

*Preliminary;
comments
welcome*



Disentangling India's Investment Slowdown

(Thomas Richardson for)

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Background

- Investment slowdown

Questions / Puzzles

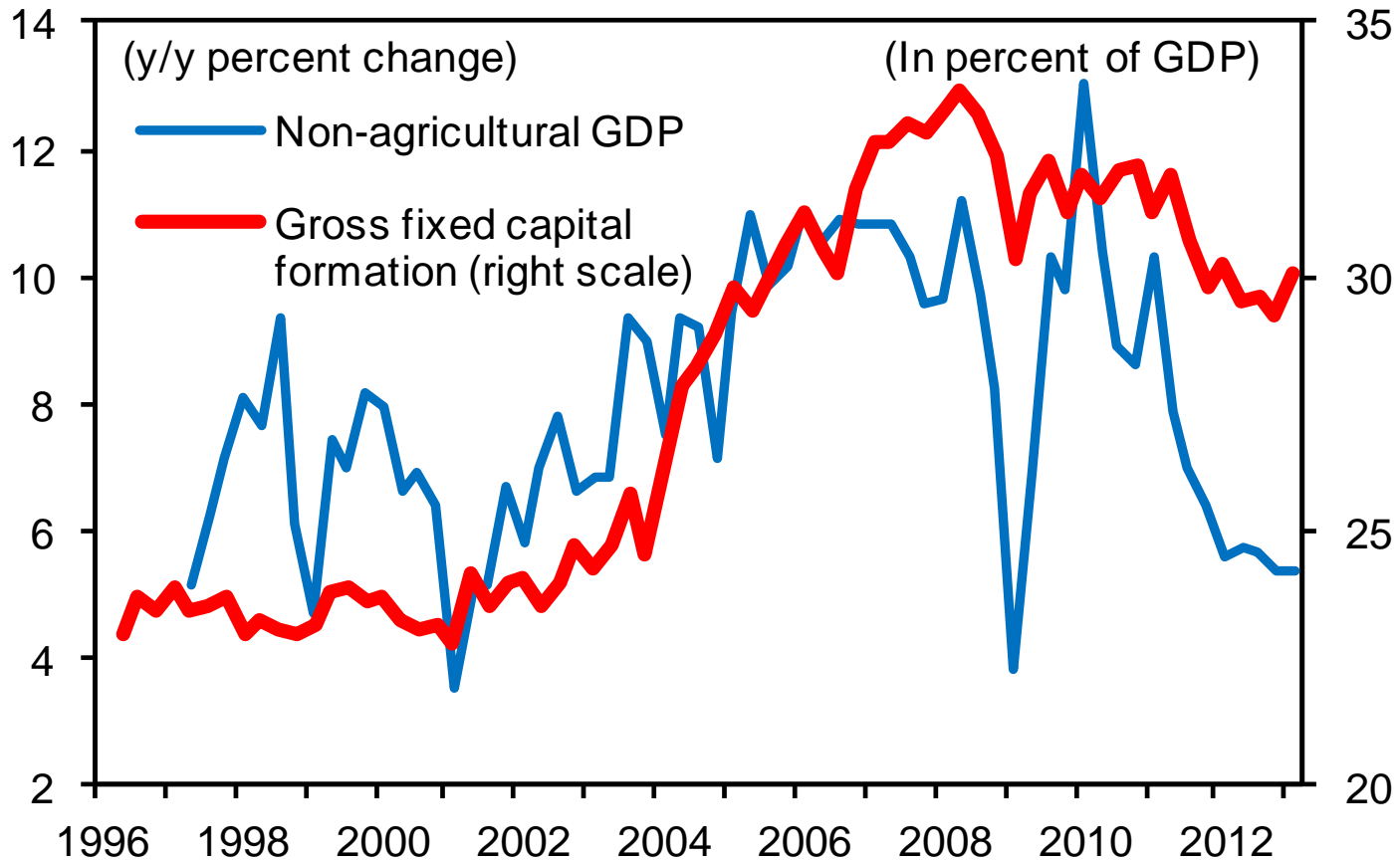
- Do interest rates matter?
- Real or nominal rates?

Innovation

- Business confidence
- Economic policy uncertainty

Falling infrastructure and corporate investment led the slowdown in 2010-12

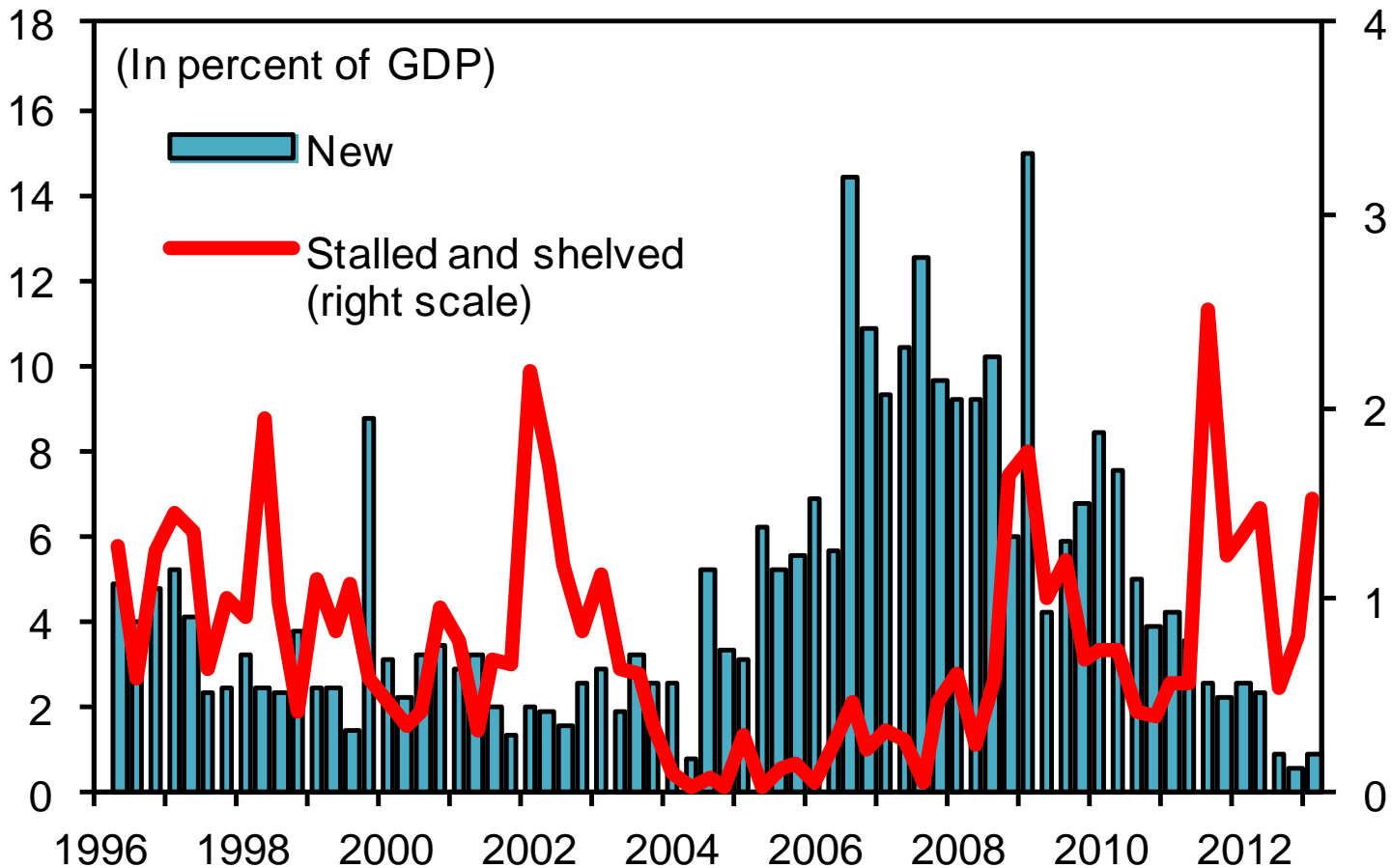
India: GDP Growth and Capital Formation



Sources: Haver Analytics; and IMF staff calculations.

Pipeline of investment projects drying up

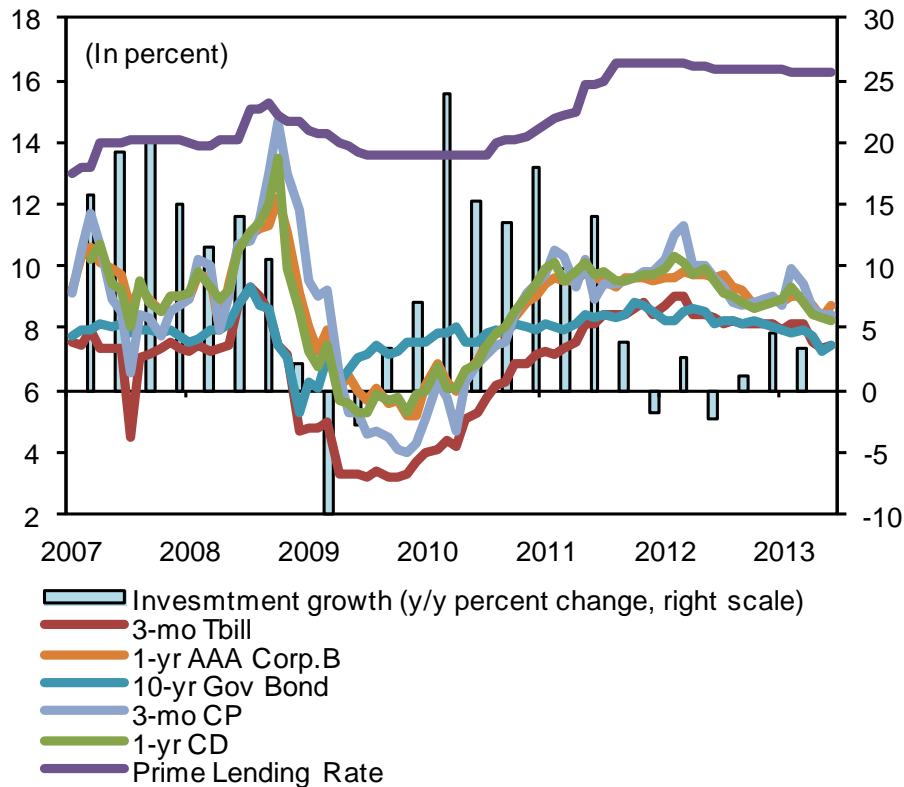
India: Shelved and New Investment Projects



Sources: CAPEX Database; and IMF staff calculations.

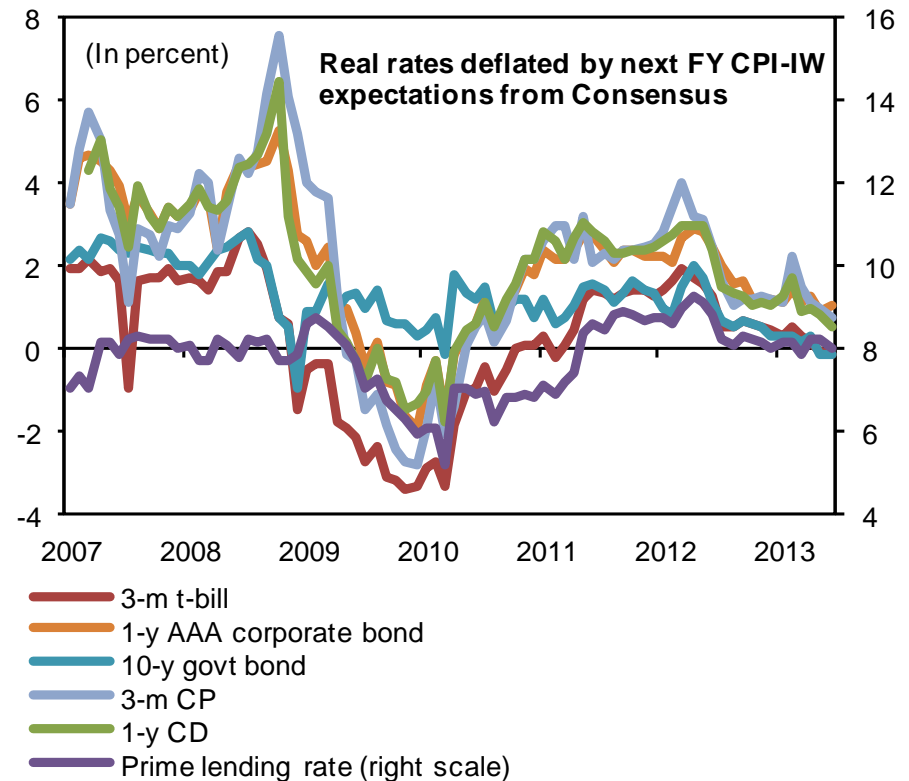
India: Nominal vs Real Interest Rates

India: Nominal Interest Rates



Sources: Bloomberg; CEIC; and IMF staff calculations.

India: Real Interest Rates



Sources: Bloomberg; CEIC; Consensus; and IMF staff calculations.

Investment is better explained by real than by nominal interest rates

Regression Analysis of Investments: Role of Interest Rates

Dependent Variable: Change in real gross fixed capital formation
(quarter-over-quarter percent change, seasonally adjusted)

	(1)	(2)	(3)	(4)
Real interest rate <i>% per annum</i>	-0.911 *** (0.277)			-0.932 *** (0.322)
Nominal interest rate <i>% per annum</i>		-0.445 *** (0.155)	-0.871 *** (0.303)	
Inflation expectations <i>%, next fiscal year</i>			1.013 * (0.541)	0.091 (0.265)
Sample: 1996Q2-2012Q4				
Number of observations	64	64	64	64
R ² , d.f. adjusted	0.257	0.200	0.245	0.245

Source: IMF staff estimates.

Note: Interest rate corresponds to the average prime lending rate. Real interest rate is based on inflation expectations for the next fiscal year from Consensus Economics surveys.

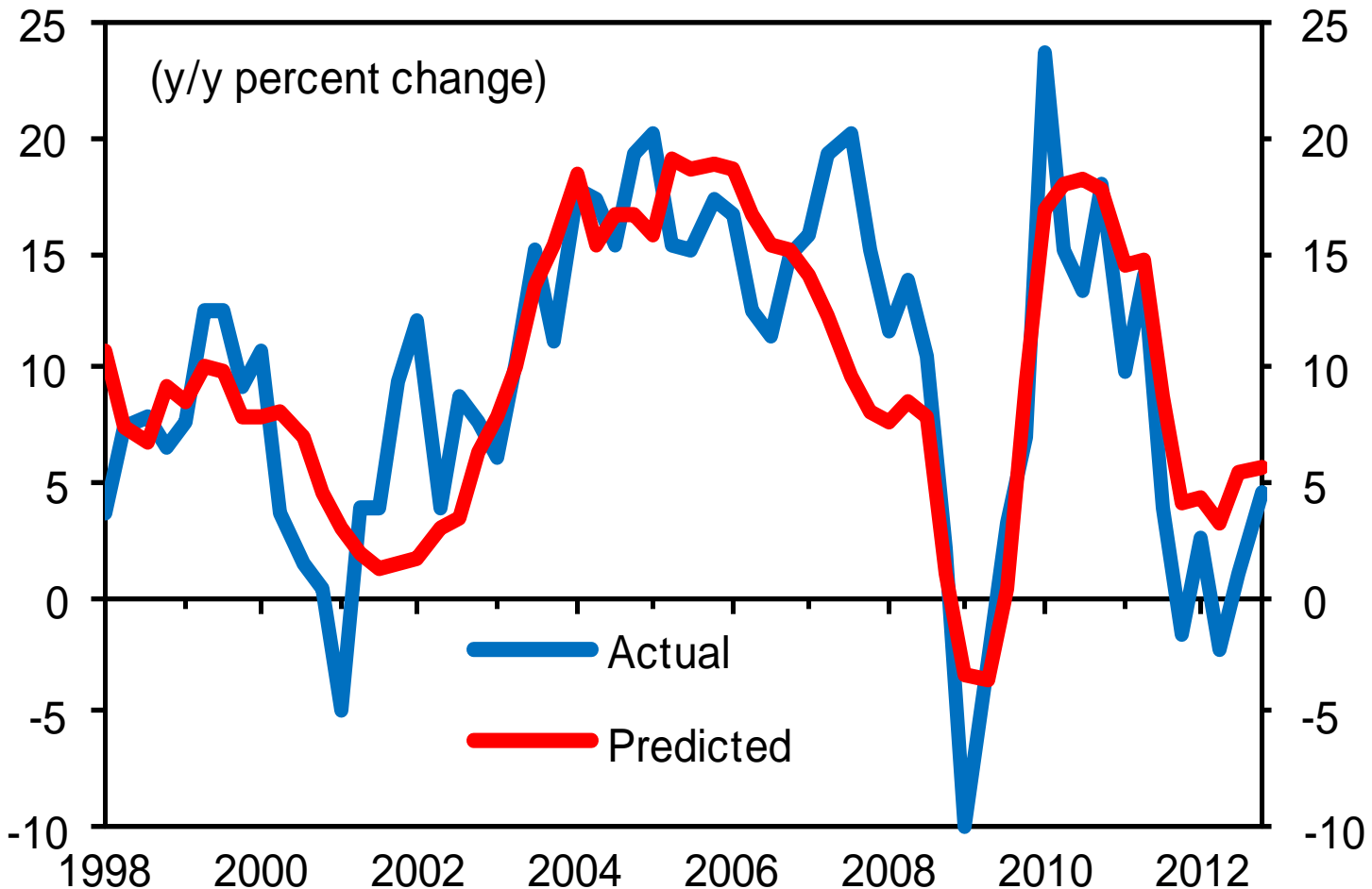
Note: Robust standard errors in parenthesis.

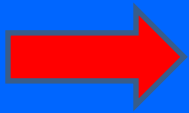
Note: ***, **, * indicates 1, 5, 10 percent statistical significance, respectively.

Note: Controlling for overall business confidence, investment goods cost inflation, global financial and macroeconomic conditions.

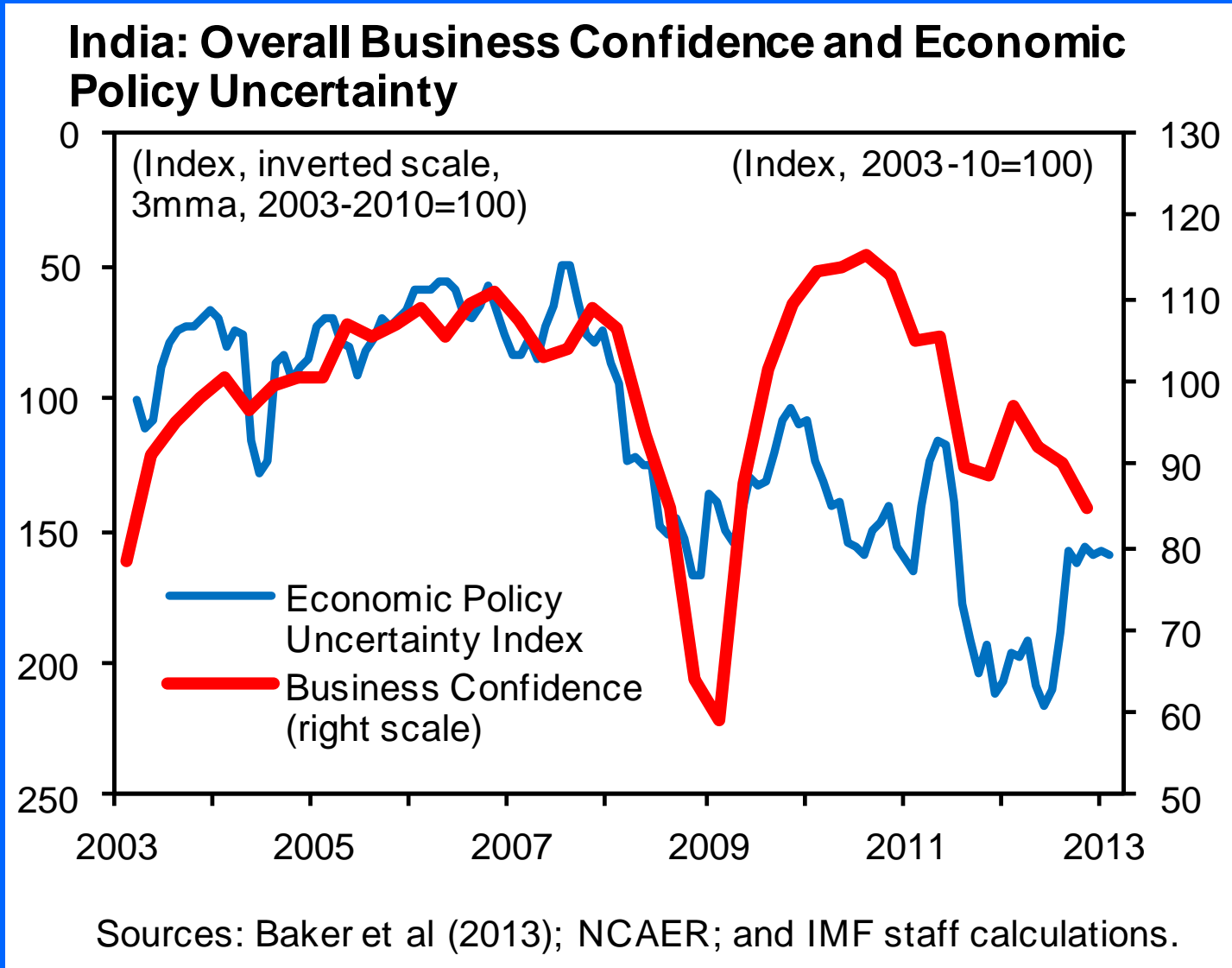
Model explains about half the investment slowdown

Figure x1. India: Fixed Investments Growth: Predicted vs. Actual

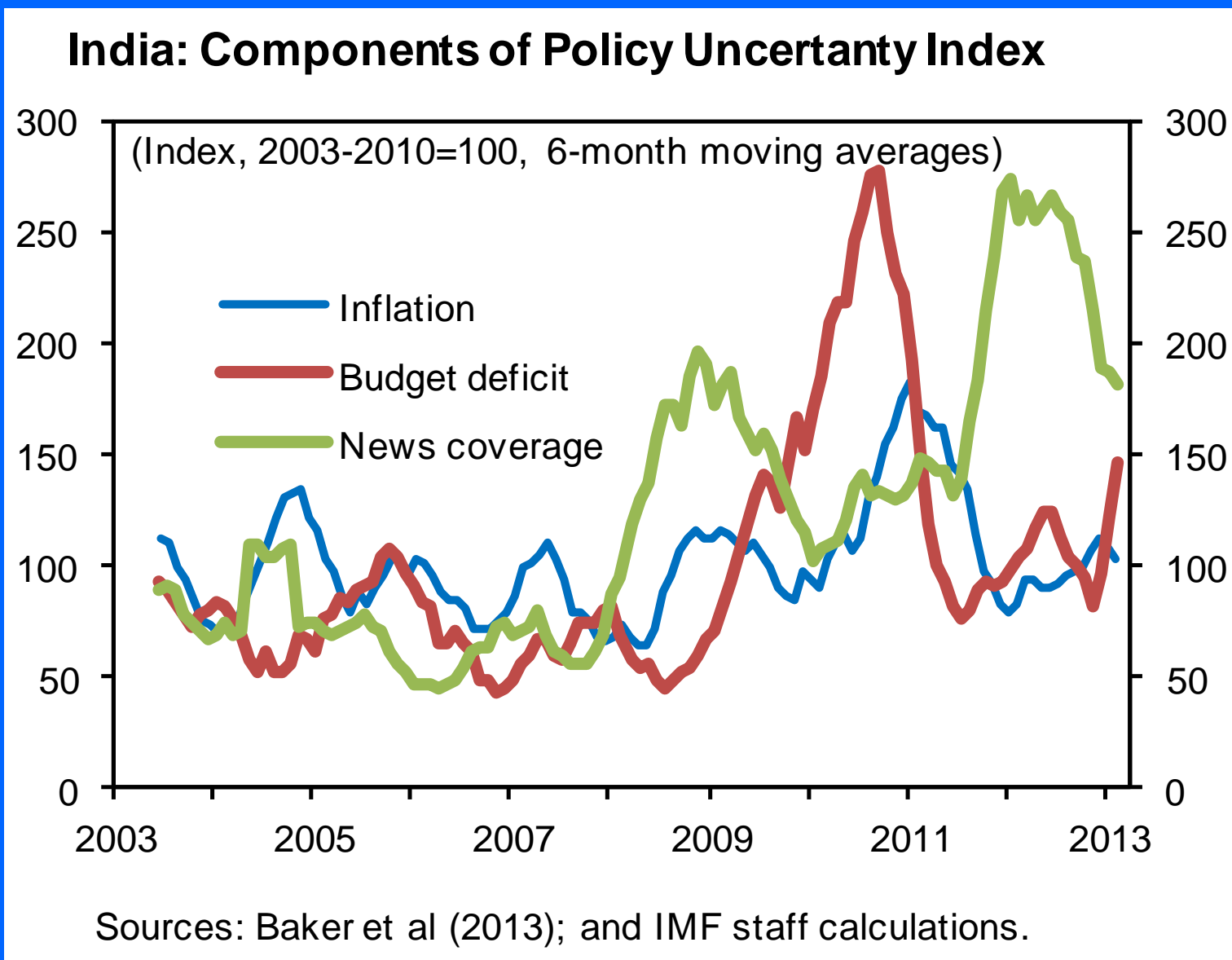




Consider economic policy uncertainty

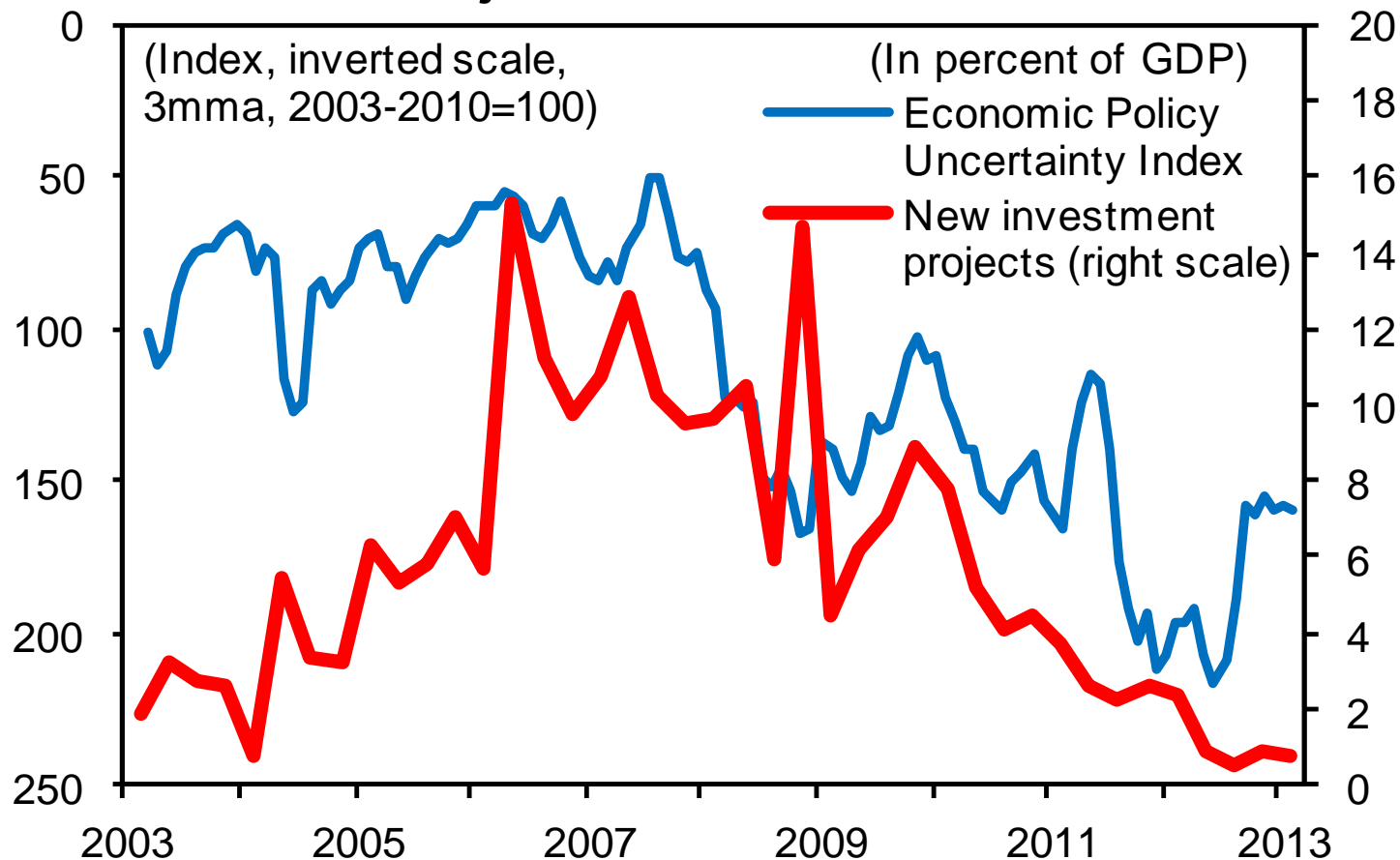


What is in the policy uncertainty index?



Policy uncertainty and new investment

India: Economic Policy Uncertainty and New Investment Projects



Sources: Baker et al (2013); CEMI; and IMF staff calculations.

New investment projects are sensitive to economic policy uncertainty (EPU)

-- but note odd sign on real interest rate

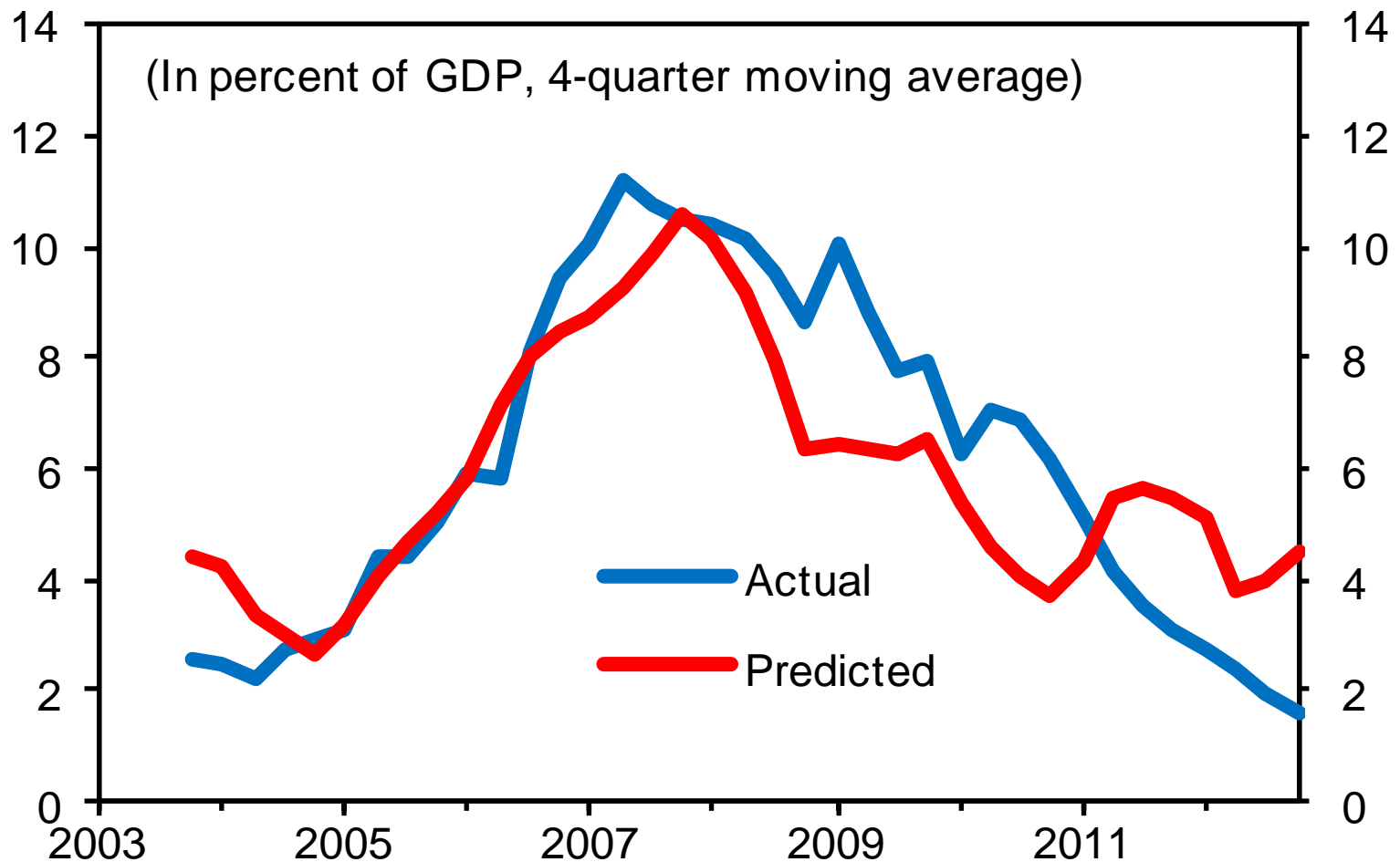
New Investment: Role of Policy Uncertainty		
Dependent Variable: New investment projects (Projects costs as percent of GDP)		
	(1)	(2)
Real interest rate <i>% per annum</i>	1.816 *** (0.365)	0.802 (0.560)
Business confidence <i>NCAER index</i>	0.000 (0.057)	0.041 (0.065)
Economic Policy Uncertainty <i>EPU Index</i>	-0.063 *** (0.014)	
Sample: 2003Q1-2012Q4		
Number of observations	40	40
R ² , d.f. adjusted	0.389	0.043
Source: IMF staff estimates.		
Note: Interest rate corresponds to the average prime lending rate. Real interest rate is based on inflation expectations for the next fiscal year from Consensus Economics surveys.		
Note: Robust standard errors in parenthesis.		
Note: ***, **, * indicates 1, 5, 10 percent statistical significance.		
Note: Controlling for global financial and macroeconomic conditions.		

Shelved projects are also sensitive to EPU & business confidence

Shelved Investment: Role of Policy Uncertainty		
Dependent Variable: Shelved investment projects (Projects costs as percent of GDP)		
	(1)	(2)
Real interest rate <i>% per annum</i>	0.071 (0.049)	0.160 *** (0.051)
Business confidence <i>NCAER index</i>	-0.012 *** (0.003)	-0.016 *** (0.003)
Economic Policy Uncertainty <i>EPU Index</i>	0.005 *** (0.001)	
Sample: 2003Q1-2012Q4		
Number of observations	40	40
R ² , d.f. adjusted	0.626	0.515
Source: IMF staff estimates.		
Note: Interest rate corresponds to the average prime lending rate.		
Real interest rate is based on inflation expectations for the next fiscal year from Consensus Economics surveys.		
Note: Robust standard errors in parenthesis.		
Note: ***, **, * indicates 1, 5, 10 percent statistical significance.		
Note: Controlling for global financial and macroeconomic conditions.		

Drop in new investment projects largely unexplained

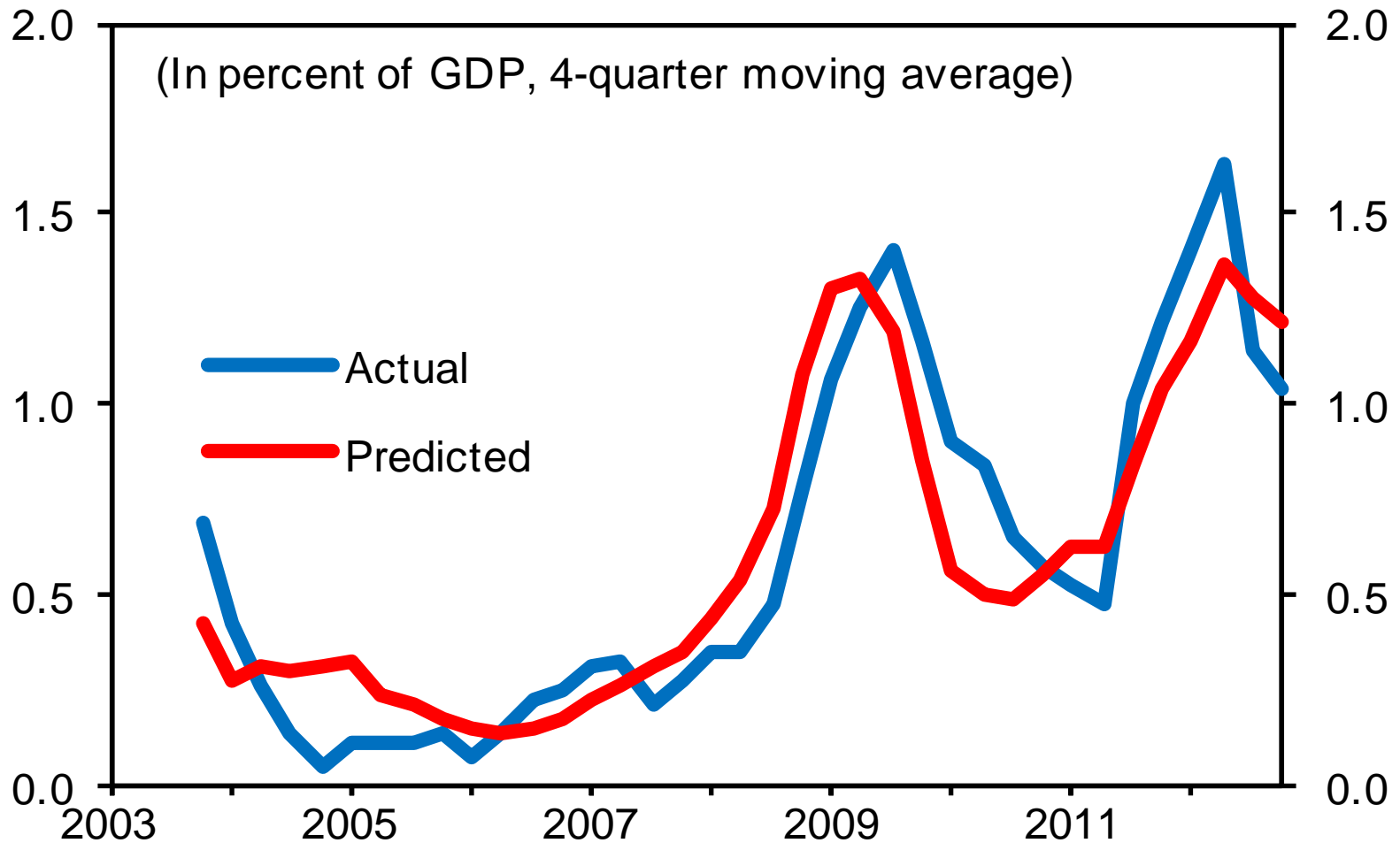
New Investment Projects: Fitted vs. Actual



Source: CAPEX database; and IMF staff estimates.

Model does a bit better for shelved projects

Shelved Investment Projects: Fitted vs. Actual



Source: CAPEX database; and IMF staff estimates.

Conclusions

Role of interest rates

- Interest rates matter for investment
- Real interest rates matter more than nominal ones
- Much of investment slowdown remains unexplained

Business confidence & policy uncertainty

- New measure of economic policy uncertainty (EPU)
- EPU matters for investment, new & shelved projects
- Does not explain everything



Investment bottlenecks

- Structural reforms needed to unlock investment:
 - Land, environment, power, transport



Thank you

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