# India's Competitiveness: A Perspective from States

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### WHAT IS COMPETITIVENESS?

- Competitiveness is the **productivity** (value per unit of input) with which a nation, region, or cluster utilizes its human, capital, and natural resources. Productivity sets a nation's or region's standard of living (wages, returns on capital, returns on natural resources)
  - Productivity depends both on the value of products and services (e.g. uniqueness, quality) as well as the
    efficiency with which they are produced.
  - It is not what industries a nation or region competes in that matters for prosperity, but how firms compete in those industries
  - Productivity in a nation or region is a reflection of what both domestic and foreign firms choose to do in that location. The location of ownership is secondary for prosperity.
  - The productivity of "local" industries is of fundamental importance to competitiveness, not just that of traded industries
  - Devaluation and revaluation do **not** make a country more or less "competitive"



### WHAT DETERMINES COMPETITIVENESS?



Source: Michael E. Porter and Institute for Strategy and Competitiveness

### WHY INNOVATE?

The capability to innovate and to bring innovation successfully to market is a crucial determinant of the global competitiveness of nations.



## **GLOBAL INNOVATION**

#### 70 China 52.50 Russian 60 Federation South Africa 38.80 35.80 50 India 35.50 Brazil 40 30 33.10 20 10 0 Swe den itates of America Denmark Finland Fuuxembourg Luxembourg Ineland Norway Canada Norway Canada Norwaki Bahrain Spain China Canada Norwaki Bahrain Bulgaria Romania Greece Matta South Africa India South Africa Bahrain China Costa Rica Norrisi Bahrain Bularus Si Lebanon Jamaica Madagassar Costa Rica Poland Lebanon Jamaica Banaica Banaica Madagassar Algeria Burundi Sambia Burundi Zambia Guinea United Sta Bosnia

#### Innovation

## COUNTRY-WISE GROWTH IN PATENTS



## LINK BETWEEN PATENTS AND COMPETITIVENESS



Source: Annual Reports of CGPDTM Various Rounds

### **Country-wise R&D Expenditure as a Percentage of GDP**



### Link between Innovation and Competitiveness at Global Level



**Global Innovation index Score 2017** 

#### **Factors of Production**

- Land
- Labor
- Capital
- Infrastructure (Physical and Technological)
- Human Capital

#### **Demand Conditions**

- Market Size
- Market Sophistication
- Market Growth

## State

### Innovation

#### Index

## Social and Political Institutions

- Healthcare Institutions
- Educational Institutions
- Administrative Institutions
- Financial Institutions

Industries, Innovation and Entrepreneurship

- R&D
- New Firm Creation
- Firms
- Industrial Clusters
- New Knowledge Creation (Patents, Copyrights etc.)

State	Per Capita SDP (₹)	State Innovation Index	Rank	Stage
Maharashtra	130056	42.98	1	
Tamil Nadu	120767	42.18	2	
Delhi	235361	38.02	3	
Kerala	127187	32.27	4	
Goa	231509	31.94	5	Innovation-Driven States
Gujarat	124934	31.18	6	Innovation-Driven States
Sikkim	203515	27.26	7	
Himachal Pradesh	125680	26.06	8	
Haryana	137513	24.80	9	
Uttarakhand	133047	23.68	10	
Karnataka	119711	34.93	1	
West Bengal	70059	29.87	2	
Arunachal Pradesh	91061	28.65	3	
Andhra Pradesh	88082	26.29	4	
Rajasthan	70966	25.03	5	Investment-Driven States
Telangana	115316	24.61	6	investment-Driven States
Punjab	107776	24.27	7	
Mizoram	81413	23.31	8	
Nagaland	68688	17.59	9	
Chhattisgarh	72459	15.39	10	
Uttar Pradesh	40469	31.75	1	
Jammu & Kashmir	64406	24.11	2	
Madhya Pradesh	50183	22.46	3	
Manipur	48684	21.37	4	
Assam	51016	19.31	5	Factor-Driven States
Tripura	65414	18.15	6	
Odisha	63122	17.92	7	
Meghalaya	66058	16.20	8	
Bihar	27675	13.85	9	
Jharkhand	53335	11.48	10	

State	2017 Rankings	2016 Rankings	Stage	
Maharashtra	1	1		
Tamil Nadu	2	2		
Delhi	3	3		
Kerala	4	6		
Goa	5	4	Innovation-Driven States	
Gujarat	6	5		
Sikkim	7	8		
Himachal Pradesh	8	7		
Haryana	9	10		
Uttarakhand	10	9		
Karnataka	1	1		
West Bengal	2	4		
Arunachal Pradesh	3	6	Investment-Driven States	
Andhra Pradesh	4	2		
Rajasthan	5	7		
Telangana	6			
Punjab	7	3		
Mizoram	8	5		
Nagaland	9	9		
Chhattisgarh	10	8		
Uttar Pradesh	1	1		
Jammu & Kashmir	2	5		
Madhya Pradesh	3	4		
Manipur	4	2	Factor-Driven States	
Assam	5	8		
Tripura	6	3		
Odisha	7	6		
Meghalaya	8	9		
Bihar	9	7		
Jharkhand	10	10		

## STATE INNOVATION INDEX





- Maharashtra and Jharkhand are the most and least innovative states in the country
- Innovation seems to be seriously lacking in the resource-rich eastern states
- A maximum score of 43 indicates the potential for Indian states to climb up the innovation ladder

## STAGES OF DEVELOPMENT



## FACTORS OF PRODUCTION





- Goa, Delhi and Telangana are the leading states under this pillar
- Indicative of low infringement on land rights, high labour force participation and high credit availability
- As expected of a developing nation, factors of production is the most developed aspect of Porter's Diamond having the lowest standard deviation of the four pillars (6.5 as compared to 16 for the other three)

## **DEMAND CONDITIONS**





- Maharashtra, Delhi and Tamil Nadu are the leading states under this pillar
- A combination of market size and market sophistication define the demand conditions of a region
- Therefore, states with higher purchasing power tend to perform well

## INDUSTRIES, INNOVATION AND ENTREPRENEURSHIP



Industries, Innovation and Entrepreneurship 61.97

• Tamil Nadu, Maharashtra and Uttar Pradesh are the leading states under this pillar

1.16

- These states being India's leading manufacturing centres have expectedly done well in innovation and entrepreneurship
- The eastern part of India has been a poor performer in this aspect

## SOCIAL AND POLITICAL INSTITUTIONS





- The map is reflective of India's poor institutional standards.
- Healthcare, educational, financial and administrative institutions have been considered to measure the country's institutional performance
- Eastern and northern-most states have scored the highest. However, that is the case because troubled regions usually have a higher incidence of institutional support

## LINK BETWEEN INNOVATION & COMPETITIVENESS: STATES



### LINK BETWEEN INNOVATION AND SOCIAL PROGRESS : STATES OF INDIA



### LINK BETWEEN INNOVATION AND ACCESS TO INFORMATION & COMMUNICATION: STATES OF INDIA



### LINK BETWEEN INNOVATION AND WAGES: STATES OF INDIA



Figure 12. Average Wage vs Patents per 100000 employees by States, 2014

Higher innovative capabilities provide a region with a considerable competitive advantage over other regions. Patenting is the best available measure for quantifying this aspect. It seems to be the case that larger states by employment size show higher innovative tendencies.

### **HIGH-TECH CLUSTERS**

#### Employment growth does not show a relationship with the presence of high-tech clusters



### **RELATIVE IMPACT BY STAGES OF DEVELOPMENT**



#### Competitiveness in high-income countries is mainly driven by innovation.

## **GIPC INTERNATIONAL IP INDEX 2017**





Government can support innovation in two ways: **Directly** - by investing in development of technology **Indirectly** - by creating an environment that supports research and development.



Incentives to support innovators Establish institutions to facilitate research and development Provide environment that supports innovation by removing obstacles faced by companies

Invest in the creation of knowledge workers



### **Business Incentives**





Incentives to support innovators Establish institutions to facilitate research and development

Provide environment that supports innovation by removing obstacles faced by companies

Invest in the creation of knowledge workers

### Country / Year Year 2000 Germany **United Kingdom United States** Japan 2015 Research & Development Expenditure (as a percentage of GDP) 0.1 0.2 0.2 0.2 0.0 2000 2015 2000 2015 2000 2015 2000 2015

#### **Research & Development Expenditure in Mature Economies**

Sum of Research & Development Expenditure (as a percentage of GDP) for each Year broken down by Country. Color shows details about Year.



#### Research & Development Expenditure (as a percentage of GDP) :India & China

Year

The trend of sum of Research & Development Expenditure (as a percentage of GDP) for Year. Color shows details about Country. The marks are labeled by sum of Research & Development Expenditure (as a percentage of GDP).

Data: World Bank



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### **Regulatory Environment**





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### **RESEARCHERS IN R&D (PER MILLION PEOPLE) IN 2013**

### **Researchers in R&D (per million people) in 2013**



### **Human Capital and Research**



WHAT IF A COUNTRY LACKS A ROBUST IP REGIME

#### Factor Conditions

Distortion in access to high quality business inputs especially in :-

- Information
- Scientific and Technological infrastructure.
- 'Intellectual' capital is not being recognised.
- In case of no protection this may result in companies' having no incentive to innovate.

Local rules and incentives that encourage productivity and investment are decreased :

**Context for Firms** 

Strategy And Rivalry

- Lower salaries due to low end work.
- Lower capital investments as companies want adequate standards.
- Lesser incentive to innovate as knowledge is not adequately protected.
- Competition between companies becomes more distorted as there is an absence of a level playing field.
- Companies reduce spending on R and D as they expect others to invest while they reap the benefits.

#### Related, Supporting Industries And Institutions

- IPR rules if they are not adequately present.
- Distort incentives to share knowledge.
- Adverse impact on innovation at the related and supporting industry level.
- It also results in a reduced network effect in clusters as different firms in clusters are adamant about sharing their business knowhow.

#### **Demand Conditions**

Sophisticated and demanding local customers and needs .

- Strict quality, safety , and environmental standards are not met as IPR laws are weaker.
- Greater imports as companies are not able to meet sophisticated demand.
- Government procurement of advanced technology as no laws are in place.

Source: Michael E. Porter and Institute for Competitiveness Analysis

### DOES LACK OF TRUST UNDERMINE COMPETITIVENESS?

#### Context for Firms Strategy And Rivalry

#### **Factor Conditions**

- Trust is critical in factor markets for appropriate resource allocation.
- Rent seeking reduces trust and creates an atmosphere of corruption.
- Inadequate/arbitrary policy design leads to erosion of trust.
- Risk of the market is in the form of trust that the goods and services produces will be consumed.

- Lower level of trust in market competition leads to collusion and illegal cartels as well as corruption.
- Low trust also results in negative perception of the regulators.
- Trust in regulators and rule of law also critical for smooth functioning.
- Independent regulators critical for institutional trust.

#### Related, Supporting Industries And Institutions

- Lower level of trust in institutions undermines the rule of law.
- Low level of trust leads to non sharing of know how resulting in lesser network externalities of agglomerations.
- Trust in institutions undermined when they harass companies.
- Vicious cycle also leads to poor quality services as nobody is willing to provide them in an over-regulated economy.

#### **Demand Conditions**

- Quality, price and differentiation are the main considerations essential for the consumer to trust the producer.
- If the consumer does not trust the producer sale may not happen.
- Effect is a slowing down economy with low level of consumption and investments.
- Safeguards in the economy include quality certifying institutions as well as branding of the product.

### **HOW CORRUPTION UNDERMINES COMPETITIVENESS?**



Source: Institute for Competitiveness Analysis

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