State-Business Relations in Indian states

Paper towards constructing an effective SBR index for Indian states[1]

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Discussion Paper Series
Number twenty-five
August 2009

IPPG Discussion Papers
available at
www.ippg.org.uk

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[1]The paper is part of the research programme consortium for Improving Institution for Pro-Poor Growth (IPPG). The authors thankfully acknowledge Kunal Sen for his valuable comments throughout the study. Appreciation is also due to Bipul Chatterjee, Govinda Rao, Dirk Willem te Velde and participants at the Calcutta IPPG workshop for helpful comments. Also, authors thank Ravikiran Naik and Don Slaboszewski for their excellent research assistance. Comments can be sent to m.cali@odi.org.uk / cuts@cuts.org. Usual disclaimer applies.
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Paper prepared for the DFID-funded Research Programme, Institutions and Pro-Poor Growth (IPPG). The authors are grateful to DFID for the funding that made this research possible. The views expressed in this paper are entirely those of the author and in no way represent either the official policy of DFID or the policy of any other part of the UK Government.

CONTENTS

ABSTRACT

Effective relations between states and business have been increasingly identified as an important institution for sustaining economic development. This note describes the construction of quantitative indices measuring the quality of state-business relations (SBRs) across Indian states in the 1975-2008 period. It represents the first effort to systematically characterise SBRs across sub-national units within a country without resorting to subjective surveys. This poses specific methodological challenges and encourages us to use a number of different variables (both from secondary and primary sources) to quantify the magnitude of effectiveness of SBRs. We discuss the possible sensitivity of the indices to minor and major definitional changes and examine the evolution of SBRs across Indian states and at the national level through the study of cross sectional and secular trends in these indices. The results suggest that the intensity of state-business relations, a measure of the positive impact of these on business sector, correlates with economic growth, although this does not imply causation. Further, state-business relations have improved over time in all states barring Bihar. Rankings of states in terms of the SBR index show varying time trends – stable and high ranking for Andhra Pradesh, Gujarat, Karnataka, and Tamil Nadu indicates, a stable and low ranking for Uttar Pradesh and Assam, rapidly improving for Haryana, Rajasthan and Orissa and swift deterioration for West Bengal, Bihar and Madhya Pradesh.

1 INTRODUCTION

Institutional quality is arguably one of the main drivers of differences in income across countries (Mauro, 1995; Rodrik et al., 2003). The economic literature has devoted increasing attention over the recent decades to quantifying the impacts of and disentangling the mechanisms through which institutions affect development outcomes. These exercises need to rely on adequate quantifications of institutional variables, whose measurement has been the subject of a substantial amount of research in recent years (e.g. governance indicators by the World Bank, see Kaufmann at al., 2008; corruption from indicators from Transparency International).

This paper focuses on the measurement of a specific economic institution - the relation between state and business - which has so far received relatively little attention. The importance of state-business relations (SBRs) in the economic development process is rooted in the experiences of those countries where the state has intervened in the economy so as 'to provide incentives to private capital and to discipline it' (Harriss, 2006). The most prominent examples of this type of intervention in recent times are provided by the East Asian countries (see for example Amsden, 1989, Johnson, 1987).

Against this background the paper makes two major contributions. First, it represents the most comprehensive effort to date to construct indices that systematically measure the quality and intensity of SBRs. It follows recent work done by the *Institution and Pro-Poor Growth* research consortium, which has tried to define and measure effective SBRs and begun to test its impact on growth (Harris, 2006, te Velde, 2006 and Sen and te Velde, 2009). The present work builds on these studies, and refines the definition and measurement of SBRs using a larger array of variables from secondary as well as primary data to capture the multi-dimensional nature of SBRs.

Second, for the first time the indices are constructed at the sub-national level, for states within a country (India) instead of that at the national level. India is the appropriate context for building sub-national indices as it is a federal country composed of several states with a fairly high degree of political autonomy and legislative powers. Under the Indian Constitution of 1949, State governments are entitled to legislate in two (the State List and the Concurrent List) of the three lists which the Constitution divides legislative powers into.[1] They are sovereign as regards making laws relating to matters in the State Lists, whereas both central and state governments can make law relating to matters in the Concurrent List. Importantly, the states have either exclusive or concurrent jurisdiction in the majority of the areas relevant to SBRs. For example, the states have competence over the regulation of mines and mineral development, industries and the production, supply and distribution of goods.[2] Also, both central and state governments are empowered to introduce legislation with respect to matters concerning trade unions and industrial and labour disputes. For instance, the Industrial Disputes Act of 1947 is the key piece of central legislation regulating industrial disputes. However, state governments have extensively amended this Act during the post-Independence period and we will use these amendments below in the construction of the SBR index. The importance of state governments in industry related policies is part of the reason why the state is a key

[1] The other list is the Union List of exclusive competence of the Federal Government

[2] Entries 23, 24 and 27 of the State List authorize these activities. However the central government does have some important jurisdiction over industrial policy as well. Entries 7, 52 and 54 of the Union List give the central government jurisdiction over defense industries and over other industries and mines when this is deemed to be in the 'public interest' (Besley and Burgess, 2004).

geographical scale at which the private sector is organised vis-à-vis the public sector. This is relevant for our work as state-level private sector associations represent an integral dimension of our SBR index.

This autonomy makes states a particularly suitable unit of analysis for studies on economic institutions and performance in India and in the developing world in general. Examples of these types of studies include tests of the effects of investment climate on productivity (Dollar et al., 2001) and investment climate assessment (World Bank, 2004 and Iarossi, 2009). These usually focus on measures (e.g. investment climate indicators) that are the outcome of policy and investment processes. We concentrate on the actual process instead, and in particular on the process that brings together state governments and businesses. This focus allows us to identify those parts of the process responsible for good or bad indicator. In this way our study is complementary to those mentioned above and could provide important information on what part of the process the actors involved need to eventually modify.

The sub-national focus has the major advantage over cross-country analyses of controlling for national level institutions which are common across states. This helps to identify the eventual effect of SBRs on development outcomes more cleanly as states in a country show greater similarities than even neighbouring countries. On the other hand, the decision to focus on states within a country poses some methodological challenges which will be discussed in subsequent sections.

Given the richness and variety of economic experiences across its states, India may represent a very useful testing ground for the relationship between effective SBRs and development outcomes. Moreover, a recent view holds that the radical shift in the attitude and the practice of the political leadership towards the private sector in the eighties has been at the root of India's sustained economic growth in the last decade (Kohli, 2006a and 2006b).

The paper is divided into six sections: the next section discusses measurement issues and defines variables to capture the different dimensions of SBRs; section three describes the data used for constructing measures as well as the fieldwork undertaken for collecting required data; section four explains the methods used to compute the mentioned indices; section five describes the behaviour of the indices across Indian states at various points of time, for each state over time and at the national level over time; section six concludes.

2 MEASURING THE SBR INDEX FOR INDIAN STATES

The aim of this research is to assess systematically the quality of SBRs across major Indian states over the post-independence period, by constructing time varying, annual composite indices for each state. Te Velde (2006) is the first (and only) study so far to develop quantitative 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.[3]

[3] The reader can refer to te Velde (2006) for a discussion of the importance of these components for effective SBRs.

The objective of this section is to explore ways in which such components can be measured in the context of Indian states. We focus on 15 major Indian states (plus Uttarakhand) for two reasons: comparability (i.e. a major state is not really comparable to a union territory or to a minor state), and data availability (i.e. a large amount of aggregate socio-economic data is available for the major states).[4] Each of the aspects mentioned above is captured through a SBR sub-index which in turn is derived from data on variables reflecting the mentioned aspects. The various SBR sub-indices are then combined to arrive at an overall index of SBR.

Te Velde (2006) builds SBR indicators for Sub-Saharan African (SSA) countries for each of the four dimensions above. He uses evident differences in economic institutions between countries (e.g. whether a country has an investment promotion agency (IPA) or not) to create such indicators. This is an appropriate strategy for SSA, as most SSA countries developed institutions to organise the public sector vis-à-vis the private sector (and vice-versa) well after the end of the colonial period. Moreover, in spite of a general tendency in the region for the evolution of more structured SBR-related institutions in the recent past, some countries still have institutions at very embryonic stage. This is not the case for India, which industrialised earlier than SSA: during the colonial times the majority of Indian states already had policies and institutions (whether effective or not) in place to deal with industrialisation and the private sector in general. Because of earlier industrialisation and historically stronger institutions in the case of Indian states, inter state differences are more complex to define than in SSA (e.g. all states created an IPA before 1970).

While this context poses a further challenge to the adequate definition of the different dimensions of SBRs, it also offers the opportunity to characterise SBRs more precisely and comprehensively than it has been done before. That is the objective of the rest of the section, which tries to identify the various channels through which the quality of SBRs may lead to specific development outcomes. We characterise each of the four components of SBRs through a number of variables that in our view capture different aspects of the component. The choice of the variables is also driven by the availability of data. Although we do spend some significant time in the data collection process, which includes also primary data gathering (as explained in section 3), some variables are not available with any reasonable efforts.[5] Despite this and the usual notes of caution when interpreting any quantitative indicator, we are confident that the measures constructed provide a fairly reliable indication of the quality and effectiveness of SBRs in the last thirty years. Such an exercise could also represent a useful precedent a benchmark for constructing SBR measures in other developing economies as well.

2.1. The role of the private sector in SBR

The most relevant way in which the private sector can organise itself vis-à-vis the public sector is via an umbrella organisation. One of the major roles of such an organisation is arguably lobbying the State to produce legislations and regulations that may favour the businesses. As argued by Kohli (2006a and 2006b) and confirmed by our fieldwork this is clearly the case in India as well. As it is clear from Table 1, almost all Indian states have an umbrella organisation (usually a chamber of commerce), which is (or aims to be) representative of the private

[4] In particular the states considered for the analysis are: Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarkhand and West Bengal. Together they represent over 95% of Indian population.
[5] Examples of such variables include the number of newspaper article in which the private sector organisation features and the number of employees in every year of the period considered.

sector. Some exceptions are Assam, Gujarat, Bihar and West Bengal as each of these has more than one apex organisation at the state or regional level. For instance, Assam has the Northern Assam Chamber of Commerce & Industry, Federation of Industry and Commerce of North Eastern Region (FINER), Federation of North East Region and the newly founded Assam Chamber of Commerce (2007). Similarly, Gujarat has several city wise organisations (over and above regional bodies) such as Gandhidham Chamber, Jamnagar Chamber, Junagadh Chamber, Porbandar Chamber, Rajkot Chamber, Saurashtra Chamber, Vadodara Chamber of Commerce and Industry, Southern Gujarat Chamber of Commerce & Industry and Central Gujarat Chamber of Commerce & Industries. West Bengal has the North East Chamber of Commerce and Industry and Bengal Chamber of Commerce and Industry. Bihar also has two well-known umbrella organisations – the Bihar Chamber of Commerce & Industry and the Bihar Industries Association. In such cases, we have chosen organisations which are representative of state business relations and continue to function actively as revealed by a working office, wide geographical spread of membership, active website, publication etc.

Among the umbrella organisations, private organisations in few states such as Assam, Haryana and Punjab are recent while in most of the other states they have been in place since the 19th or early 20th century. In some cases, like in the states of Maharashtra, Gujarat, Andhra Pradesh and Uttarakhand, the umbrella organisation is older than the state itself. Due to a relatively 'active' umbrella organisation in almost every state, a private sector measure based only on the existence of the umbrella organisation (such as that constructed for SSA) would not exhibit much variability in the case of Indian states.

Thus, in order to capture differences among Indian states in terms of the organisations of the private sector, we need to measure also the *quality* and *effectiveness* of this organisation. These characteristics are directly unobservable, and perception based estimates of these are subject to a whole range of measurement errors as explained below. Ideally, one would like to gather objective measures of the level and effectiveness of the activity of the organisation. The former may be captured by variables such as the number of (full-time equivalent) employees of the umbrella organisation or the number of 'hits' revealed by a google search of the organisation (normalised by some measure of the size of the economy). The effectiveness of the organisation in promoting private sector interests may be captured by indicators such as the number of members (e.g. a more effective organisation raises the expected return to becoming member of it) and the share of non administrative staff in total staff salaries (as lobbying and/or strategic activities, which ideally favour SBRs are mainly looked after by non-administrative staff). Unfortunately, time varying data on such measures has proved impossible to collect (as described in the fieldwork section below).

Table 1: Private sector organisations across Indian states

Statename	State code	Umbrella	Name	Found. Year	Website	Web update	Office premise
Andhra Pradesh	1	YES	Federation of Andhra Pradesh Chamber of Commerce and Industry	1917	YES / 2001	four times a month	YES / 1977
Assam	2	YES	Federation of Industry and Commerce of North Eastern Region	1992	YES / 2001	Twice in a month	Rented
Bihar	3	YES	Bihar Industries Association	1943	YES / 2007	Once in a month	YES / 1958
Gujarat	4	YES	Gujarat Chamber of Commerce and Industry	1949	YES / 2002	02-06: Twice in a month 07-08: daily	YES / 1955
Haryana	5	YES	PHD Chamber of Commerce and Industry	1988	YES / 2007	Daily: 30 days	YES / 2007
Karnataka	8	YES	Federation of Karnataka Chambers of Commerce & Industry	1916	YES / 2002	Daily: 30 days	YES / 1916
Kerala	9	YES	Kerala Chamber of Commerce and Industry	1951	YES / 2007	Daily: 30 days	YES / 1967
Madhya Pradesh	10	YES	Madhya Pradesh Chamber of Commerce & Industry	1906	YES / 2005	Once in a month	YES / 1950
Maharashtra	11	YES	Bombay Chamber of Commerce and industry	1836	YES / 1998	Daily: 30 days	Rented
Orissa	14	YES	Utkal Chamber of Commerce and Industries	1964	YES / 2006	Daily: 30 days	YES / 2003
Punjab	15	YES	PHD Chamber of Commerce and Industry	1988	YES / 2007	Daily: 30 days	YES / 2007
Rajasthan	16	YES	Rajasthan Chamber of Commerce and Industry	1947	YES / 1999	Once in 6 months	YES / 1969
Tamil Nadu	18	YES	The Madras Chamber of Commerce & Industry	1924	YES / 2003	Once in 6 months	YES / 1990
Uttar Pradesh	20	YES	Associated Chambers of Commerce & Industry of Uttar Pradesh	1994	YES / 2006	Once in 3 months	Rented
West Bengal	21	YES	Bengal National Chamber of Commerce and Industry	1853	YES / 2004	Once in a month	YES / 1853
Uttarakhand	22	YES	Kumaun Garhwal Chamber of Commerce and Industry	1980	YES / 2008	Weekly/4 times a month	YES / 2001

Sources: various websites and fieldwork

We resort then to other more tractable measures of the quality of private sector associations. These variables are discrete rather than continuous. However a measure derived from combining such variables might be expected to vary much more than each of these variables consider individually. These variables include:

a) Whether the private sector is organised through an umbrella organisation or not (a score of 1 is given in each year the association existed, 0 otherwise). We name this variable *active*.

b) Whether the private sector association has a **website** or not (*website*): 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 our fieldwork confirms that organisations appearing to be more structured and organised have had an active website in place for a longer time.

c) How frequently the website is updated (*web_update*) (see appendix **A** for the exact coding of these variables): 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.

d) 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. Nonetheless, the Bombay Chamber of Commerce and industry (BCCI) can be an exception to this argument. BCCI is one of the oldest and most well known Chambers of Commerce in India. It has run the office out of a rented building ever since its establishment in 1836. This feature seems to be motivated by the location of the office. It is located right in the heart of commercial Mumbai where all top business houses such as Tatas and Birlas and international banks operate from. Moreover, the Mumbai harbour is at the back of the BCCI office building. This suggests that the location of the premises of the organisation contributes strategically to its effective functioning. Such location might not be possible if an organisation insists on owning its premises. Thus, the 'owned/rented' distinction might be misleading in certain cases though it does accurately reflect difference in activity/status in most cases, with owned premises suggesting a more established business association.

Table 1 reports data on variables which constitute the SBR sub-index on the role of private sector.

2.2. The role of the public sector in SBR

The most visible way through which the *public sector* is organised vis-à-vis the private sector is via the establishment of an Investment Promotion Agency (IPA). As all states have had a formal IPA for a long time (see Table 2), capturing the quality of the S in the SBRs requires more refined measures than a simple dummy for whether or not the state has an IPA: We propose here two types of them that will results in the composite public sector dimension of SBRs:

a) Focusing on four types of state owned (or state participated) **productive corporations**: IPA, Financial, Infrastructure Development and Tourism

Development Corporations. These represent important types of pro-business engagements with benefits for all sectors.
The only exception is the tourism corporation, which is the only sectoral corporation with a presence in virtually all states. While all state governments have identified tourism as an important productive activity, they have institutionally supported its development in different periods.
Table 2 summarises the foundation years of these corporations (whenever available) for various Indian states. We 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. Thus, the creation of any one of the mentioned organisations increases the index (which is the sum of the mentioned dummy variables divided by 4) by 0.25. Some evidence from the Indian SBR case studies supports the relevance of this measure for capturing positive interaction between the state and business. For example, one of the indicators of the pro-business nature of Andhra Pradesh's sixth state chief minister's (Jalagam Vengala Rao, 10/12/1973 to 06/03/1978) political regime is the creation of state owned productive corporations (such as State Finance Corporation and the Industrial Development Corporation).

b) In as much as governments signal their relative priorities through the allocation of public resources, the expenditure patterns of state governments might indicate the quality of the public dimension of SBR. We focus in particular on two types of state **revenue expenditures:** expenditure on economic services (*econ_services*) and expenditure on industries (*industries*). The former is a major part of the government's development expenditure. It includes (i) Industry and Minerals; (ii) Energy; (iii) Agriculture and Allied Activities; (iv) Rural Development; (v) Special Area Programme; (vi) Irrigation and Flood Control; (vii) Transport and Communication; (viii) Science, Technology and Environment and (ix) General Economic Services. The share of such expenditure in total government expenditure may represent some measure of government's involvement in private sector development.
More accurately, industry expenditure is that part of expenditure on economic services which is most closely related to SBR promotion activities. This is corroborated by our fieldwork results which indicate that only industry departments engage with the business sector in a 'significant' manner, identifying its needs and facilitating its operations. We use the share of expenditure on economic services in total state government expenditure and share of industrial expenditure in total expenditure on economic services as variables. Revenue expenditures are published in the annual budget statement of each state. We construct associated variables for the public sector index on the basis of this data: percentage share of expenditure on economic services in total state government expenditure, and share of industrial expenditure in total expenditure on economic services. By definition, these ratios fall between 0 and 1.

Table 2: Foundation years for four productive corporations

	IPA	Financial	Infrastructure	Tourism
Andhra Pradesh	1960	1956	1973	1976
Assam	1965	1954	2000	1988
Bihar	2006	1954	2006	1981
Gujarat	1962	1960	1995	1975
Haryana	1967	1967	1967	1974
Karnataka	1964	1959	2000	1971
Kerala	1960	1953	1993	1930
Madhya Pradesh	1965	1955	2000	1978
Maharashtra	1966	1953	1996	1956
Orissa	1962	1956	1981	1979
Punjab	1966	1953	1998	1979
Rajasthan	1969	1951	1998	1978
Tamil Nadu	1965	1949	1992	1971
Uttar Pradesh	1961	1954	0	1974
West Bengal	1967	1954	1997	1974
Uttarakhand	2002	NA	2002	2001

IPA stands for the state investment promotion agency; Financial stands for the state financial corporation; Infrastructure stands for the state infrastructure development corporation; Tourism stands for the state tourism development corporation. Note: NA= Not Available from the sources consulted; 0 = no existing corporation
Source: various websites and fieldwork

2.3. The interaction between states and businesses

The practice and *institutionalisation of SBR* usually happens at the national level via an institutionalised Public-Private Dialogue (PPD). Secondary sources as well as the fieldwork suggest that all Indian states have a more or less formalised PPD. Although it is plausible that most official systematic dialogues happen at the national level, all governments we interviewed claimed that such dialogues exist in their states. There are usually quite informal and needs-based rather than characterised by a regular frequency. This implies that it would be virtually impossible to effectively capture any meaningful variation of SBR practice in this context through the variable based on institutionalised PPD. We propose instead some alternative measures that we believe capture state business interaction more effectively:

a) Index of **labour regulation** constructed by Besley and Burgess (2004) (*lab_regu*). Besley and Burgess (2004) developed an index for the 1958-1992 period by coding legislation based on all state level amendments of the Industrial Disputes Act[6] of 1947. They used the coded data to show that states which had amended the Act in a pro-worker direction had experienced lowered output than other which had not. Although, all states seemingly have the same starting point since the Act was passed in 1949,

[6] The Act sets out procedures for the conciliation, arbitration and adjudication procedures in the case of an industrial dispute. It was enacted to offer protection to workers in the organised sector against exploitation by employers. Also, Industrial relations falls under the concurrent list of Indian Constitution of 1949, and therefore both the central and the state government have joint jurisdiction over labour regulation legislation Besley and Burgess (2004).

it has been extensively amended by various states during the post-independence period at different points of time.

The mentioned coding has been used specifically to study the impact of market regulation on productivity by the authors. They have cumulated scores over time to construct a regulatory measure which quantitatively depicts the evolution of the regulatory environment over time in these states.

Using the same index and further updating it till 2007, we have also classified each state level act on labour regulation as anti-worker (value of -1), pro-worker (1) or neutral (0). In this way a yearly cumulative index has been produced which 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 and would get reflected in more pro-employer labour market regulation.

b) Rates of private sector related taxes. There are a number of possible state level taxes that may proxy for states' 'anti-business attitude': state's own professional tax; state's taxes on property and capital transactions; state's own stamps and registration fees. Nonetheless, the property tax is levied by municipal bodies rather than State governments and the institutional setting for the levy of the professional tax also varies across states. To provide an idea of the relative importance of these different taxes Table 3 reports the mean values (in the period 1957-2003) of the shares of each tax in total state level tax revenue. Therefore, we choose to focus on the stamp duty[7] rate (*stampduty*) in this study. Data on stamp duty has been obtained from Alm et al (2004).

We have considered state-wise 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. In its entirety, these duties and fees are often the third or fourth most important source of domestic tax revenues. Apart from the Central act, State governments have the exclusive power to fix stamp duties for transactions and instruments listed in the state list.

The specific items taxed vary by states. According to some estimates, over 65 different kinds of such charges are imposed by the state governments For example, Karnataka imposes stamp duties on 55 separate items, Andhra Pradesh on 56 and Assam, Bihar on 65 items (Alm et al, 2004). Thus, each State has the authority to enact its own stamp duties and their distribution across states potentially reflects difference in the attitudes towards business activities. However, the data on variable exhibits certain gaps due to lack of quantitative information on state-wise stamp duties.

There are a number of other potential labour market indicators that are likely to represent the quality/intensity of interaction between state governments and businesses. These include the number of inspected factories as a proportion of total registered factories, convictions as a percentage of number of factories inspected, the proportion of industrial disputes resulting in adjudication awards in favour of workers and the officially announced minimum wage. However the coverage of such variables (mainly from the Indian Labour Yearbook) is patchy and their inclusion in the computation of SBR indices reduces the number of

[7] Stamp duties are imposed under the Indian Stamp Act 1899. Further, under the Indian Constitution, stamp duties and registration fee are divided into those imposed under the Union List (or those set by the Central Government) and those imposed under the State List (or those determined by the individual States).

observations. For this reason we will use these variables only to check the robustness of our analysis.

Table 3: State-wise mean values (over time) of share of taxes

	proftax_tax	propcap_rev	stamps_tax
Andhra Pradesh	0.71%	8.20%	4.95%
Assam	0.98%	4.16%	2.06%
Bihar	0.00%	7.29%	4.85%
Gujarat	0.69%	5.72%	4.60%
Haryana	0.13%	5.96%	7.76%
Jammu & Kashmir	0.00%	1.85%	2.53%
Karnataka	0.68%	6.14%	5.48%
Kerala	0.02%	5.92%	6.51%
Madhya Pradesh	0.65%	6.49%	4.20%
Maharashtra	1.77%	6.22%	5.71%
Orissa	0.07%	4.18%	3.58%
Punjab	0.26%	7.26%	8.22%
Rajasthan	0.00%	7.53%	3.98%
Tamil Nadu	0.00%	7.01%	6.96%
Uttar Pradesh	0.10%	9.00%	6.15%
West Bengal	0.98%	8.15%	5.10%

Note: values are mean over the time period for which data are available (which may differ from state to state); proftax_tax: state's own profession tax revenue over tottax (State's own tax revenues + State's Share in Central Taxes); *propcap_tax*: state's taxes on property and capital transactions over tottax; *stamps_tax*: State's own stamps and registration fees over tottax.
Source: EOPP and Reserve Bank of India

2.4. Mechanisms to avoid collusive behaviour

The traditional tool for states to ensure the avoidance of collusive behaviour within the business sector is the national competition policy. Such policy in India is enacted at the national level, thus there is no variation across states. We therefore propose to use other measures that 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.
"Since the Licensing Committee reviewed applications on a sequential, first-come, first-served basis, and the five-year plans laid down targets or ceilings for industrial capacity, this provided an incentive for pre-emptive license applications. This system tended to favour the larger industrial houses (e.g. Birla, J.K. and Tata) which were better informed and organised and submitted multiple early applications as a means of foreclosing on plan capacity." (Aghion et al., 2006, p. 5).
As the decision of what 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** (*publication*) informing its members. This measure may proxy 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** (*pub_frequency*) with which the publication is produced and distributed would also determine the level of transparency in the association's activities.

The indices constructed through these variables have two main advantages over the traditional investment climate indicators. First, they cover a larger time span than any other indicators on India states. This allows us 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.[8] Carlin et al. (2006) 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.

3 DATA

The conceptual research design provides the blueprint for data collection related to the SBR index construction. Data is used to analyse the relationship between state business relations and growth in Indian states and determine structural changes over time.
To capture indicators of all four dimensions of the composite SBR index (Private Sector, Public Sector, SBR Practice, and anti-collusive behaviour), we have conducted structured and semi-structured interviews with business associations in each state and state government officials from the industry department of almost every state. Some data was also collected from secondary sources. As noted earlier, the data used in the construction of SBR index was a time series for 16 states of India for 1975 - 2008.

3.1. Primary data

Two separate questionnaires were administered for the private and public sector in each state (see Appendix B). The main private sector organisation interviewed in each state (dimension 1 of the index) was the umbrella organisation. However, other business associations are also active in various states representing both sectoral (e.g. Madhya Pradesh Textile Mills Association) and (in certain instances) geographical interests (e.g. North Bihar Chamber of Commerce and Industry).

Initially it was thought that the interests and activities of regional/sectoral bodies may not always be in line with those of the umbrella organisation; in fact these associations may have even emerged out of a marked difference with the apex association. Another consideration was that these would provide information that would act as a cross check on the effectiveness of the umbrella business association. For instance, if these associations have separate formalised dialogues with the state government, this may indicate relative ineffectiveness of the practice of SBR through the apex association (component 3). However, this may

[8] The example they provide is when the subjective variable is attitude toward for money. Using this variable as a regressor when an income measure is the dependent variable will generate a bias due to the effect of wealth on the attitude *to reporting* preference for money.

also indicate the absence of collusive behaviour between the state government and the apex association and the latter's refusal to lobby for particular sectoral interests. These arguments served as justification for administering the questionnaire in Appendix 1 also to business associations other than the apex one.

However, fieldwork interactions with representatives of other sectoral/regional bodies/associations clarified that most of the sectoral bodies also possess membership of the state's umbrella organisation. The basis of emergence of sector based associations in states is the need to influence government departments to secure benefits for specific sectors in terms of tax reduction, favourable tender notice, marketing of product etc. The common business concerns which impact all business sectors across the state such as value added tax (VAT) etc are addressed to the state government through the umbrella organisation.

The umbrella organisation is the main source of national and international business information for sectoral associations. In fact, all state umbrella organisations and many sector based associations in the state are members of national umbrella associations, based in metro cities or the national capital. Notably, many sector based associations are also members of other sector based associations of neighbouring states. It is observed that such practice is common and strategically motivated to procure business information on time and to extend business contacts.

The field survey also involved interaction with representatives of the small scale industries (SSI) associations of all 16 states. However, we have not used data on SSI associations in the SBR index construction. Although the umbrella organisation represents all big, medium and small businesses, SSI associations expressed apprehensions and perceptions that big businesses and SSI have different policy preferences and priorities. Quite often, the umbrella organisation is not able to protect or promote the concerns of the SSI because it is dominated/influenced by priorities of big businesses. It becomes pertinent for them to approach the state government separately.

We felt that it is important to separate the samples of associations representing small scale and medium enterprises (SMEs) on the one hand and large scale enterprises on the other. There are exclusive State level policy announcements (legislations) for SMEs as against those for large businesses. SMEs seem to have distinctly different relations with the State and are dependent on it for business support/protection. For instance, states in the North East are dominated by SMEs which are mostly informal units, subsisting on state support. The SME association plays a strong role in influencing quotas for public procurement. This may lead to misallocation of public resources. Similarly, the Gujarat government is pro-SME according to some interviewees. For the last ten years (since 1997) the state's emphasis has reportedly been on developing SMEs through cluster development. The state offers a number of benefits like land at concessional rates, tax exemption, and earmarking of resources for investment in product-specific sectors such as pharmaceuticals, textiles. Given the difference in the nature of SBRs involving SMEs, the data on the SME sector has not been included in the construction of the SBR measure.

While interviewing private associations, a number of core questions relating to the foundation years, finances, full time employees, skill composition of the employees, cost of administrative and programme staff were asked. These core questions were accompanied by specific questionnaires, focussed on information critical to the construction of the SBR index. It included information on

membership, administrative and non-administrative budget, website, publications, membership fee, institutionalised public-private dialogue etc.

However, as noted earlier, it was found next to impossible to obtain time series data on variables such as membership fee, bifurcated budget and number of annual members. Thus, data on these variables could be collected only for the current year. An attempt was also made to refer to the annual reports of private organisations to fill gaps in data but old records of these documents were either not available with the organisations or not meant for public distribution. Thus, due to lack of continuity pertaining to such variables, we may run cross-section regressions to check for the robustness of relationships deduced on the basis of panel data analysis.

For each state, other than the umbrella organisation, two sectoral associations were sampled to ensure representativeness. These two sectoral associations were chosen on the basis of sectoral share in employment or in value added. However in many cases the apex / umbrella organisation was located in the capital city. To economise on survey costs and time, we looked for sector based associations located in the capital or thereabouts. In certain cases, one of the sectoral associations suitable as per the selection criteria was located in the capital and the other in a different town. In such cases, budgetary and time constraints compelled us to look for a sectoral association based in the capital city. During the survey, three states (Bihar, Orissa and Uttarakhand) out of the 16 administered states were found to have no registered functioning sector based association in the capital city and therefore only the umbrella association was interviewed.

Table 4 in appendix C presents the two sectors selected from each state along with their ranking in terms of value addition and employment generation.

As regards interactions with state representatives, mainly department of commerce and industry dealing with the private sector was targeted. In some states, interactions were held with representative of key production corporations to get qualitative information on the functioning of public sector and its dealings with private sector.

The sample data was used to construct the sub-components described in sections 2.1, 2.2, 2.3 and 2.4 of this paper and include these in the computation of sub-indices. See Appendix D for list of interviewees.

3.2. Secondary data

In order to make the computation of the SBR index more robust, data on state expenditures, labour and industrial disputes, inspections of factories, stamp duty etc from secondary sources is also utilised. Data on total revenue expenditure, revenue expenditure on economic services, industries, transport and communications, and energy are obtained from the Reserve Bank of India and online data services of *Macro Scan* (www.macroscan.com). Data on labour regulation is obtained from the work by Timothy Besley and Robin Burgess[9] and the measure is updated from P.L Malik (2007). Data on stamp duty rates has been obtained from James Alm et al (2004) and updated by referring to various annual state budgets and news items.

[9] "Can Labour Regulation Hinder Economic Performance? Evidence from India"

Minimum state regulated wages across states were taken from annual reports of the Ministry of Labour, Government of India. Data on total number of factories inspected in a state, total number of convictions (offences relating to employment and hours of work, notices, safety provisions, health measures and others) and industrial disputes resulting in adjudication awards in favour of and against workers were obtained from various annual issues of *Indian Labour Year Books and Indian Labour Statistics*. Data on net state domestic product (NSDP) at constant prices (with 1980 as base year) was obtained from the website of the Reserve Bank of India and www.indiastat.com.

Economic growth across states is measured by the year to year percentage change in NSDP. As mentioned earlier, (section 2.3), some of the data on industrial disputes, share of factories inspected, minimum wage etc exhibits gaps due to the data not being reported in available official reports, or the labour year books (reference book for these data sets) exhibiting a lag of couple of years in reporting data (current data is not reported).

Institutional support for obtaining some of the required data was taken from the libraries of the National Institute of Public Finance and Policy, V.V. Giri National Labour Institute and Jawaharlal Nehru University, New Delhi.

4 CALCULATING THE INDEX

After compilation of the data on various required variables, we need to normalise the mass of data as different variables exhibit different ranges. It is only then that such variables can be combined into a common index (see **Appendix E**). This section discusses the methods we follow for each of these operations and the different types of indices computed.

4.1. Normalisation

An ideal normalisation system should satisfy four axioms (Roodman, 2006): 1) normalized scores should fall in a common range, say between 0 and 1; 2) they should have the same average so that we can immediately understand whether a specific score is above or below average; 3) they should have the same standard deviation, like *z* scores; and 4) a raw score of 0 should map to a normalised value of 0. If for simplicity, one wanted to employ linear normalisations, then there would be two degrees of freedom per indicator (i.e. the constant term and the slope), which is not enough to ensure the satisfaction of all four axioms. Therefore, we need to make a decision on which axioms to satisfy. As is the case for a number of popular indices, such as the Human Development Index (HDI), we propose a normalisation process that satisfies axioms 1 and 4.

In particular, each variable which is not a 0-1 dummy is transformed through the following expression:

$$x_{norm} = \frac{x - x_{\min}}{x_{\max} - x_{\min}}$$

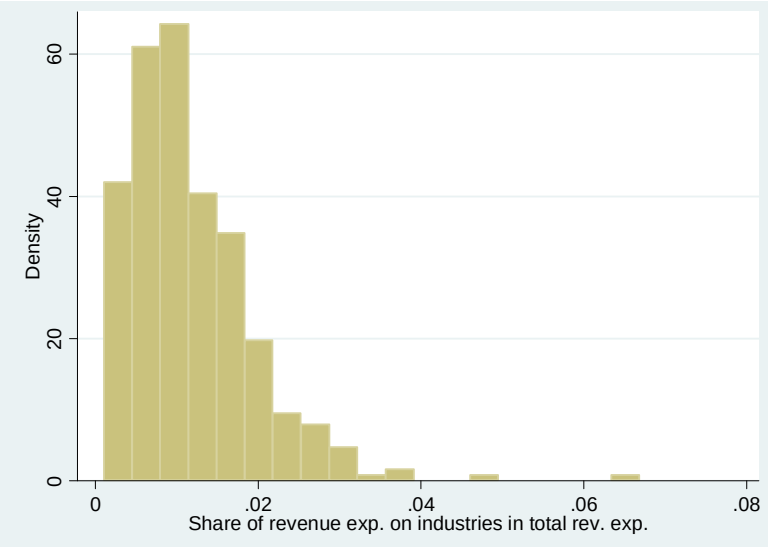
where x is the actual value of the variable and x_{min} and x_{max} are the maximum and minimum values of the variable observed in the entire time series. In this way the comparability of the variables is guaranteed while their variation is preserved.

Not satisfying a axiom (2) may pose some problems in that it is difficult to establish whether a value of a certain variable is above or below the average as

the means vary across variables. Also having different distributions has implications in terms of weighting of the variables in the composite index.

Chart 1 presents the density distribution of one of the variables (the share of revenue expenditures on industries in that of economic services). The distribution is evidently highly skewed to the left and our normalisation method generates lower values than those corresponding to a more normal distribution (as x_{max} is large relative to the rest of the distribution). Using equal weights (as we do) may reduce the relative importance of the variable in the composite index. However, if we decide to equate all the means, that would artificially compress or expand the differences between the values of a variable. Equating the means would thus tend to hide variations in average performance across variables. For example, business associations across the country may be very good at updating websites but very poor in releasing comprehensive publications. The normalised data should reflect this difference in performance.

Chart 1: Distribution of "industry revenue expenditure share" variable



4.2. Weighting and indices construction

There are three separate weighting processes involved in the construction of the SBR index. First, those private sector variables for which data are available for the mentioned three associations in each state need to be weighted to generate an aggregate private sector variable. We have experimented with different types of weights to limit the degree of subjectivity in this weighting decision, thus effectively generating different variants of the variables. In particular we use three weighting systems: one which uses only the apex body values (i.e. assigning the weight of 1 to the apex body and 0 to the sectoral associations); one which gives relatively more weight to the apex body than to sectoral bodies (i.e. assigning the weight of 0.5 to the apex body and 0.25 to each of the sectoral associations); and one which gives equal weights (1/3 to each association). For example, the calculation of the variable *website* (whether the association has a website or not) according to the second method would be:

website05 = website_1×0.5 + (website_2 + website_3)×0.25

where website_i is the website variable for association *i* (with *i*=1 representing the apex body).

These different weighting systems assume that the private sector dimension of SBR is shaped to different degrees by the apex bodies and the other associations. This balance of power is most probably state-specific and is bound to vary over time. Obviously we cannot capture all of these variations (we cannot have state- and time-varying weighting systems) as enough information about these is not available.

However, use of three different weighting methods allows the checking of robustness of results to differences in assumptions about the relative influence of different associations. It can also provide a check against eventual measurement errors in the apex body variables.

The second weighting choice concerns the evolution of measures of the four sub-indices. Here it is difficult to have a strong argument against equal weighting of each variable in the absence of clear evidence about the relative importance of the associated variables. Given a weighting system, we can still produce different measures of each sub-index by including different variables as constituents. Thus, we produce:

1) three measures of the sub-index relating to the role of the private sector in SBR:

*sbr_private_1 = (active_1 + website_1 + web_update_1 + office_premise*_1)/4
sbr_private03 = (active03 + website03 + web_update03)/3
sbr_private05= (active05 + website05 + web_update05)/3

2) two measures of the sub-index relating to the role of the public sector in SBR:

sbr_public_b = (corporations + econ_services)/2
sbr_public = (corporations + Industries)/2

As noted, we use two measures to construct sub-index on the public sector. The first measure takes account of state government expenditure on developmental activities by considering expenditure on economic services (*econ_services*) and the second does so by including state's expenditure on industries (*industries*) in the construction of the sub-index. The other variable 'productive corporation' is included in both measures of the sub-index. The difference lies in the importance given to industrial expenditures (a sub-component of expenditures on economic services), with second assigning greater importance than the first, in ascertaining the role of the public sector in SBR.

3) one measure of the sub-index of SBR practice:

sbr_practice = (stampduty + lab_regu)/2

4) three measures of the sub-index of anti-collusive SBR:

sbr_collusive_1 = (publication_1 + pub_freq_1 + delicense)/3
gen sbr_collusive03 = (publication03 + pub_freq03 + delicense)/3
gen sbr_collusive05 = (publication05 + pub_freq05 + delicense)/3

We aggregate the different measures of each sub-index into general SBR indices using equal weighting:

sbr_tot1 = (sbr_private1 + sbr_public + sbr_practice + sbr_collusive1)/4
sbr_tot03 = (sbr_private03 + sbr_public + sbr_practice + sbr_collusive03)/4
sbr_tot05 = (sbr_private05 + sbr_public + sbr_practice + sbr_collusive05)/4
sbr_tot1_b = (sbr_private1 + sbr_public_b + sbr_practice + sbr_collusive1)/4

sbr_tot03_b = (sbr_private03 + sbr_public_b + sbr_practice + sbr_collusive03)/4
sbr_tot05_b = (sbr_private05 + sbr_public_b + sbr_practice + sbr_collusive05)/4

5 SOME ANALYSIS OF THE SBR INDICES

Table 5a *(appendix F)* presents the summary statistics of normalised variables used for the construction of SBR indices. The range of data is between 0 and 1. One may note from table 6 presenting pair-wise correlations over the period 1975-2008 that the sub-indices relating to the role of private sector and anti-collusive behaviour in SBR show the highest and most significant association with the SBR composite index.

Referring again to Table 6, the *negative* correlations over time between the anti-collusive sub-indices and those for SBR practice for Andhra Pradesh, Kerala, Bihar, Madhya Pradesh, Orissa and West Bengal can be explained intuitively by a tendency to counter decline in license revenue related accruals through higher stamp duty rates and imposition of stricter labour regulations. In other words, the state tries to maintain its power in terms of access to monetary resources of administered business and control over involved stakeholders. Similarly, the *negative* correlation observed between the composite SBR index and the sub-index relating to the role of the public sector over time in states like Gujarat and Maharashtra could be due to the state government relaxing in terms of pro-business interventions when the private sector is well organised and self reliant. *Appendix G* shows scatter plots of correlations between different components of SBRs across states for five year averages for period 1986-2008.

Table 5a: Summary Statistics of the variables used in the construction of SBR measure

Variable	0bs	Mean	Std. Dev	Coef. O Var	Min	Max	Skewness
sbr_private1	544	0.408	0.239	0.585	0	1	0.943
sbr_priva~03	544	0.303	0.164	0.542	0	0.806	-0.546
sbr_priva~05	544	0.317	0.172	0.543	0	0.854	-4.288
sbr_public	379	0.559	0.101	0.18	0.248	1	3.845
sbr_public_b	379	0.427	0.081	0.189	0.178	0.796	-5.448
sbr_practice	438	0.569	0.123	0.217	0	0.85	-2.255
sbr_collus~1	544	0.511	0.295	0.577	0	0.992	0.837
sbr_collu~03	544	0.391	0.246	0.63	0	0.94	-1.115
sbr_collu~05	544	0.421	0.251	0.596	0	0.913	-1.678
sbr_tot1	362	0.555	0.116	0.208	0.287	0.821	1.615
sbr_tot03	362	0.499	0.096	0.193	0.323	0.778	-0.26
sbr_tot05	362	0.509	0.097	0.19	0.316	0.784	-0.625
sbr_tot1_b	362	0.522	0.112	0.215	0.258	0.776	1.56
sbr_tot03_b	362	0.466	0.091	0.195	0.311	0.734	-0.396
sbr_tot05_b	362	0.477	0.092	0.193	0.3	0.74	15.574

Table 6: Correlation Coefficients

Andhra		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Tot1**
Pradesh	**Private 1**	1				
	Public	-0.3036	1			
	Practice	-0.0145	0.0258	1		
	Acollusive	*0.5891	-0.1480	*-0.4489	1	
	SBRTotal	*0.7404	0.0194	0.0401	*0.8833	1
Assam		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Tot1**
	Private 1	1				
	Public	*0.6015	1			
	Practice	-0.1117	-0.1314	1		
	Acollusive	*0.9640	*0.7549	-0.1267	1	
	SBRTotal	*0.9478	*0.6744	-0.0688	*0.9910	1
Bihar		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Tot1**
	Private 1	1				
	Public	*0.6863	1			
	Practice		-0.0595	1		
	Acollusive	0.1724	0.1430	*-0.5931	1	
	SBRTotal		*0.9409	0.2213	-0.3192	1
Gujarat		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	*-0.4584	1			
	Practice	*0.5019	*-0.4098	1		
	Acollusive	*0.4694	-0.2425	-0.1846	1	
	SBRTotal	*0.9606	**-0.357	*0.6087	*0.5608	1
Haryana		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	-0.0525	1			
	Practice	*0.7551	0.3032	1		
	Acollusive	*0.6657	*-0.5543	0.7028	1	
	SBRTotal	*0.9384	-0.1024	*0.7531	*0.7028	1
Karnataka		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	*0.8452	1			
	Practice	*.6388	*0.5718	1		
	Acollusive	*.4429	*0.4789	*0.8008	1	

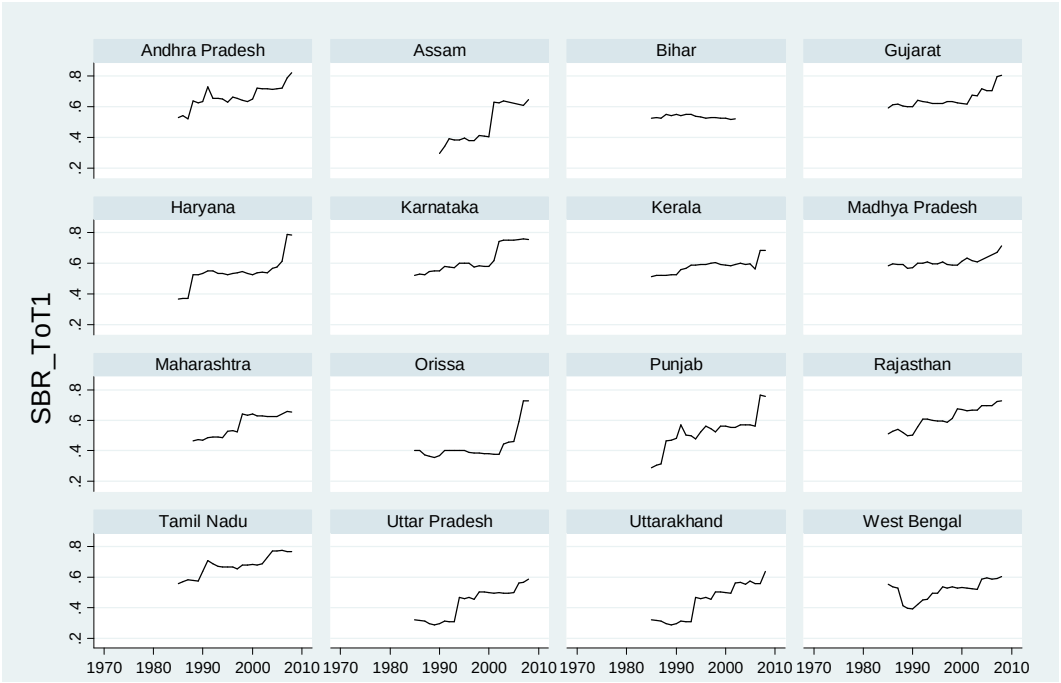
	SBRTotal	*0.9635	*0.8797	*0.7874	*0.6465	1
Kerala		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	-0.1087	1			
	Practice	*-0.6767	-0.3093	1		
	Acollusive	0.1828	*0.7784	*-0.5649	1	
	SBRTotal	*0.7220	*0.5802	*-0.8103	*0.7624	1
MP		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	*0.4544	1			
	Practice	0.1205	0.2304	1		
	Acollusive	**0.305	0.1721	*-0.7168	1	
	SBRTotal	*0.8768	*0.6585	0.2728	*0.4535	1
Maharashtra		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	*-0.5477	1			
	Practice	*0.6002	-0.0347	1		
	Acollusive	*0.5532	-0.2523	*0.5923	1	
	SBRTotal	*0.9678	**-0.3981	*0.7368	*0.8363	1
Orissa		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	**-0.3798	1			
	Practice	*0.4878	-0.1771	1		
	Acollusive	*0.6264	**-0.3578	-0.0916	1	
	SBRTotal	*0.9603	-0.2640	*0.8984	*0.8615	1
Punjab		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	0.2799	1			
	Practice	*0.5185	0.1659	1		
	Acollusive	*0.6709	0.6025	*0.6025	1	
	SBRTotal	*0.8618	*0.4100	*0.6788	*0.8057	1
Rajasthan		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	*0.4617	1			
	Practice	*0.6540	0.2379	1		
	Acollusive	*0.5702	-0.0915	*0.7266	1	

	SBRTotal	**0.8687	*0.4329	*0.9038	*0.7687	1
Tamil Nadu		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	0.1704	1			
	Practice	*0.4876	-0.0440	1		
	Acollusive	*0.8518	**0.3719	0.2278	1	
	SBRTotal	*0.9718	**0.3602	*0.4717	**0.8614	1
UP		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	*-0.8197	1			
	Practice	*0.4990	*-0.5020	1		
	Acollusive	*.8829	*-0.9570	0.2533	1	
	SBRTotal	*0.9639	*-0.8998	*0.6999	*0.9503	1
West Bengal		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	-0.1049	1			
	Practice	0.0221	-0.1884	1		
	Acollusive	*0.3981	*0.4930	*-0.5460	1	
	SBRTotal	*0.6510	0.1103	*0.7881	*0.5039	1
Uttarakhand		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	*-0.4865	1			
	Practice	0.0134	-0.1526	1		
	Acollusive	*0.8552	*-0.5784	0.2451	1	
	SBRTotal	*0.7829	*-0.5415	*0.5415	*0.8673	1
Overall		**Private 1**	**Public**	**Practice**	**Acollusive**	**SBR Total**
	Private 1	1				
	Public	**0.0973	1			
	Practice	*0.2411	*0.1068	1		
	Acollusive	*0.5798			1	
	SBRTotal	*0.8256	*0.2968	*0.5404	*0.1925	1

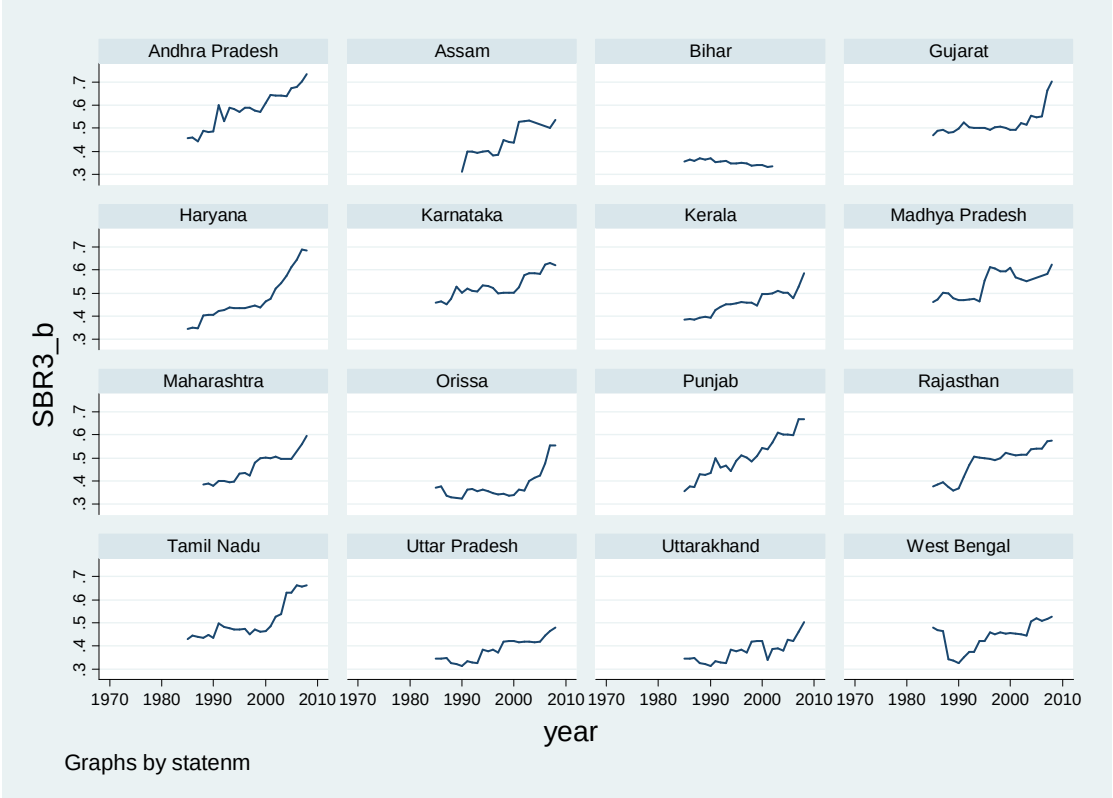
** significant at 10%; * significant at 5%;

Graph 1 – Graph 4 capture movements of state-wise and all-India scores of SBR measures in the period 1975-2007. *Graph 1* plots sbr_tot1 against time whereas *Graph 2* and *3* do the same for sbr3_b and sbr_tot05 respectively. The difference between these variants of the SBR overall index lies in the type of the sub-index used to capture the role of the private sector in SBR (sbr_tot1 versus sbr3_b or sbr_tot05). Nonetheless, the graphs show similar movements, suggesting that sectoral trends are similar to those relating to the umbrella organisation.

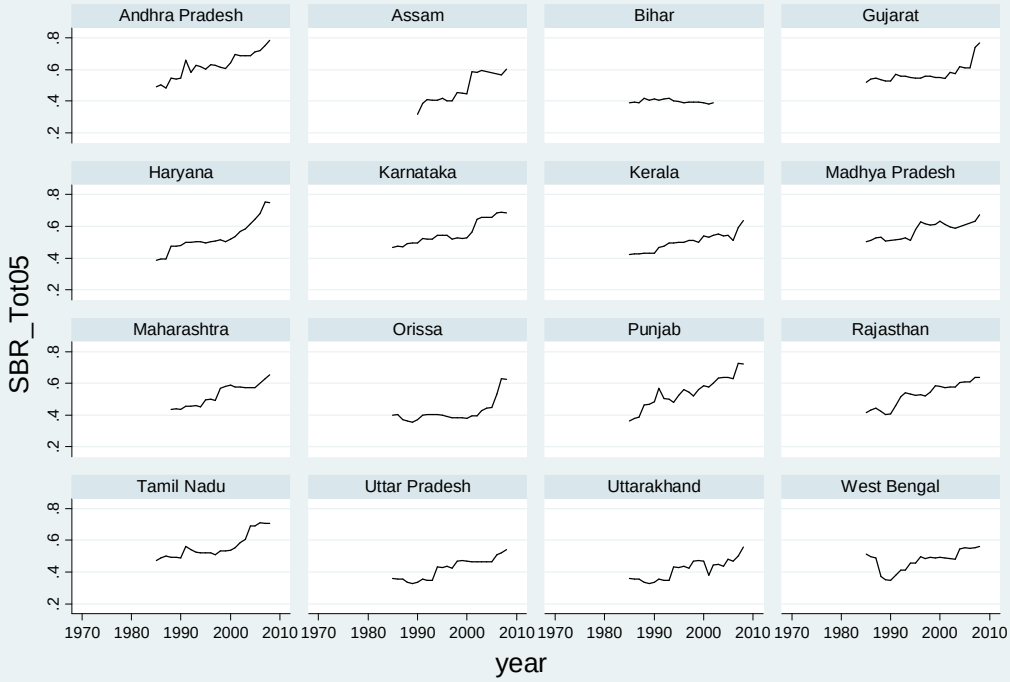
Graph 1 (SBR_Tot1)



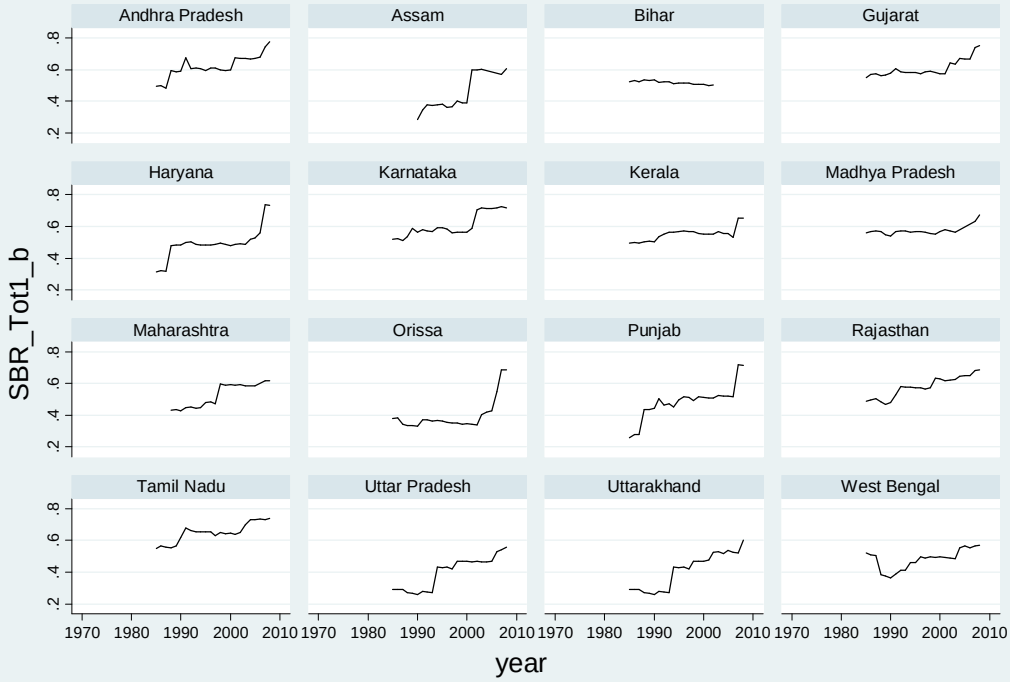
Graph 2 (SBR3_b)



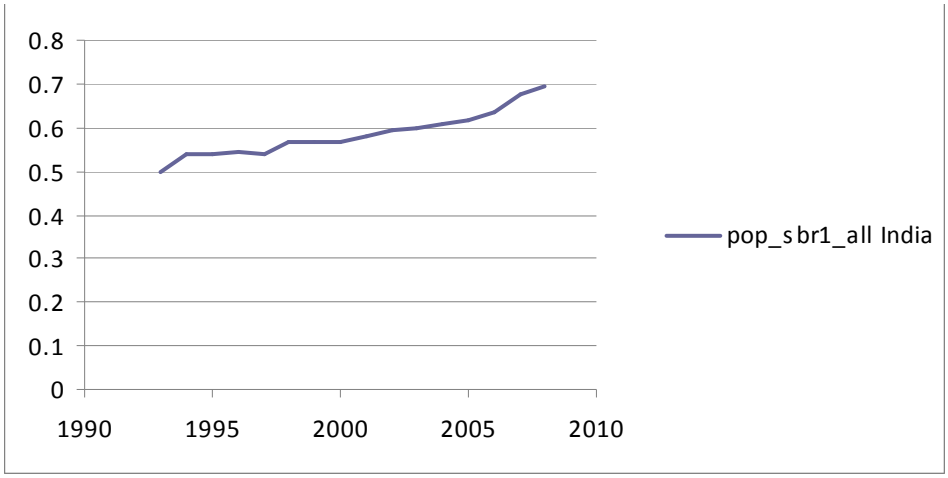
Graph 3 SBR_Tot05



Graph 4 SBR_Tot1_b



Graph 5 SBR Total_India



Note: SBR measure for Assam (1985-89 & 2004-06), Bihar (2003-07), Madhya Pradesh (2004-06) and Maharashtra (2004, 2006) could not be calculated due the gaps in data. Suitable interpolation has been used to fill the gap.

From Graph 1, we can infer that the SBRs of Southern regional states (Andhra Pradesh, Karnataka, TN, and Kerala) show similar movements and generally show an upward trend. The initial values of the SBR index for Karnataka and Tamil Nadu are relatively higher than those of other states. However, in Andhra Pradesh the SBR index has moved the fastest among all the southern states. Kerala has shown significant improvement only recently; the left oriented government in the state may explain the overall trend of slow improvement.

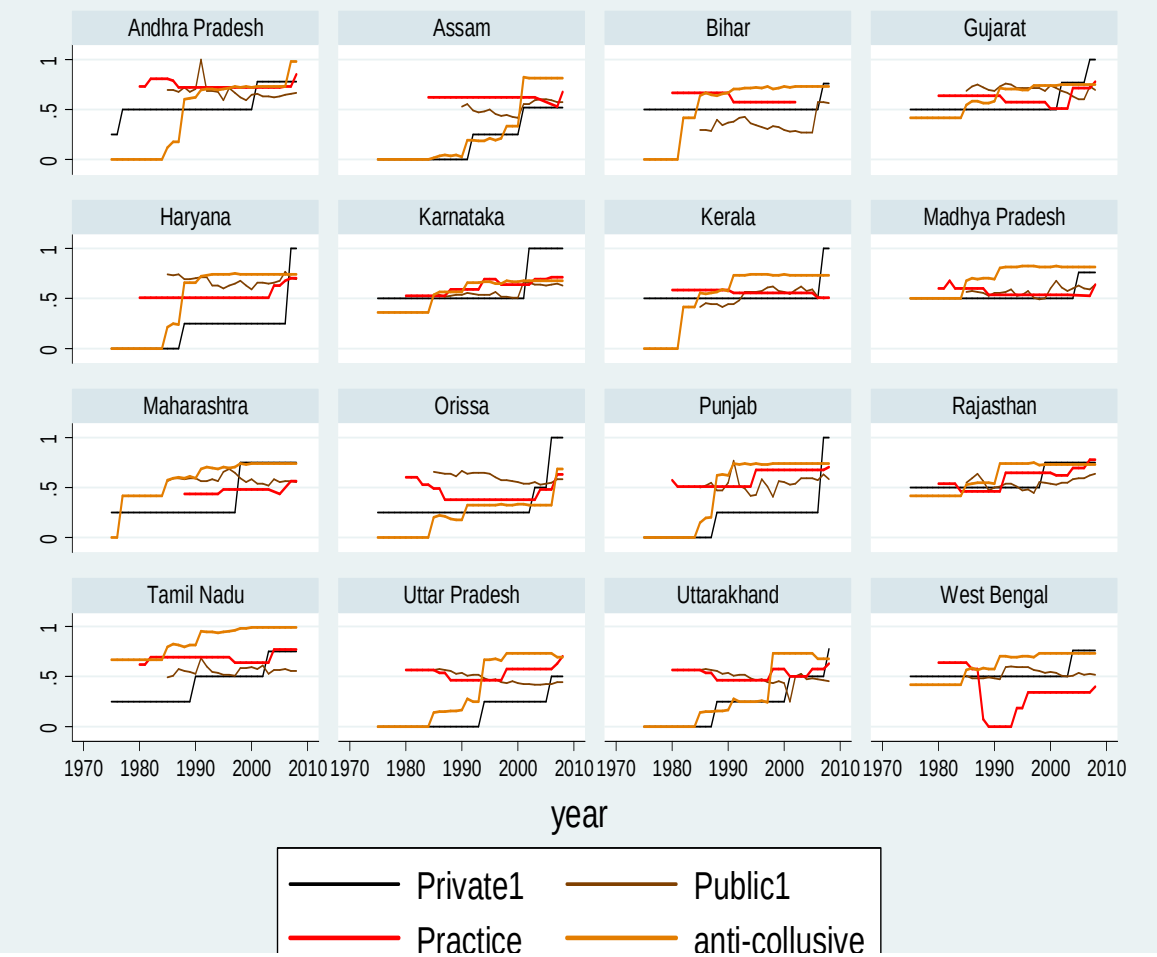
Amongst Bimaru States (Bihar, MP, Rajasthan, Uttar Pradesh), in Bihar and Madhya Pradesh there has not been much improvement over time. As regards Uttar Pradesh, the graph is slightly counter intuitive. There have been steep jumps without any corresponding marked economic improvement. This suggests that the data does not reflect economic reality. For example, the SBR private sub-index consists of website related variables which are often determined purely by technological breakthroughs (computerisation etc) rather than actual improvement in business relations. In the case of Rajasthan, **t**he rise in the SBR graph is consistent with the notion that Rajasthan has left the club of Bimaru states at the turn of the century.

West Bengal's graph is unique – the SBR index started at a relatively high value, went into deep decline in the late 1980s with recovery starting only in the mid 1990s. Uttarakhand is generally doing well. Haryana and Punjab exhibit similar movements in the SBR index. In the case of Gujarat, post Narendra Modi (Gujarat Chief Minister) SBR increase has accelerated. A common feature of the movements of the SBR index in various states is that the exogenous influence of delicensing (Central policy) produces an upward movement in the index.

In Graph 6 and 7, West Bengal is the outlier in terms of movements over time in the the SBR sub index relating to 'Practice'. This suggests the negative attitude of the West Bengal government towards business. In terms of the sub-index relating to the role of the public sector in SBR, Uttar Pradesh's performance is found to be poor.
As explained before, increase in the SBR sub-index relating to the role of the private sector is often determined purely by technological breakthroughs (computerisation etc), rather than improvements in business relations. The stable

graph of the sub-index is suddenly broken by jumps caused by IT related aspects. A robustness check of trends using other relevant variables is therefore called for.

Graph 6 (by Sub index)



Graph 7 (by sub-index including both economic services and industries in the Public dimension)

Table 7 presents estimates from regressions of SBR measures with respect to time in various states. The coefficient on time though small is significant for all 16 states, suggesting that SBR has improved significantly with time in all states except Bihar where there is significant deterioration. In Maharastra, Punjab, Haryana, Rajasthan, Karnataka, Assam, Uttar Pradesh and Uttarakhand, the change in the SBR measure with respect to time is faster than in the other remaining states.

Table 7: SBR Regression over Time effects

Dep. var. sbr_tot1	AP	Assam	Bihar	Gujarat	Haryana	Karnataka
Time	0.009	0.020	-0.001	0.007	0.011	0.011
	(0.001)**	(0.003)**	(0.000)+	(0.001)**	(0.002)**	(0.001)**
Constant	0.471	-0.697	0.616	-0.165	-1.128	-1.532
	(0.028)**	(0.169)**	(0.040)**	(0.130)	(0.298)**	(0.225)**
Observations	24	16	18	24	24	24
R-squared	0.706	0.771	0.209	0.642	0.588	0.808
F	52.75	47.08	4.23	39.53	31.44	92.31
Standard errors in parentheses						
+ significant at 10%; * significant at 5%; ** significant at 1%						

Dep. var. sbr_tot1	Kerala	MP	Maharashtra	Orissa	Punjab	Rajas
Time	0.005	0.004	0.011	0.009	0.013	0.010
	(0.001)**	(0.001)**	(0.001)**	(0.002)**	(0.002)**	(0.001)**
Constant	-0.611	-0.350	-2.808	-2.676	-4.291	-3.293
	(0.176)**	(0.193)+	(0.365)**	(0.773)**	(0.656)**	(0.263)**
Observations	24	21	19	24	24	24
R-squared	0.676	0.566	0.834	0.423	0.710	0.909
F	45.92	24.73	85.42	16.15	53.90	220.98
Standard errors in parentheses						
+ significant at 10%; * significant at 5%; ** significant at 1%						

Dep. var. sbr_tot1	TN	UP	WB	Uttarakhand	All India
Time	0.009	0.013	0.006	0.015	0.022
	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.002)**
Constant	-3.039	-5.786	-2.499	-7.746	-0.008
	(0.372)**	(0.564)**	(0.718)**	(0.631)**	(0.045)
Observations	24	24	24	24	34
R-squared	0.820	0.846	0.444	0.884	0.748
F	99.90	121.27	17.60	168.44	94.76
Standard errors in parentheses					
+ significant at 10%; * significant at 5%; ** significant at 1%					

Table 8 presents rankings of various states in terms of the overall SBR index over time. Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Maharashtra show a stable and high ranking over time. Uttar Pradesh and Assam show a stable and low ranking over time. The major gainers in terms of ranking are Haryana, Punjab and Orissa whereas the major losers are West Bengal and Madhya Pradesh. Rajasthan picked up around the mid nineties (since 1995) in terms of magnitude of the SBR index though its ranking has dropped again in the past two or three years. All states except Bihar and West Bengal show a significant improvement over time in terms of magnitude of the SBR index. As mentioned before, the improvement in the performance of Uttar Pradesh might be more apparent than real.

Table 8: SBR Rankings over the period (pre-liberalisation and post-liberalisation)

	1985	1995	2000	2005	2006	2007	1985	1995	2000	2005	2006	2007
Andhra Pr.	0.530	0.631	0.649	0.718	0.724	0.788	5	2	3	3	3	3
Assam		0.395	0.406			0.609			14			12
Bihar	0.524	0.535	0.524				6	8	11			
Gujarat	0.591	0.621	0.623	0.707	0.707	0.799	1	3	5	4	4	1
Haryana	0.367	0.527	0.525	0.576	0.613	0.790	11	9	12	10	6	2
Karnataka	0.524	0.601	0.581	0.753	0.758	0.760	7	4	8	2	2	6
Kerala	0.516	0.592	0.590	0.597	0.565	0.685	8	7	7	8	9	9
Madhya Pr.	0.586	0.600	0.613			0.675	2	5	6			10
Maharashtra		0.526	0.640	0.622		0.656		10	4	6		11
Orissa	0.400	0.400	0.380	0.461	0.590	0.727	10	14	15	13	7	7
Punjab	0.290	0.525	0.559	0.568	0.562	0.764	13	11	9	11	10	5
Rajasthan	0.509	0.592	0.668	0.695	0.695	0.723	9	6	2	5	5	8
Tamil Nadu	0.558	0.665	0.681	0.771	0.774	0.767	3	1	1	1	1	4
Uttar Pradesh	0.317	0.459	0.499	0.497	0.560	0.567	12	13	13	12	11	14
West Bengal	0.554	0.497	0.533	0.595	0.589	0.592	4	12	10	7	8	13
Uttarakhand			0.499	0.573		0.556			13	9		15

Interestingly, ranking in terms of the SBR index can possibly be compared with the composite ranking of ease of doing a business in various 'Indian cities' generated by the World Bank. The World Bank's ranking is an average of different indicators describing the bureaucratic burden on businesses such as time needed for staring a business, contract enforcement, access to credit, flexibility in labour market regulations, ease of obtaining licences, trading across borders etc. Table 9 presents the comparison between state level SBR rankings and the World Bank's ranking of the ease of doing business for the year 2006. A positive correlation between the two rankings is suggested implying that the SBR index could also be a good measure of the ease of doing business and therefore the potential for growth. Moreover, the SBR index can be claimed to be a significant improvement over the World Bank index given that it is not only time varying, but also considers greater number of states.

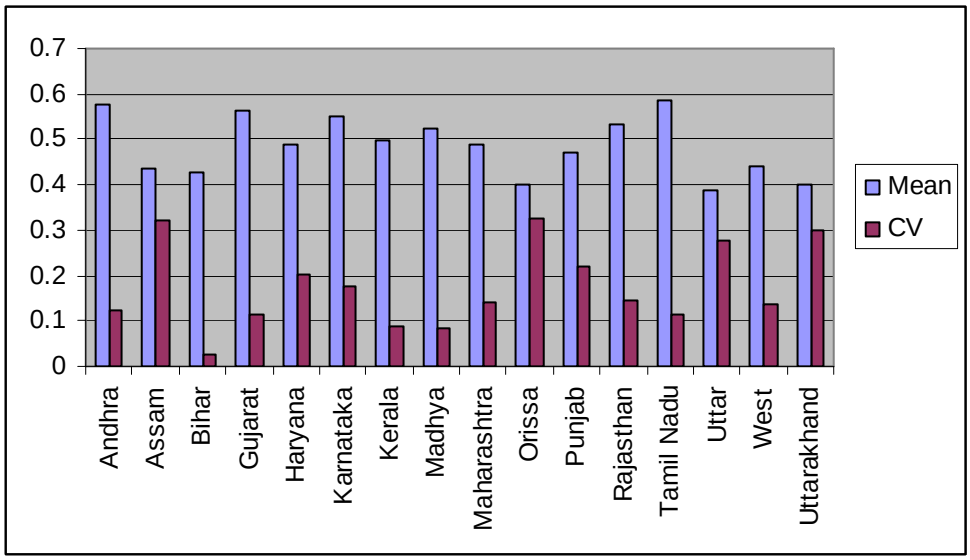
Table 9: Rank Comparison between SBR state ranking and World Bank ranking on the ease of doing business in India, 2006

State	World Bank Rank 2006*	SBR Rank 2006
Andhra Pradesh	1	3
Karnataka	2	2
Orissa	5	5
Punjab	7	7
Rajasthan	3	4
Tamil Nadu	4	1
Uttar Pradesh	6	8
West Bengal	8	6

Spearman's rank correlation coefficient		
	SBR_rank	WB_rank
SBR_rank	1	
WB_rank	**0.7381**	1

** Subnational ranking on the ease of doing business in India, World Bank's Doing Business database*.

Graph 8: Coefficient of Variation of the SBR Measure
(five year averages for various period starting 1986-1990 and ending 2001-2005 and three year average for 2006-2008)



Graph 8 plots overall mean value against the coefficient of variation of the SBR measure of all states. It suggests that Haryana, Kerala, Madhya Pradesh, Maharashtra, Punjab, West Bengal and Rajasthan are average performers in terms of the SBR measure which exhibits a mean of values (across time periods) in the range of 0.44-0.55 for each state. However, variation over time as captured by the coefficient of variation exhibits vastly different values across states. Out of the mentioned states, Maharashtra, Kerala, Rajasthan, and Madhya Pradesh have a low coefficient of variation indicative also of limited growth in SBR, whereas on the other hand states like Haryana, West Bengal and Punjab exhibit high variation which is possibly consistent with significant growth in SBR but does not necessarily imply such growth. In other words, high variation as illustrated above is consistent with both low and high average growth in SBR. This is also captured by the ensuing discussion on SBR growth rates. Andhra Pradesh, Gujarat and Tamil Nadu are the best performers in terms of mean values while states, such as Orissa, Assam, Uttar Pradesh bring up the rear with SBR mean lying below 0.40 and SBR values also exhibiting high variation.

Table 10 displays average annual growth rate of the SBR measure and coefficient of variation[10] of such growth rates for the period 1986-2008 for each state. The estimates indicate that average annual growth rates of Gujarat, Karnataka, Kerala, Rajasthan, Tamil Nadu, Andhra Pradesh and West Bengal are comparable. However, data on coefficient of variation of these states suggest that Rajasthan, Karnataka, Tamil Nadu have more stable growth than the rest. Similarly, Andhra Pradesh and Tamil Nadu have identical high growth rates but their measure of variation suggests that growth of Tamil Nadu is more consistent. The same is the case of Orissa and Assam. Rajasthan and Karnataka are best matched in terms of average growth rates and measures of variation.

[10] Note that five year means of the SBR measure for various sub-periods in 1986-2008 are calculated. The growth rates associated with the transition from each sub-periodic mean to the next are calculated and so is the average growth rate for 1986-2008. This measure is then combined with the average growth for the entire period to yield a pseudo CV (coefficient of variation). The deviations of sub-periodic growth rates from the average growth for the entire period are used to calculate pseudo standard deviation. For the sake of simplicity, this is being referred to in the text as just 'coefficient of variation'.

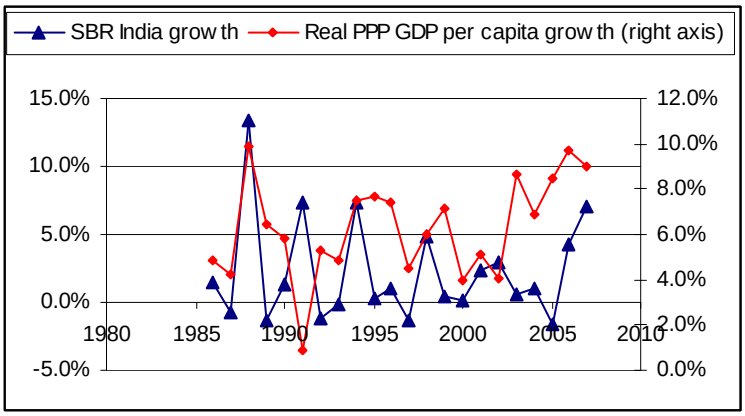
Orissa, Punjab and Haryana are states that exhibit the highest average growth rates for the entire period studied. Nonetheless, they also show the highest variation, intuitively suggesting low stability of the growth rates. Madhya Pradesh, originally the largest state in India until when the state of Chhattisgarh was carved out, displays the second lowest average growth rate of the SBR measure. The trend in these states is consistent with the graphical movement in graph 1: SBR_Tot1.

Table 10: Average Annual Growth Rate of the SBR measure and Coefficient of Variation

State	Average Growth Rate	CV of average Growth Rate
Andhra Pradesh	1.3%	1.26
Assam	2.9%	0.84
Bihar	-0.2%	-1.19
Gujarat	1.1%	2.50
Haryana	2.1%	3.04
Karnataka	1.6%	0.64
Kerala	1.0%	1.70
Madhya Pradesh	0.8%	3.10
Maharashtra	1.8%	0.77
Orissa	2.9%	4.21
Punjab	2.6%	1.76
Rajasthan	1.6%	0.51
Tamil Nadu	1.3%	0.88
Uttar Pradesh	3.1%	0.93
West Bengal	1.3%	1.25
Uttarakhand	3.2%	0.51

Another exercise has been attempted in graph 9 to find out if a positive correlation exists between the rate of economic growth and change of state business relations in India. The graphs confirm a positive correlation indicating the importance of SBR for economic growth as well as confirming that SBRs have indeed been correctly measured in the Indian context (as the empirically estimated relationship between SBR and economic growth confirm the theoretical postulation)

Graph 9



6 CONCLUSIONS

Effective relations between states and business appear to be as an important condition for sustaining economic development according to an emerging line of research. However empirical evidence on this is limited by the lack of adequate measurement of SBRs over time. This paper has described the construction of quantitative indices of the quality of SBRs for Indian states in the 1975-2008 period and estimated these. It builds on te Velde (2006), who performs a similar exercise for sub-Saharan Africa, identifying four main dimensions of 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.

This represents the first effort to systematically characterise SBRs across sub-national units within a country without resorting to subjective surveys. This poses specific methodological challenges including the identification of suitable variables to capture the multi-dimensional nature of SBR and their aggregation into composite indices. We use a number of different variables (both from secondary and primary sources) to quantify the effectiveness of SBRs across Indian states. Such a strategy allows a researcher interested in identifying the effects of SBR on some outcomes to check for the possible sensitivity of results to change in the index's composition.

An examination of the evolution of SBRs across Indian states and at the national level suggests the following:

- First, the state-business relationships improve over time for all states except Bihar;

- Second, the pattern over time in rankings differs across states: for instance, Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Maharashtra show a stable and high ranking over time. Uttar Pradesh and Assam show a stable and low ranking over time. The major gainers in terms of ranking are Haryana, Punjab and Orissa whereas the major losers are West Bengal and Madhya Pradesh. Rajasthan picked up around the mid nineties (since 1995) in terms of magnitude of the SBR index though its ranking has dropped again in the past two or three years.

- Third, not much difference occurs in the SBR results when sectoral information pertaining to sectoral business associations is incorporated. The health of associations corresponds to the health of the umbrella organisation.

- Fourth, the magnitude of the SBR measure shows a sudden jump after mid 1990s, suggesting improvement. However, such improvement may be a result of technological breakthroughs relating to IT and exogenous impacts of delicensing and thus, calls for robustness check of trends using alternative relevant variables.

- Fifth, negative secular correlation between the SBR sub-indices and the SBR composite index of many of the states suggests that delicensing seems to evoke different responses in terms of the various aspects of state government behaviour – a general loosening of hold by some governments on all fronts. Whereas other states increase exploitation of other levers of influence on the business sector.

- Finally, the positive correlation between the SBR measure and economic growth indicates the importance of SBR for economic growth in the Indian context and it thus, confirms the need for estimating the impact of SBR on economic performance using other determinants of growth as control variables.

REFERENCES

Aghion, P. Burgess R., Redding S. and F. Zilibotti (2006), The Unequal Effects of Liberalization: Evidence from Dismantling the License Raj in India, CEP Discussion Paper No 728

Amsden, A. (1989), *Asia's Next Giant: South Korea and Late Industrialisation*, New York: Oxford University Press.

Besley, T. and R. Burgess (2000), Land reform, poverty reduction and growth: evidence from India, *Quarterly Journal of Economics.*

Besley, T. and R. Burgess (2004), Can labour regulation hinder economic performance? Evidence from India, *Quarterly Journal of Economics* 119(1), 91-134.

Bertrand, M. and S. Mullainathan (2001). Do People Mean What They Say? Implications for Subjective Survey Data, *American Economic Review Papers and Proceedings*, 91(2), pp. 67-72.

Carlin, W., Shaffer, M.E. and P. Seabright (2006), Where are the Real Bottlenecks? A Lagrangian Approach to Identifying Constraints on Growth from Subjective Survey Data, CERT Discussion Paper 2006/04.

Dollar, D., G. Iarossi and T. Mengistae, (2001), Investment Climate and Economic Performance: Some Firm Level Evidence from India, mimeo World Bank.

Harris, J. (2006), Institutions and State-Business Relations, IPPG Briefing Paper No. 2.

Iarossi, G. (2009), The Investment Climate in 16 Indian States, Policy Research Working Paper 4817, World Bank.

James Alm, P. Annez, et al. (2004), Stamp Duties in Indian States: A case for Reform, *Working Paper*, World Bank.

Johnson, C. (1987), Political institutions and economic performance: the government-business relation in Japan, South Korea and Taiwan, in: F. Deyo (ed.), *The Political Economy of the New Asian Industrialism*, Ithaca: Cornell University Press.

Kohli, A. (2006a), Politics of economic growth in India, 1980–2005 part 1: the 1980s, *Economic and Political Weekly,* pp 1251–9.

Kohli, A. (2006b), Politics of economic growth in India, 1980–2005 Part II: the 1990s and beyond, *Economic and Political Weekly,* pp 1361–70.

Malik, P. L., Ed. (2007), Industrial Law, Volume II, New Delhi.

Mauro, P. (1995), Corruption and growth. *Quarterly Journal of Economics*, 60(3), pp. 681–713.

Rodrik, D., Subramanian, A. and Trebbi, F. (2004), Institutions rule: the primacy of institutions over geography and integration in economic development, *Journal of Economic Growth*, 9(2), pp. 31–165.

Roodman, D. (2006), Building and Running an Effective Policy Index: Lessons from the Commitment to Development Index, Center for Global Development.

Sen, K. and D.W. te Velde (2009), State Business Relationships and Economic Growth In Sub-Saharan Africa, *Journal of Development Studies*, forthcoming.

te Velde, D.W. (2006), Measuring State-Business Relations in Sub-Saharan Africa, IPPG Discussion Paper No. 4.

World Bank (2004). India: Investment climate and manufacturing industry, Investment Climate Assessment, November.

APPENDIX A

SBR Data Description / Coding

Variable	**Description / time period**	**Data Source**
Active	1 if association existed in that year; 0 otherwise (1975-2008)	Field
website	1 if website existed in that year; 0 otherwise (1975-2008)	-do-
publication	1 if website existed in that year; 0 otherwise (1975-2008)	-do-
Website update	Daily: 30 Once in a month: 1/1 Twice in a month: 2 Weekly/4 times a month: 4 Once in 3 months: 1/3 Once in 6 months: 1/6 Once in 12 months: 1/12 Once in 24 months: 1/24 (1975-2008)	-do-
Publication frequency	Once in a month: 1 Weekly/4 times a month: 4 Once in 3 months: 1/3 Once in 6 months: 1/6 Once in 12 months: 1/12 Once in 24 months: 1/24 (1975-2008)	-do-
Owned or rented office premise	0 if rented , 1 if owned (1975-2008)	-do-
Investment Promotion Agency	1 if an Investment Promotion Agency existed in that year; 0 otherwise (1975-2008)	Official state website
State Financial Corporation	1 if a state Financial Corporation existed in that year; 0 otherwise (1975-2008)	-do-
State Infrastructure Development Corporation	1 if a state Infrastructure Corporation existed in hat year; 0 otherwise (1975-2008)	-do-
State Tourism Development Corporation	1 if a state Tourism Corporation existed in that year; 0 otherwise (1975-2008)	-do-
Total Revenue Expenditure *(Rupees Lakh)*	It includes entire State's Revenue Expenditure (1985-2008)	State Finances, A study of Budgets, RBI / Macro Scan (www.macrscan.com)
Plan Revenue Expenditure *(Rupees Lakh)*	It includes State's planned Revenue Expenditure (1990-2008)	-do-
Non-Plan Revenue Expenditure *(Rupees Lakh)*	It includes State's non- planned Revenue Expenditure (1990-2008)	-do-
Total Revenue Expenditure on Economic Services *(Rupees Lakh)*	It includes State's Revenue Expenditure on Economic Services (1985-2008)	-do-
Plan Revenue Expenditure on Economic Services *(Rupees Lakh)*	It includes State's planned Revenue Expenditure on Economic Services (1990-2008)	-do-
Non-Plan Revenue Expenditure on Economic Services *(Rupees Lakh)*	It includes entire State's non-planned Revenue Expenditure on Economic Services (1990-2008)	-do-
Total Revenue Expenditure	It includes State's Revenue	-do-

on Industries *(Rupees Lakh)* *(Rupees Lakh)*	Expenditure on Industries (1985-2008).	
Plan Revenue Expenditure on Industries *(Rupees Lakh)*	It includes State's planned Revenue Expenditure on industries (1990-2008)	-do-
Non-Plan Revenue Expenditure on Industries *(Rupees Lakh)*	It includes State's non- planned Revenue Expenditure on industries (1990-2008)	-do-
Total Revenue Expenditure on Transport and communications *(Rupees Lakh)*	It includes State's Revenue Expenditure on Transport and communications (1985-2008).	-do-
Plan Revenue Expenditure on Transport and communications *(Rupees Lakh)*	It includes State's planned Revenue Expenditure on Transport and communications (1990-2008)	-do-
Non-Plan Revenue Expenditure on Transport and communications *(Rupees Lakh)*	It includes entire State's non-planned Revenue Expenditure on Transport and communications (1990-2008)	-do-
Total Capital Expenditure *(Rupees Lakh)*	It includes entire State's Capital Expenditure (1985-2008)	-do-
Plan Capital Expenditure *(Rupees Lakh)*	It includes State's planned Capital Expenditure (1990-2008)	-do-
Non-Plan Capital Expenditure *(Rupees Lakh)*	It includes State's non- planned Capital Expenditure (1990-2008)	-do-
Total Capital Expenditure on Economic Services *(Rupees Lakh)*	It includes State's Capital Expenditure on Economic Services (1985-2008)	-do-
Plan Capital Expenditure on Economic Services *(Rupees Lakh)*	It includes State's planned Capital Expenditure on Economic Services (1990-2008)	-do-
Non-Plan Capital Expenditure on Economic Services *(Rupees Lakh)*	It includes entire State's non-planned Capital Expenditure on Economic Services (1990-2008)	-do-
Total Capital Expenditure on Industries *(Rupees Lakh)*	It includes State's Capital Expenditure on Industries (1985-2008).	-do-
Plan Capital Expenditure on Industries *(Rupees Lakh)*	It includes State's planned Capital Expenditure on industries (1990-2008)	-do-
Non-Plan Capital Expenditure on Industries *(Rupees Lakh)*	It includes State's non- planned Capital Expenditure on industries (1990-2008)	-do-
Total Capital Expenditure on Transport and communications *(Rupees Lakh)*	It includes State's Capital Expenditure on Transport and communications (1985-2008).	-do-
Plan Capital Expenditure on Transport and communications *(Rupees Lakh)*	It includes State's planned Capital Expenditure on Transport and communications (1990-2008)	-do-
Non-Plan Capital Expenditure on Transport and communications *(Rupees Lakh)*	It includes entire State's non-planned Capital Expenditure on Transport and communications (1990-2008)	-do-
Officially announced Minimum Wage in States	1991-2007	Annual Reports, Ministry of Labour, Government of India, Various Issues and India Stat.com

Total number of factories inspected in a state	1975-2006	Indian Labour Year Book/ Indian Labour Statistics, Ministry of Labour, Government of India, Various Issues
Total number of factories registered in a state	1975-2006	-do-
Percentage of factories inspected to total number of registered factories (state-wise)	1975-2006	Authors' calculation
Total number of Convictions	Conviction with regard to offences relating to employment and hours of work, notices, registers and returns, Safety provisions, health sanitation including welfare and others 1975-2006	Indian Labour Year Book/ Indian Labour Statistics, Ministry of Labour, Government of India, Various Issues
Percentage of conviction to total number of registered factories	1975-2006	Authors' calculation
Percentage of conviction to total number of factories inspected	1975-2006	Authors' calculation
Industrial disputes referred to Adjudication awards given in favour of workers and against workers	1975-1998	Indian Labour Year Book/ Indian Labour Statistics, Ministry of Labour, Government of India, Various Issues
Per Capita Net State Domestic Product at factor cost - state-wise *(at constant price; Rupees crore)*	1980-2007	http://rbidocs.rbi.org.in/rdocs/Publications/DOCs/87391.xls
Components of Net State domestic product at Factor cost by industry of origin *(at constant prices; Rupees crore)*	1980-2007	http://rbidocs.rbi.org.in/rdocs/Publications/DOCs/87389.xls
Net State Domestic Product at factor cost *(state-wise at constant price; Rupees crore)*	1980-2007	http://rbidocs.rbi.org.in/rdocs/Publications/DOCs/87387.xls
Stamp Duty Rates	1980-2003/04	prepared by Arvind Modi and Jim Alm for their World Bank Working Paper (procured from OP Mathur of NIPFP)

APPENDIX B

Questionnaire submitted to the Indian private sector associations

Part I

1. When was the organisation **established**? Who established it? Who finances the costs?

2. How many **full time equivalent employees** work in the organisation?

    - What is the **skill composition** of the employees (e.g. professional economists / social scientists versus clerks and administrators)?
    - What is the **cost** to the organisation of the non-administrative staff and the entire staff?
    - Can you provide this information for **every year** since 1957?

3. Who do you represent? What are the businesses not covered by you?

    - How many **members** does the association have? Can you provide this information for **every year** since 1957?

4. If you have a **website**, when was it set-up?

5. Do you have a **regular publication** informing members of your activities?

    - If so, since when?
    - How often is it published?
    - How many members receive it?
    - Does this contain agreed policy positions?

6. Does the BA charge a membership fee? If so, how much is it? Since when? (Historical data)

7. Does the organisation have a formalised dialogue with the *state* government?
    - If so, since when?
    - If so how often? (Please provide this information for each year since 1957)
    - If so, with which government institutions or dedicated part of the state government?
    - What are the characteristics (e.g. annual meetings with prepared agenda and formal documents, ad-hoc meetings, etc)?

Part II (semi-structured: more open ended questions important to get a qualitative feeling on the organisation; but may give rise to the development of other measures if we can consistently codify some of the data)

8. What is your **mandate**? (e.g. do you have departments for policy advocacy, lobbying, research, etc?)

    - Has this changed? If so when and how?

9. *Effects of business organisation*. Were there instances in which your organisation helped to

- prioritise and remove obstacles to doing business for your members (please explain how this came about)
- Influence the budget and government spending plans.

10. Does the BA provide **training courses**, e.g. linked to specific occupations and business matters? If so since when?

11. Does the BA undertake liaison work with banks to **facilitate loans** for (Medium and Small Scale) enterprises? If so, since when?

12. Does the BA **provide information** to its members on matters such as exports, imports, trade, commerce and the trends in the industry? If so since when?

13. Does the BA provide support to its members in terms of **access to technology**, marketing? If so since when?

14. Do you think the *state* government has changed its attitude towards the private sector over the past decade or so?

    - If yes, in what measurable way?
    - If yes, when did it happen approximately (key milestone) and why?

15. How many state and government committees is the organisation represented in? Can we have the information for every year since 1957?

16. Do you have other suggestions (e.g. do you prefer/want closer or less closer or weaker relations with the *state*?)

Questionnaire submitted to the state bureaucrats
(Industry)

1. What is the department's role?

2. Do you have an institutionalised Public-Private Dialogue?

    - If so, since when?
    - If so how often? (Please provide this information for each year since 1957)
    - If so, with what business associations?
    - What are the characteristics (e.g. annual meetings with prepared agenda and formal document, ad-hoc meetings, etc)?

3. What office entertains a dialogue with the private sector within your department regardless whether that is formal or informal (e.g. Pubic Relations Office)?

    - Is that the office's main mandate? If so since when?
    - When was such an office established?
    - How many people work in that office?
    - Can we have this data for every year since 1957?

4. How many committees in your department include some formal private sector representation?

    - Can you state the number of private sector association over total members in each of these committees?
    - Can we have this info in each year since 1957?

5. Has there been one or more changes in the attitude of the public sector towards businesses?

    - If so when?
    - What visible signs of such a change have there been

APPENDIX C

Table 4 Selected Sectors/Associations for Field Interview

State	Industry Group For field sample	Number of workers (nos)	Net Value Added (Rs)	Ranking in employment	Ranking in value addition	Top industry group in employment	Top industry group in value add.
Andhra Pradesh	Mfr. Of Chemical and Chemical Products (Bulk Drug)	38282	234847	6th	1st	Mfr. Of tobacco Products	Mfr. Of Chemical and Chemical Products
	Mfr. of Rubber and Plastic Products (Plastic)	12703	21892	11th	10th	Mfr. Of food Prods. & Beverages	Mfr. Of food Prods. & Beverages
Assam	Mfr. Of food Prods. & Beverages (Tea)	66464	84745	1st	1st	Mfr. Of food Prods. & Beverages	Mfr. Of food Prods. & Beverages
	-not available- SSI association	-	-	-	-	Mfr. Of other Non-Metallic Mineral Prod.	Mfr. Of Coke, refined petroleum Prod. & Nuclear Fuel
Bihar	-not available-	-	-	-	-	Mfr. Of other Non-Metallic Mineral Prod.	Mfr. Of Coke, refined petroleum Prod. & Nuclear Fuel
	-not available-	-	-	-	-	Mfr. Of food Prods. & Beverages	Mfr. Of tobacco Products
Gujarat	Mfr of Textiles & Prods. (Textile)	154524	141972	1st	2nd	Mfr of Textiles & Prods.	Mfr. Of Chemicals and Chemical Products
	Mfr. Of Chemicals and Chemical Products **(**Chemical)	129950	987304	2nd	1st	Mfr. Of Chemicals and Chemical Products	Mfr of Textiles & Prods.
Haryana	Mfr of Textiles & Prods. (Textiles)	27487	49601	3rd	5th	Mfr. Of Transport & Equipment	Mfr. Of Transport & Equipment
	Mfr. of Rubber and Plastic Products (Sports goods)	9152	19705	7th	8th	Mfr. Of food Prods. & Beverages	Mfr. Of Machinery & Equipment and Accounting & Computing Machinery
Karnataka	Mfr. Of food Prods. & Beverages (Sugar)	59323	121215	2nd	1st	Mfr of Textiles & Prods.	Mfr. Of food Prods. & Beverages

	Mfr. Of Electrical Machinery, Communication & apparatus (Electronics)	22971	89477	4th	4th	Mfr. Of food Prods. & Beverages	Mfr. Of tobacco Products
Kerala	Mfr of Textiles & Prods. (Coir)	30691	22609	2nd	6th	Mfr. Of food Prods. & Beverages	Mfr. Of Chemical and Chemical Products
	Mfr. of Rubber and Plastic Products (Rubber)	12655	23288	5th	5th	Mfr of Textiles & Prods.	Mfr. Of food Prods. & Beverages
Madhya Pradesh	Mfr. Of Chemical and Chemical Products (Drug manufacturers/Pharmaceuticals)	16342	84085	5th	1st	Mfr of Textiles & Prods	Mfr. Of Chemical and Chemical Products
	Mfr. Of food Prods. & Beverages (Soybean Processors)	17627	66389	3rd	5th	Mfr. Of Electrical Machinery, Communication & apparatus	Mfr of Textiles & Prods
Maharashtra	Mfr. Of Chemical and Chemical Products (Chemical)	79304	873744	5th	1st	Mfr of Basic Metals & Fabricated Metal Prod, except Machinery & Equipment	Mfr. Of Chemical and Chemical Products
	Mfr. Of Electrical Machinery, Communication & apparatus (Electrical & Electronics)	41304	162172	8th	9th	Mfr. Of food Prods. & Beverages	Mfr. Of Transport & Equipment
Orissa	-not available-					Mfr of Basic Metals & Fabricated Metal Prod, except Machinery & Equipment	Mfr of Basic Metals & Fabricated Metal Prod, except Machinery & Equipment
	-not available-					Mfr. Of other Non Metallic Mineral Production	Mfr. Of other Non Metallic Mineral Production
Punjab	Mfr of Textiles & Prods (Knitwear)	57496	103129	2nd	3rd	Mfr. Of food Prods. & Beverages	Mfr. Of food Prods. & Beverages
	Mfr. of Rubber and Plastic Products (Sports goods)	16265	24737	5th	7th	Mfr of Textiles & Prods	Mfr. Of Chemical and Chemical Products
Rajasthan	Mfr of Textiles & Prods (Textiles)	67771	80620	1st	3rd	Mfr of Textiles & Prods	Mfr. Of other non-metallic mineral prod
	Mfr. Of Chemical and Chemical Products (Pharmaceuticals)	9241	131856	5th	2nd	Mfr. Of other non-metallic mineral prod.	Mfr. Of Chemical and Chemical Products

Tamil Nadu	Mfr. of Rubber and Plastic Products (Plastics Manufacturers & Merchants)						
	Mfr. Of Electrical Machinery, Communication & apparatus (Electric Trade)						
Uttar Pradesh	Mfr. Of food Prods. & Beverages (Sugar)	128805	170201	1st	2nd	Mfr. Of food Prods. & Beverages	Mfr. Of Chemical and Chemical Products
	Mfr. Of food Prods. & Beverages (Distillery)	128805	170201	1st	2nd	Mfr of Textiles & Prods	Mfr. Of food Prods. & Beverages
West Bengal	Mfr of Textiles & Prods (Jute)	176075	144419*	1st	2nd	Mfr of Textiles & Prods	Mfr of Basic Metals & Fabricated Metal Prod, except Machinery & Equipment
	Mfr of Basic Metals & Fabricated Metal Prod, except Machinery & Equipment (Ferro Alloy)	82083	174696	2nd	1st	Mfr of Basic Metals & Fabricated Metal Prod, except Machinery & Equipment	Mfr of Textiles & Prods
Uttarakhand	Not available						

Source: Indiastat.com, Handbook of Industrial Policy and Statistics 2002, Ministry of Commerce and Industry, Government of India, accessed on August 12, 2008.

APPENDIX D

List of Interviewees

1. Andhra Pradesh

Federation of Andhra Pradesh Chambers of Commerce & Industry (FAPCCI),
Federation House, 11-6-841, Red Hills, Post Box 14 Hyderabad

Andhra Pradesh Plastics Manufacturers Association
#304, 3rd Floor, Raghava Ratna Towers, Chirag Ali Lane
Hyderabad

Bulk Drug Industries
C-25, Industrial Estate, Sanathnagar
Hyderabad

Federation of Andhra Pradesh Small Industries Associations
Hyderabad

Commissioner of Industries
Chirag Ali Lane, Abids
Hyderabad -500 001

2. Bihar

Mr. K. P Jhunjhunwala
President
Bihar Industries Association
Industry House
Sinha Library Road
Patna- 800 001

Bihar Industrial Area Development Authority
(A Govt. of Bihar Undertaking) (BIADA)
Udyog Bhawan, First floor, East Gandhi Maidan, Patna - 800 004
http://www.biada.in/

Department of Industries
Government of Bihar
Second Floor, Vikash Bhawan
Patna

3. Assam

Federation of Industries & Commerce of North Eastern Region
Swahid Dilip Chakravarty Path, Behind Ice Factory, R G Baruah Road, Guwahati 781 005

Tea Board Zonal Office
Housefed Complex, 5th floor, Central Block, Beltala, Basistha Road, Dispur
Guwahati 781 006 Assam

Tea Association of India (Branch Office)
Zoo Narengi Road, Opposite CPWD Colony
Guwahati-781021 Assam

Assam Livestock & Poultry Corporation
and

Dairy Development Department
Khanapara, Guwahati - 22 Assam

All Assam Small Scale Industries Association
Industrial Estate, Bamuni Maidan,
Guwahati (Assam)-781021

4. Gujarat

Gujarat Chamber of Commerce & Industry
Gujarat Chamber of Commerce & Industry
Shri Ambica Mills Gujarat Chamber Bldg
Ashram Road Post Box No. 4045 Ahmedabad, 380 009 Gujarat

Ahmedabad Textile Industry's Research Association (ATIRA)
Ahmedabad

Gujarat Chemical Association
"Shri Rasiklal Vasa Chemical Chamber",
Nikumbh Complex, 3rd Floor, Nr. Reliance House, C. G Road, Ahmedabad - 6

Industries Commissionerate
Government. Of Gujarat, Gandhinagar

5. Punjab &
6. Haryana

PHD Chamber of Commerce and Industry
PHD House, Sector -31A, Chandigarh

SGMEA (The Sports Goods Manufacturers & Exporters Association)
201 Shakti Nagar,
Jalandhar - 144001, Punjab,

Federation of Knitwear, Textile an Allied Industries Associations (FEKTAA)
II Floor, Sutlej Tower, Atam Marg (Cemetery Road), Civil Lines,
Ludhiana, Punjab

The Textile Association-INDIA
PHC Unit
C/o. Saurabh Sales Pvt. Ltd. SCO: 107-8-9,
Ist floor Sector 34-A Chandigarh-160 022

Northern India Chamber of Industry & Commerce
C-127 Focal Point, Ludhiana

Apex Chamber of Industry & Commerce
Room No. 212, Savitri Complex 1
G.T Road, Ludhiana

Udyog Sahayak (Industrial Facilitation Cell)
Directorate of Industries,
18 Himalaya Marg, Udyog Bhawan,
Sector 17, Chandigarh 160017

7. Karnataka

A Ramakrishna, Secretary General
Federation of Karnataka Chambers of Commerce and Industry (FKCCI),
P.B No:9996, K.G Road,
Bangalore 560 009

South Indian Sugar Mills Association
Farah Winsford, 133/6, Infantry road
Bangalore: 560 001

Electronics' Association
Kamakshi Complex,
Sanjay Nagar Main Road Bangalore: 94

Karnataka WTO Cell, Industry Department
Karnataka Council for Technological Upgradation
Fourth Floor, Basava Bhavan,
Basaveswara Circle, Bangalore: 560 001

8. Kerela

Kerala Chamber of Commerce and Industry
Cochin -31

9. Madhya Pradesh

G. D. Ladha, President
M. P. Chambers of Commerce and Industry
Sanatan Dharam Mandir Road ,
Gwalior – 474009 Madhya Pradesh

M.P. Small Scale Drug Manufactures' Association
47-C, Sector 'A'
Sanwer Road, Industrial Estate,
Indore-452 015 Madhya Pradesh

The Soybean Processors Association of India
Scheme No. 53,
Near Malviya Nagar, A.B. Road
Indore - Madhya Pradesh

M.P. Small Scale Industries Organisation
E-2/30, Mahavir Nagar
Bhopal-462016 Madhya Pradesh

M.P. Laghu Udyog Nigam Ltd.
(M.P. Government Undertaking)
Panchanan Bhawan, (4th Floor), Malviya Nagar, Bhopal 462003 Madhya Pradesh

10. Maharashtra

Bombay Chamber of Commerce and Industry
Mackinnon Mackinzie Building,
3rd Floor, 4, Shoorji Vallabhdas Road, Ballard Estate,
Mumbai 400001 Maharashtra

Indian Specialty Chemical Manufacturers Association
1156, Bole Smruti, Suryavanshi Kshatriya Sabhagriha Marg,

Indian Coir Association,
C/o The Cochin Chamber of Commerce & Industry,
PB No. 503, Bristow Road,
Willingdon Island, Cochin – 682003

Kerala Rubber Merchants Association
Indian Chamber Building
Mattancherry, Kochi-02
Poopalan, Development Officer

Coir Board
"Coir House", M.G. Road,
Kochi 682 016

Kerala State Industrial Development Corporation Limited [KSIDC]
Trivandrum: Keston Road,
Kowdiar, Kerala - 695 003

Kerala Vyapari Vyavasai Ekopana Samithi
Vyaparabhavan, Manjalykulam Road,
Thiruvananthapuram

Dadar - Mumbai-28 Maharashtra

Indian Electrical & Electronics Manufacturers Association
501, Kakad Chambers, 132,
Dr. Annie Besant Rd., Worli,
Mumbai-18 Maharashtra

Directorate of Industries,
New Administrative Bldg.,
2nd Floor, Opp. Mantralaya,
Mumbai – 400 032 Maharashtra

11. Orissa

Utkal Chamber of Commerce and Industries (UCCI)
N/6 IRC Village, Nayapalli
Bhubaneswar – 751 015

Orissa Small Scale Industries Association (OSSIA)
OSSIA Complex
Madhupatna Industrial Estate
Madhupatna, Cuttack-753 010

Founder Chairman – IPICOL
& Ex-Managing Director – IDCO
222/1 Shastri Nagar, Unit IV,
Bhubaneswar -751 001

12. Rajasthan

Rajasthan Chamber of Commerce & Industry
Chamber Bhawan, M. I. Road
Jaipur- 302 003

The Rajasthan Textile Mills Association
B-1, Nawalkha Apartments
Bharat Mata Path, Jamnalal Bajaj Marg,
C-Scheme, Jaipur 302 001

Rajasthan Pharmaceutical Manufacturers Association

SP-2, Bais Godam Industrial Estate
Jaipur 302 006

Office of the Commissioner of Industries, Rajasthan
Udyog Bhawan, Tilak Marg
Jaipur 302005

13. Tamil Nadu

The Madras Chamber of Commerce & Industry
Karumuttu Centre, I Floor 634 (Old No.498),
Anna Salai,
Chennai 600035

The Madras Electric Trades Association
93, Govindappa Naicken Street,
2nd FLOOR,
Chennai 600 001

Chennai Plastics Manufacturers & Merchants Association
New No.26 (Old No.142),
Choolai High Road,
Chennai 600 112

Tamil Nadu Small and Tiny Industries Association
10, G.S.T. Road, Guindy,
Chennai 600 0032

Department of Industries and Commerce
Chepauk, Chennai- 600005

14. Uttar Pradesh

Associated Chambers of Commerce & Industry of Uttar Pradesh, **Secretariat**
2/302, Vikas Khand, Gomti Nagar,
Lucknow-226010

Uttar Pradesh Leather Industries Association
R.O.: 187/170, Jajmau Road,
Kanpur -208010

UP Distillers Association
P. H. D. House, 4th Floor 4/2,
Siri Institutional Area,
August Kranti Marg,
New Delhi - 110 016

UP Sugar Mills Association

Ansal Plaza, C-Block, IInd Floor, Andrews Ganj,
August Kranti Marg, New Delhi 110049

Indian Industries Association
IIA Bhawan, Vibhuti Khand,
Phase II, Gomti Nagar,
Lucknow – 226010 Uttar Pradesh

15. West Bengal

Bengal Chambers of Commerce and Industries (BCCI), West Bengal

Federation of Small and Medium Industries, West Bengal (FOSMI).
23, R.N.MUKHERJEE ROAD,

Indian Ferro Alloy Producer's Association (Eastern Chapter)
Tata Centre, 10th Floor (ERP ROOM)
43, Jawaharlal Nehru Road
Kolkata 700 071.

16. Uttrakhand

Kumaun Garhwal Chamber of Commerce & Industry Chamber House
36 - A, E. C. Road, Dehradun

Uttaranchal Pharmaceutical Manufacturers Association
D-8, Industrial Area, Haridwar-249 401

Indian Industries Association (IIA) Uttarakhand
S. G. Electrical, 91-Shivlik Puram,
G.M.S. Road, Dehradun

Directorate of Industries
Industrial Area, Patel Nagar,
Dehradun

APPENDIX E

SBR Index Calculation
(i) Time series (ii) Cross Section

S`.no	PRIVATE SECTOR INDEX	Potential time variant version	Time invariant version	Special Remarks
1.	Active (establishment year)	Add up the value of the variables (either 1 or 0) which are to be included in the index (in this case all the three variables with the label 'active') and divide the sum by the number. For instance if in a year variables appear as (1, 0,1), it will give the value 2/3 in that year.	Min[The number of years it has been in existence in the year 2008, 33]/ 33 Note 33 is the maximum value that the numerator can take i.e. the value of the index will vary between 0 and 1.	The value of the Active variable correspond to Apex business association may be given a weight of 0.50 and the sectoral associations 0.25 each. Also since sectors administered in the 16 states are not strictly comparable due to difference in percentage contribution to industry value-added. It might be advisable to have different weights across business associations for different states.
2.	website	do	Do	
3.	Website update	Here frequency of web-updation can be expressed as 'the number of the times the website is updated in a month' Normalised value of the relevant variable is given by = Actual-Min / Max-Min Where, max and min refer to the maximum and minimum across states and time periods Then take simple average of 3 normalised website updation variables.	Same as column 2	
4.	Office space	As such (1 or 0)	Same procedure as in 1	
5.	**Private sector Index**	1+2+3+4 / 4	1+2+3+4 / 4	
6.	**PUBLIC SECTOR**	**Potential time variant version**	**Time invariant version**	
7.	4 Production corporations -industry,	Add up the value of the variables (either 1 or 0) and divide the sum by	For each value get corresponding normalised form:	

	-infrastructure -investment -Tourism	the number.	Min[The number of years it has been in existence in the year 2008, 33]/ 33 Then take the arithmetic mean of the various normalised variables	
8.	Revenue expenditure on Industry share from total planned Development expenditures	As such as this is a ratio belonging to [0,1]	**NA**	
9.	**Public Sector Index**	7+8 / 2	7+8 / 2	
10	**SBR INTERACTION**	**Potential time variant version**	**Time invariant version**	
11	Factory Regulation: **i**) Besley Burgess index of labour regulation ii)Total convictions/all inspected factories iii) Total convictions/all factories in a state	i)Convert BB's labour Reg. into normalised for using: = Actual-Min / Max-Min Where, max and min refer to the maximum and minimum value across states and time periods (ii) & (iii) same as above	**NA**	
12	Stamp Duty	Same as above	**NA**	
13	Industrial disputes	Adjudications in favour / Adj in favour + Adj going against	**NA**	
14	**SBR interaction Index**	11+12+13 / 3	11+12+13 / 3	
15	**COLLUSIVE BEHAVIOUR INDICATORS**	**Potential time variant version**	**Time invariant version**	
16	Publication	Same as 1	Min[The number of years it has been in existence in the year 2008, 33]/ 33	
17	Publication frequency	Same as 3	= Actual-Min / Max-Min by this the value of the index will vary between 0 and 1.	

18	Value added by firms of Delicenced Industries as a proportion of total industrial GDP or State GDP	As such lies in [0,1]	**NA**	
19	**Collusive index**	16+17+18 / 3	16+17+18 / 3	
20	**SBR Index**	5+9+14+19/4	5+9+14+19/4	

APPENDIX F

Table 5a: Summary Statistics of the select variables

Variable	0bs	Mean	Std. Dev	Cof. Of Var	Min	Max	Cof. Of Skewness
active1	544	.8621324	.3450783	0.400261	0	1	-1.198576671
active2	544	.7371324	.4405963	0.597717	0	1	-1.789853433
active3	544	.7132353	.452667	0.634667	0	1	-1.900501031
website1	544	.1488971	.3563146	2.393026	0	1	1.253642989
website2	544	.0974265	.2968105	3.046507	0	1	0.984734368
website3	544	.0753676	.2642266	3.505838	0	1	0.855715511
web_u~1_norm	544	.0580065	.2246357	3.872595	0	1	0.774674284
web_u~2_norm	544	.0289445	.1591164	5.497293	0	1	0.545723131
web_u~3_norm	544	.0093061	.0593375	6.376194	0	1	0.470500105
publication1	544	.7150735	.4517949	0.631816	0	1	-1.891963588
publication2	544	.3419118	.4747868	1.388624	0	1	2.160412632
publication3	544	.2408088	.427968	1.777211	0	1	1.688038358
pub_freq1_~m	544	.2352941	.2486036	1.056565	0	1	-0.177462032
pub_freq2_~m	544	.1534926	.3152801	2.054041	0	1	1.460535568
pub_freq3_~m	544	.0857843	.1861512	2.169991	0	1	1.382493908
office_pre~1	544	.5643382	.4962997	0.879437	0	1	-2.633459984
ipa	518	.9382239	.2409811	0.256848	0	1	-0.769057407
Financia	518	.984556	.1234298	0.125366	0	1	-0.375371264
Infra	518	.4710425	.4996433	1.060718	0	1	2.82827269
tourism	518	.9150579	.279065	0.30497	0	1	-0.913143175
Stamp Dutynorm	417	.5655788	.1719355	0.303999	1.59e-07	1	-0.309787682
sdelice_shr~t	544	.5813813	.4149124	0.713667	0	.9996512	-1.287743871
delice_shr~p	368	.3850878	.3855486	1.001197	0	.9963542	0.147281043
lab_regu_n~m	544	.5764181	.1869916	0.324403	0	1	0.08004905
active05	544	.7936581	.2835276	0.357241	0	1	-2.183299615
active03	544	.7708333	.2948556	0.382515	0	1	-2.331650137
website05	544	.1176471	.2587176	2.199099	0	1	1.364195169
website03	544	.1072304	.2396642	2.23504	0	1	1.342258043
publicati~05	544	.5032169	.3342948	0.664316	0	1	0.028868831
publicati~03	544	.432598	.3242335	0.749503	0	1	0.918455681
web_update05	544	.0385659	.1249538	3.240007	0	.75	0.925923821
web_update03	544	.0320857	.0992865	3.094416	0	.6666667	0.969488299
pub_freq05	544	.1774663	.172186	0.970246	0	.7916667	0.914121357
pub_freq03	544	.1581904	.1665423	1.052797	0	.8333333	1.348434001
shr_econ_r~m	364	.2507978	.1303749	0.519841	3.78e-09	1	0.021418233
shr_ind_re~m	364	.1639258	.1179959	0.719813	-1.02e-07	1	0.619821536
shr_ind_ec~m	364	.1895092	.1241805	0.655274	-5.95e-08	1	0.492915554

Table 5b: Summary Statistics of the select variables, to be used to check the robustness of the states' SBR measure

Variable	0bs	Mean	Std. Dev	Cof. Of Var	Min	Max	Cof. Of Skewness
disp_in_fa~s	210	595.8429	1248.98	2.096157	0	13250	0.913568432
disp_again~s	202	362.3317	507.6854	1.401162	0	3308	1.313796103
fact_regist	237	12482.77	11304.87	0.905638	1361	61649	0.79313694
no_factori~d	241	7941.494	6426.865	0.809277	577	27979	0.963219548
shr_ins_reg	235	67.39502	20.6137	0.305864	0	100	-0.61779011
tot_convict	186	1118.849	1831.916	1.637322	1	11175	1.308218827
avg_wage	204	56.39904	27.18524	0.482016	4.62	133.065	0.363510493
retotalplan	294	287094.1	296845.6	1.033966	0	2596525	0.91635618
nsdp_fact_~t	412	13042.6	9559.277	0.732927	1638	61212	0.873423796

APPENDIX G

Scatter Chart of the correlation between different components of SBRs across states

(five year averages since 1985-2007)

Chart 1

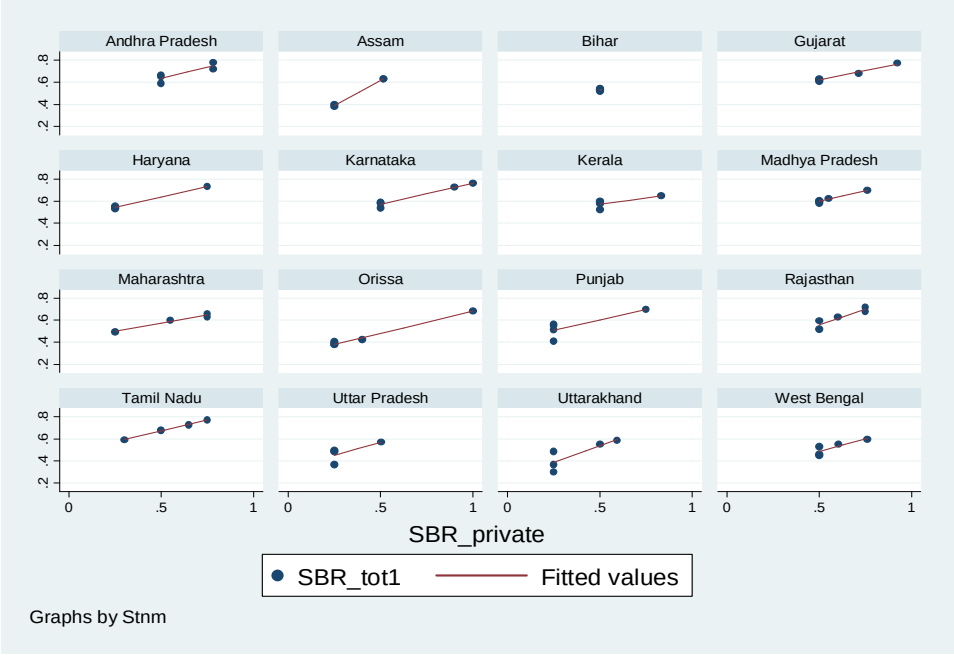


Chart 2

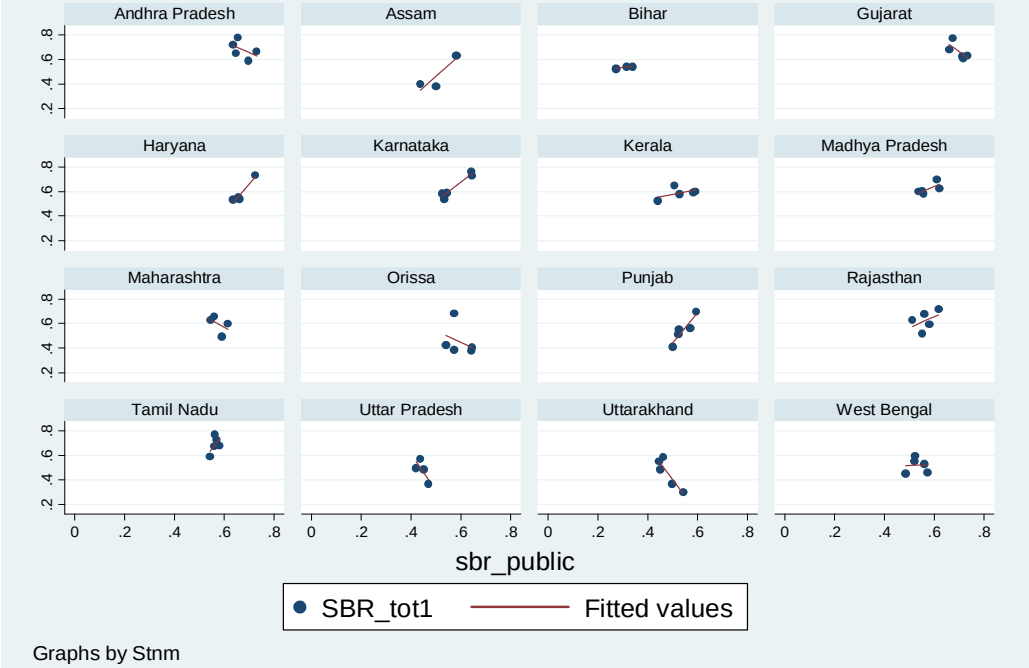


Chart 3

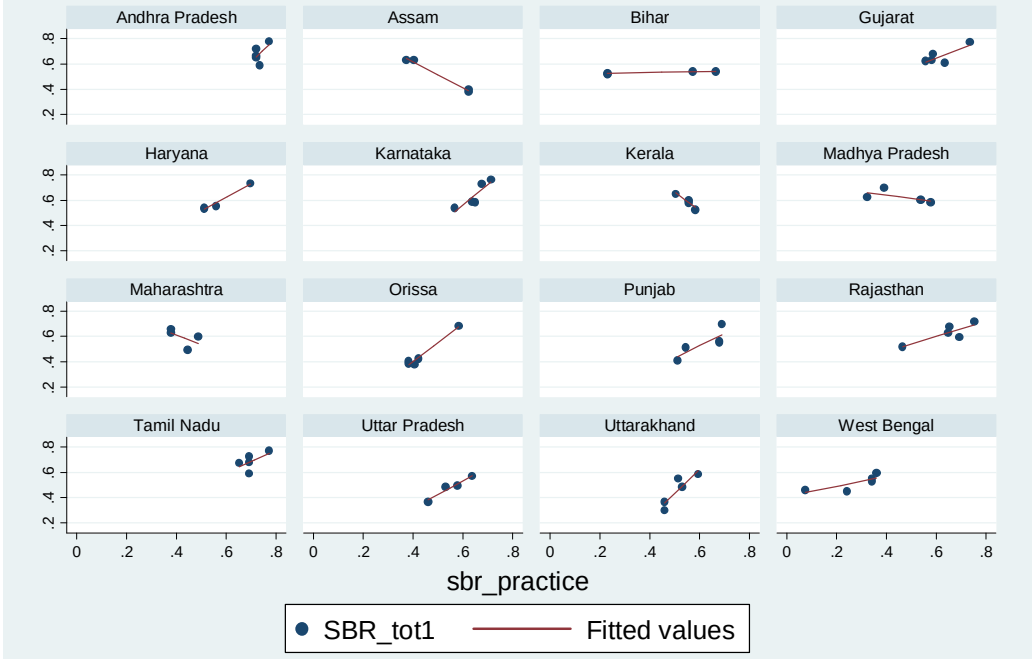


Chart 4

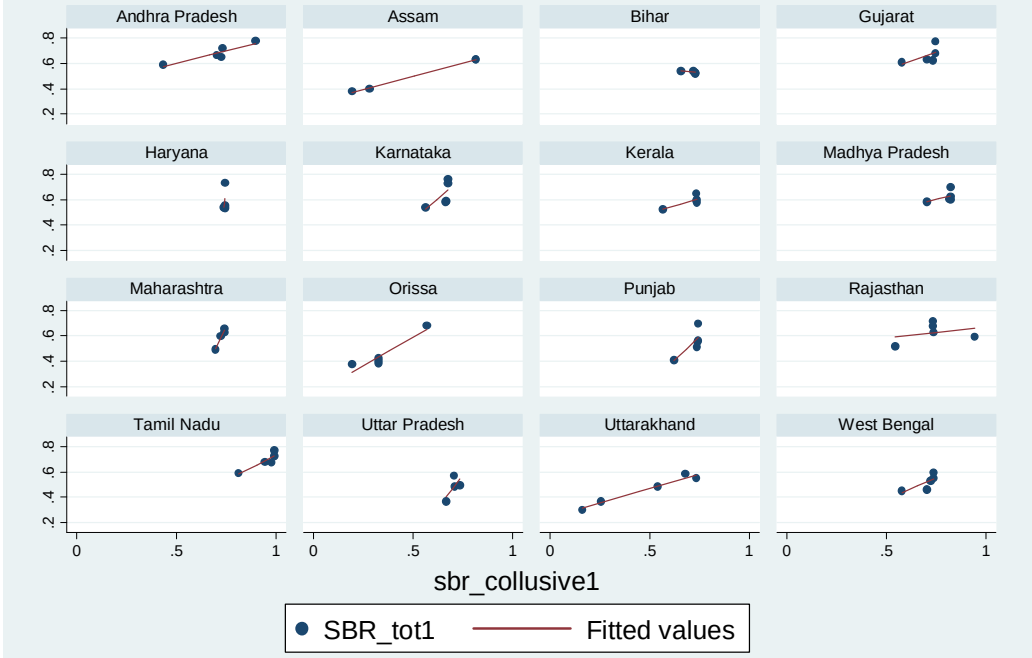
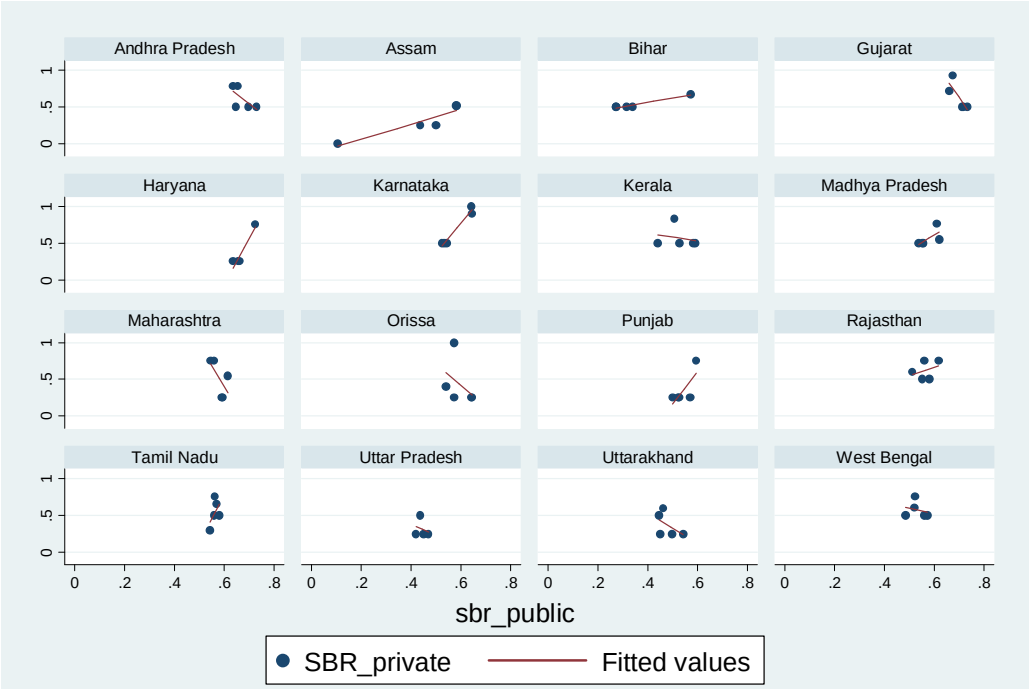
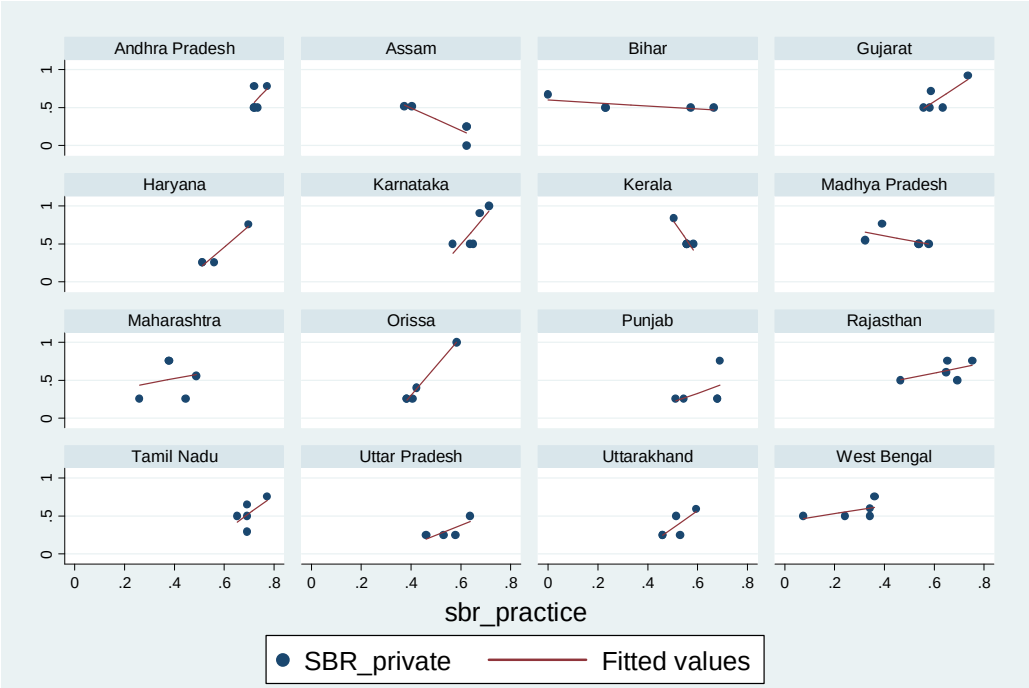


Chart 5



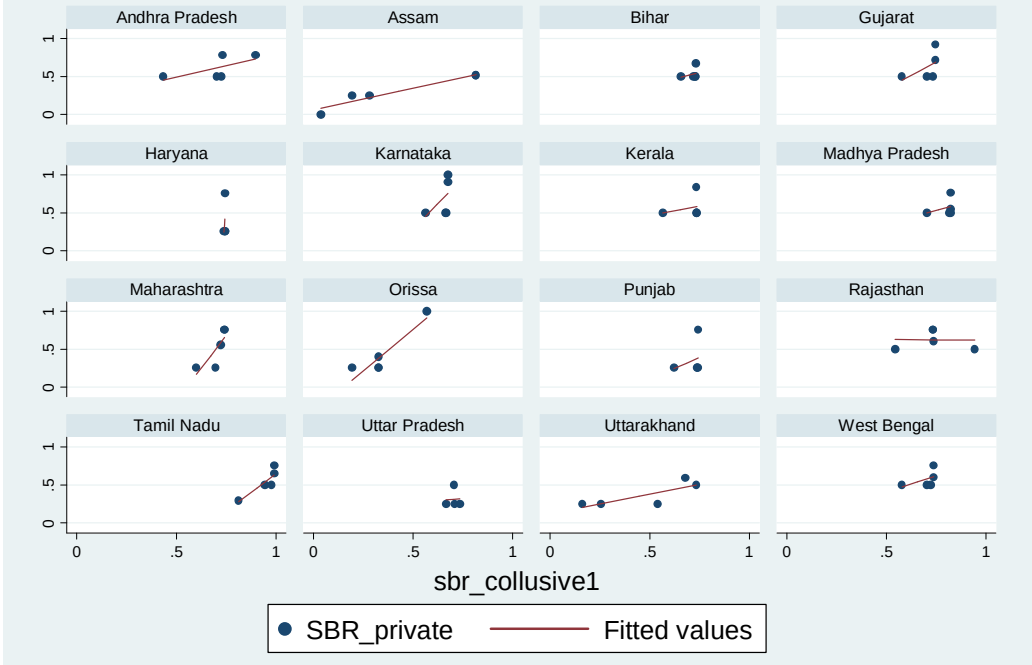
Graphs by Stnm

Chart 6



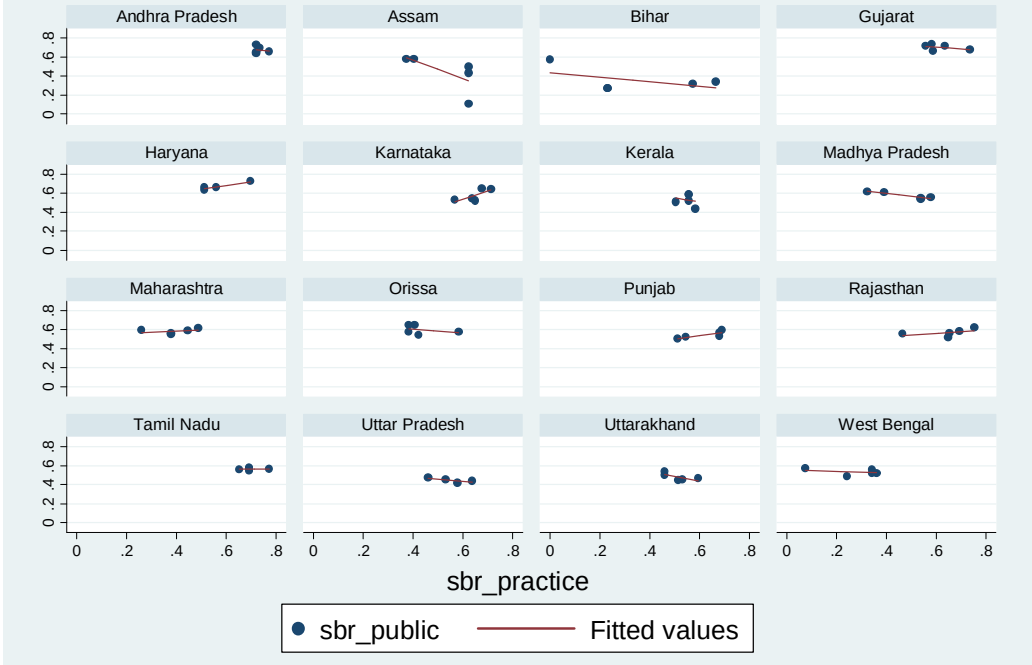
Graphs by Stnm

Chart 7



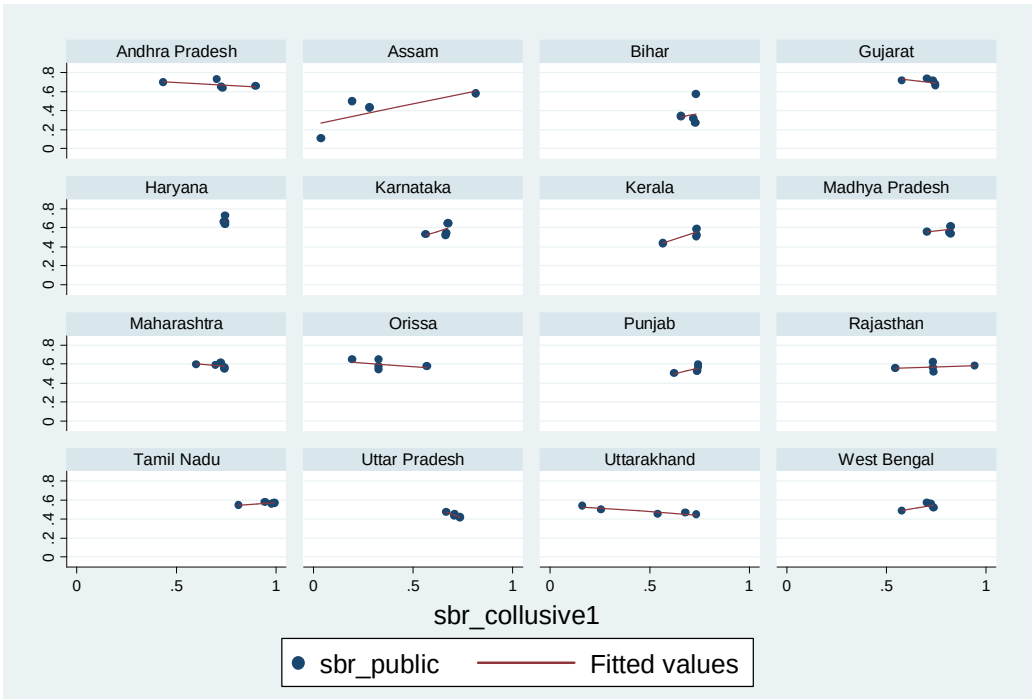
Graphs by Stnm

Chart 8



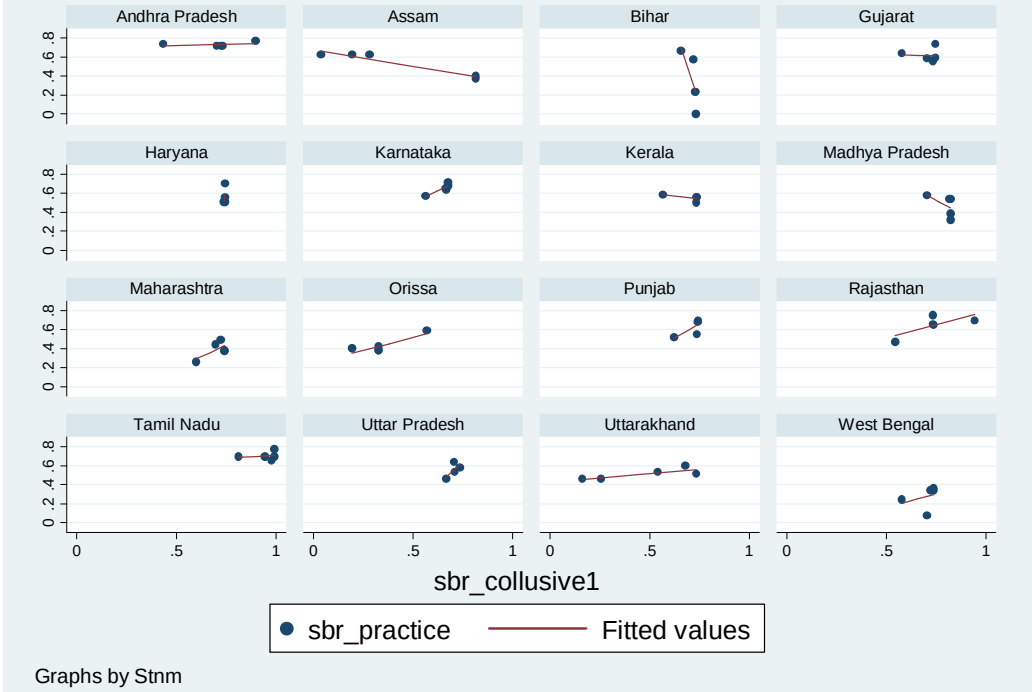
Graphs by Stnm

Chart 9



Graphs by Stnm

Chart 10



Graphs by Stnm