# Institutional Environment Differences Across the Indian States for Entrepreneurial Development

Review of Integrative Business & Economics Research

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**ABSTRACT**

There is a shortage of evidences and literatures regarding institutional environment differences across the states of India. Therefore, the paper attempts to provide some important sub-national environment differences across the Indian states in the context of entrepreneurship. It focuses on the security, opportunity and availability differences across the states of India and finds a significant potential differences across the states which may result the different level of entrepreneurship development in India among its states. Moreover, while the composite index (Index of Institutional Quality) gives an overview of the institutional environment of the states in the context of entrepreneurship, it is observed that a state which performs extremely well in certain indicators, its performances is not satisfactory in others. It is found that among the weaker and poor institutional quality states the problem is in all sectors, but the priority sectors are availability and security rather than opportunity. Any generalization about India as a whole may have misleading information and conclusions. India is a combination of states with better Institutional environment and quality which can attract investment as well as the states where the problems are worrisome. There are also certain states which experience imbalances among the various institutional factors. The interstate variation is significant and policymakers should consider these potential differences.

Keywords**:** institutions, entrepreneurship, security, opportunity, availability

## 1**. INTRODUCTION**

Institutions and entrepreneurship are important components of a flourishing society and it is widely acceptable that the institutional environment of a region has a crucial role to play in the determination of entrepreneurship in that region. But simply the acknowledgement that the environment matters is not sufficient from an empirical perspective. It is also essential to present the picture of institutional environment through certain quality dimensions in the form of some identifiable variables, through which one can compare it across the various regions and understand why the relative contribution of entrepreneurship varies significantly across the regions.

Many studies worldwide have tried to find out that which regional institutional factors encourage or constrain entrepreneurship? Three large research projects at the World Bank, The Heritage Foundation and the World Economic Forum (WEF) are actively involved in measuring the quality of institutions across the countries and over time (Acs and Szerb, 2010).The Global Competitiveness Report of World Economic Forum (WEF),


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Global Entrepreneurship Development Index (GEDI) suggested by Zoltán J. Acs and László Szerb and Global Entrepreneurship Monitor (GEM) provide a long list of institutional variables at cross country level.

Though the studies have considered institutional differences across the countries in the context of entrepreneurship, the institutional differences within the country are equally important. The statement of Bardhan (2005) that "in any case cross national studies do not usually give us good insights into the mechanism through which institutions affect development" seems more relevant in the case of country like India, where the State governments have a larger role and control in the implementation of many institutions related variables. In the federal structure of India areas like law and order, courts and justice, local governance, education, land and contracts, sales taxes and many minor taxes come under the state list or concurrent list of the Indian constitution. Therefore, a study which captures the interstate differences of institutions, their quality and enforcement based on some objective indicators is worthwhile and may provide better understanding of the institutional environment in India.

Previous studies, like Indicus Analytics (2004), Veeramani and Goldar (2005) and the National Knowledge Commission (2008) provide information regarding investment climate differences across the Indian states based on the perception surveys and interviews with the entrepreneurs and the company managers. But the perception based measures have at least one problem, that they are subjective and vague (Subramanian, 2007). Additionally, perception based data also have a problem regarding comparability across states or regions due to different interpretations of survey responses (Godin, Clemens and Veldhuis, 2008). Recently, Debroy and Bhandari (2014) in their studies have developed the index of economic freedom for states of India based on 'Economic Freedom of the World (EFW)' methodology. This study has used many reasonable proxies and indicators to capture the performances of sub-national institutions. However, this study limits itself to the three broad areas: (a) Size of the government, (b) Legal structure and (c) Regulations of labour and business. Many institutional prerequisites or determinants such as market size, education, information availability and credit accessibility could not get much attention, which are important context specific variables of entrepreneurship. Therefore, there is a shortage of evidences in the case of India.

Institutional environment/quality is a structural framework which consist many non-measurable elements also along with the measurable ones. Therefore, it is not reasonable and possible also, to recognize and recommend certain necessary and sufficient conditions for entrepreneurship development and one of the difficulties faced in the empirical work on institutions and institutional environment is deficient institutional quality indicators. Nevertheless, the paper attempts to present some important regional institution related differences across the states of India in the context of entrepreneurship. It has a focus on the general security, opportunity and availability environment of the states and is structured in five sections. Introduction is followed by section 2 which provides the information regarding the sources of data and the methodology used in the calculation of indices. In section 3 the detailed information regarding the security, opportunity and availability differences across the Indian states in the form of various sub-indices are given. Section 4 verifies the sufficiency of the indices regarding fulfilment of their purposes and finally section 5 concludes with some suggestions.

## 2. **SOURCES OF DATA AND METHODOLOGY**

The efficiency of an institutional set up seems to depend on the coherence of several complementary elements which deliver a unified and mutually reinforcing environment. Though some are specific, many of them are of a general nature and influence every


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aspect of the economy (Gupta et al. 2014). Therefore, they should be studied in a cluster rather than in an isolated way. Kunčič (2014) has recommended that it is hard to find one proxy or variable which would suitably represent the institutional environment and its quality; hence, a composite indicator which combines the information of several empirical measures is a better solution. The composite index of indicators which has been used as an instrument to capture the institutional quality in this paper has to rely on various sources (Planning Commission of India; Census of India; Published works such as 'The State of Economic Freedom in India 2013' by Debroy and Bhandari, 2014; Ministry of Statistics and Program Implementation (MOSPI); Ministry of Human Resource Development (MHRD) and Reserve Bank of India (RBI) etc.) as most of the related data are not available from a single source. This practice is not unique; as several indexes use data from other sources. For example, the Index of Economic Freedom uses the Doing business data to derive the Business Index sub-index, and the Corruption Perception Index to identify business corruption. India comprises 29 States and seven Union Territories. Ideally, all states should be included, however, due to the unavailability of data from all the states only 20 states could be selected for the study. The variables have been selected from the same sources for all the states to ensure that the data are defined in the same way. Sources of data are mentioned against all the variables in detail while providing information regarding the construction of the institutional quality index and its sub-indices. Additionally, only those indicators have been selected for which proper variables/proxies are available and are meaningful at the state level.

Each variable is considered to be equally important; therefore no arbitrary weights have been provided to the variables. There are methodologies and econometric techniques such as Principal Component Analysis (PCA) and Instrumental Variable analysis to merge together the indicators and determine the appropriate weight, but may have a problem of negation of potential differences across the states, regions or countries (Acs and Szerb, 2010). Knack and Keefer (1997) also mention that it is not yet clear how the various institutional traits/indicator sought to be weighed in designing an objective measure of institutional quality. Therefore, a composite index which provides equal weights to all the variables avoids the problem of accusation of using an arbitrary weighting methodology.

The variables have been normalized for population and area, wherever required. Normalization is done through dividing the variables by population, area or converting them in the form of a ratio or using it as a percentage of some aggregate, so that they become neutral to the size and population of the states. Further, since a variable or indicator should not have higher weight due to its high value and variance, values are normalized to zero to one, that is, '0' as the lowest and '1' as the highest.

In the next stage, each of the ranges equalized variables are aggregated and averaged by using arithmetic mean to create the categorical sub-indices for each of the areas under consideration. Finally, the composite index of the institutional quality is the simple arithmetic mean of all the categorical sub-indices. All indices are arranged on such a scale that higher values represent better performance in terms of quality of institutions and environment for the entrepreneurs. Thus, the indicators indicate the relative position of the states. This method of aggregation and arithmetic average for creating a composite index has been used in one form or another in The Doing business Index, and the Index of Economic Freedom by Fraser Institute's Economic Freedom of the World (EFW). The composite index of Economic Freedom for the states of India by Debroy and Bhandari (2014) is also constructed on the basis of same methodology.

## 3. **INSTITUTIONAL QUALITY INDICES**


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The composite index which attempts to capture institutional environment for entrepreneurs across the Indian states is sub-divided into three categorical sub-indices: (1) Index of Opportunity, (2) Index of Availability and (3) Index of Security. These three areas of sub-division: opportunity, availability and security are the main components of the institutional quality in this study, which capture some important dimensions of the environment for entrepreneurship. These indices compare Indian states at the specified dimensions and therefore are relative in sense and do not tell how 'good' are conditions of one state from other in an absolute sense.

### 3.1 **Index of Opportunity**

The perception of opportunity and its recognition by the entrepreneurs is a key to entrepreneurial actions. Acs and Szerb (2010) mentions that the opportunity perception potential is essential to recognize and explore novel business opportunities. The region having more and better opportunities attracts the investors and induces them to start a business. Thus, the Index of opportunity tries to enumerate the environment in which the entrepreneurs perceive the opportunity for them. The index is mainly divided into two parts: (1) Market Size and (2) Government size. Both these factors have completely opposite effects on the perception of the entrepreneurs. While a larger market size provides opportunities for the entrepreneurs, larger size of the government constrains them.

#### 3.1.1 **Market Size**

The development of entrepreneurship in a particular state or region depends upon the size of the market available for the various entrepreneurial activities. There should not be any doubt that a larger market size creates new market niches and provide more opportunities for the entrepreneurs. Acs and Szerb (2010) have explained the size of the market in their GEDI as a combined measure of domestic market size in terms of GDP or income and the urbanization of a region. Both of these variables are multiplied to measure the agglomeration effect on the opportunity perception of entrepreneurs. The two independent variables are multiplied to demonstrate their combined and conditional effects (Acs and Szerb, 2010). A higher per capita income indicates the higher purchasing power of a region and urbanization implies a diversified demand structure. Both of them collectively offer a flexibility of the diversity of activities for the entrepreneurs. The variable 'Per Capita Net State Domestic Product' has been used as a proxy for the purchasing power of the states in this index and the urbanization of a particular state is measured in terms of 'Percentage of the Urban Population in the Total Population'. Both the variables are multiplied to collectively represent the size of the market across the states. The multiplication captures the idea that both the variables are required for the better perception of entrepreneurial opportunities. The figures of Per Capita Net State Domestic Product are collected from the data book of the Planning Commission of India, 2014. The source of the data for urbanization is Ministry of Statistics and Programme Implementation of India (www.mospi.gov.in). The Market sizes of the various Indian states are shown in Table 1.


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**Table 1 Market size in 2011-12**

| Sl. no | State | Per capita NSDP at constant (2004-05) prices in (Rs) * | Rank | Urbanisation (%) ** | Rank | Market size | Rank |
|---|---|---|---|---|---|---|---|
| 1 | Andhra Pradesh | 42119 | 9 | 33.49 | 8 | 0.471 | 9 |
| 2 | Assam | 22910 | 18 | 14.08 | 18 | 0.064 | 19 |
| 3 | Bihar | 13226 | 20 | 11.3 | 19 | 0 | 20 |
| 4 | Chhattisgarh | 26979 | 14 | 23.24 | 15 | 0.178 | 14 |
| 5 | Gujarat | 57508 | 3 | 42.58 | 4 | 0.86 | 4 |
| 6 | Haryana | 62078 | 2 | 34.79 | 7 | 0.751 | 5 |
| 7 | Himachal Pradesh | 48923 | 7 | 10.04 | 20 | 0.127 | 16 |
| 8 | Jammu and Kashmir | 28999 | 12 | 27.21 | 12 | 0.24 | 11 |
| 9 | Jharkhand | 25634 | 15 | 24.05 | 14 | 0.175 | 15 |
| 10 | Karnataka | 41959 | 10 | 38.57 | 5 | 0.55 | 7 |
| 11 | Kerala | 53877 | 5 | 47.72 | 2 | 0.9 | 3 |
| 12 | Madhya Pradesh | 24395 | 16 | 27.63 | 11 | 0.196 | 13 |
| 13 | Maharashtra | 62457 | 1 | 45.23 | 3 | 1 | 1 |
| 14 | Odisha | 24134 | 17 | 16.68 | 17 | 0.094 | 18 |
| 15 | Punjab | 46364 | 8 | 37.49 | 6 | 0.593 | 6 |
| 16 | Rajasthan | 28851 | 13 | 24.89 | 13 | 0.212 | 12 |
| 17 | Tamil Nadu | 57131 | 4 | 48.45 | 1 | 0.978 | 2 |
| 18 | Uttarakhand | 50303 | 6 | 30.55 | 10 | 0.518 | 8 |
| 19 | Uttar Pradesh | 18217 | 19 | 22.28 | 16 | 0.096 | 17 |
| 20 | West Bengal | 33117 | 11 | 31.89 | 9 | 0.338 | 10 |

Source: *Data-book for Use of Deputy chairman, Planning Commission, Government of India, 10th March 2014. Available at: http://planningcommission.gov.in

**Selected Socio-Economic Statistics India, 2011. Government of India, Ministry of Statistics and Programme Implementation. Available at: www.mospi.gov.in

3.1.2 **Government Size**

A larger size of the government limits the opportunities for the private entrepreneurs. If a government performs too many functions, then there remains a little scope for private activities. Even though there is availability of the market, the state may capture a major portion of it and entrepreneurs may not find much opportunity for them even with a larger market size. The larger role of the government as a producer and provider of services and goods and other such activities reduces the level of economic freedom and therefore constrains the opportunities for the entrepreneurs. The source of the variable 'Government Size' in this study is the published work of Bibek Debroy and Laveesh Bhandari (2014) "The State of Economic Freedom in India 2013" based on various proxies and variables: Government Revenue Expenditure; Administrative


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Gross State Domestic Product (GSDP); Share of the Government in Organized Employment; State level taxes on Income, Property, Commodities and services and Capital transactions and Stamp Duty Rate. The average of the scores of the two latest years for which scores are available (2011 and 2013) has been calculated to remove a single year effect. The size of the government of the different Indian states and their respective rankings is given in Table 2.

**Table 2 Size of Government**

| Sl. no | State | 2011-12 | |
|---|---|---|---|
| | | **Score** | **Rank** |
| 1 | Andhra Pradesh | 0.585 | 8 |
| 2 | Assam | 0.605 | 5 |
| 3 | Bihar | 0.53 | 13 |
| 4 | Chhattisgarh | 0.5 | 15 |
| 5 | Gujarat | 0.715 | 2 |
| 6 | Haryana | 0.745 | 1 |
| 7 | Himachal Pradesh | 0.59 | 7 |
| 8 | Jammu and Kashmir | 0.585 | 8 |
| 9 | Jharkhand | 0.545 | 11 |
| 10 | Karnataka | 0.485 | 16 |
| 11 | Kerala | 0.535 | 12 |
| 12 | Madhya Pradesh | 0.4 | 19 |
| 13 | Maharashtra | 0.68 | 3 |
| 14 | Odisha | 0.47 | 17 |
| 15 | Punjab | 0.595 | 6 |
| 16 | Rajasthan | 0.52 | 14 |
| 17 | Tamil Nadu | 0.57 | 10 |
| 18 | Uttarakhand | 0.465 | 18 |
| 19 | Uttar Pradesh | 0.39 | 20 |
| 20 | West Bengal | 0.615 | 4 |
| **Median** | | **0.5575** | |

Source: Economic Freedom of the States of India 2013 (BibekDebroy, Laveesh Bhandari andSwaminathan S. AnklesariaAiyar, 2014) available at: http://www.cato.org/sites/cato.org/files/economic-freedom-india-2013/economic-freedom-states-of-india-2013.pdf

Note: The score of 2011-12 is the average of 2011 & 2013.

But neither a lower size of the government nor a larger market size alone is sufficient in determining the opportunity environment for the entrepreneurs. A state may have a smaller government size, but the market size would not be large enough to provide more and better opportunities for entrepreneurship. Similarly, even though a state has a sufficiently large market size, the government would be the major player in various activities. Thus, there would be limited opportunities for the entrepreneurs. To avoid the dominance of any one indicator (Market size or Government size) on the sub-index, an average of these indicators may be a better alternative. Therefore, to average out such problems and to balance any such differences the average of the Government Size scores and Market Size scores is calculated as:

$$\text{Index of opportunity} = \frac{Government\ Size + Market\ Size}{2}$$


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These two pillar indicators provide the quality of opportunity perception among the states of India. The relative values and rankings of the states are reported in Table 3.

**Table 3 Index of opportunity**

| Sl. no | **State** | **Score 2011-12** | **Rank** |
|---|---|---|---|
| 1 | Andhra Pradesh | 0.52818 | 7 |
| 2 | Assam | 0.334853 | 16 |
| 3 | Bihar | 0.265 | 19 |
| 4 | Chhattisgarh | 0.339244 | 15 |
| 5 | Gujarat | 0.787187 | 2 |
| 6 | Haryana | 0.748179 | 4 |
| 7 | Himachal Pradesh | 0.358864 | 14 |
| 8 | Jammu and Kashmir | 0.412032 | 11 |
| 9 | Jharkhand | 0.359782 | 13 |
| 10 | Karnataka | 0.517013 | 8 |
| 11 | Kerala | 0.720047 | 5 |
| 12 | Madhya Pradesh | 0.298035 | 17 |
| 13 | Maharashtra | 0.84 | 1 |
| 14 | Odisha | 0.2823 | 18 |
| 15 | Punjab | 0.594406 | 6 |
| 16 | Rajasthan | 0.36627 | 12 |
| 17 | Tamil Nadu | 0.77436 | 3 |
| 18 | Uttarakhand | 0.491763 | 9 |
| 19 | Uttar Pradesh | 0.242921 | 20 |
| 20 | West Bengal | 0.476937 | 10 |
| **Median** | | **0.444484** | |

While calculating the Index of Opportunity for the Indian states the variation of scores among the states is found to be lower in terms of the government size (Range = 0.745 - 0.39 =0.355, Variance = 0.008) in comparison to the size of the market (Range= 1- 0 =1, Variance = 0.11). Therefore, in the context of Indian states the size of the market is a more dominant factor in determining the opportunity environment differences among the states.

### 3.2 **Index of Availability**

Index of Availability captures the accessibility of people to credit, information and higher education which act as an efficiency enhancer for the entrepreneurship. The level of education, availability of information and credit collectively provides start up motives and enhances the efficiency of a region and people to develop entrepreneurial activities. On the other hand, lack of these factors may constrain entrepreneurial activities.

#### 3.2.1 **Credit**

Credit is one of the basic requirements of any entrepreneurial activities and studies have considered access to finance or credit as one important element of institutional quality for the entrepreneurship. Reserve Bank of India's report (2005) on the trend and progress of banking in India 2004-05, mentions that the credit-deposit ratio of the commercial banks


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across the states has traditionally been used as a credit-efficiency indicator and is regarded as an aggregate measure for gauging the effectiveness of the credit delivery system (as cited in Dash and Raja, 2009). Therefore, this study also uses 'credit-deposit ratio' (source: data book of the Planning Commission of India, 2014) to capture the differences of the credit environment across the states. Credit-deposit ratio, popularly CD ratio, is the ratio of how much a bank lends out the deposits it has mobilized. A very low ratio indicates that people have lower access to the credit and banks are not making full use of their resources. A low CD ratio may also mean that the banks feel it risky to lend loans or they are not efficient enough in delivering credit. There is also a possibility of lack of demand for credit or people may lack formal qualifications for it. In any of such cases the lower credit deposit ratio indicates weaker credit environment. The credit environment index of the various Indian states is reported in Table 4.

3.2.2 **Education**

The level of education determines the quality of human capital of a region. A region having a higher general level of education has more skilled people and therefore more entrepreneurs. Hay and Camp (1999) conclude that the larger a country's investment in education at the tertiary level, the higher the rate of new firm formation (as cited in Verheul et al. 2000). Similarly, in a study, Bruce and Deskins (2010) find that U.S. states in which a larger share of the adult population holds a college degree tend to have higher rates of tax based entrepreneurship. Therefore, tertiary level of education has a specific role in the determination of an environment of a region or states for the development of entrepreneurship. Gross Enrolment Ratio (GER) in tertiary or higher education is used to measure such differences across the countries in terms of education. Global Entrepreneurship Monitor (GEM) report 2011 and Global Entrepreneurship Development Index (GEDI) by Acs and Szerb (2010) have used gross enrolment ratio in tertiary education in order to measure the institutional differences of countries in the context of entrepreneurship. This paper also uses the variable 'Gross Enrolment Ratio in Higher Education (18-23 Years)' (source: All India Survey on Higher Education (2011-12), Government of India) to understand the different conditions of higher education across the states of India. The GER of various Indian states is given in table 5.

**Table 4 Credit Environment**

| Sl. no | **State** | **Credit-Deposit (C-D) Ratio 2011-12** | **Rank** |
|---|---|---|---|
| 1 | Andhra Pradesh | 110.15 | 2 |
| 2 | Assam | 36.47 | 16 |
| 3 | Bihar | 29.065 | 20 |
| 4 | Chhattisgarh | 52.91 | 12 |
| 5 | Gujarat | 68.03 | 9 |
| 6 | Haryana | 86.81 | 4 |
| 7 | Himachal Pradesh | 38.36 | 15 |
| 8 | Jammu and Kashmir | 35.705 | 17 |
| 9 | Jharkhand | 34.33 | 19 |
| 10 | Karnataka | 71.635 | 8 |
| 11 | Kerala | 73.785 | 7 |


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| | | | |
|---|---|---|---|
| 12 | Madhya Pradesh | 58.42 | 11 |
| 13 | Maharashtra | 84.195 | 5 |
| 14 | Odisha | 49.09 | 13 |
| 15 | Punjab | 79.47 | 6 |
| 16 | Rajasthan | 90.075 | 3 |
| 17 | Tamil Nadu | 115.135 | 1 |
| 18 | Uttarakhand | 35.395 | 18 |
| 19 | Uttar Pradesh | 43.82 | 14 |
| 20 | West Bengal | 63.28 | 10 |
| Source: Data-book for Use of Deputy chairman, Planning Commission, Government of India, 10th March 2014. Available at: http://planningcommission.gov.in. Note: The Credit-Deposit Ratio of 2011-12 is the average of 2011 & 2012. | | | |

**Table 5 Gross Enrolment Ratio in Higher Education (18-23 Years)**

| Sl. no | **State** | **2011-12** | **Rank** |
|---|---|---|---|
| 1 | Andhra Pradesh | 29.9 | 3 |
| 2 | Assam | 14.7 | 16 |
| 3 | Bihar | 12.5 | 18 |
| 4 | Chhattisgarh | 10.5 | 19 |
| 5 | Gujarat | 16.5 | 15 |
| 6 | Haryana | 28.0 | 4 |
| 7 | Himachal Pradesh | 24.8 | 6 |
| 8 | Jammu and Kashmir | 22.8 | 9 |
| 9 | Jharkhand | 9.9 | 20 |
| 10 | Karnataka | 23.8 | 7 |
| 11 | Kerala | 21.8 | 10 |
| 12 | Madhya Pradesh | 18.5 | 11 |
| 13 | Maharashtra | 26.3 | 5 |
| 14 | Odisha | 16.6 | 14 |
| 15 | Punjab | 23.0 | 8 |
| 16 | Rajasthan | 18.2 | 12 |
| 17 | Tamil Nadu | 40.0 | 1 |
| 18 | Uttarakhand | 31.1 | 2 |
| 19 | Uttar Pradesh | 17.4 | 13 |
| 20 | West Bengal | 13.6 | 17 |
| Source: All India Survey on Higher Education (2011-12), Government of India, Ministry of Human Resource Development, Department of Higher Education, 2014. | | | |

### 3.2.3 **Information**

The availability of information enhances the efficiency and reduces the transaction costs involved in entrepreneurial activities. Shane and Venkataraman (2000) point out that the


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availability of information influences the ability to recognize opportunities. Therefore, the availability of information to a larger number of people and accessibility to more and new information is one of the important mechanisms through which the entrepreneurship of a region may progress. There is not a single source of information in any region or country and therefore, the availability of information in a particular country or region can't be measured accurately. It can only be captured to some extent through some proxy or proxies. In modern days broadband is seen to be conducive to entrepreneurial activities because it facilitates the access to information and stimulates innovation activities (Audretsch, Heger and Veith, 2015). Therefore, the percentages of households having a computer/laptop with internet are used as a proxy to measure the difference of information availability across the states of India in this paper. Moreover, this is the only variable for which data are available for all the concerned states and from a reliable source (Census of India, 2011). But, in developing countries like India the accessibility to computer and internet is limited; therefore, television is another appropriate proxy to measure the interstate differences of availability of information. Additionally, the programs of television are available in many languages and television is a popular and more accessible means of information and communication. Due to some geographical reasons the internet connectivity may differ across the states, but the television is comparatively more evenly scattered across the country. Thus, the variable 'percentage of households having a computer/laptop with internet' is supplemented by the variable 'percentage of households having television'. Both variables/proxies jointly capture the availability of information across the Indian states in the sub-index Index of Availability. Some state may have a higher percentage of households with television, but a lower percentage of households having a computer/laptop with internet facility. Similarly, there are also possibilities of states with higher percentage of households having a computer/laptop with internet facility but a lower percentage of households with televisions. The two variables are multiplied with each other in order to check and balance the discrepancies if any among the states due to geographical and other such factors. The data on sources of information for different states are shown in Table 6.

**Table 6 Households having Sources of Information**

| Sl. no | State | 2011-12 | | | | | |
|---|---|---|---|---|---|---|---|
| | | Households having Television (%) | Rank | Households having computer/ laptop with internet (%) | Rank | Normalised score | Rank |
| a | b | c | d | e | f | g=c x f | h |
| 1 | Andhra Pradesh | 58.8 | 8 | 2.6 | 11 | 0.192363 | 10 |
| 2 | Assam | 27.5 | 17 | 1.6 | 15 | 0.023244 | 15 |
| 3 | Bihar | 14.5 | 20 | 0.9 | 20 | 0 | 20 |
| 4 | Chhattisgarh | 31.3 | 16 | 1.2 | 19 | 0.012874 | 19 |
| 5 | Gujarat | 53.8 | 10 | 3.1 | 8 | 0.220843 | 9 |
| 6 | Haryana | 67.9 | 5 | 5.3 | 4 | 0.600153 | 4 |
| 7 | Himachal Pradesh | 74.4 | 4 | 2.8 | 10 | 0.290702 | 7 |
| 8 | Jammu and Kashmir | 51 | 11 | 2.9 | 9 | 0.186462 | 11 |
| 9 | Jharkhand | 26.8 | 18 | 1.5 | 16 | 0.018851 | 17 |
| 10 | Karnataka | 60 | 7 | 4.8 | 5 | 0.453257 | 6 |
| 11 | Kerala | 76.8 | 3 | 6.3 | 1 | 0.85931 | 1 |
| 12 | Madhya Pradesh | 32.1 | 15 | 1.4 | 17 | 0.022478 | 16 |


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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13 | Maharashtra | 56.8 | 9 | 5.8 | 2 | 0.529425 | 5 |
| 14 | Odisha | 26.7 | 19 | 1.4 | 17 | 0.015581 | 18 |
| 15 | Punjab | 82.6 | 2 | 5.4 | 3 | 0.782759 | 2 |
| 16 | Rajasthan | 37.6 | 12 | 1.8 | 14 | 0.053103 | 13 |
| 17 | Tamil Nadu | 87 | 1 | 4.2 | 6 | 0.611111 | 3 |
| 18 | Uttarakhand | 62 | 6 | 3.2 | 7 | 0.279055 | 8 |
| 19 | Uttar Pradesh | 33.2 | 14 | 1.9 | 13 | 0.047765 | 14 |
| 20 | West Bengal | 35.3 | 13 | 2.2 | 12 | 0.069068 | 12 |
| Source: Data-book for Use of Deputy chairman, Planning Commission, Government of India, 10th March 2014 (based on census 2011). Available at: http://planningcommission.gov.in | | | | | | | |

The Index of Availability is calculated as the average of the normalized scores of all these elements:

$$\text{Index of Availability} = \frac{Norm\ Credit + Norm\ Edu + Norm\ Inf}{3}$$

Where,

Norm Credit = Normalised score (0-1) of Credit-Deposit Ratio

Norm Edu = Normalised score (0-1) of Gross Enrolment Ratio in Higher Education (18-23 Years)

Norm Inf = Normalised score (0-1) of the percentage of **(**households having Television × households having computer/ laptop with internet)

The comparative scores of the sub-index 'Index of Availability' of the various Indian states is reported in Table 7.

**Table 7 Index of Availability**

| Sl. no | **State** | **2011-12** | **Rank** |
|---|---|---|---|
| 1 | Andhra Pradesh | 0.599632 | 4 |
| 2 | Assam | 0.089582 | 18 |
| 3 | Bihar | 0.028793 | 19 |
| 4 | Chhattisgarh | 0.103283 | 17 |
| 5 | Gujarat | 0.297608 | 11 |
| 6 | Haryana | 0.62413 | 2 |
| 7 | Himachal Pradesh | 0.297904 | 10 |
| 8 | Jammu and Kashmir | 0.230727 | 12 |
| 9 | Jharkhand | 0.026674 | 20 |
| 10 | Karnataka | 0.469883 | 7 |
| 11 | Kerala | 0.591412 | 5 |
| 12 | Madhya Pradesh | 0.216417 | 13 |
| 13 | Maharashtra | 0.5716 | 6 |
| 14 | Odisha | 0.156944 | 15 |


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| | | | |
|---|---|---|---|
| 15 | Punjab | 0.601201 | 3 |
| 16 | Rajasthan | 0.345898 | 9 |
| 17 | Tamil Nadu | 0.87037 | 1 |
| 18 | Uttarakhand | 0.352306 | 8 |
| 19 | Uttar Pradesh | 0.156122 | 16 |
| 20 | West Bengal | 0.196506 | 14 |
| **Median** | | **0.297756** | |

The higher score implies the better availability of credit, higher education, skilled personnel and information in the state on an average in comparison to those states having comparatively lower scores. On the other side, lower scores indicate the presence of constraints in the region such as lack of skilled and educated personnel, shortage of necessary and relevant information and difficulties in access to credit which collectively create a gloomy and discouraging environment for both the entrepreneurs and the population at large.

### 3.3 **Index of Security**

Institutional economics literatures have given much importance to the security of life and property rights in encouraging investment and innovation. The Index of security measures the level of security of lives and property against physical and economic offenses across the states. The source of the index of security in this study is the published work of Bibek Debroy and Laveesh Bhandari (2014) "The State of Economic Freedom in India2013".Various variables/proxies used to measure the security of lives and property in their study are: Total value of property recovered out of total value of property stolen, Violent crimes as a share of total crimes, Cases under economic offenses out of total crimes, vacant posts of judges in the judiciary as a ratio of total sanctioned posts of Judge, cases where investigations are completed by the police and cases where trials are completed by courts. Thus, The efficiency and quality of legal structure and justice mechanism, which is an important factor for the security of property rights, have also been included to present an overview of the legal structure. The average of two adjacent years may lessen the potential of using a single good or bad year. Therefore, the average of the scores of the two latest years for which scores are available (2011 and 2013) has been calculated to remove a single year effect. The scores and rankings of the states are reported in the table 8.

Security has an important role in the development of entrepreneurship and entrepreneurship development may indirectly improve the security of a region through economic development or at least not doing any addition to the poverty of any nation. Bonito et al. (2017) find that the entrepreneurship has no impact on the poverty in the Phillipines but has a little impact on the economic development.


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**Table 8 Security of Property Rights and Rule of Law: State Scores and Rankings**

| Sl. no | **State** | **Score** | **Rank** |
|---|---|---|---|
| 1 | Andhra Pradesh | 0.495 | 4 |
| 2 | Assam | 0.15 | 18 |
| 3 | Bihar | 0.1 | 20 |
| 4 | Chhattisgarh | 0.45 | 6 |
| 5 | Gujarat | 0.455 | 5 |
| 6 | Haryana | 0.405 | 7 |
| 7 | Himachal Pradesh | 0.37 | 11 |
| 8 | Jammu and Kashmir | 0.34 | 13 |
| 9 | Jharkhand | 0.185 | 16 |
| 10 | Karnataka | 0.355 | 12 |
| 11 | Kerala | 0.38 | 9 |
| 12 | Madhya Pradesh | 0.725 | 1 |
| 13 | Maharashtra | 0.155 | 17 |
| 14 | Odisha | 0.26 | 15 |
| 15 | Punjab | 0.405 | 7 |
| 16 | Rajasthan | 0.54 | 3 |
| 17 | Tamil Nadu | 0.595 | 2 |
| 18 | Uttarakhand | 0.275 | 14 |
| 19 | Uttar Pradesh | 0.375 | 10 |
| 20 | West Bengal | 0.15 | 18 |

Source: Economic Freedom of the States of India 2013 (BibekDebroy, Laveesh Bhandari andSwaminathan S. AnklesariaAiyar, 2014) available at: http://www.cato.org/sites/cato.org/files/economic-freedom-india-2013/economic-freedom-states-of-india-2013.pdf


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### 3.4 **Institutional Quality Index**

Finally, an institutional quality index, which is an average of all the above mentioned sub-indices are calculated for each state. This index is a composite index obtained by the aggregation of the sub-indices of each of areas with equal weights:

$$\text{Institutional Quality Index} = \frac{INDOPP + INDAVAIL + INDSEC}{3}$$

Where,

*IND OPP* = Index of Opportunity

*IND AVAIL*= Index of Availability

*IND SEC* = Index of Security

Different arbitrary weighting techniques may yield different relative rankings of the states in terms of the institutional environment; therefore, equal weights are used to avoid such problems. The institutional quality index is the simple arithmetic mean of the sub-indices as sub-indices are that of various indicators. The interstate variation of institutional environment for entrepreneurship on an average is shown below in table 9.

**Table 9 Institutional Quality of States (2011-12)**

| Sl. No. | **State** | **Index of Security** | **Index of Opportunity** | **Index of Availability** | **Average** | **Rank** |
|---|---|---|---|---|---|---|
| **a** | **b** | **c** | **d** | **e** | **f = (c+d+e)/3** | **g** |
| 1 | Andhra Pradesh | 0.495 | 0.52818 | 0.599632 | 0.540937 | 4 |
| 2 | Assam | 0.15 | 0.334853 | 0.089582 | 0.191478 | 18 |
| 3 | Bihar | 0.1 | 0.265 | 0.028793 | 0.131264 | 20 |
| 4 | Chhattisgarh | 0.45 | 0.339244 | 0.103283 | 0.297509 | 14 |
| 5 | Gujarat | 0.455 | 0.787187 | 0.297608 | 0.513265 | 7 |
| 6 | Haryana | 0.405 | 0.748179 | 0.62413 | 0.592436 | 2 |
| 7 | Himachal Pradesh | 0.37 | 0.358864 | 0.297904 | 0.342256 | 12 |
| 8 | Jammu and Kashmir | 0.34 | 0.412032 | 0.230727 | 0.327586 | 13 |
| 9 | Jharkhand | 0.185 | 0.359782 | 0.026674 | 0.190485 | 19 |
| 10 | Karnataka | 0.355 | 0.517013 | 0.469883 | 0.447298 | 8 |
| 11 | Kerala | 0.38 | 0.720047 | 0.591412 | 0.56382 | 3 |
| 12 | Madhya Pradesh | 0.725 | 0.298035 | 0.216417 | 0.413151 | 10 |
| 13 | Maharashtra | 0.155 | 0.84 | 0.5716 | 0.5222 | 6 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| 14 | Odisha | 0.26 | 0.2823 | 0.156944 | 0.233081 | 17 |
| 15 | Punjab | 0.405 | 0.594406 | 0.601201 | 0.533536 | 5 |
| 16 | Rajasthan | 0.54 | 0.36627 | 0.345898 | 0.417389 | 9 |
| 17 | Tamil Nadu | 0.595 | 0.77436 | 0.87037 | 0.746577 | 1 |
| 18 | Uttarakhand | 0.275 | 0.491763 | 0.352306 | 0.373023 | 11 |
| 19 | Uttar Pradesh | 0.375 | 0.242921 | 0.156122 | 0.258014 | 16 |
| 20 | West Bengal | 0.15 | 0.476937 | 0.196506 | 0.274481 | 15 |
| | **Median** | **0.3725** | **0.444484** | **0.297756** | **0.393087** | |

Tamil Nadu, Haryana, Kerala, Andhra Pradesh and Punjab are the top five states which have comparatively higher institutional quality scores and rankings respectively. These states have an average score more than 0.5.On the other side, Bihar, Jharkhand, Assam, Odisha and Uttar Pradesh are the states with an average score lower than 0.3. But, there is a significant difference between the median scores of all the three sub-indices, that is, Index of Security, Index of Availability and Index of Opportunity. The median score of Opportunity is highest (0.444), while the median score of availability is lowest (0.29) which indicates that on an average the comparatively bigger constraint in the development of entrepreneurship among the Indian states is the lack of adequate information, accessibility to credit and higher education. The security environment is also not so well across the states on an average. There are significant differences in the different areas (security, opportunity, availability) even within a state.

## 4. **VERIFICATION OF THE INDEX**

It is worthwhile to confirm that whether the various indicators/variables used for the measurement of the institutional quality of the Indian states are adequately related and signify their representation in the various sub-indices. It is also necessary to examine the association between various sub-indices and the composite Institutional Quality Index. Correlation coefficients between the different variables and their respective sub-indices have been calculated for this purpose, which are reported in tables 10 and 11.

**Table 10 Correlation coefficients between Index of Opportunity and the indicators**

| | Government size | Market size | Index of Opportunity |
|---|---|---|---|
| Government Size | 1.0000 | - | - |
| Market Size | 0.5205 | 1.0000 | - |
| Index of Opportunity | 0.6842*** (0.0009) | 0.9788*** (0.0000) | 1.0000 |

Note: *** indicates the significance level at ($p<0.01$) and the values in the parentheses are p values


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**Table 11 Correlation coefficients between Index of Availability and the variables**

| | Education | Credit-Deposit Ratio | Information | Index of Availability |
|---|---|---|---|---|
| Education | 1.0000 | - | - | - |
| Credit-Deposit Ratio | 0.5998*** (0.0052) | 1.0000 | - | - |
| Information | 0.6328*** (0.0028) | 0.5385 | 1.0000 | - |
| Index of Availability | 0.8606*** (0.0000) | 0.8490*** (0.0000) | 0.8472*** (0.0000) | 1.0000 |

Note: *** indicates the significance level at ($p<0.01$) and the values in the parentheses are p values

And similarly the correlation coefficients between the Institutional Quality Index and the sub-indices are also calculated and reported in table 12. In all the cases, the various variables which are used in the institutional quality measurement show significant correlations with their respective sub-indices. Similarly the sub-indices are significantly correlated with the Institutional Quality Index. Therefore, it seems that the Institutional Quality Index is convincing in its purpose and may provide some valuable insights into the institutional environment variation across the states of India. Moreover, the correlation between the index of Availability and the Index of Opportunity has also been found high and significant. Thus, a composite index has an additional advantage that it may also take care of multicollinearity among several variables without losing the potential regional differences.

**Table 12 Correlation coefficients between Institutional Quality Index and the Sub-Indices**

| | Index of Security | Index of Opportunity | Index of Availability | Institutional Quality |
|---|---|---|---|---|
| Index of Security | 1.0000 | - | - | - |
| Index of Opportunity | 0.1276 | 1.0000 | - | - |
| Index of Availability | 0.4173 | 0.7995*** (0.0000) | 1.0000 | - |
| Institutional Quality | 0.5926*** (0.0059) | 0.8354*** (0.0000) | 0.9506*** (0.0000) | 1.0000 |

Note: *** indicates the significance level at ($p<0.01$) and the values in the parentheses are p values

## 5. ANALYSIS AND CONCLUSION

While the composite index (Index of Institutional Quality) gives an overview of the institutional environment of the states in the context of entrepreneurship, it is observed


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that a state which performs extremely well in certain indicators, its performances is not satisfactory in others. One cannot say that states with better institutional quality index scores on the average perform better on all the indicators of institutional environment. It means that the states with higher average institutional quality scores are not necessarily better in all respects than that of states with lower average institutional quality scores. Every region or states has its own strengths and weaknesses. Of course, there are some states having worse performances in almost all indicators, but that is not correct in the case of many states. Therefore, indexes of each indicator in the form of sub-indices have an additional advantage which provides detailed information regarding potential differences, strengths and weaknesses of the states. Acs and Szerb (2010) has mentioned the relevance of two closely related theories, Theory of Weakest Link (TWL) and Theory of Constraints (TOC) regarding the importance of such detailed information. These two theories, which are mainly applied in production and operation management, argue that if the various indicators/areas are out of balance, development is inhabited and improvement can only be achieved by removing the weakest link that constrains the performance of the whole system. Thus, in the context of entrepreneurship, it implies that entrepreneurship development in any state depends on improving the binding institutional barriers and can be achieved by improving the worst performing indicators/variables. For example, among the better institutional environment states, Gujarat is a state with a comparatively better average institutional environment than many of the states, but its weakness is in terms of availability of credit, higher education and sources of information to a larger section of people. Therefore, a larger accessibility of these factors and to a larger population may help in sustainment of the progress and may further enhance the entrepreneurial level of the state. Similarly, there are some states like Maharashtra and Karnataka where the concern is regarding the security environment. Among the weaker and poor institutional quality states the problem is in all sectors, but the priority sectors are availability and security rather than opportunity. Of course a balance between the different areas and among the various indicators is desirable, but all of them cannot be achieved simultaneously. Therefore, the weak performances in a particular area, that is, a bottleneck, should be concerned first because it has the negative effect on all the features.
Any policy or recommendations which would be applicable for one state may not be relevant for others. Any generalization about India as a whole may have misleading information and conclusions. India is a combination of states with better Institutional environment and quality which can attract investment as well as the states where the problems are worrisome. There are also certain states which experience imbalances among the various institutional factors. The interstate variation is significant and policymakers should consider these potential differences. Along with the differences there are some similarities between the similar category states. For example, poor institutional quality states have a similarity of weaknesses in availability and security. Thus, detailed information on each state and each indicator is useful in understanding the institutional environment of the states and their differences with other states. One policy and action in all the states may show different results depending upon the institutional strengths or weaknesses of the various states. The institutional environment information of the states may provide a significant contribution in understanding the different level of entrepreneurship across the Indian states.

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