India's Economic Growth: Some Lessons

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Introduction

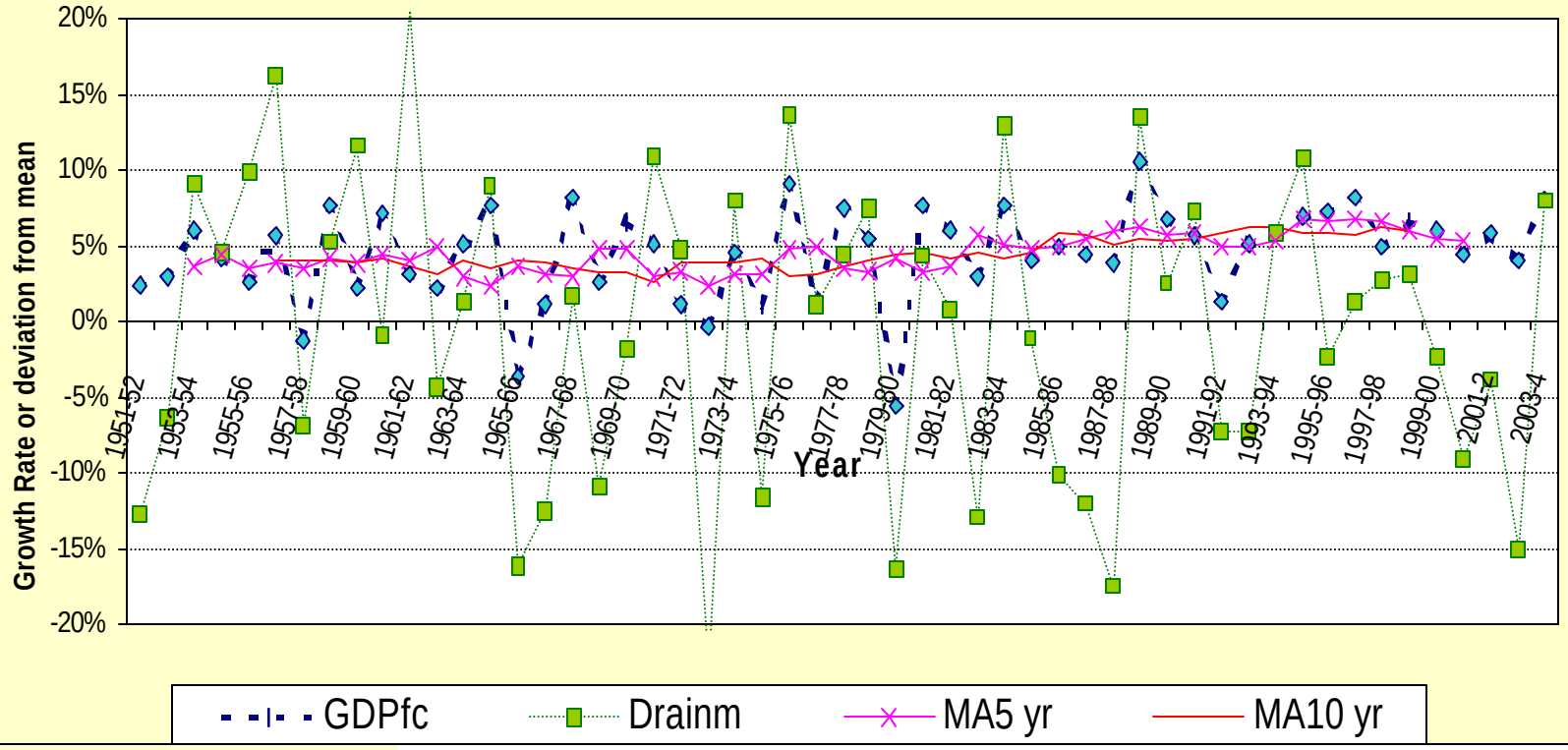
- ICRIER research papers of Economic Growth, Productivity and Reforms
  - Three papers completed, 4th in process
- Myths/Over-simplifications about Economic Growth and Poverty
  - Golden Age of Fabian Socialism
  - Hindu Rate of Growth
  - Indian Economy Take-off

Growth Trends, Breaks & Policy

- Growth Regressions
  - Exogenous factors: Rainfall
  - Chow test to explore breaks
  - Dummies to define breaks
    - Impact of policy regime!
- Sub-phases defined by policy
- Other policy linkages/impacts explored

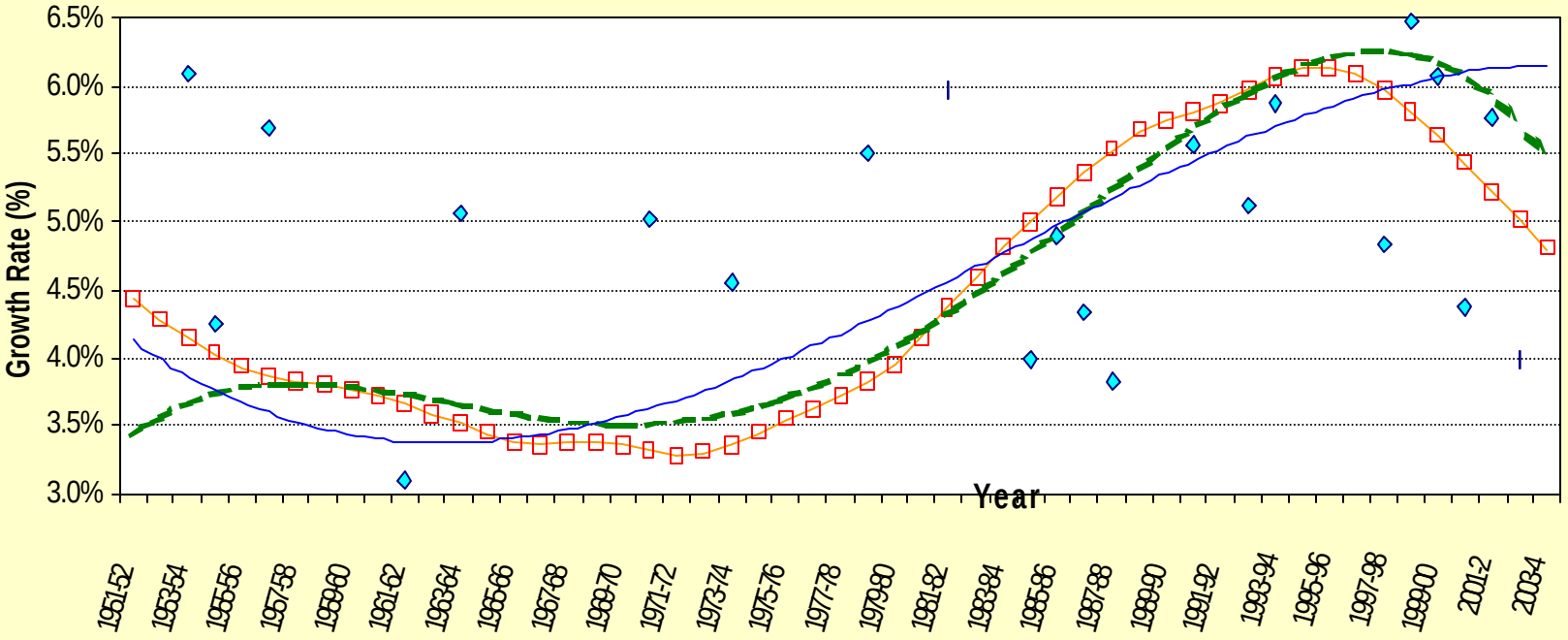
Fluctuations in GDP Growth

Figure 1: GDPfc and Rainfal



Trends in GDP Growth

Figure 2: Smoothed GDP Series



Cause of Fluctuations: Rainfall

- **GrGdp=0.045+0.161*DrainM - 0.117*DrainM(-1)**

  (13.8) (5.0) (-3.5)

  R^2=0.447, R^2(Adjusted) =0.425, DW=2.029

  - *DrainM = deviation of the current rainfall from the mean of the entire period.

- Regression of GDP Growth on rainfall
  - Rain explains 45% of variation in growth
  - Short term impact is less than long term: Current rain has positive effect (+0.16), last years negative (-0.12); Net (+0.04)
  - Other Exogenous: Oil price - value NS

Increase in Growth rate from 1980-81

- Earlier Studies on Break points affected by drought effects.
- Chow Test for Break Point
  - **Break in the growth rate in 1980-81**

    F value = 5.56 P=0.0024
- Dummy for 1980 to current: D80
  - **(2) GrGDP = 0.0349 + 0.023*D80 + 0.190*DrainM**

    (12.0) (5.2) (6.7)

    - 0.104*DrainM(-1) - 0.303*AR(1)

    (-3.6) (2.1)

    R^2=0.62, R^2(adjusted)=0.59, DW=2.05

Rainfall Impact changing?

- **Slope Dummys**
  - **(2')GrGDP = 0.0349+0.023*D80+0.218*DrainM-**
    (12.2) (5.2) (5.9)
    0.124*DrainM(-1)- 0.339*AR(1)- 0.072*DrainM80 +
    (-3.5) (-2.3) (-1.2)
    0.06*DrainM80(-1)
    (0.98)
    R^2=0.64, R^2(Adjusted)=0.59, DW=2.0
    - **DrainM80=DrainM*D80 (Insignificant)**

Agricultural Slowdown or Green Revolution?

- Basic Equation:
  - **(3a) GrGDPag=0.030+0.358*DrainM - 0.337*DrainM(-1)**

    (4.8) (5.9) (-5.3)

    R^2=0.58, R^2(Adjusted)=0.56, DW=2.9
- Test for Break in Agriculture GDP growth
  - **No Break point in 1970s**
  - **Potential Break Point at 1964-65,**
    - **Introduction of Dummy for 1964-65 onwards shows it is insignificant**
    - **Presence of Significant Auto-correlation => Alternative specification**

GDP Ag Growth Break: Alternative specification

- **GrGDPag=0.029+0.3885*DrainM-0.372*DrainM(-1)**

  (8.0) (7.3) (-6.7)

  - 0.492 AR(1)

  (-3.9)

- **Potential Break Point at 1962-63!**
  - **Introduction of Dummy for 1962-63 onwards show the dummy to be insignificant.**
- **No statistical break in growth of Ag GDP 53 year**
  - **Once variation in rainfall are accounted for.**
- **No change in the effect of rainfall variations on GDP(Ag) even after 1980-81**

Policy Throttling Manufacturing Growth

- GrGman= 0.059+ 0.127*DrainM
  (12.2) (2.7)
  R^2=0.13, R^2(Adjusted)=0.11, DW=1.6
  - Chow test: Potential Break Point at 1981
- GrGman= 0.051+0.019*D81+0.14*DrainM
  (8.3) (2.0) (3.0)
  R^2=0.19, R^2(Adjusted)=0.18, DW=1.75
  - Growth rate accelerated after 1980-81
- GrGman= 0.066-0.025*D6580+0.114*DrainM
  (12.1) (-2.5) (2.5)
  R^2=0.23, R^2(Adjusted)=0.20, DW=1.74

Non-Tradable Services(excluding Govt Service)

- **GrGntrdbl=0.058+0.039*DrainM+0.501 AR(1)**

  (11.8) (1.8) (4.0) -----(5a)

  R^2=0.29, R^2(Adjusted)=0.26, DW=2.1
- **Highest probability of a break at 1985-86[F=5.28, P=0.003]**
- **Introduction of dummy for 1985-86 onwards**
- **GrGntrdbl=0.0475+0.027*D85+0.068*DrainMean**

  (11.8) (1.82) (4.00) -----(5a)

  R^2=0.47, R^2(Adjusted)=0.44, DW=1.67
- **Break out in the rate of growth of non-tradable services in 1985-86**

Summary of Statistical Results

- No other breaks in total GDP growth once 1980-81 break is accounted for
- Break in manufacturing GDP: 1980-1
- Services accelerated: 1980-1 to 1985-6
- Agriculture: No green revolution break
  - Kept agriculture growth from falling!
  - No change in Monsoon dependence of economy. Drought proofing? Unsuccessful

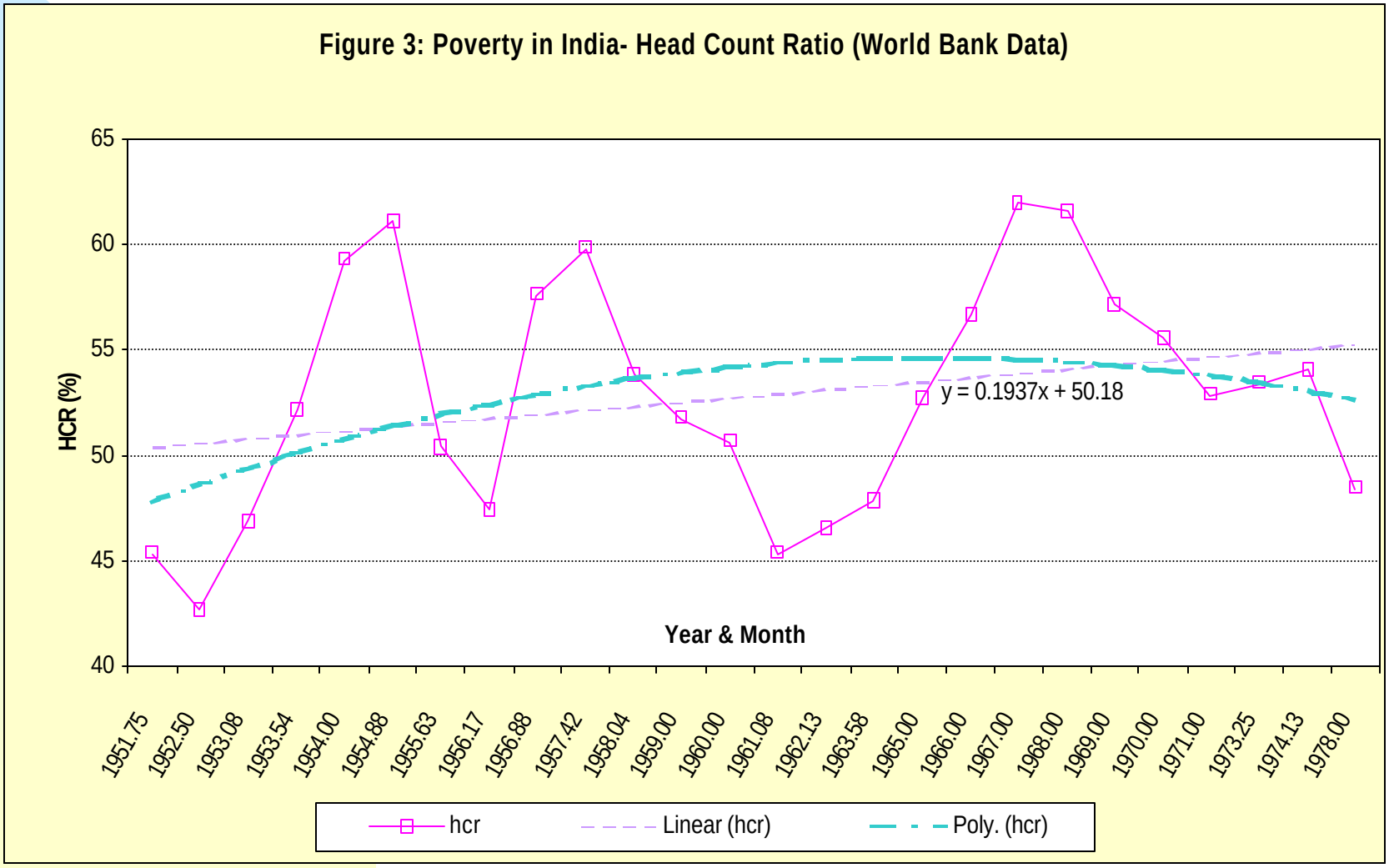
Two Growth Phases: Policy

- Phase I: Indian Version of Socialism (Indian Socialist rate of growth - ISRG)
  - 30 years from 1950-51 to 1979-80
  - Mahalonobis Model: Commanding heights, Impt Subs Ind (CG), Controls, SSI reserve (offset).
  - Result: Avg. Gr Rt: 3.5% per annum
- Phase II: Experiments in Market Reform (Bharatiya Rate of Growth - BRG)
  - 24 years from 1980-1 to present
  - Policy: De-control, de-licensing, private entry
  - Avg. Gr Rt: 5.8% per annum

Table 1:Socialism to Market (Ph I to Ph II)

Phase=>	I: Indian Socialism	II: Market Reform
Period=>	1951-2 to 1979-80	1980-1 to 2003-4
Variable		
GDP at factor cost	3.5%	5.8%
World rank in GDP growth	60/74*	9/88
Per capita GDP	1.3%	3.7%
World rank in per capita growth	66/76*	9/88
Poverty rate (HCR)	0.20%	-0.80%
GDPgr:Co-efficient of Variation	1.0	0.3
Rainfall: Difference from mean	0.5%	-1.8%
Contribution to GDP growth	-0.03%	-0.08%
Total Factor Productivity Growth	0.9%	2.7%
Consumption: Private	3.2%	4.6%
Consumption: Government	5.8%	6.0%
Investment: Total	6.1%	6.3%
Investment: Public	7.5%	2.4%
Investment: Private	3.6%	8.7%
Investment: Fixed	4.8%	6.2%
Machinery	6.6%	8.8%
Structures	4.4%	4.5%
Private (fixed)	3.6%	8.7%
Real Exchange Rate:Pt/Pnt	0.3%	-0.3%
Price of Crude Oil	15.8%	2.4%

Increasing Poverty Trend



Phase I: Growth & Poverty Rise?

- Govt appropriating growing resources (table 1)
  - Govt Cons Gr (5.8%) > GDP Gr (3.5%)
- Benefit to People ('public') low
  - Private consumption Gr (3.2%) < GDP Gr.
- Government investment high (7.5%)
  - Positive contribution (table 2) in building
    - Administrative system across the country
    - Infrastructure: Electricity, Telecom, railway
  - Negative Aspects:
    - Misallocation towards private G&S
    - Inefficiency/Waste?

Phase I: Sector growth

Table 2: Economic growth (% per yr)			
Phase=>	I: IS		II: MR
Period=>	1951-1979		1980-2003
Variable			
Tradables	2.8%		**4.6%**
Non-tradable services	4.7%		**6.9%**
Services (excl. GDPadmin)	4.5%		**7.0%**
GDP(excl. GDP admin)	3.4%		**5.7%**
Electricity,Gas,Water	9.6%		7.2%
Banking & Insurance	6.7%		**10.6%**
Communication	6.7%		**12.0%**
Other transport	6.3%		6.5%
Administration,Defence	6.1%		6.2%
Manufacturing regd	6.1%		6.9%

Sub-phases of Development

- I. Indian Version of Socialism: Licence, Permit, Quota Raj (IS)
  - IA: Quest for Commanding Heights(QCH)
  - IB: Legislative-Bureaucratic Socialism (LBS)
- II. Experiments in Market Reform
  - IIA: Critical Reform
  - IIB: Wider Reform

Table 3: Sub-phases

Phase=>	I A:Comndg Hghts	I B: Leg-Bur Soc	II A: Basic Rfrm	II B: Wider Rfrm
Period=>	1951 to 1964	1965 to 1979	1980 to 1991	1992 to 2003
Variable				
GDP at factor cost	4.1%	2.9%	5.5%	6.1%
World rank in GDP gr	39/74*	63/74	**12/88**	**9/107**
Per capita GDP	2.0%	0.6%	3.2%	4.1%
World rank in PCGDPgr	41/74*	67/74	**14/88**	**9/107**
Poverty rate (HCR-level)	50.5%	55.4%	38.0%	35.3%
CV of GDPgr	0.6	1.5	0.5	0.2
Rainfall: Diff from mean	4.0%	-2.7%	-1.7%	-1.9%
Contribution to GDP g	0.44%	-0.48%	-0.08%	-0.08%
TFPG	1.6%	0.2%	2.6%	2.8%
Consumption: Private	3.7%	2.8%	4.5%	4.8%
Consumption: Govet	6.6%	5.1%	6.0%	6.1%
Investment: Total	7.9%	4.5%	5.0%	7.6%
Investment: Public	11.6%	**3.7%**	2.9%	2.0%
Investment: Private	3.5%	3.8%	7.3%	10.3%
Investment: Fixed	6.5%	3.2%	5.6%	6.9%
Machinery	9.7%	3.7%	**8.5%**	**9.2%**
Structures	5.8%	3.2%	3.7%	5.4%
Real Exchange Rate:Pt/P	-0.1%	0.7%	-0.3%	-0.4%
Price of Crude Oil	0.9%	29.7%	-1.0%	5.8%

IA. Quest for Commanding Heights

- **Positive aspects** (relative to pre-independence)
  - National administration: Integration, state, district
  - Electrictiy, Communication, Railways
  - Modern manufacturing (mild ISI-temp protection)
- Result: GDPgr 1.5%(1900-13) to 4.1% (1951-64)
- Negative aspects: Slowly built up unnoticed
  - Agriculture neglect (2.9%/yr) => '65-66 crises
  - Monopoly Infrastructure, Mining=>X-inefficiency
  - Gov Inv in Pvt. G&S => Control Pvt sector Inv
  - Mild ISI => Permanant & unlimited protection

IB. Legislative-Bureaucratic socialism

- Legislation: MRTP, FERA, Insurance & Bank nationalisation, labour laws (300)
- Bureaucratic Rules & Procedures (LPQ Raj):
  - Comprehensive: Imports, Investment, production, trade, labour, capital, technology.
- State (Public?) Sector: Levathian
  - GDP share:11.8% to 22.1%. Inv share >50%
  - Gov Inv in manuf, mining(Pvtgds): 17% to 27%
- Governance deterioration: Quality/quantity of
  - Public G&S (Police,courts, roads, public health, Res/ext)
  - Quasi-public G&S (Primary education/health, water)

IB. Result: Socialist Rate of Growth

- Growth: GDP = 2.9%/yr, World rank 69/79
- Income:PCGDP=0.6%/yr, Pvt cons 2.8%(3.7)
- Poverty: HCR increased to 55.4% (50.5%)
- Efficiency/Productivity
  - TFPG:1.6% to 0.2%; Manf (0.4% to -0.8%)
  - Machinery investment 3.7% / yr (9.7%)
  - Manufacturing Gr. collapse (-2.5%)
  - Regd. Manf: 7.9% to 4.4%
- Legacy: Dual Economy & Control mentality
  - Underground Economy: Flexible

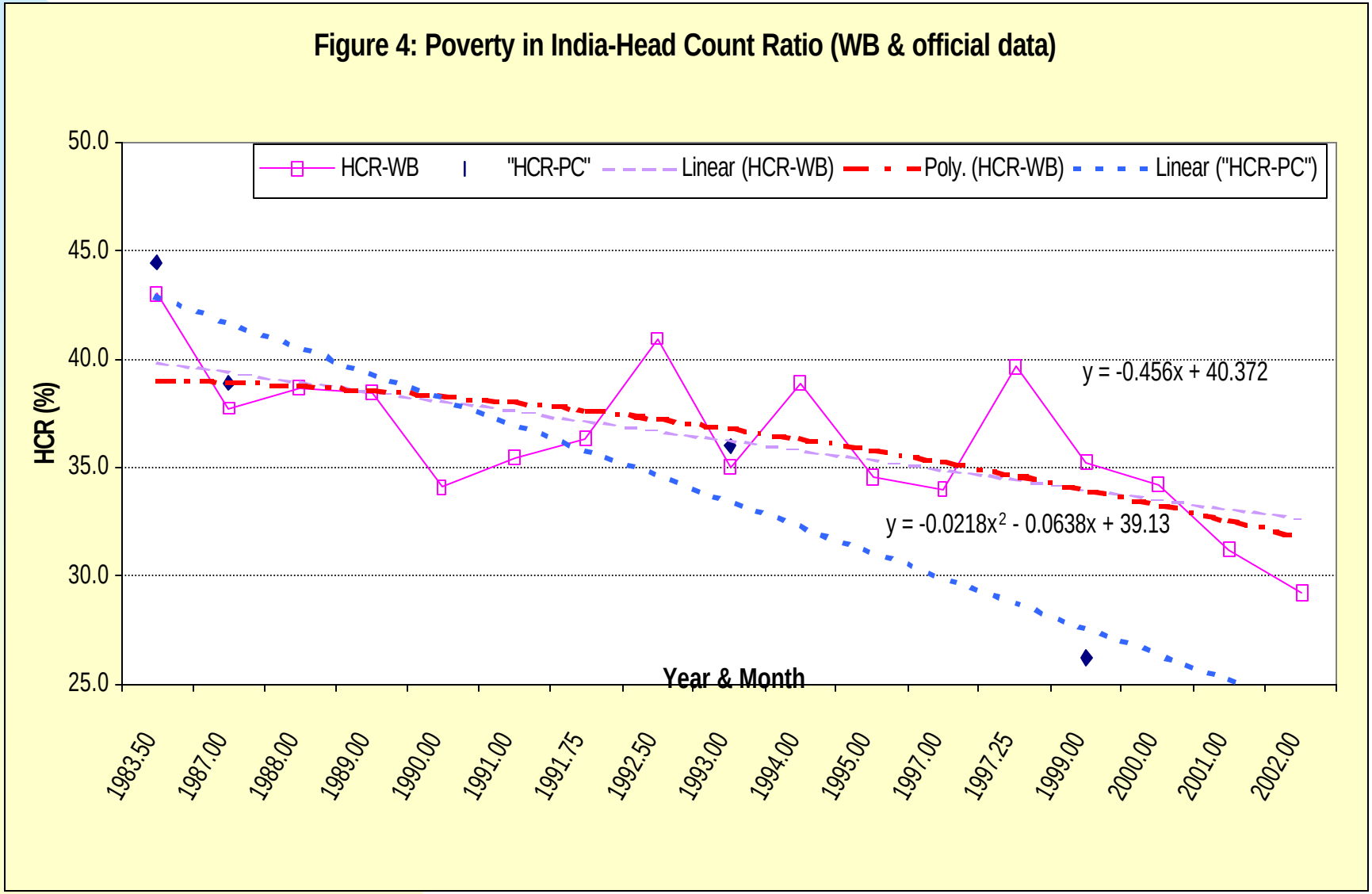
IIA: Initiation of Critical Reform

- Industrial de-licensing, MRTP, SSI limits
  - De-reservation (40), broadbanding
  - Cement & aluminium de licensed
- Capital goods imports: EPCG- modernisation
  - Pme=-0.8%/yr (IB:2.2%/yr)
  - Gr Inv me = 9.9%/yr (IB: 3.7%/yr)
- Private Investment Gr = 8.4%/yr (IB: 3.5%/yr)
- Income Tax rates peaked in 1970s
  - Private Cons: 4.5%/yr (2.8%/yr)
- Modvat introduced

IIA. Result: Bharatiya Rate of Growth

- GDP Gr rt 5.5%/yr (2.9%); World rank 12/86
  - Manufacturing Avg Gr 6.1% (4.1%); Trend +2.5%; ICOR 6.9 (9.6)
- Income: PCgdp 3.2% (0.6%).
- Poverty Avg HCR declines to 38% (frm 55.4%)
- Other factors:
  - Oil price decline: Pvt demand
  - FD 7.7% (4.1%) 1/3 to 1/2 internal,
- Negatives: Fiscal Deficit
  - FD ½ to 2/3=>CAD; XR rigidity: BOP Crises

Declining Poverty Trend



Reasons for large increase

- Growth Cycle: Catch-up Growth
  - Release of suppressed production
  - Investment environment: Machinery
  - Productivity of capital: CG import
- Directional change-Credibility (economic agents and bureaucrat controllers)
- Governance Paradox: Market substituting institutions & market distorting policy
- Supply side effect: Oil price = Tax
- Demand: Fiscal Deficit

IIB: Wider Reform & Result

- External: XR (FEMA), Export, Import [gold,qr,tariff (20%)], FDI, FII, CA
  - Export gr 10.8% (8.4%); Wrld Shr 0.8%(0.5)
  - Pt/Pnt lower => Gr NT 7.5%(6.3)/T 4.5%(4.3)
  - CAD, BOP very strong
- Finance:Int rts, Bank(70%); Equity,Debt mrkt;
- Tax Reform: Inc Tax (ltd), CENVAT(slow).
- Industry/Manuf (MRTP)
  - Investment 7.8%(5%); Machinery 7.9% (9.9%)

IIB. Impact (of reform) on Growth

- Gr Impulse: Mid nineties
  - Manuf (1994-5 to 1996-7): + 2.6%
  - Services (1995-6 to 1999-00): 2.2%
  - GDP (1994-5 to 1996-7): +1.6%?
- Avg GDP Gr 6.1% /yr (5.5% in IIA)
  - 0.6% increase not statistically significant
- Why was take-off aborted in 1997-98?
  - External factors/ Uncertainty:
    - Asian crises, Sanctions?

Reasons for Small increase in Growth

- Focus: Internal / Endogenous factors
  - Exchange Rate, Interest rate not a factor
- Incomplete Reforms
  - Particularly tradable goods
- Governance quality and efficiency
  - Deterioration in Quality/quantity of Public and Quasi-public Goods &Services
- Credibility of reforms (Policy risk)
- Inverse governance paradox: De-facto<de-jure

Incomplete Reform:Tradable sector

- Manufacturing:
  - High Tariffs: Reduce peak to 5% by 2007
  - Indirect tax multiplicity, fragmented market: CENVAT (hc, ssi exemption) / NATVAT,
  - Abolish SSI reservation, Labour rigidity
- Mining: Coal denationalisation, private entry
- Agriculture: ECA, APMA, FA & FRA, FDI in Retail, rural insurance; Irrigation, water, elect co-ops; Procurement sys (FCI)

Governance: Chronic Disease

- Informal Institutions:
  - Social (society and culture) -Strong, Diverse
  - Civil society: V. S. Niapaul, A Million Mutinies
- Formal Institutions: Government
  - Level: India's growth below that indicated by institutional quality
  - Trend: Slow deterioration since the mid-sixties
- Public & Quasi-public goods: Quantity & quality
  - Police, prosecutors, courts, judges
  - Roads, Agri R&D & Extension
  - Primary education, public health

Credibility of Reforms

- Internal criticism leading to slowdown, halt or reversal is most damaging to credibility:
  - Cong (91-96): Congress Socialist Forum
  - LF(97-98): CPM, Paswan etc.
  - NDA(99-2003): Swadeshi Jagran Manch
- Democratic Opposition has to question:
  - Credibility unaffected
  - No damage if reform legislation passed
- Govt instigation/condoning of Riots or inability to control violence hurts credibility

Key Lessons of Sector Reform

- External, Infrastructure, Taxation, Financial
- Successful reform requires Knowledge of where the country is located in the policy distortion-institution space(point A) and a clear idea of the medium term goals(point B).
- No unique path from point A to point B.
- The timings, phasing and speed of reforms is constrained & determined by the existing institutional structure, its state and the applicable socio-political constraints.

Success of Indian Reforms

- ICRIER WP 121:
  - "Success depends on policy adaptation and institutional innovations that take account of the existing reality as well as keep firmly in view the goals and direction of the policy reform, while showing tactical flexibility in achieving these goals."

TFPG: Total Factor Productivity growth

Gry=0.0148+0.430*Grk+0.202*DrainM-0.118*DrainM(-1)

(2.35)** (1.6)* (5.7)*** (-3.4)***

R^2=0.51, R^2(Adj)=0.48, DW=2.29

These parameter are substituted into the Eq:

TFPG=Gry-**a** * Grk- EDrainM-e*DrainM(-1)

The estimated (hp filtered) TFPG0hp is used in following:

Gry=1.11TFPG0hp+0.34*Grk+0.22*DrainM-0.12*DrainM(-1)

(4.6)*** (1.9)* (6.9)*** (-4.0)***

-0.35*AR(1)

(-2.5)*** R^2=0.62, R^2(Adj)=0.59, DW=2.1

- The estimate of capital Coefficient =0.34 is almost identical to the capital share used by Collins and Bosworth (1996).

Source: ICRIER WP No. 131

Determinants of TFPG

TFPG1=0.044*(Ifme/IF) -0.17*GrXRreal - 0.271 (AR1)

(7.8)*** (-2.8)*** (-2.3)**

R^2=0.27, R^2(Adj)=0.24, DW=2.1

Ifme/IF=Ratio of Fixed investment in Machinery & Equipment to the total fixed investment.

GrXRreal=Rate of Change of Real Exchange Rate.

TFPG1=0.01 D6580+0.05*(Ifme/IF) -0.17*GrXRreal

(-2.5)** (8.9)*** (-2.7)***

- 0.35 (AR1)

(-2.8)***

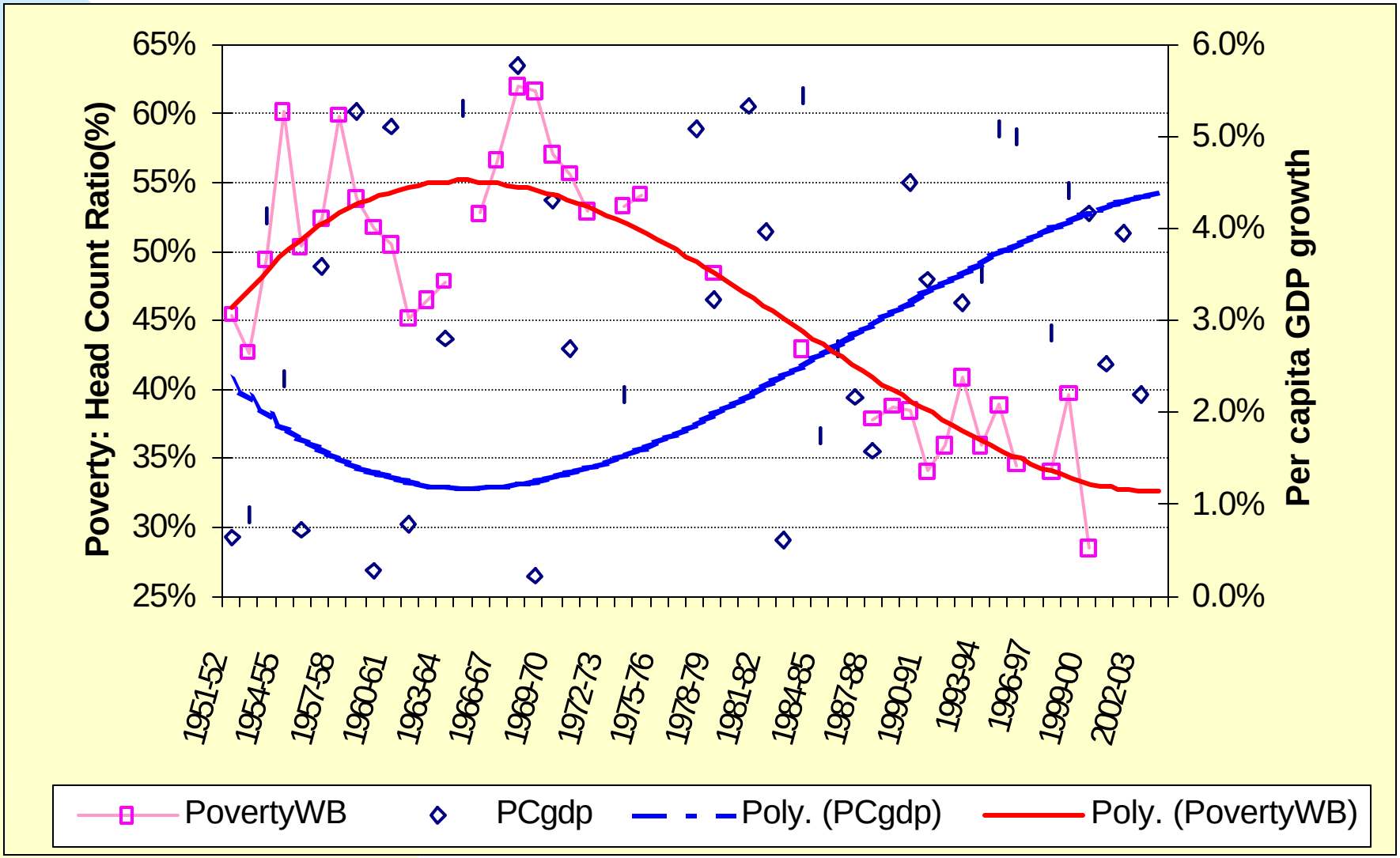
R^2=0.35, R^2(Adj)=0.31, DW=2.1

D6580=dummy for 1965-66 to 1980-81

TFPG by Sectors

Table : Factor Productivity Growth							
		Total Factor Productivity Growth (TFPG)					
Sectors	Phase/sub-phase	I	I A	I B	II	II A	II B
	Period	1950-79	1950-64	1965-79	1980-00	1980-91	1992-03
	K share						
GDPfc	0.26	0.9%	1.9%	0.1%	3.0%	2.5%	3.6%
agriculture+.	0.23	0.2%	1.0%	-0.5%	2.1%	2.2%	2.1%
mining	0.36	-3.1%	-4.3%	-2.1%	2.0%	-0.2%	4.3%
manufacture	0.32	-0.3%	0.4%	-0.8%	2.0%	1.3%	2.8%
electricity	0.58	-7.6%	-17.0%	-0.6%	4.4%	4.1%	4.7%
construction	0.16	-0.9%	-0.7%	-1.1%	-0.7%	-1.7%	0.3%
trade,htl	0.38	-1.0%	1.3%	-3.0%	2.6%	1.6%	3.6%
transprt+	0.33	-0.2%	-2.1%	1.5%	3.8%	2.8%	4.9%
ServiceOth	0.23	4.0%	5.8%	2.4%	4.4%	4.1%	4.7%

Per Capita GDP Growth & Poverty



Future Growth and Reform

- Current pace of reform => 6% to 6.5%
- Sustained Fast Growth requires dedicated reform for next 10-15 years:
  - 6.5% to 7.5%: Policy reform in all sectors
    - Principles: Free entry, competition, enlightened regulation (e.g. Telecom)
    - Detailed analysis to identify jungle of controls and determined reform to eliminate it
  - 7.5%+: Overhaul of Governance
    - Criminal politician; Courts; Police
    - Reorient role of Govt (Pvt-Pub gds)