

ENVISIONING INDIA AS A KNOWLEDGE ECONOMY: SOME VIEWS ON MISSING LINKS

TARLOK SINGH MEMORIAL LECTURE
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by

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**Table 1: Distribution and Growth of Real GDP (at 1990-2000 prices)
1950-51/2008-09**

Y e a r	% S h a r e o f G D P					Per Capita NNP (Rs.)
	Primary	Secondary	Manufacturin g	Tertiary	Total GDP	
1	2	3	4	5	6	7
1950-51	56.5	13.6	-	29.9	100	5708
1960-61	52.3	17.0	-	30.7	100	7121
1970-71	45.9	20.4	12.6	33.7	100	8091
1980-81	39.9	22.0	13.8	38.1	100	8594
1990-91	34.0	23.2	16.6	42.8	100	11535
1995-96	29.9	24.3	-	45.8	100	13402
2000-01	26.2	23.5	15.3	50.3	100	16172
2004-05	22.4	24.0	15.1	53.6	100	19331
2005-06	21.7	24.3	15.1	54.0	100	20868
2006-07	20.5	24.6	15.4	54.9	100	22580
2007-08	19.7	24.7	15.4	55.6	100	24295
2008-09	18.9	23.8	14.6	57.3	100	25563
<u>Growth Rate</u>						
50-51/60-61*	2.8	6.2	-	4.3	3.8	1.9
60-61/70-71*	2.0	5.4	-	4.6	3.5	1.2
70-71/80-81*	1.8	4.5	4.0	4.6	3.4	0.7
80-81/90-91*	3.1	6.9	7.6	6.9	5.5	3.1
90-91/02-03*	2.7	6.0	10.4	7.9	6.0	4.1
2000-01/2001-02	5.9	2.8	2.5	7.2	5.8	3.7
2001-02/2002-03	-5.9	6.9	6.8	7.5	3.8	2.0
2002-03/2003-04	9.3	7.8	7.1	8.5	8.5	7.1
2003-04/2004-05	0.7	10.5	8.1	9.1	7.5	5.5
2004-05/2005-06	5.8	10.6	9.0	10.3	9.4	7.9
2005-06/2006-07	4.0	11.5	12.0	11.1	9.6	8.2
2006-07/2007-08	4.5	8.6	8.8	10.8	9.0	8.0
2007-08/2008-09	1.6	4.0	2.4	9.7	6.7	5.2
2008-09/2009-10*	-2.0	8.2	7.7	8.7	6.5	5.7

Note : 1. The percentage figures upto 1990-91 are at 1993-94 prices and those for 2000-01 and beyond are at 1999-2000 prices. 2 * Growth rates are estimated by fitting semi-log curve

2* Projected by EAC-PM (Economic Outlook for 2009/10, October 2009:5)

- Source: 1. Govt. of , Economic Survey of , 2008-09, Ministry of Finance, Feb 2009: A-3, A-5
2. Reserve Bank of , Handbook of Statistics on the Indian Economy, 2005-06. RBI, September 18, 2006: 8-12.
3. Govt. of , Press Note on Revised Estimates of Annual National Income, 2008-09, Central Statistical Organization May 20, 2009: 5-6

Table 2 : World Share of GDP for Select Countries at Purchasing Power Parity

Economy	Current: Uni polar			Projected (2002 prices)					
	(2005)			2015-Bipolar		2025		2035: Tripolar	
	(Int\$bi)	Share (%)	Rank	Share (%)	Rank	Share (%)	Rank	Share (%)	Rank
China	8815	14.5	2	19.5	1	25.2	1	30	1
USA	12407	20.5	1	19.5	2	17.8	2	16	2
India	3779	6.2	4	8.2	3	11.2	3	14.3	3
Japan	3995	6.6	3	6.2	4	5.5	4	4.8	4
Germany	2336	4.2	5	3.5	5	3	5	2.6	5
France	1850	3.1	7	2.7	6	2.4	7	2.1	8
UK	2002	3.3	6	2.7	7	2.3	8	2	9
Russia	1552	2.6	10	2.6	8	2.6	6	2.5	6
Italy	1672	2.8	8	2.5	9	2	9	1.6	11
Brazil	1566	2.6	9	2.2	10	1.9	12	1.6	12

Source: 1. For 2005, UNDP, Human Development Report 2007/2008 – Fighting Climate Changes: Human Solidarity in a divided World, UNDP, 2007: 277-280

2. For 2015, 2025 and 2035 Projections, Virmani, A., Economic Performance, Power Potential and Global Governance: Towards a New International Order, ICRIER Working Paper 150, December 2004.

Table 3: Basic pillars of a knowledge economy:

- an economic incentive and institutional regime that provides good economic policies and institutions, which promote efficient allocation of resources and stimulate creativity and incentives for the efficient creation, dissemination, and use of existing knowledge;
- an educated and skilled workforce that continuously upgrades and adapts skills to efficiently create and use knowledge;
- an effective innovation system of firms, research centres, universities, and other academic institutions that keeps up with the knowledge evolution, taps into the growing stock of global knowledge, and assimilates and adapts new knowledge to local needs; and
- a modern and adequate information infrastructure that facilitates the effective communication, dissemination, and processing of information knowledge

Source: Chen, Derek H.C. and Suh Joonghae, "Introduction" in Korea as a Knowledge Economy: Evolutionary Process and Lessons Learned, Joonghae Suh, *et al.*, Korea Development Institute, Seoul, 2007.

Table 4: Distribution of Educated Workers by Rural-Urban and Male-Female Breakup: 2004-05

Worker Description	Percentage of Educated Workers							
	Agriculture	Manufacturing	Construction	Trade, Hotelling etc.	Transport, Storage, Communicati	Finance, Insurance, etc.	Services	Total
1	2	3	4	5	6	7	8	9
Rural	10.0	15.2	9.0	25.6	24.8	69.4	51.1	14.0
Urban	17.4	32.8	18.9	42.4	39.6	80.8	60.1	41.2
Male	14.6	28.8	13.3	37.3	31.6	77.3	60.3	25.2
Female	4.3	11.8	2.6	15.8	52.9	83.5	47.7	9.7
Total	10.3	23.4	12.2	34.5	32.2	78.0	55.9	20.6

Note: Following the usual international convention, a worker with secondary level of schooling and above is defined as an educated worker.

Source: Employment-Unemployment unit level data for 2004-05, obtained from the National Sample Survey Organization, Govt. of India.

Table 5: Public Expenditure (Centre + State + Union Territories) on Social Services and Education over Plan Periods and for Select Years

Plan/Year	Percentage of Total Public Expenditure on					
	Education	Science & Technology*	Health	Housing	Other Social Services**	Total Social Services
1	2	3	4	5	6	7
VI (1980-85)	2.7	0.9	3.1	2.6	6.1	14.5
VII (1985-90)	3.5	1.4	3.1	2.2	7.1	16.0
1990-91	4.0	1.3	3.3	2.9	6.5	16.5
1991-92	4.0	1.3	3.0	2.1	6.8	15.9
VIII (1992-97)	4.5	2.1	3.2	2.4	8.0	18.2
1992-93	3.6	1.3	3.1	2.0	6.9	15.5
1996-97	5.5	1.6	1.9	4.4	9.4	21.2
IX (1997-02)	6.1	2.1	4.1	4.4	8.8	23.4
1997-98	5.9	-	3.4	3.9	7.5	20.7
2001-02	5.8	-	4.3	6.4	8.4	24.9
X (2002-07)	6.2	2.0	-	-	-	22.8
2002-03	5.5	2.0	3.9	6.8	11.0	27.1
2006-07	7.7	2.8	3.8	4.3	9.5	25.3
XI (2007-12)	8.2	2.4	-	-	-	30.2
2007-08	7.9	2.6	4.1	4.9	10.0	27.0
2008-09	8.4	2.5	4.0	4.9	9.6	26.8

- Note: 1. * is not included in Social Services.
2. ** Others include (1) water supply, housing, etc; (2) information and broadcasting; (3) labour and employment; (4) social welfare and nutrition; (5) welfare of depressed classes/castes; (6) north-eastern areas; and (7) other miscellaneous social services.

Source: Govt. of India, Economic Survey 2009-10, Ministry of Finance, Feb. 26, 2010: pp. A41-A46.

Table 6: Growth of Higher Education System in India

No. of Institutions	1951	2000	2008
1	2	3	4
I Universities	25	201	513
1. Central Universities	-	22	40
2. State Universities	-	-	268
3. Deemed Universities	-	-	125
4. Institutions of National Importance	-	-	38
5. Private Universities	-	-	42
II Colleges	700	12342	22064
1. Technical/Professional	-	-	6244
Total	725	12543	22577
III NAAC Accredited			
a. Universities	-	61 (30.3)	140 (27.3)
b. Colleges	-	198 (1.6)	3492(15.8)
IV Enrolment (million)	0.1	7.5	16.9

Note: Figure in parenthesis is the proportion of accredited institutions.

Source: Govt. of India, Eleventh Five Year Plan 2007-2012, Volume II, Social Sector, Planning Commission, June 2008: p. 22.

**Table 7: Gross Enrolment Ratio in Higher Education (University or College):
2004-05**

Enrolment by Classified Categories	Actual Enrolment Ratio	Eligible Enrolment Ratio
1	2	3
I <u>Locale of Residence</u>		
Rural Areas	6.74	47.49
Urban Areas	19.88	57.10
Total Areas	10.84	52.61
II. <u>Person's Sex</u>		
Male	12.42	55.63
Female	9.11	48.58
III. <u>Social Groups</u>		
S.Ts	6.57	61.50
S.Cs	6.52	51.21
O.B.Cs	8.77	50.05
Others	17.22	53.90
IV <u>Religious Groups</u>		
Hindus	11.91	-
Muslims	6.84	-
Christians	16.68	-
Sikhs	12.00	-
V <u>Enrolment Trend</u>		
1970	4.9	-
1980	5.2	-
1990	6.2	-
2000	10.2	-
2005	11.4	-

- Source: 1. Thorat, Sukhadeo, 89th Annual Convocation Address, University of Mysore, 11th March 2009, pp.17-19.
2. Agarwal, Pawan, Privatization and Internationalization of Higher Education in the Countries of South Asia: An Empirical Analysis, (mimeo.), (nd), p.52

Table 8: Gross Enrolment Ratio (GER) in Higher Education in Select Countries, 1998-99 to 2002-03

Country	1998-99	1999-00	2000-01	2001-02	2002-03
1	2	3	4	5	6
India	-	11	11	11	12
Australia	64	63	63	65	74
Canada	59	60	59	58	--
China	6	7	10	13	16
France	51	53	54	54	56
Germany	48	48	49	50	51
UK	59	58	59	64	64
USA	73	70	71	81	83

Source: Agarwal, Pawan, Privatization and Internationalization of Higher Education in the Countries of South Asia: An Empirical Analysis, (mimeo.), (nd), p.67.

Table 9: Percentage of Persons (Age 15 years and above) having Technical Education Including the Level of Technical Education: 2004-05

Category of Persons	% of Persons with Technical Education	% of Persons with Technical Education by Level of Technical Education		
		Diploma/Certificate before Graduate Level	Diploma Certificate at Graduate Level & Above	Degree in Technical Education
		3	4	5
<u>R u r a l I n d i a</u>				
Male	1.5	73.3	20.0	6.7
Female	0.6	83.3	16.7	0.0
Persons	1	70.0	20.0	10.0
<u>U r b a n I n d i a</u>				
Male	7.3	54.8	27.4	17.8
Female	3.1	54.8	35.5	9.7
Persons	5.1	54.9	29.4	15.7
<u>T o t a l I n d i a</u>				
Male	3.3	57.6	27.3	15.2
Female	1.3	69.2	23.1	7.7
Persons	2.2	59.1	27.3	13.6

Note: Technical education includes professional courses/diploma/certificate/ degree in agriculture, engineering/technology, medicine, crafts, etc.

Source: Govt. of India (2006). Status of Education and Vocational Training in India 2004-05: NSS Report No. 517, December 30.

Table 10: Allocation of Central Plan Resources among Major Sectors during 10th (2002-07) and 11th (2007-12) Five Year Plans

Sector	%age Share of Total Central Plan Resources		%age Increase in 11 th Plan Allocation over 10 th Plan Expenditure
	10 th Plan (Budget Estimates)	11 th Plan (Projected Allocations)	
1	2	3	4
Education	7.68	19.29	340.0
Rural Development, Land Resources & Panchayati Raj	10.70	13.39	120.0
Health & Family Welfare	5.62	8.71	170.0
Agriculture & Irrigation	6.22	8.55	140.0
Social Justice	4.47	6.35	150.0
Physical Infrastructure	10.94	9.01	40.0
Scientific Depts.	3.66	4.68	120.0
Energy	5.81	4.04	20.0
Others	44.90	25.97	1.1
Total	100.0	100.0	75.0

Source: Govt. of India, Eleventh Five Year Plan 2007-2012, Volume I, Inclusive Growth, Planning Commission, June 2008: p.45.

Table 11: Ongoing Expansion Plans and Other Initiatives

I. 11th Plan Expansion Schemes	II Other Initiatives
<ul style="list-style-type: none"> 1) 16 new Central Universities 2) 14 new World-class Universities 3) 8 new Indian Institutes of Technology (I.I.Ts) 4) 7 new Indian Institute of Management (I.I.Ms) 5) 20 new Indian Institute of Information Technology (I.I.Ts) 6) 20 new National Institutes of Technology 7) 5 new Indian Institutes of Science Education & Research 8) 2 new Schools of Planning and Architecture 9) 370 new Degree Colleges 10) 1000 new Polytechnics 11) 210 new Community Colleges 	<p>1. Foreign Education in India</p> <ul style="list-style-type: none"> 1) FDI in education; 2) Foreign Educational Institutions (regulation of entry & operation) Bill, 2010; 3) Foreign University campuses, competitive bids and wooing; 4) Essentially Private Institutions; 5) Free hand in Fee Structures, Admission Policies, Reservation Obligations, etc.; 6) Dual Salary Structures; 7) Global Education at Home; 8) Aggressive Promoters: USA, Australia, U.K., Singapore, etc. <p>1. Institutional Restructuring</p> <ul style="list-style-type: none"> 1) Envisioning National Level Policy Body: NCHER; 2) Flexible Academic Policies; 3) Academic Atonomy & Incentives for research promotion; 4) Greater responsibility for State Governments
<p>Note: Very slow progress so far for many of these schemes; World Class Universities still exist on paper only; perhaps, too many ambitious schemes, too soon; plan allocations are grossly underutilized for many schemes.</p>	<p>1. Public-private Partnership</p> <ul style="list-style-type: none"> 1) Public-Private-Commercial Institutions; 2) Social Obligations of Private Players; 3) Criticality of Quality Education

Table 12 : Distribution of India's Principal Status/Workers (15 Years and above) by Level of Education Accomplishment and Sector of Employment: 1987-88/2004-05

Locale	Year	Sector	Level of Educational Accomplishment					
			Percentage of Workers					
			Illiterate	Primary	Middle	Secondary.+		
Total	Male	Female						
1	2	3	4	5	6	7	8	
R U R A L	1987-88	Agriculture	66.1	22.5	7.1	4.3	6.1	0.8
		Non-agriculture	42.6	29.4	12.3	15.7	18.3	6.6
		Total	60.5	24.2	8.3	7.0	9.4	1.8
	1993-94	Agriculture	60.7	23.6	9.2	6.5	9.0	1.1
		Non-agriculture	34.3	29.1	15.4	21.2	23.4	11.3
		Total	54.5	24.9	10.6	10.0	12.8	2.6
	2004-05	Agriculture	50.6	25.7	13.4	10.3	13.7	3.6
		Non-agriculture	29.1	27.2	18.7	25.0	26.9	17.0
		Total	44.3	26.2	15.0	14.5	18.2	6.1
U R B A N	1987-88	Agriculture	57.5	22.4	9.6	10.5	12.1	1.6
		Non-agriculture.	22.9	29.4	14.6	33.1	34.4	26.4
		Total	26.5	28.9	14.1	30.5	32.7	21.3
	1993-94	Agriculture	52.4	26.4	10.7	10.5	14.6	2.1
		Non-agriculture	20.3	24.5	16.2	39.0	40.4	31.3
		Total	23.7	24.7	15.6	36.0	38.2	25.8
	2004-05	Agriculture	43.1	24.6	14.0	18.3	26.3	3.7
		Non-agriculture	15.6	22.1	18.0	44.3	45.8	36.8
		Total	17.7	22.3	17.7	42.3	44.5	31.9
R + U	2004-05	Agriculture	50.4	25.7	13.4	10.5	14.2	3.6
		Non-agriculture	22.5	24.7	18.4	34.4	36.3	26.2
		Total	38.1	25.3	15.6	21.0	25.1	10.1

- Source: 1. For 1987-88, Govt. of India, Results of the Fourth Quinquennial Survey on Employment and Unemployment (All-India), NSS 43rd Round (July 1987-June 1988), SARVEKSHANA Special Numbers, September 1990, NSSO, New Delhi pp.S194-S199.
2. For 1993-94, Govt. of India, Employment and Unemployment in India, 1993-94, Fifth Quinquennial Survey NSS 50th Round (July 1993-June 1994), NSSO Report No. 409, March 1997, pp.A121-A126.
3. For 2004-05, Govt. of India, Employment and Unemployment Situation in India 2004-05 (Part-I), NSS 61st Round (July 2004-June 2005), NSSO Report No. 515, September 2006, pp. A124-A132.

Table 13: Development Expenditure by State Governments on Economic & Social Services

Year of Expenditure	Development Expenditure as % of Total Public Expenditure	% of Development Expenditure on	
		Economic Services	Social Services
1	2	3	4
1980-81	70.42	58.64	41.36
1985-86	70.72	54.18	45.82
1990-91	69.57	52.72	47.28
1995-96	64.64	49.94	50.06
2000-01	60.52	46.17	53.83
2005-06	58.76	49.79	50.21
2006-07	59.66	50.13	49.87
2007-08	62.68	48.90	51.10
2008-09	62.40	47.45	52.55

Note: 1. Development expenditure includes plan outlays on agricultural and allied activities rural development, special areas programmes, irrigation and flood control, energy, Industry and minerals, transport, communications, science & technology, general Economic services and social services

2. Economic Services includes

3. Social services includes

Source: RBI, Handbook of Statistics on the Indian Economy: 2008-09, RBI, Sept. 15, 2009: p.179.

THANK YOU