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Relations matter for Firm Performance?  
– A study of Indian Manufacturing**

Kathuria, Vinish; Natarajan, Rajesh Raj and Sen, Kunal  
Indian Institute of Technology Bombay, Centre for  
Multi-Disciplinary Development Research, Dharwad,  
University of Manchester, UK

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**Does the institution of State Business Relations matter for Firm  
Performance? – A study of Indian Manufacturing**

Vinish Kathuria

SJMSOM, Indian Institute of Technology Bombay, India

email: [vinish@iitb.ac.in](mailto:vinish@iitb.ac.in)

Rajesh Raj S. N.\*

Centre for Multi-Disciplinary Development Research, Dharwad, Karnataka, India

email: [rajeshraj.natarajan@gmail.com](mailto:rajeshraj.natarajan@gmail.com)

Kunal Sen

IDPM, University of Manchester, UK

e-mail: [kunal.sen@manchester.ac.uk](mailto:kunal.sen@manchester.ac.uk)

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\* Corresponding author; mailing address: Assistant Professor, Centre for Multi-Disciplinary Development Research, Dharwad, Karnataka, India; email: [rajeshraj.natarajan@gmail.com](mailto:rajeshraj.natarajan@gmail.com). This paper forms a part of a larger study examining the effect of state-business relations on the productivity of Indian firms funded by IPPG-University of Manchester, UK ([www.ippg.org.uk](http://www.ippg.org.uk)). We are thankful to IPPG-University of Manchester and DFID-UK for financial support. We are also thankful to the Central Statistical Organisation, for providing us access to the data, and to Nilachal Ray for his many suggestions and comments. An earlier version of the paper was presented at the Quantitative Analysis of Public Policy conference held at Indian Institute of Management Bangalore during August 10-12, 2009. The authors thank conference participants for helpful comments. The usual disclaimers apply.

### **Abstract**

This paper examines the role of the external institutional environment captured by effective state-business relations on firm performance. By effective state-business relations, we mean a set of highly institutionalised, responsive and public interactions between the state and the business sector. We find that effective state-business relations have had a discernible positive impact on firm performance in Indian formal manufacturing for the years 2000-01 and 2004-05. We also find internal and external institutional factors are complementary to firm performance - smaller firms, firms in urban areas, older firms and firms in simpler organizational forms benefit more.

**Keywords:** State business relations, firm productivity, manufacturing sector, India.

JEL Classification Codes: L25, O53, O43.

## 1. INTRODUCTION

Why are some firms more productive than others? Much of the previous literature on the determinants of firm performance has highlighted the role of the institutional factors that are internal to the firm such as the firm's ownership structure (Boardman and Vining 1989, Chhibber and Majumdar 1998, 1999, Khanna and Palepu 2000), the ability of its managers (Shleifer and Vishny 1989), the investments that the firm's owners makes in human capital of its employees (Bates 1990, Becker and Barry 1996) and the innovative capabilities of the firm (Penrose 1959, Nelson and Winter 1982, Cimoli *et al.* 2009). Less attention has been paid to the external institutional determinants of firm performance, and in particular the relationship between the state and the business sector.<sup>1</sup> In this paper, we examine the role of effective state-business relations in influencing firm performance using Indian manufacturing as a case-study. By effective state-business relations, we mean a set of highly institutionalised, responsive and public interactions between the state and the business elite. As has been noted in the case of East Asia, strong industrial performance has occurred in contexts where there were strong collaborative relations between the political and economic elites (Aoki 2001, Amsden 2001).

Effective state-business relations occur when there is 'the maintenance of benign collaboration between the agents of the state and business' (Harriss 2006). Benign collaboration between agents of the state and business require strong, well organised and representative business associations and effective and accountable governments that have a strong interest in the growth of the private sector. Well organised business associations can contribute to firm performance by providing both market-supporting and market-complementing activities (Cammatt 2007). Through market-supporting activities, business associations can strengthen the overall functioning of markets by

supporting the provision of public goods such as electricity and roads which are critical for productive investments to take place. Market-complementing activities, on the other hand, address various types of market imperfections and involve ‘direct coordination among firms to reconcile production and investment decisions’ (Doner and Schneider 2000). Effective and accountable governments can deliver on the services and public goods that are essential for robust private sector growth such as infrastructure and law and order. Strong states can make credible commitments on key policies such as future rates of corporate taxation and the likelihood of nationalisation of private sector assets. Such commitments are essential for the firms to invest in human capital and machinery and equipment that are likely to boost firm performance (Sen and te Velde, 2009).

Our empirical context is India, which provides us a fertile empirical ground to examine the relationship between effective state-business relations and economic performance at the firm level. Given India’s federal political structure, we would expect to see wide variations in the manner Indian state governments interact with the business sector. Given the move from a command and control regime by Indian policy makers since 1991 and the political space that economic reforms provided to state governments to follow their own paths with specific economic policies (within certain constraints), we would expect significant variation in effective state-business relations across Indian states. We exploit these institutional differences of Indian states testing for the impact of effective state-business relations (SBRs) on firm performance for the Indian formal manufacturing sector. We first propose a way of quantifying the degree of effectiveness of SBRs for fifteen Indian states, which has been developed by Cali, Mitra and Purohit (henceforth, CMP, 2009). We then use this measure in augmented production function estimates of firm performance using a rich firm-level data set

which covers all firms in the Indian formal manufacturing sector for the years 2000-01 and 2004-05 to examine whether effective SBRs matter for firm performance. We also explore whether institutional factors internal to the firm such as firm size, firm age, location and organisational form influence the manner effective SBRs impact on firm performance. We find that effective state-business relations have had a discernible positive impact on firm performance in India. We also find effective state-business relations particularly benefit smaller firms, firms in urban areas, older firms and firms with simpler organisational forms such as sole proprietorships and family firms (in contrast to firms with diffused ownership).

The rest of the paper is in five sections. In the next section, we set out the theoretical argument why effective state-business relations matter for firm performance. In Section III, we describe the measure of state-business relations in India, drawing from the work of Cali, Mitra and Purohit (2009) (henceforth, CMP). Section IV describes the firm-level data and the methodology. In Section V, we discuss the results of our analysis. Section VI concludes.

## **II. WHY DO EFFECTIVE STATE-BUSINESS RELATIONS MATTER FOR FIRM PERFORMANCE?**

The literature on state-business relations takes the following elements as essential characteristics of effective state-business relations (SBRs) (see Maxfield and Schneider 1997, Chapter 1).

- *Transparency*: the flow of accurate and reliable information, both ways, between business and government.
- *Reciprocity*: the capacity and autonomy of state actions to secure improved performance in return for subsidies.

- *Credibility*: when capitalists are able to believe what state actors say.

Effective SBRs as characterised above can affect firm performance through fulfilling a number of economic functions. Firstly, they can help to solve information related market and co-ordination failures in areas such as skill development or infrastructure provision (Amsden 1989). For instance, business associations or government departments may co-ordinate and disperse information among stakeholders. Greater transparency in the flow of information between state actors and the business sector leads to a better allocation of investments by the business sector to their most productive uses. Higher credibility of state actions lead to less problems of time and dynamic inconsistency of government policies, providing a more favourable environment for high quality investment to occur (Rodrik 1991, Ibarra 1995). Reciprocity ensures improved performance by private sector actors in return for subsidies and the provision of public goods, contributing to higher productivity growth.

Secondly, effective SBRs provide a check and balance function on government policies and tax and expenditure plans (te Velde 2006). Thus, effective SBRs may help to ensure that the provision of infrastructure is appropriate and of good quality. The design of effective government policies and regulations depends, among other things, on input from and consultation with the private sector. Regular sharing of information between the state and businesses ensures that private sector objectives are met with public action and that local level issues are fed into higher level policy processes (Evans 1995). The private sector can identify constraints, opportunities, and possible policy options for creating incentives, lowering investment risks, and reducing the cost of doing business. More efficient institutions and rules and

regulations might be achieved through policy advocacy which could reduce the costs and risks faced by firms and enhance productivity.

In summary, effective state-business relations can mitigate both market failures and government failures which are pervasive in most developing countries, and by doing so, bring about an increase in the performance of firms.<sup>2</sup>

### **III. MEASURING STATE BUSINESS RELATIONS IN INDIA**

te Velde (2006) was the pioneering study to develop measures of SBRs quality. He argues that an SBR index should have four components, which reflect the main aspects of effective SBRs:

- 1) the way in which the private sector is organised vis-à-vis the public sector;
- 2) the way in which the public sector is organised vis-à-vis the private sector;
- 3) the practice and institutionalisation of SBRs;
- 4) the avoidance of harmful collusive behaviour between the two sectors.

Each of the aspects mentioned above is captured through a SBR sub-index which in turn is derived from data on variables reflecting the above mentioned aspects. The various SBR sub-indices are then combined to arrive at an overall index of SBR. CMP measure SBR along the above four dimensions for 15 Indian states using both primary and secondary data. We describe below the manner CMP operationalise the measurement of SBR in India.

#### *The role of the private sector in SBR*

CMP measure the role of the private sector via the quality and effectiveness of the umbrella business association and two sector based business associations, as follows:



- a) Whether the private sector association has a **website** or not: The variable takes a value of zero in any year in which the organisation does not have a website and 1 otherwise. This is likely to proxy for the quality of the organisational structure as well as its outside visibility. Evidence from their fieldwork confirms that organisations appearing to be more structured and organised have had an active website in place for a longer time.
- b) How frequently the website is updated: Again, this captures the efficiency of internal processes (which makes frequent updates possible) as well as the level of activity of the organisation. The need for updating the website more frequently should increase with the intensity of the organisation's activity.
- c) The variable *office\_premise*, takes the value of 1 if the office is owned and 0 otherwise. This variable proxies the level of the organisation's resources as well as the extent to which the association is willing to invest in costly physical assets.

#### *The role of the public sector in SBR*

CMP measure the role of the public sector in SBR by the presence of state owned or state participated productive corporations, which are investment promotion agencies, Financial, Infrastructure Development and Tourism Development Corporations. These represent important types of pro-business engagements with benefits for all sectors. They construct a cumulative sub-index ranging in value between 0 and 1 which is the average of four dummy variables, one for each organisation. At any point of time the dummy for an organisation takes the value of 1 if it is in place and 0 otherwise.

CMP also assess the role of the public sector via the governments' signalling of their relative priorities through the allocation of public resources. In their work, they focus on two types of state **revenue expenditures**: expenditure on economic services as a ratio of total government expenditures and expenditure on industries as a ratio of total expenditures on economic services.

#### *The interaction between states and businesses*

CMP measure the interaction between state governments and the business sector in two ways:

**a) Index of labour regulation:** This is the index constructed by Besley and Burgess (2004). The authors score each state level act on labour regulation as anti-worker (assigning -1), pro-worker (1) or neutral (0). In this way they produce a yearly cumulative index which may proxy for the relative effectiveness of the mentioned aspect of SBR. The argument is that more effective SBRs would allow employers to be more influential affecting on government policies and would get reflected in more pro-employer labour market regulation.

**b) Stamp Duty:** CMP take state-wise stamp duties as proxies for the attitude of the state governments towards business establishments and their expansion. These proxies are valid because a stamp duty is a tax on the value of a transaction, most commonly on the transfer of movable and immovable properties and instruments used in commercial and business transactions.

#### *Mechanisms to avoid collusive behaviour*

CMP use the following measures to capture the transparency of SBRs:

a) The gross output of firms belonging to **delicensed industries** as a proportion of total industrial GDP (data on delicensing from Aghion *et al.* 2006; data on firms by sector in the Annual Survey of Industries): The License Raj was a

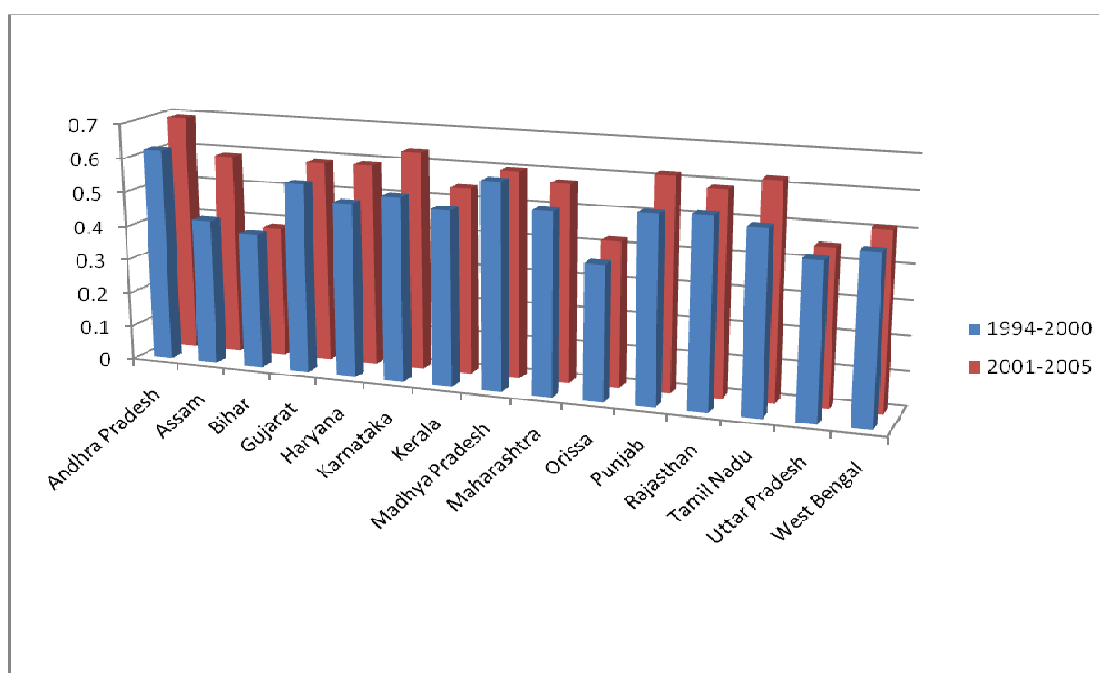
system of centralised controls regulating entry and production activity. Delicensing introduced competition and reduced rent-seeking by corporations entrenched with public powers. As the decision of which industries to delicense was made at the central level, this effectively provides an exogenous source of change in the possible extent of collusive behaviour at the state level.

- b) Whether the private sector umbrella association has a **regular publication** informing its members. This measure proxies for the transparency of the organisation's activities. Higher transparency would be associated with lower probability of collusive behaviour which may harm business not entrenched with public authorities. As in the case of the organisation's website, the **frequency** with which the publication is produced and distributed would also determine the level of transparency in the association's activities.

As CMP correctly argue, the indices constructed through these variables have two main advantages over the traditional investment climate indicators. First, they cover a larger time span (27 years from 1980 to 2006) than any other indicators on Indian states. This allows one to examine the evolution of the relevant economic institution over different periods. Second, by not being based on firms' perceptions, they avoid the measurement error problem typical of subjective survey response data. Bertrand and Mullainathan (2001) argue that the likely causal correlation of this measurement error with dependent variables may generate biased estimated coefficients. Carlin *et al.* (2009) explain along these lines the problem of interpreting the coefficients of standard cross-country regressions where a productivity or income measure is regressed on subjective constraints.

CMP normalize the data so as to make the variables vary over a common range and to make the increase in a variable signal an improvement in the index. While CMP used different weighting procedures in the construction of the SBR private variable, we use the weighting procedure where the apex business association is assigned a value of 0.5 and the two sectoral associations are assigned a value of 0.25 each.<sup>3</sup>

In Figure 1, we present the period averaged SBR measures for 1994-2000 and 2001-2005. As is clear, there are strong differences in the effectiveness of state-business relations across Indian states. These differences seem to have persisted over time. Bihar and Orissa, among the less industrialized states, have the least degree of effectiveness of state-business relations while Andhra Pradesh and Tamil Nadu, the more progressive states, have the highest degree of effectiveness as reflected in the SBR measure. Assam has shown the highest improvement in the effectiveness of state-business relations between 1994 and 2005.



Source: CMP (2009)

**Figure 1: State-Business Relations, 1994-2000 and 2001-2005 across Indian states**

## IV. DATA AND METHODOLOGY

### *Data*

We use unit level data for the formal manufacturing sectors for two years – 2000-01 and 2004-05. Data are drawn from the Annual Survey of Industries (ASI) collected by the Central Statistical Organisation (CSO). The ASI is the census survey of all the formal manufacturing units for all the industries across all the states. The data is collected every year from all the units registered under the Indian Factories Act of 1948.<sup>4</sup> CSO is the agency that collects information on various aspects of the functioning units. The information collected include - gross output, number of workers, gross fixed assets, electricity and materials consumed, ownership, profit etc. at the unit level. The data are in the form of repeated cross-sections, and not in panel form. This is because the CSO do not reveal the identity of the firm/plant in the unit record data.<sup>5</sup>

### *Methodology*

Our variable of interest is the measure of state-business relations that we described in Section III and its effect on firm's total factor productivity (TFP). To test the effect of SBR on TFP, we estimate augmented production functions as follows:

$$Y_{isj} = a_0 + a_1 K_{isj} + a_2 L_{isj} + a_3 SBR_s + \hat{\alpha}_i + e_{isj} \quad (1)$$

where  $i$  is industry,  $s$  is state and  $j$  is firm.  $Y$  is gross value added,  $K$  is capital stock,  $L$  is total number of employees,  $SBR$  is our measure of state-business relations,  $\hat{\alpha}_i$  are industry fixed effects and  $e$  is the error term. For the year 2000-01, we use  $SBR$  averaged over 1994-2000 and for the year 2004-05, we use  $SBR$  averaged over 2001-2005.

We would expect that  $a_3$  is positive and significant – i.e., more effective SBR (as captured by a higher SBR score) should lead to improved total factor productivity. We estimate equation 1 for both the years – 2000-01 and 2004-05. We also expect an increase in value of  $a_3$  over the period, as economic reforms may have made an effective SBR more conducive to stronger firm performance.

The industry fixed effects capture industry-specific differences in technology which would be correlated with TFP. They also capture other industry specific differences which would affect TFP such as differences in market structure and trade orientation. Since we cover units of all sizes, we first estimate equation (1) using Ordinary Least Squares, with robust heteroskedasticity constant standard errors. However, it is possible that unobserved technology shocks may be correlated with both, capital stock and output, leading to a bias in estimate of  $a_1$ . In order to correct for this, we also estimate equation (1) using two-stage least squares with materials as an instrument for capital stock.

Equation (1) assumes that effective state-business relations would affect all firms equally, regardless of their individual characteristics. However, as the literature on the institutional determinants of firm performance makes clear, firm specific characteristics such as firm size, location, age and organisational form are crucial in explaining why some firms are better performers than others. We would expect that for a given Indian state, some firms would be better positioned or more able to take advantage of effective SBR, given their institutional characteristics. We investigate the impact of effective SBRs on firm performance across various firm-specific characteristics and explore four such characteristics – the size of the firm (*SIZE*), the age of the firm (*AGE*), whether the firm is located in an urban area (*URBAN*) and the

organisational form of the firm, captured by whether the firm is an individual proprietorship or not (ORG).

With regard to firm size, we expect that smaller firms are more likely to benefit from improved SBRs that lead to better provision of public goods and greater information flows from government departments to the business associations small firms belong to. Also, smaller firms would not have the individual capacities of the larger firms to lobby for changes in policies and would benefit from stronger business associations that can lobby on their behalf. With respect to firm age, we expect that older firms would benefit more from effective SBRs as they are more likely to be members of business associations than younger firms. With respect to location, firms in urban areas are more likely to be members of business associations and may be able to access the public goods that more effective SBRs may help provide.

Finally, with respect to organisational form, privately owned firms, especially those in sole proprietorships, are more likely to benefit from effective SBRs, as compared to firms having diffused ownership. For a country like India where regulations abound, and many of the privately-owned firms often lack information for other key aspects of business such as finance, taxation etc., the effective SBR fills this obvious information gap. On the other hand, the information need from SBR is virtually negligent for a public limited company. This is because for a public limited firm, this information and other guidance comes from the outside directors, which hail from varied spheres like banking, or former govt. officials or academics.<sup>6</sup> Furthermore, under clause 49 of listing agreement that came into effect after 2001 in the Indian capital market, the composition of board of public limited companies should comprise outside directors not less than 30 per cent. This implies that for public limited

companies since 2001 – there has been stronger presence of outside directors substituting the need for information obtained through effective SBRs.

We measure firm size, firm location and firm age as binary variables – for firm size, a value of one if the firm has more than 100 employees, zero if not; for firm location, value of one if the firm is located in an urban area, a value of zero if not, and for firm age, a value of one for firms which have completed more than 10 years since inception, and a value of zero for those who have not. For measuring organisational form, we have used an ordered variable with five organisational types in the order of increasing public involvement in these firms: the value ‘1’ is assigned to individual proprietorship firms, ‘2’ to joint family firms, ‘3’ to partnership firms, ‘4’ to private limited companies and ‘5’ to public limited companies.

The augmented specification with the interaction variables between SBR and firm size, location, age and organisational form is presented in equation (2) below:

$$Y_{isj} = a_0 + a_1 K_{isj} + a_2 L_{isj} + a_3 SBR_s + a_4 SBR_s * SIZE_{isj} + a_5 SBR_s * URBAN_{isj} + a_6 SBR_s * AGE_{isj} + a_7 SBR_s * ORG_{isj} + a_4 SBR_s + \hat{\delta}_i + e_{isj} \quad (2)$$

Where we expect that  $a_4$  and  $a_7$  are negative, while  $a_5$  and  $a_6$  are positive.

We present the results of the estimates of equations (1) and (2) in the next section.

## V. RESULTS

Table 1 summarises the descriptive statistics for 2000-01 and 2004-05. For the 2000-01 round, we have data for 24,361 units and for the 2004-05 round, it is 31,014 firms. There is variation in value added, capital stock and employment for the firms in our sample for both the years, though the summary statistics on value added, capital stock, employment, fuel and materials are not statistically very different for the two years. The SBR public, SBR practice and SBR collusive variables have remained more or



less the same, while the SBR private variable reported a significant improvement over the period 1994-2005, indicating an increase in information flow from business associations to its members.

**Table 1: Summary Statistics**

VARIABLES	2000-01 (N=24361)				2004-05 (N=31014)			
	Mean	SD	MIN	MAX	Mean	SD	MIN	MAX
Log GVA	14.72	2.21	0.62	24.00	14.70	2.17	2.83	24.25
Log Capital Stock	14.76	2.72	-0.25	24.75	14.68	2.67	-0.42	25.66
Log Employment	3.88	1.55	0	10.63	3.79	1.51	0	10.73
Log Fuel	13.00	2.34	3.44	22.24	12.84	2.28	3.29	22.34
Log Material	15.31	2.93	1.96	24.88	15.29	2.99	2.08	26.45
Log SBR	<b>0.177</b>	0.017	0.135	0.210	<b>0.188</b>	0.020	0.132	0.225
Log SBRpvt	<b>0.123</b>	0.025	0.067	0.168	<b>0.161</b>	0.044	0.067	0.245
Log SBRpub	0.194	0.024	0.124	0.233	0.195	0.025	0.107	0.231
Log SBRpract	0.195	0.030	0.111	0.236	0.196	0.027	0.128	0.236
Log SBRcollu	0.200	0.034	0.105	0.264	0.215	0.026	0.133	0.252

*Notes:* SD – Standard Deviation, MIN – Minimum, MAX – Maximum; Figures in bold means the difference is statistically significant over the two years.

For 2000-01, the table presents the average log SBR and its components for 1994-2000 and for 2004-05, the table presents the average log SBR and its components for 2001-2005.

We next present estimates of equations (1) and (2) in Table 2 for the year 2000-01 and in Table 3 for the year 2004-05. These equations are estimated with the OLS methods and are presented in Cols. 1, 3, 5, 7 and 9. The estimation of the coefficients of labour and capital using OLS method implicitly assumes that the input choices are determined exogenously. Firm's input choices can be endogenous too. For instance, the number of workers hired by a firm and the quantity of materials purchased may depend on unobserved productivity shocks. These are overlooked by the researcher but they certainly represent the part of TFP known to the firm. Since input choices and productivity are correlated, OLS estimation of production functions will yield biased parameter estimates. Wu-Hausman Test, as reported in row 10 of Tables 2 and 3 respectively, indicates that endogeneity is a serious problem with our OLS estimations. That may also be the reason that the coefficients of SBR, the interaction terms and other variables change across estimations. To correct this endogeneity bias, we estimate instrumental variable (IV) method with raw materials as instrument.

We begin with OLS and IV estimates of equation (1) in Cols. (1) and (2) of Tables 2 and 3 respectively. We then present OLS and IV estimates of equation (2) in Cols. (3) to (10) in Tables 2 and 3, interacting the SBR variable with each firm characteristic in turn – firm size, location, age and firm organisation. Since the interaction variables are very likely to be collinear, we enter these interaction variables one by one, rather than jointly.

As is evident from Tables 2 and 3, the coefficients on labour and capital inputs have the expected signs and are statistically significant at the 1 per cent level for both the years. We find that the coefficient on the SBR measure is positive and significant in the OLS estimates for 2000-01 and both the OLS and IV estimates when entered on its own without any interaction terms (Cols. (1) and (2) of tables 2 and 3). When we add interaction terms of firm characteristics with SBR, the SBR variable remains positive whenever it is statistically significant. More over, the size of the coefficient on the SBR variable is higher for 2004-05 (without interaction terms) than for 2000-01. This suggests that the impact of effective SBR has increased with a more favourable economic environment possibly brought about by reforms. Overall, our results strongly support the proposition that effective state-business relations matter for firm performance.

The results in Tables 2 and 3 also indicate that the effect of SBR differs across firm size (Cols. (3) and (4) for Tables 2 and 3). It is observed that the interaction term between firm size and SBR is negative and significant in all cases, suggesting that smaller firms perform better with better SBR. It is possible that a good business environment eases the growth constraints faced by small firms (Ayyagari and Maksimovic 2008).<sup>7</sup> A similar argument is also posed by Dollar *et al.* (2005) that smaller firms could benefit from more effective SBR, provided they have access to

better infrastructure. According to Hallward-Driemeier and Stewart (2004), smaller firms stand to gain more from broad-based investment climate improvements than larger firms.

As hypothesised in the previous section, we find from Cols. (5) and (6) of tables 2 and 3 that the effects of effective SBR is more pronounced in firms located in urban areas than in those located in rural areas – the interaction term between URBAN and SBR is positive and significant for both OLS and IV estimates, and for both the years 2000-01 and 2004-05. We also observe that the impact of SBR on firm performance increases with the age of the firm – the interaction term between AGE and SBR is positive and significant in the OLS and IV estimates for 2000-01 and 2004-05. That is, older firms derive more benefit from more effective SBR. With respect to organisation type, as conjectured, we find that more effective SBR provides greater benefits to firms with simpler organisational structures (i.e., individual proprietorships) or firms with less public involvement. The interaction term between ORG and SBR is negative and significant in the IV estimates for 2000-01 and 2004-05 respectively.

**Table 2: Regression Results, OLS and IV = 2000-01**

VARIABLES	I		II		III		IV		V	
	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV	(7) OLS	(8) IV	(9) OLS	(10) IV
Capital	0.316* (0.00582)	0.709* (0.00975)	0.316* (0.00582)	0.708* (0.00974)	0.320* (0.00586)	0.706* (0.00963)	0.319* (0.00599)	0.720* (0.00997)	0.307* (0.00604)	0.752* (0.0117)
Labour	0.825* (0.00830)	0.331* (0.0133)	0.835* (0.0102)	0.345* (0.0150)	0.824* (0.00832)	0.342* (0.0131)	0.819* (0.00858)	0.302* (0.0139)	0.820* (0.00813)	0.332* (0.0141)
SBR	1.076* (0.401)	0.384 (0.486)	1.158* (0.403)	0.491 (0.489)	0.683* (0.403)	-0.392 (0.484)	0.980* (0.403)	-0.333 (0.487)	-0.295 (0.406)	1.570* (0.509)
Size*SBR			-0.228* (0.127)	-0.292* (0.155)						
Urban*SBR					0.786* (0.0762)	1.589* (0.0922)				
Age*SBR							0.260* (0.0707)	2.004* (0.0951)		
Org*SBR									0.201* (0.0228)	-0.630* (0.0345)
Constant	6.797* (0.181)	2.710* (0.281)	6.751* (0.184)	2.660* (0.283)	6.737* (0.179)	2.696* (0.279)	6.770* (0.180)	2.620* (0.282)	7.051* (0.197)	2.268* (0.304)
Ind. Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wu-Hausman Test for Endogeneity		3540.35 (0.00)		3536.92 (0.00)		3473.11 (0.00)		3520.04 (0.00)		3222.35 (0.00)
N	24303	24303	24303	24303	24303	24303	24300	24300	23252	23252
R-squared	0.830	0.738	0.830	0.739	0.830	0.743	0.830	0.739	0.833	0.728

Note: \* statistically significant at minimum 10 per cent level. Figures reported in the parentheses are standard errors.

**Table 3: Regression Results, OLS and IV = 2004-05**

VARIABLES	I		II		III		IV		V	
	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV	(7) OLS	(8) IV	(9) OLS	(10) IV
Capital	0.307* (0.00495)	0.651* (0.00798)	0.307* (0.00495)	0.649* (0.00794)	0.310* (0.00498)	0.647* (0.00786)	0.311* (0.00506)	0.652* (0.00797)	0.299* (0.00527)	0.697* (0.00952)
Labour	0.849* (0.00673)	0.423* (0.0108)	0.880* (0.00836)	0.463* (0.0121)	0.850* (0.00674)	0.437* (0.0105)	0.842* (0.00689)	0.413* (0.0109)	0.835* (0.00661)	0.410* (0.0113)
SBR	2.278* (0.273)	1.373* (0.319)	2.466* (0.274)	1.604* (0.320)	1.993* (0.273)	0.891* (0.318)	2.111* (0.273)	0.642* (0.319)	1.576* (0.277)	2.760* (0.337)
Size*SBR			-0.638* (0.102)	-0.765* (0.120)						
Urban*SBR					0.688* (0.0578)	1.218* (0.0682)				
Age*SBR							0.278* (0.0528)	1.321* (0.0668)		
Org*SBR									0.216* (0.0168)	-0.466* (0.0252)
Constant	6.515* (0.150)	2.785* (0.215)	6.400* (0.152)	2.674* (0.216)	6.452* (0.149)	2.776* (0.213)	6.494* (0.149)	2.859* (0.213)	6.655* (0.156)	2.230* (0.230)
Ind. dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wu-Hausman Test for Endogeneity		3788.42 (0.00)		3755.64 (0.00)		3701.12 (0.00)		3689.49 (0.00)		3638.1 (0.00)
N	31014	31014	31014	31014	31014	31014	30933	30933	30004	30004
R-squared	0.851	0.780	0.851	0.781	0.852	0.784	0.852	0.784	0.854	0.768

Note: \* statistically significant at minimum 10 per cent level. Figures reported in the parentheses are standard errors.

### **Impact of SBR components**

We have also examined the impact of four components of SBR (SBR private, SBR public, SBR practice and SBR collusive) on firm performance by estimating the IV regression model (equation 1). Results in Table 4 indicate that the SBR private and SBR practice components have a positive and significant effect on TFP for 2004-05, while the SBR collusive component has a similar effect on TFP for 2000-01. However, the SBR public dimension seems to have a negative and significant effect on TFP for the year 2000-01. This latter finding may possibly reflect the fact that setting up of corporations by the state and public expenditure on economic sectors has not led to the provision of high quality public goods that matter for private sector performance (Panagariya 2008). Nevertheless, it is clear that the private, practice and collusive dimensions of the overall SBR measure have contributed to the overall positive impact of effective SBR on firm performance.

In addition, we have looked at whether our findings with regard to the control variables are consistent across SBR components. We find that the interaction effect of SBR and the control variables are similar across these components (Table 5). That is, small sized firms, firms in urban areas, older firms and firms with simpler organisational structures (less public participation) do better across all dimensions of SBR. The results with the interaction terms between SBR and firm location and between SBR and age are somewhat surprising with the SBR coefficients becoming negative across almost all dimensions of SBR. However, this can be explained by the fact that the effective SBR primarily indicates effectiveness of business associations, most being urban focused and more applicable to older firms. Furthermore, we noticed that the net effect of SBR captured in the summation of the SBR term on its own and the interaction of SBR with firm location on one hand and the age on the other is always positive across all the dimensions of SBR.

**Table 4: IV estimates: SBR Components**

Variables	SBR Private		SBR Public		SBR Practice		SBR Collusive	
	2000-01	2004-05	2000-01	2004-05	2000-01	2004-05	2000-01	2004-05
<b>Capital</b>	0.71* (0.01)	0.65* (0.01)	0.71* (0.01)	0.65* (0.01)	0.71* (0.01)	0.65* (0.01)	0.71* (0.01)	0.65* (0.01)
<b>Labour</b>	0.33* (0.01)	0.43* (0.01)	0.34* (0.01)	0.42* (0.01)	0.33* (0.01)	0.42* (0.01)	0.33* (0.01)	0.43* (0.01)
<b>SBR Component</b>	0.43 (0.31)	1.02* (0.14)	-0.67* (0.32)	-0.24 (0.24)	0.07 (0.25)	0.65* (0.23)	0.86* (0.22)	-0.32 (0.24)
<b>Ind. Dummy</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>N</b>	24361	31014	24361	31014	24361	31014	24361	31014
<b>R-squared</b>	0.74	0.78	0.74	0.78	0.74	0.78	0.74	0.78

Note: \* statistically significant at minimum 10 per cent level. Figures reported in the parentheses are standard errors.

**Table 5: IV Results for SBR components**

Sl. No	Variables	SBR Private		SBR Public		SBR Practice		SBR Collusive	
		2000-01	2004-05	2000-01	2004-05	2000-01	2004-05	2000-01	2004-05
1	<b>SBR</b>	322.2* (11.84)	146.6* (4.597)	631.0* (37.39)	586.5* (34.30)	642.5* (50.80)	779.8* (65.30)	356.2* (16.99)	687.2* (48.44)
	<b>Size*SBR</b>	-21.71* (0.805)	-9.840* (0.313)	-43.50* (2.580)	-40.92* (2.396)	-44.04* (3.479)	-53.54* (4.481)	-24.20* (1.153)	-47.26* (3.323)
2	<b>SBR</b>	-1.398* (0.329)	0.193 (0.148)	-1.431* (0.322)	-0.798* (0.244)	-0.622* (0.249)	0.119 (0.226)	-0.0300 (0.224)	-0.992* (0.233)
	<b>Urban*SBR</b>	2.456* (0.135)	1.431* (0.0786)	1.496* (0.0857)	1.188* (0.0671)	1.365* (0.0841)	1.125* (0.0668)	1.388* (0.0823)	1.065* (0.0611)
3	<b>SBR</b>	-1.504* (0.331)	0.0952 (0.149)	-1.613* (0.326)	-0.932* (0.245)	-0.829* (0.250)	0.0509 (0.225)	-0.151 (0.224)	-1.110* (0.233)
	<b>Age*SBR</b>	2.875* (0.138)	1.491* (0.0770)	1.850* (0.0885)	1.283* (0.0659)	1.793* (0.0865)	1.272* (0.0656)	1.781* (0.0853)	1.179* (0.0601)
4	<b>SBR</b>	4.038* (0.355)	3.239* (0.173)	1.509* (0.346)	1.205* (0.261)	1.469* (0.277)	1.806* (0.249)	2.550* (0.261)	0.860* (0.257)
	<b>Org*SBR</b>	-0.894* (0.0486)	-0.522* (0.0280)	-0.586* (0.0320)	-0.456* (0.0247)	-0.565* (0.0315)	-0.448* (0.0247)	-0.542* (0.0303)	-0.417* (0.0225)

Note: \* statistically significant at minimum 10 per cent level. Figures reported in the parentheses are standard errors.

## VI. CONCLUSIONS

In this paper, we examine the institutional determinants of firm performance. In contrast to the previous literature which focuses mainly on institutional determinants which are internal to the firm such as managerial capabilities and technological competencies, we focus on the external institutional environment that may affect firm performance. We identify this as effective state-business relations, which are synergistic relationships between the state and the business sector, Using a measure of effective state-business relations developed by Cali *et*

*al.* (2009) and firm-level data for the entire Indian formal manufacturing sector for 2000-01 and 2004-05, we show that effective state-business relations have had a significant positive effect on total factor productivity for formal manufacturing sector firms in India. We also find that the effect of the external institutional environment on firm performance is dependent on specific firm characteristics – firms with certain characteristics are more likely to benefit from effective state-business relations than others. We find that smaller firms, firms in urban areas, older firms and firms with simpler organisation structures (less public participation) do better with more effective state-business relations. This suggests that both internal and external institutional factors matter for firm performance and the effects of external and internal institutional determinants on firm performance are strongly complementary.

Our disaggregated analysis of which dimension of state-business relations matter most for firm performance suggest that the private, practice and collusive components contribute to the overall impact of effective SBR on firm performance. However, the public dimension of effective state-business relations seems to have a negative effect on TFP. Thus our results suggest that it is important to improve the quality of public goods provided by the sub-national state governments which can further enhance the impact of other sub-components. Overall, our finding suggests that there is a need to strengthen the collaborative relationships between the state and the business sector to enhance the performance of firms in the manufacturing sector. As has been witnessed in the cases of South Korea and Taiwan, the formalisation of interactions between the state and the business sector can occur through public-private dialogues on issues having direct implications for firms' growth.



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## End Notes

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<sup>1</sup> An alternate set of arguments on the external institutional determinants of firm performance, propounded by the World Bank, among others, is that the investment climate – understood to be the institutional, policy and regulatory environment in which firms operate – has a strong impact on firm performance. However, as Moore and Schmitz (2008, p. 10) have argued, “the core conceptual problem with (this view) is that government and political power are viewed primarily as persistent threats to capital, investment and economic growth. From that perspective, the policy mission is to curtail the influence of political power through formal rules, laws and institutions. If that mission fails, politicians are expected at least to maltreat the private economy, and possibly to loot it, and thus, undercut economic growth.” Thus, there is a strong assumption in this literature that the state, by its very nature, is always predatory, and cannot be developmental in most instances of its manifestations. In this paper, we take an opposite view: that ‘good growth-enhancing relations between business and government elites are possible’ (Maxfield and Schneider 1997) and that effective state-business relations are the core external institutional determinants of firm performance.

<sup>2</sup> See Qureshi and te Velde (2007) and Sen and te Velde (2009) for evidence that improvements in state-business relations improve economic performance both at the micro and macro levels, for Sub Saharan Africa.

<sup>3</sup> We have experimented with different weights for the apex and the two sectoral business associations in the construction of the SBR private variable with no change in the results.

<sup>4</sup> The enterprises which employ less than 20 workers without the use of electricity or 10 workers with the use of electricity or are not producing hazardous substances (such as chemicals) fall under the unorganized/informal sector, as these are firms that are not required to register with the authorities under the Indian Factories Act of 1948.

<sup>5</sup> We cleaned the data in following two steps - omitted units reporting zero or negative capital stock, zero output and zero employment; and as in 2000, the states of Bihar, Madhya Pradesh and Uttar Pradesh were bifurcated to form new states Uttrakhand, Chattisgarh and Jharkhand, these three states were merged with their parent states so as to have consistency with SBR variable.

<sup>6</sup> There is strong evidence that in case of India the presence of outside directors on boards are associated with improved firm performance (Jackling and Johl, 2009).

<sup>7</sup> Ayyagari and Maksimovic (2008) demonstrate that a good business environment improves the growth of industries that are naturally composed of small firms more than large-firm industries. In their view, small firm dominated industries gain from less stringent and more business friendly regulations associated with starting and closing a business, licensing requirements, exporting and importing, employment hiring and firing decisions, paying taxes, protecting investors and obtaining credit.