Examining the decoupling hypothesis for India

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Decoupling

Recent debate on decoupling has increased in the recent crisis:

- Greater trade and financial linkages suggest synchronisation.
- But developing countries like India and China did not slow down like industrial countries.
- Theory does not give a clear guidance on whether there should be “coupling” or “decoupling”.

Empirical research

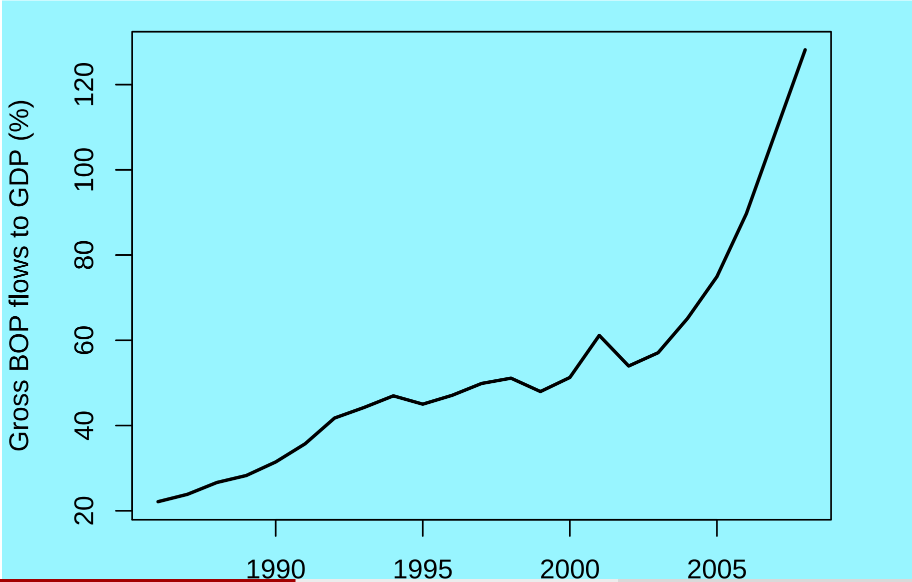
Emprical research in the field

1. Studies changes in comovements over time.
2. Measures spillover from industrial countries to developing countries.
3. Analyses determinants of business cycle comovement.

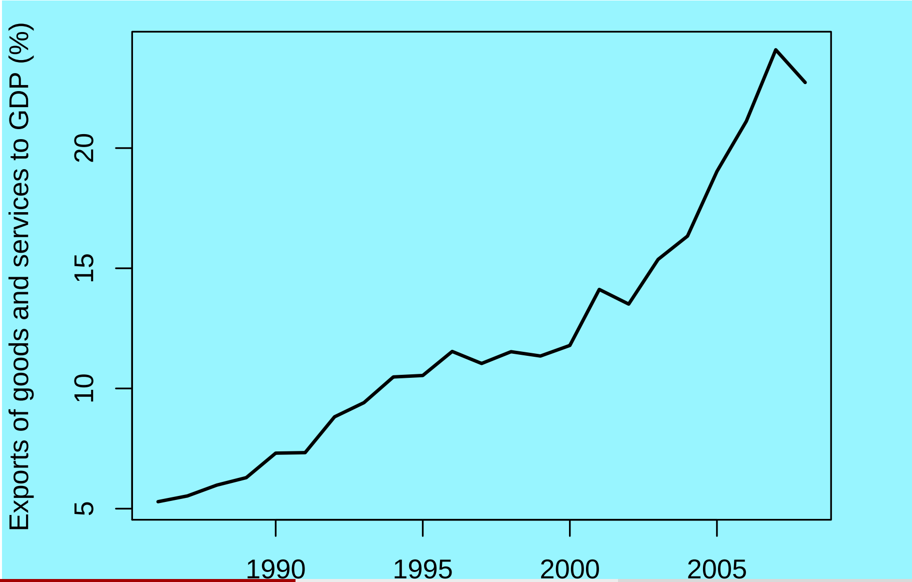
Part I

Increasing integration of the Indian economy

Gross BOP flows to GDP



Goods & Services exports to GDP



Increasing integration

Table: Ratios of trade and capital flows to GDP in India

Sub-Sample	Trade/GDP (%)	(CA+KA)/GDP (%)
1992-1997	20.44	45.83
1997-2003	23.28	53.77
2003-2008	34.26	93.94

Equity market correlations

Table: Correlations of weekly returns on the CMIE Cospi stock market index against global stock market indexes

	UK FTSE-100	Japan Nikkei-225	US S&P 500
1992-1997	-0.008	-0.038	-0.023
1997-2003	0.184	0.168	0.167
2003-2008	0.463	0.390	0.339
Full period	0.192	0.149	0.150

Integration and business cycle synchronisation

Theory:

- Increased trade implies demand shocks in one country lead to output shocks in another.
- Shocks such as commodity/oil prices can affect all countries.
- Monetary policy shocks can get transmitted.
- Increased financial integration implies financial shocks in one country may lead to contagion.

But

- Impact of specialisation/vertical production structures on shocks can result in decoupling.

Integration and business cycle synchronisation

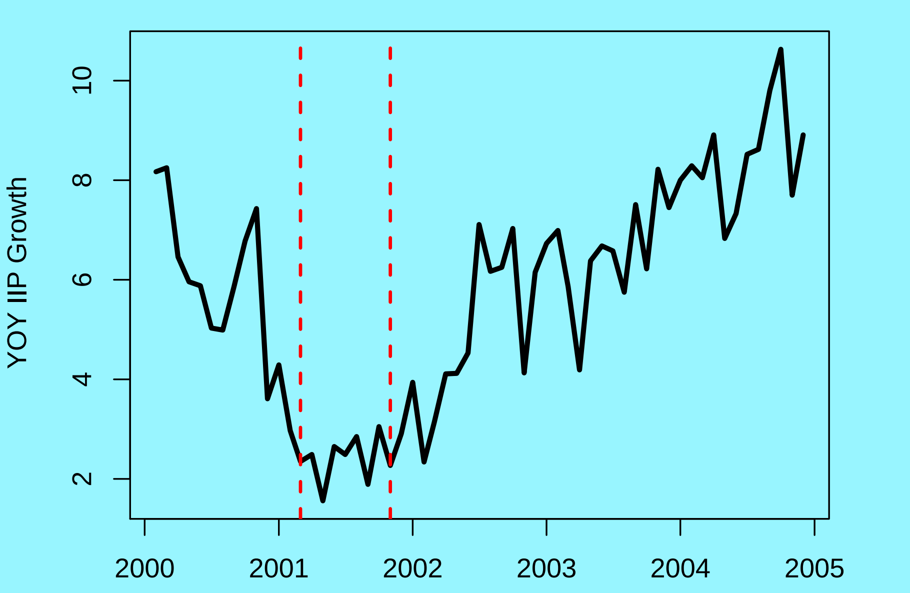
Empirical studies:

- Evidence for synchronisation strong in developed countries (Frankel and Rose, 1998).
- No consensus for developing economies.
- Evidence of greater comovement with greater trade: (Calderon, Chong and Stein, 2003)
- Others seem to suggest decoupling of Indian and Chinese business cycles from industrial countries. (Fidrmuc, Korhonen and Batorova, (2008), Kose, Otrok, Prasad (2008)).
- No study focusing only on India.

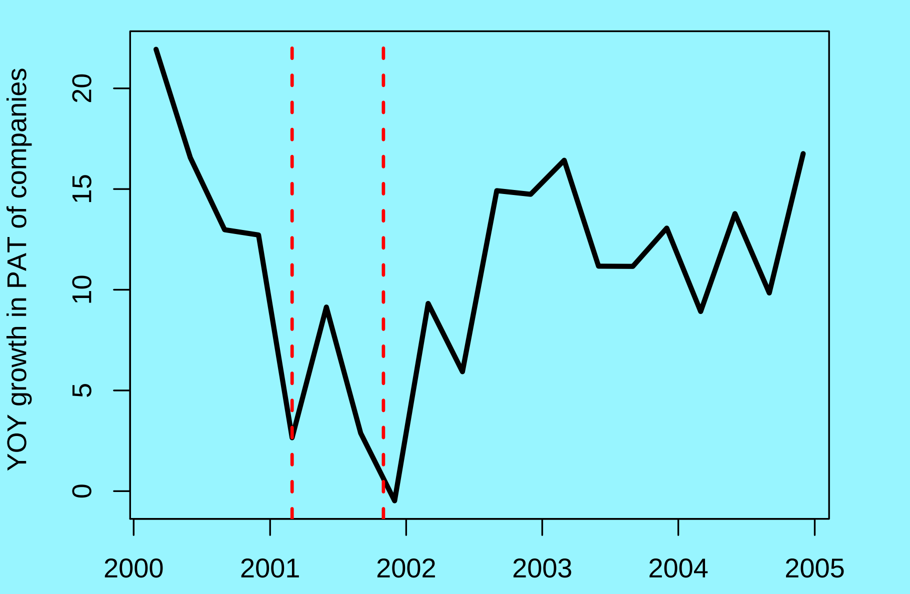
Part II

India in the last US recession

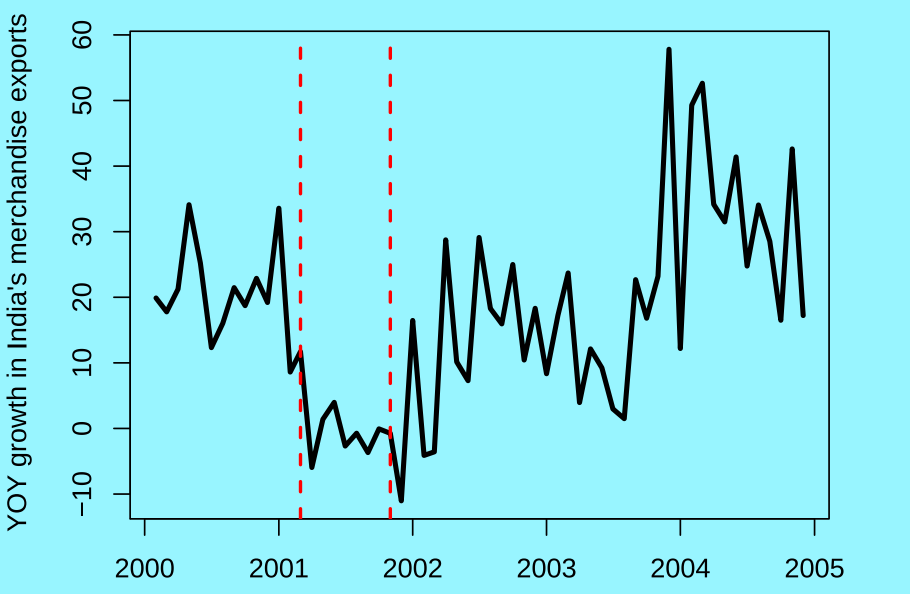
India in the 2001 recession



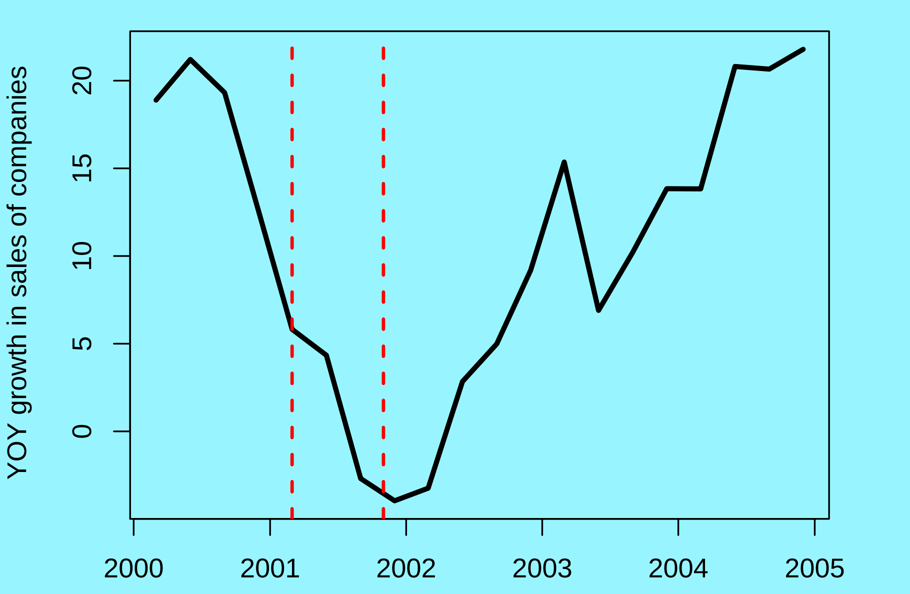
India in the 2001 recession



India in the 2001 recession



India in the 2001 recession



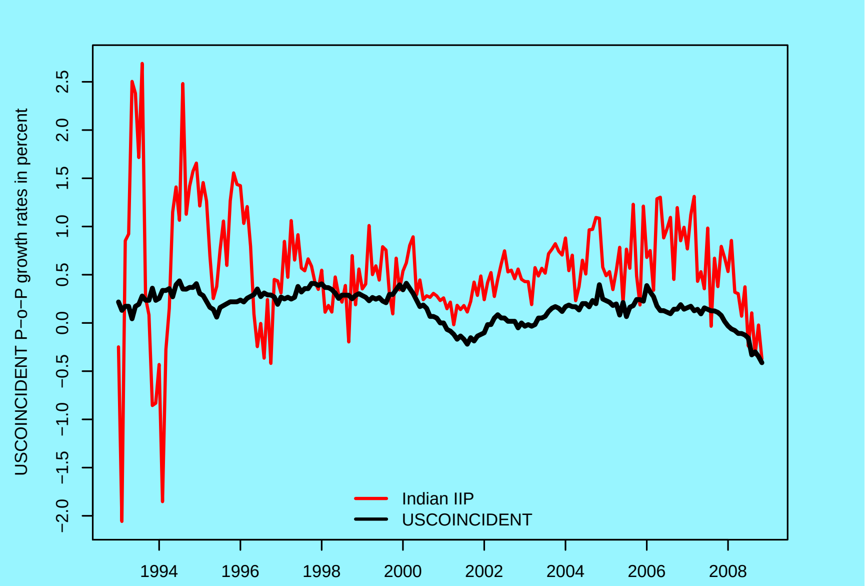
Part III

India since the early 1990s

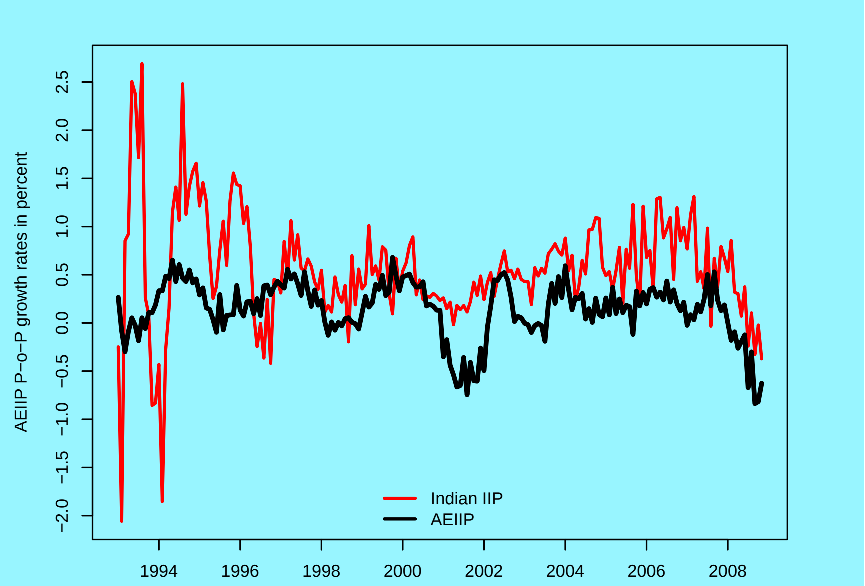
Data

- India: Index of Industrial Production (IIP).
- US: Conference Board coincident indicator.
- Industrial economies: IIP for all industrialised economies.
- Three sub-samples: 1992-1997, 1997-2003, 2003-2008.

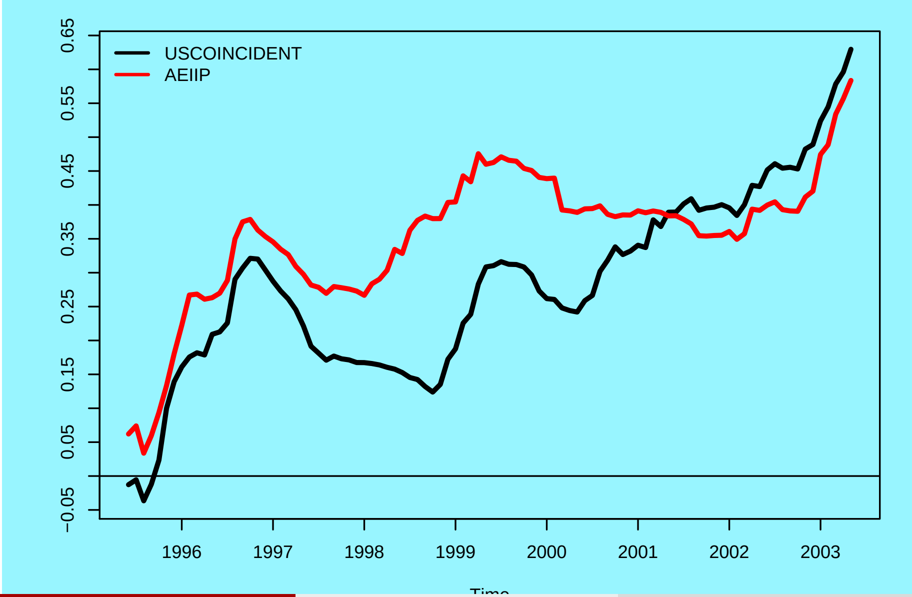
Indian IIP and the US coincident indicator



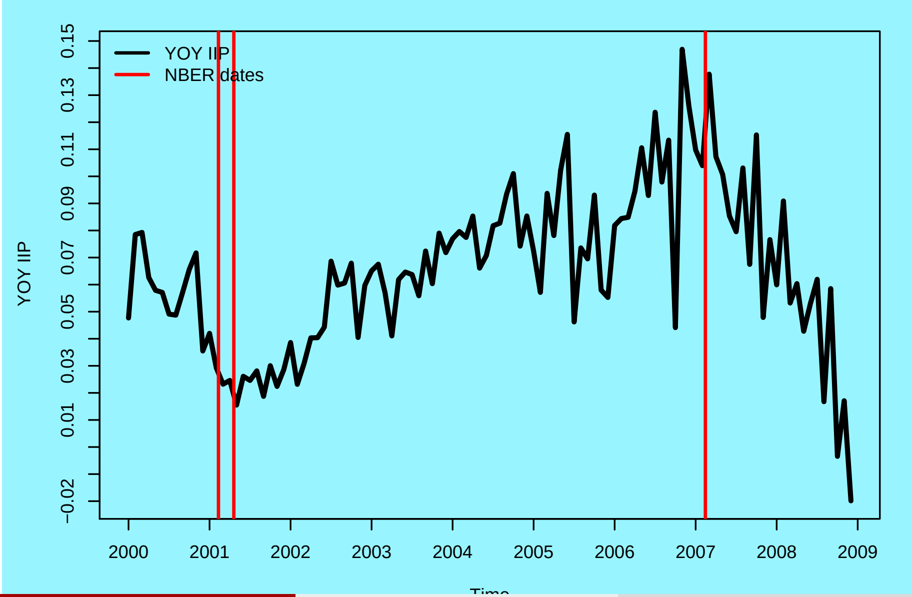
Indian IIP and IIP of industrial economies



Rolling correlations with Indian IIP



Indian IIP during the US expansion and contraction



Questions

- The above suggests business cycle synchronisation.

  Questions for formal analysis:
- Are Indian business cycles synchronised with industrial country business cycles?
- How has synchronisation changed over time?
- How does comovement with industrial economies compare with that with the US?

Part IV

Methodology

Harding-Pagan index of concordance

- Studies the “state-series" of a variable: 0-1 binary variable
- Index of concordance: Proportion of time that two variables are in the same state [Harding and Pagan, 2006]
- Index = 0, countercyclical. Index = 1, procyclical. E[Index] = 0.5.

Harding-Pagan index of concordance: Results

Variable	$\hat{I}_{xy}$	$\hat{\rho}_{S_x S_y}$	t statistic	p value
Period 1: 1992-1997				
USCOINCIDENT	0.536	-0.136	-0.8	0.427
AEIIP	0.500	-0.333	-2.629	0.011**
Period 2: 1997-2003				
USCOINCIDENT	0.767	0.356	1.544	0.127
AEIIP	0.781	0.526	2.72	0.008**
Period 3: 2003-2008				
USCOINCIDENT	0.781	0.501	6.438	0.000***
AEIIP	0.984	0.965	43.497	0.000***
Full period: 1992-2008				
USCOINCIDENT	0.639	0.254	2.178	0.031**
AEIIP	0.743	0.476	3.569	0.000***

Insights

- There is business cycle synchronisation over 1992-2008.
- This is increasing over time.
    - 1992-1997: Weakly counter-cyclical to world cycle
    - 1997-2003: Weakly pro-cyclical
    - 2003-2008: Strongly procyclical and synchronised
- Indian cycle seems more synchronised with industrial economies cycles than with US cycles

Key results

- There is evidence of business cycle synchronisation.
- This synchronisation has increased over time.
- Indian business cycles are more synchronised with cycles in a broader group of industrial countries than with the US.

Robustness checks

- Alternative methodologies - cross-correlation and spectral analysis.
- Change sample period:
  - This is not a definite “start-end" process. Rather, slowly evolving phenomenon reflecting structural changes in the Indian economy
  - So, change sample break dates to Feb-1998 and Jun-2004.
- Detrend the data using the HP filter
- Redefine key variables: use US industrial production, World trade.

The key results hold.

Next steps

- To study the transmission mechanism of business cycle synchronisation.
- Use other indicators to study comovements.

Thank you.