<td></td>
<td>(0.085)</td>
<td>(0.071)</td>
<td>(0.072)</td>
<td>(0.081)</td>
</tr>
<tr>
<td>Exim Bank Disbursed Loans Share</td>
<td>0.114 **</td>
<td>0.109 **</td>
<td>0.110 **</td>
<td>0.115 **</td>
</tr>
<tr>
<td></td>
<td>(0.058)</td>
<td>(0.050)</td>
<td>(0.050)</td>
<td>(0.051)</td>
</tr>
<tr>
<td>State-wise support to R&amp;D Projects</td>
<td>-0.001</td>
<td>-</td>
<td>0.002</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Real Gross State Product</td>
<td>-</td>
<td>0.0001 **</td>
<td>0.0001 **</td>
<td>0.0001 **</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.00003)</td>
<td>(0.00003)</td>
<td>(0.00003)</td>
</tr>
<tr>
<td>Planned Outlay</td>
<td>-</td>
<td>0.013</td>
<td>-</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.016)</td>
<td>(0.015)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>0.048 **</td>
<td>-0.014</td>
<td>-0.019</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.025)</td>
<td>(0.026)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>Bihar</td>
<td>0.017 **</td>
<td>-0.026 *</td>
<td>-0.029 *</td>
<td>-0.017</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.015)</td>
<td>(0.015)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Gujarat</td>
<td>0.040</td>
<td>-0.039</td>
<td>-0.043</td>
<td>-0.016</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td>(0.030)</td>
<td>(0.031)</td>
<td>(0.042)</td>
</tr>
<tr>
<td>Haryana</td>
<td>0.067 **</td>
<td>0.026 **</td>
<td>0.024 **</td>
<td>0.050 **</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.011)</td>
<td>(0.012)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>Karnataka</td>
<td>0.110 **</td>
<td>0.054 **</td>
<td>0.049 **</td>
<td>0.063 **</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.022)</td>
<td>(0.023)</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Kerala</td>
<td>0.037 **</td>
<td>-0.005</td>
<td>-0.007</td>
<td>0.015</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.010)</td>
<td>(0.011)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>0.015 *</td>
<td>-0.041 **</td>
<td>-0.045 **</td>
<td>-0.035</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.020)</td>
<td>(0.021)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>0.185 **</td>
<td>0.041</td>
<td>0.029</td>
<td>0.046</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.063)</td>
<td>(0.066)</td>
<td>(0.071)</td>
</tr>
<tr>
<td>Orissa</td>
<td>0.021 *</td>
<td>-0.010</td>
<td>-0.011</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.008)</td>
<td>(0.008)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>Punjab</td>
<td>0.027 **</td>
<td>-0.017</td>
<td>-0.022 *</td>
<td>0.0001</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.012)</td>
<td>(0.013)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>0.018 **</td>
<td>-0.025</td>
<td>-0.021</td>
<td>-0.023</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.016)</td>
<td>(0.014)</td>
<td>(0.018)</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>0.137 **</td>
<td>0.068 **</td>
<td>0.061 **</td>
<td>0.076 **</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.026)</td>
<td>(0.028)</td>
<td>(0.032)</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>0.045 **</td>
<td>-0.045</td>
<td>-0.053</td>
<td>-0.041</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.036)</td>
<td>(0.037)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>West Bengal</td>
<td>0.047 **</td>
<td>-0.008</td>
<td>-0.013</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.022)</td>
<td>(0.024)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>Delhi</td>
<td>0.096 **</td>
<td>0.070 **</td>
<td>0.067 **</td>
<td>0.070 **</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.014)</td>
<td>(0.015)</td>
<td>(0.016)</td>
</tr>
<tr>
<td>Other</td>
<td>0.022</td>
<td>0.004 *</td>
<td>0.0002</td>
<td>0.0002</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.003)</td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
</tbody>
</table>

No. of obs. = 80. Data range = 1996-2000. Dependent Variable is FDI count share. * Denotes significance at 10% level, ** at 5% level.
### Table 3(B)

**Instrumental Variables Results for Labor Conflict**

<table>
<thead>
<tr>
<th>Regressors</th>
<th>First Stage</th>
<th>Second Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derived state-fixed effect from 1998-2000</td>
<td>1.099**</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(9.57)</td>
<td></td>
</tr>
<tr>
<td>Urban Gini-coefficient (1995)</td>
<td>-0.369**</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(-2.06)</td>
<td></td>
</tr>
<tr>
<td>Predicted (instrumented) state-fixed effect from 1996-1997</td>
<td>-</td>
<td>-22.71**</td>
</tr>
<tr>
<td></td>
<td>(-1.98)</td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>0.014</td>
<td>2.172*</td>
</tr>
<tr>
<td></td>
<td>(1.36)</td>
<td>(1.87)</td>
</tr>
<tr>
<td>East</td>
<td>0.013</td>
<td>3.411</td>
</tr>
<tr>
<td></td>
<td>(1.21)</td>
<td>(1.58)</td>
</tr>
<tr>
<td>West</td>
<td>0.021*</td>
<td>0.052</td>
</tr>
<tr>
<td></td>
<td>(1.64)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Other</td>
<td>0.020</td>
<td>2.106**</td>
</tr>
<tr>
<td></td>
<td>(1.01)</td>
<td>(2.05)</td>
</tr>
<tr>
<td>Literacy Rate (1991)</td>
<td>-0.0004</td>
<td>0.027</td>
</tr>
<tr>
<td></td>
<td>(-0.90)</td>
<td>(0.96)</td>
</tr>
<tr>
<td>Workforce Participation (Urban Male)</td>
<td>0.003**</td>
<td>0.270</td>
</tr>
<tr>
<td></td>
<td>(2.62)</td>
<td>(1.60)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.043</td>
<td>-16.04*</td>
</tr>
<tr>
<td></td>
<td>(-0.59)</td>
<td>(-1.74)</td>
</tr>
<tr>
<td>R2</td>
<td>0.9582</td>
<td>0.657</td>
</tr>
<tr>
<td>Observations</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

T-statistics in parenthesis. * Denotes significance at the 10% level, ** denotes significance at the 5% level.

**First Stage:** Identifying instruments include the derived state-fixed effect from 1998-2000 and the urban gini variable. As seen from their t-statistics, both the identifying instruments are significant. Moreover, an F-test that these identifying instruments are jointly zero is strongly rejected (F[2,7]=48.18, Prob > F = 0.0001).

**Second Stage:** Tests of overidentifying restrictions: P-value for Sargan N*R-sq test = 0.9565, and P-value for Basmann test = 0.9712. Thus, the null hypothesis cannot be rejected, which implies that our identifying instruments are valid.
Figure 1: FDI Projects by State and Year

Figure 2: Mandays Lost Due to Workstoppage (Normalized)
### Supplementary Appendix

#### Table 1 - State/Union Territory Classifications

<table>
<thead>
<tr>
<th>State/Union Territory</th>
<th>Classification Code</th>
<th>State/Union Territory</th>
<th>Classification Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>1</td>
<td>Orissa</td>
<td>9</td>
</tr>
<tr>
<td>Bihar, Jharkhand</td>
<td>2</td>
<td>Punjab, Chandigarh</td>
<td>10</td>
</tr>
<tr>
<td>Gujarat, Dadar &amp; Nagar Haveli</td>
<td>3</td>
<td>Rajasthan</td>
<td>11</td>
</tr>
<tr>
<td>Haryana</td>
<td>4</td>
<td>Tamil Nadu, Pondicherry</td>
<td>12</td>
</tr>
<tr>
<td>Karnataka</td>
<td>5</td>
<td>Uttar Pradesh, Uttarakhand</td>
<td>13</td>
</tr>
<tr>
<td>Kerala</td>
<td>6</td>
<td>West Bengal</td>
<td>14</td>
</tr>
<tr>
<td>Madhya Pradesh, Chattisgarh</td>
<td>7</td>
<td>Jammu &amp; Kashmir, Mizoram, Nagaland, Sikkim, Himachal Pradesh, Assam, Tripura Meghalaya</td>
<td>15</td>
</tr>
<tr>
<td>Maharashtra, Goa, Daman &amp; Diu</td>
<td>8</td>
<td>Delhi</td>
<td>16</td>
</tr>
</tbody>
</table>

#### Table 2 - Regional Dummies

<table>
<thead>
<tr>
<th>Dummies</th>
<th>Regions</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region 1</td>
<td>North</td>
<td>Haryana, Punjab, Rajasthan, Uttar Pradesh, Delhi</td>
</tr>
<tr>
<td>Region 2</td>
<td>South</td>
<td>Andhra Pradesh, Kerala, Tamil Nadu, Karnataka</td>
</tr>
<tr>
<td>Region 3</td>
<td>East</td>
<td>Bihar, Orissa, West Bengal</td>
</tr>
<tr>
<td>Region 4</td>
<td>West</td>
<td>Gujarat, Madhya Pradesh, Maharashtra</td>
</tr>
<tr>
<td>Region 5</td>
<td>Other</td>
<td>Arunachal Pradesh, Jammu &amp; Kashmir, Mizoram, Nagaland, Sikkim, Himachal Pradesh, Assam, Tripura, Meghalaya</td>
</tr>
</tbody>
</table>