

Inflation Reports, Transparency, and Accuracy in Inflation-Targeting Countries

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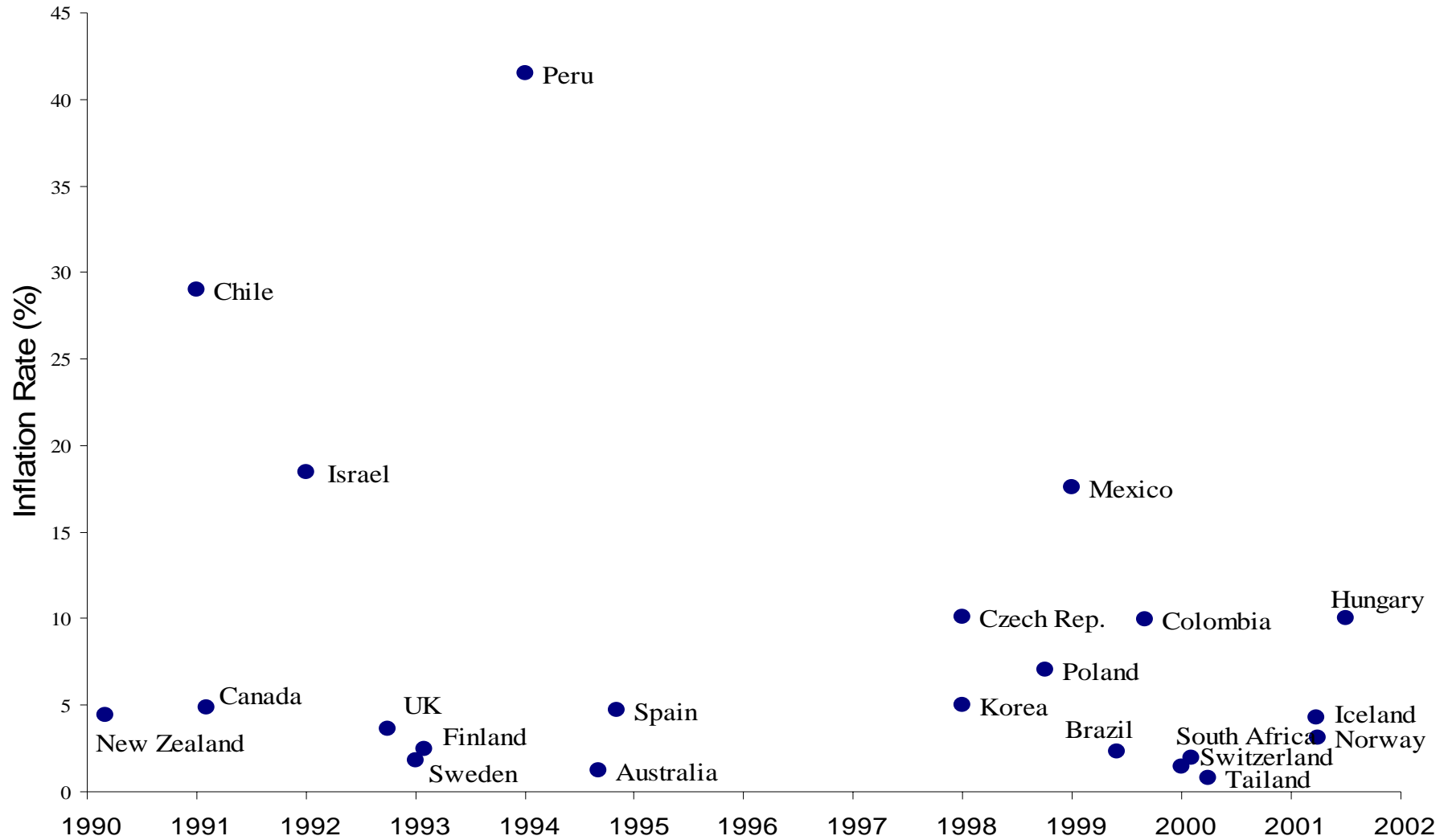
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Outline

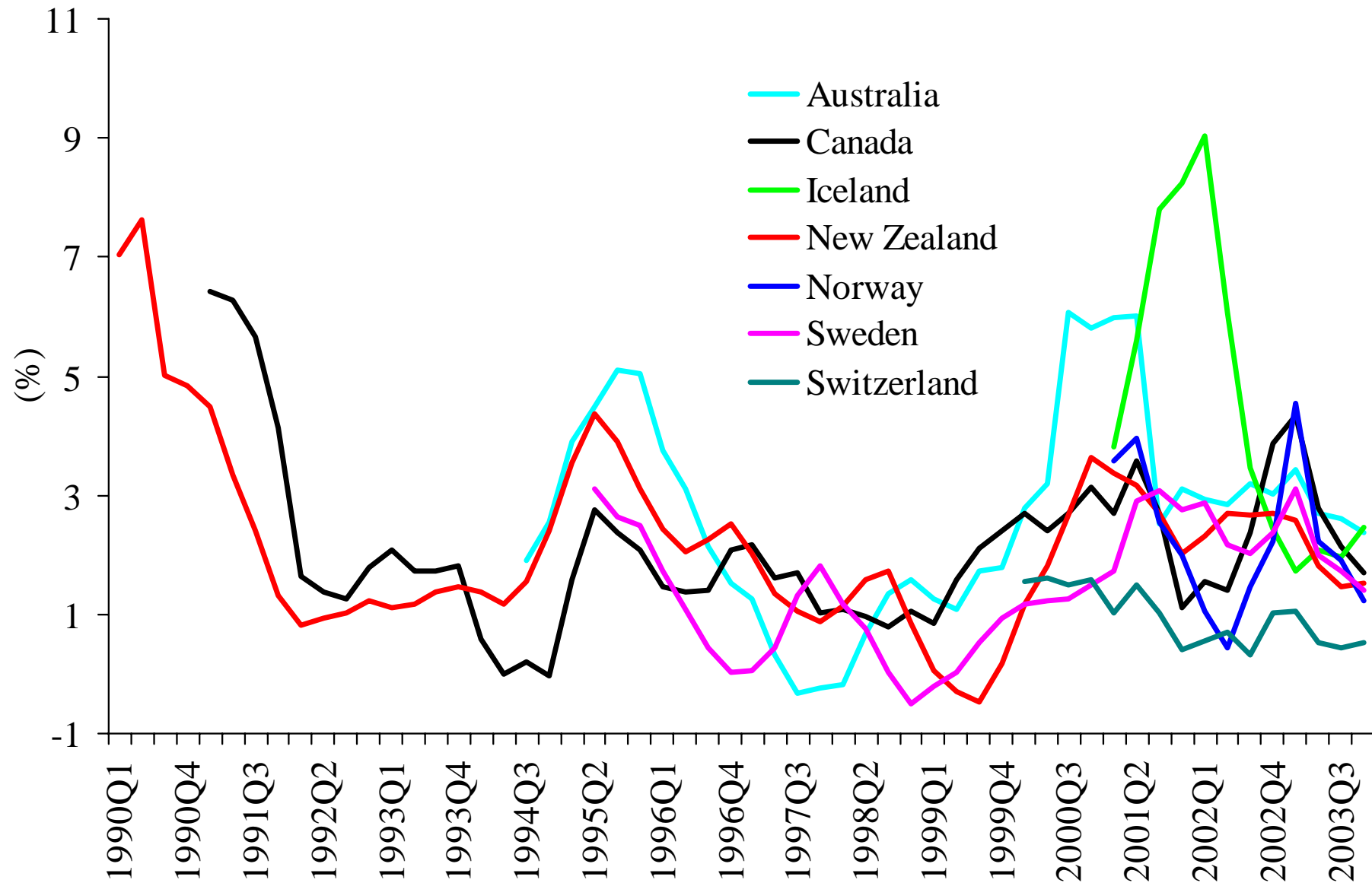
1. Inflation Convergence under IT
 2. Inflation Reports
 3. Transparency
 4. IT Accuracy
 5. Conclusions
- References

1. Inflation Convergence under IT

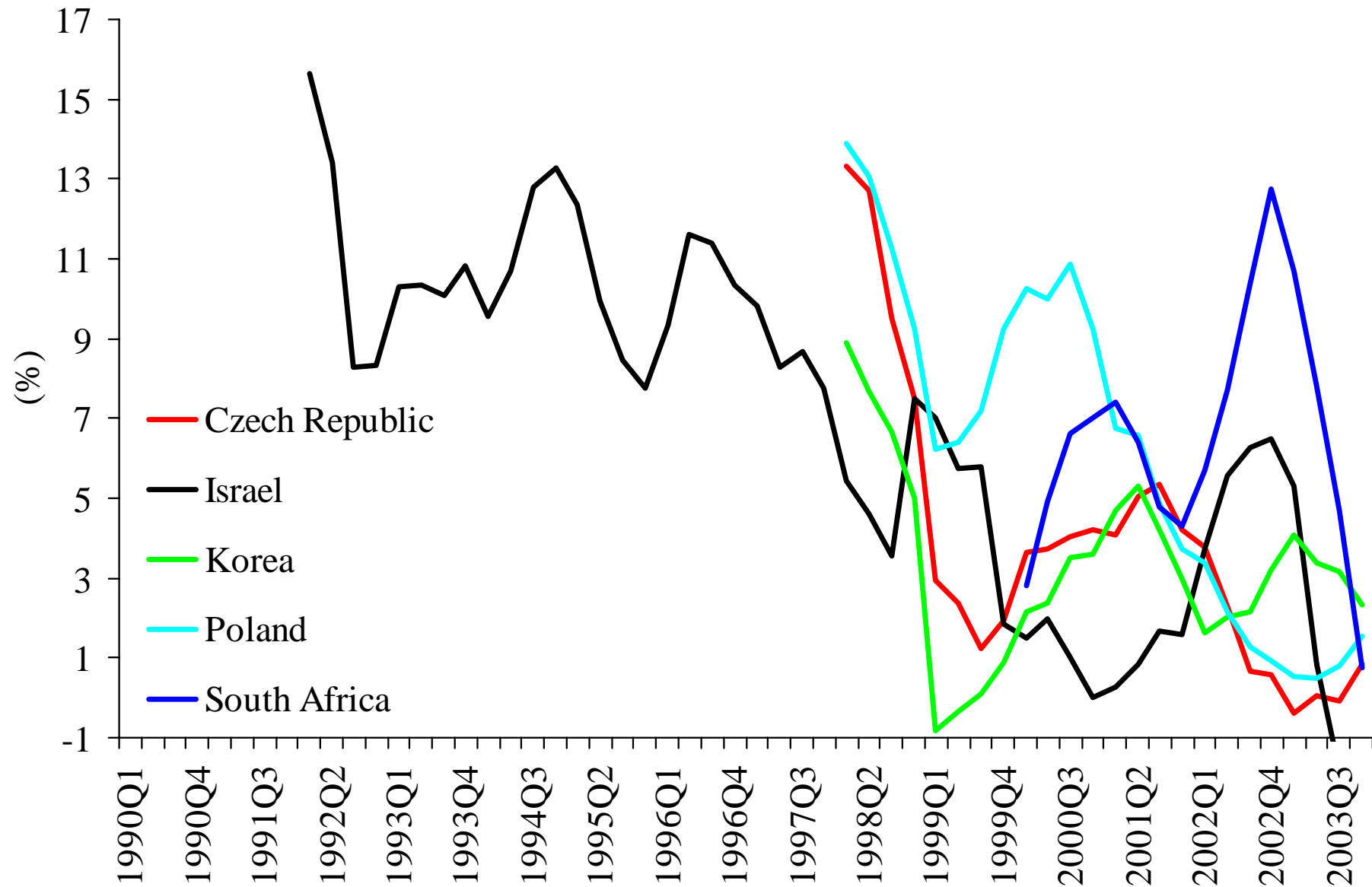
IT Adoption Dates and Initial Inflation



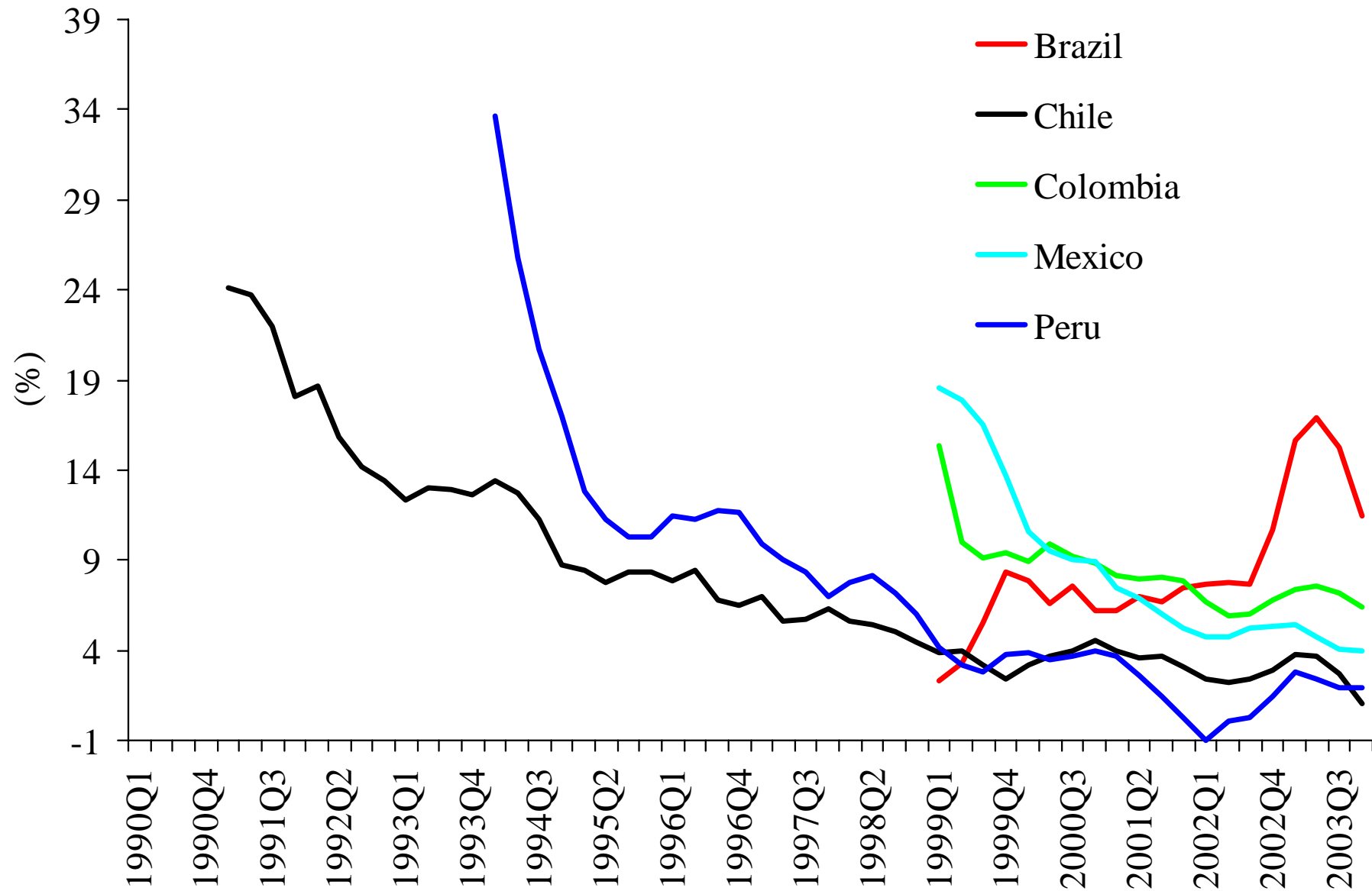
Inflation convergence under IT



Inflation convergence under IT



Inflation convergence under IT



2. Inflation Reports

Inflation Reports

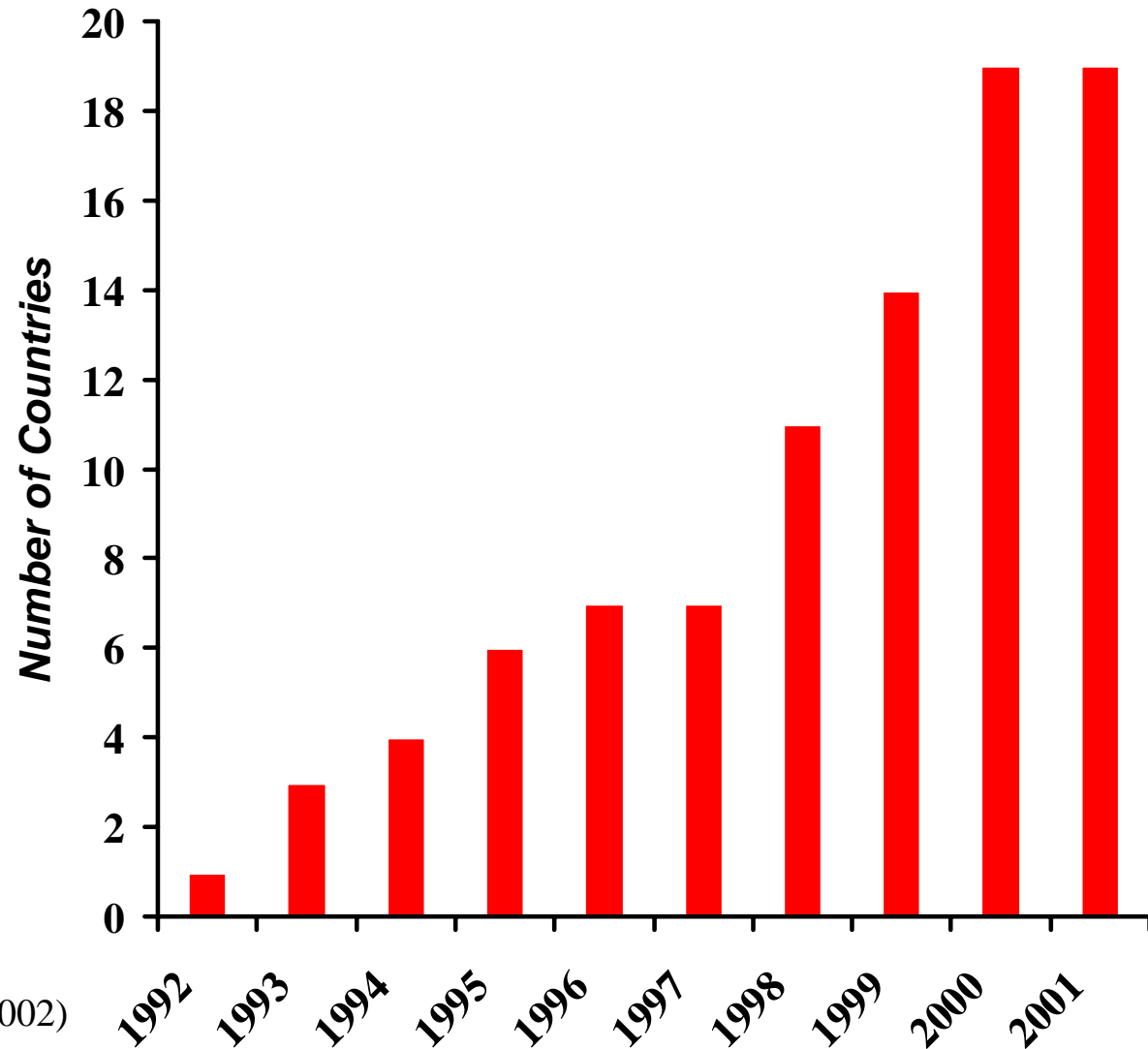
- Inflation reports are key instruments of communication of CBs with markets and the public
- Provide information about how CBs analyze and view current and future economic conditions
- Complementary to other communication tools: press releases and minutes of monetary policy meetings, analytical models, research papers, discussion notes
- Important distinction between quantity and quality of information.

Inflation Reports

- Inflation Reports: What do they communicate?
 - Discussion of monetary policy objectives
 - Analytical structure and views on which policies are based
 - Policy projections and performance analysis
- Inflation Reports: how should they communicate?
 - Comprehensive yet concise executive summary
 - Format continuity
 - Focus only on necessary information
 - Intensive in figures and tables.

Inflation Reports

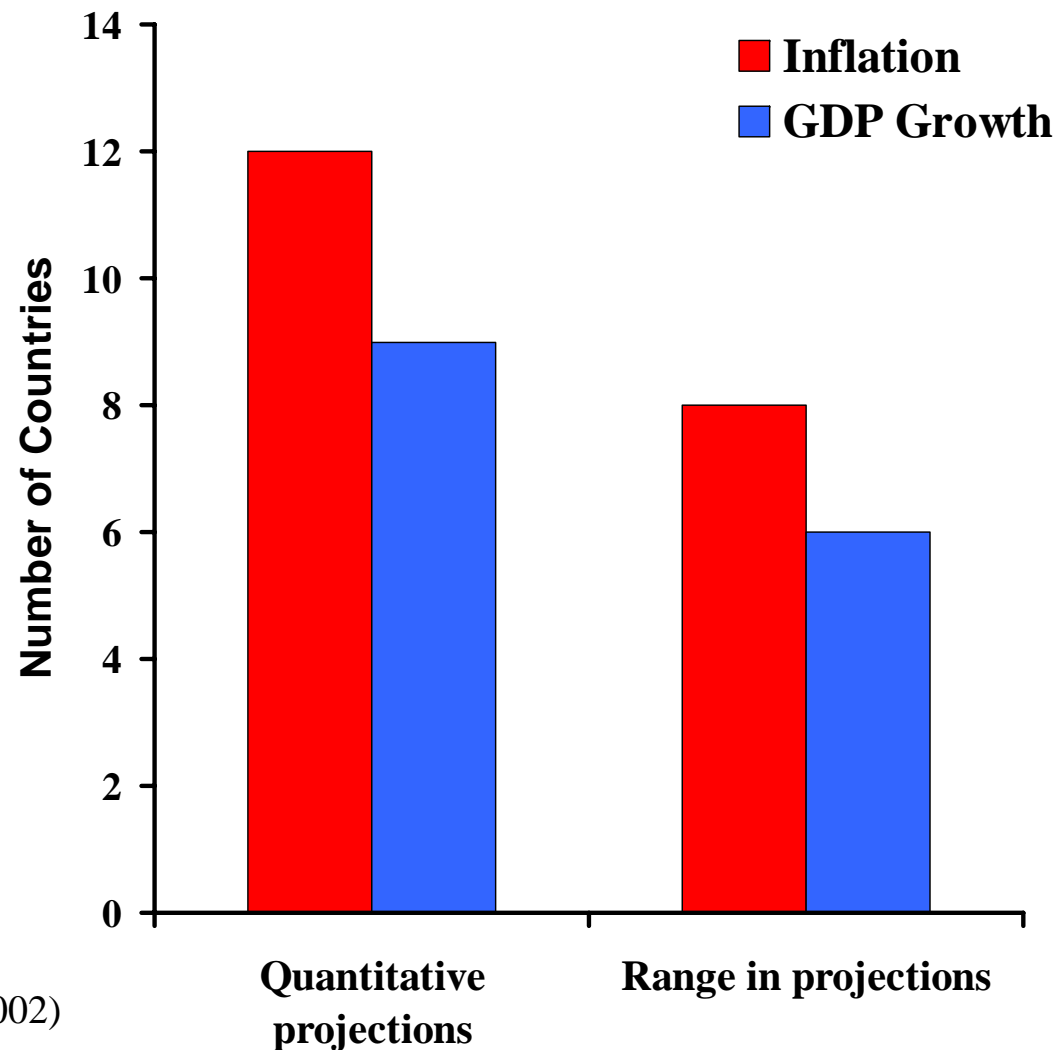
IRs are fundamental tools of policy transparency and accountability to raise market credibility



Source: Schmidt-Hebbel and Tapia (2002)

Inflation Reports

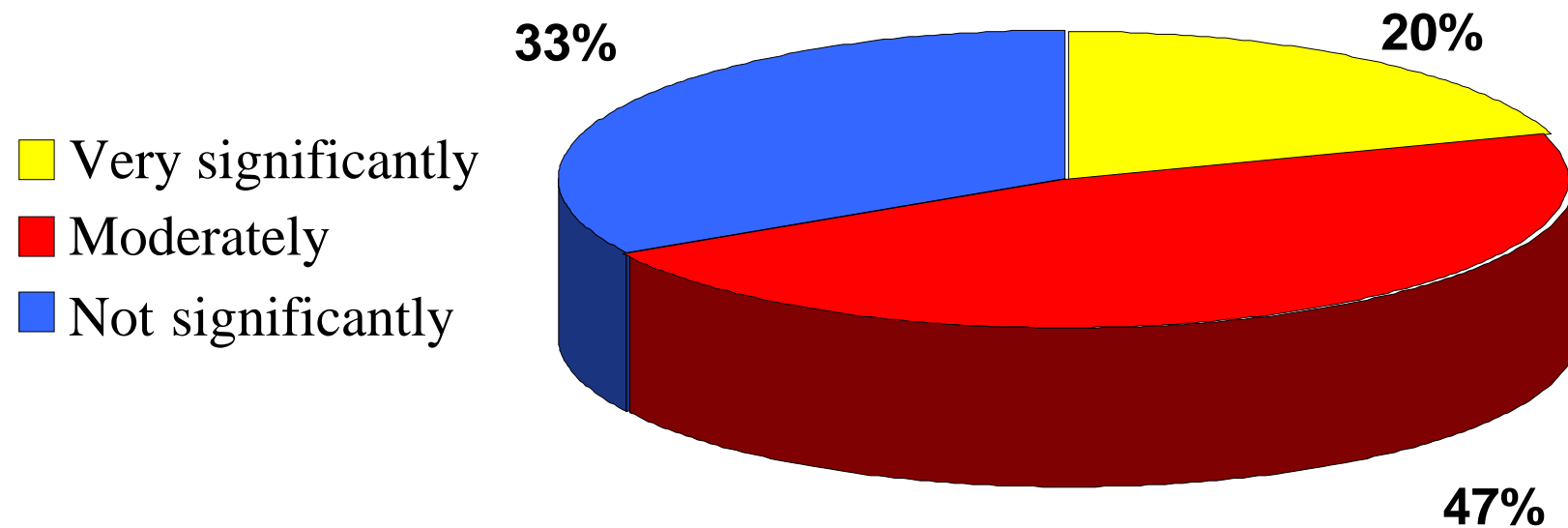
Quantitative
inflation and
growth projections
...and fan charts...
are effective ways
to communicate
with the public



Source: Schmidt-Hebbel and Tapia (2002)

Inflation Reports

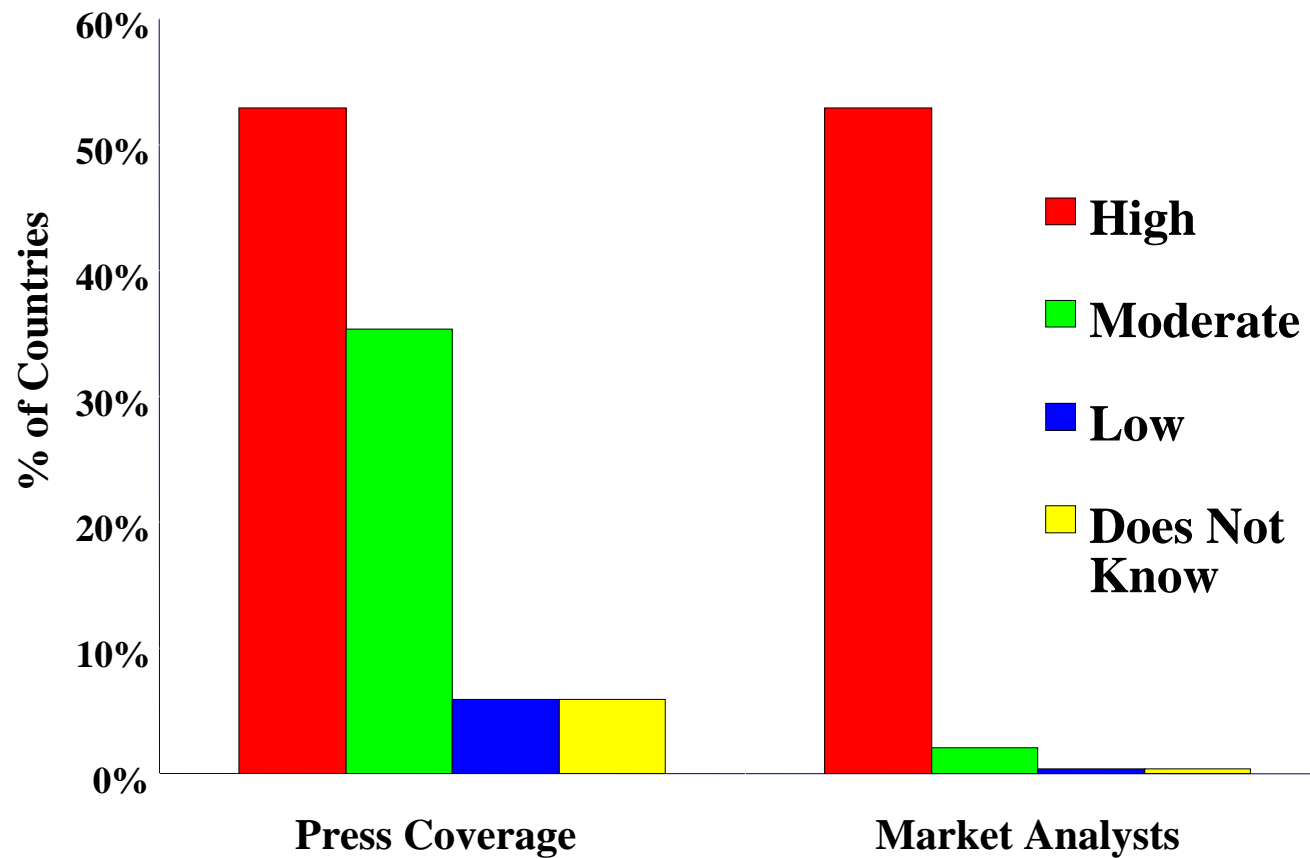
Do IRs affect private sector expectations?



Source: Schmidt-Hebbel and Tapia (2002)

Inflation Reports

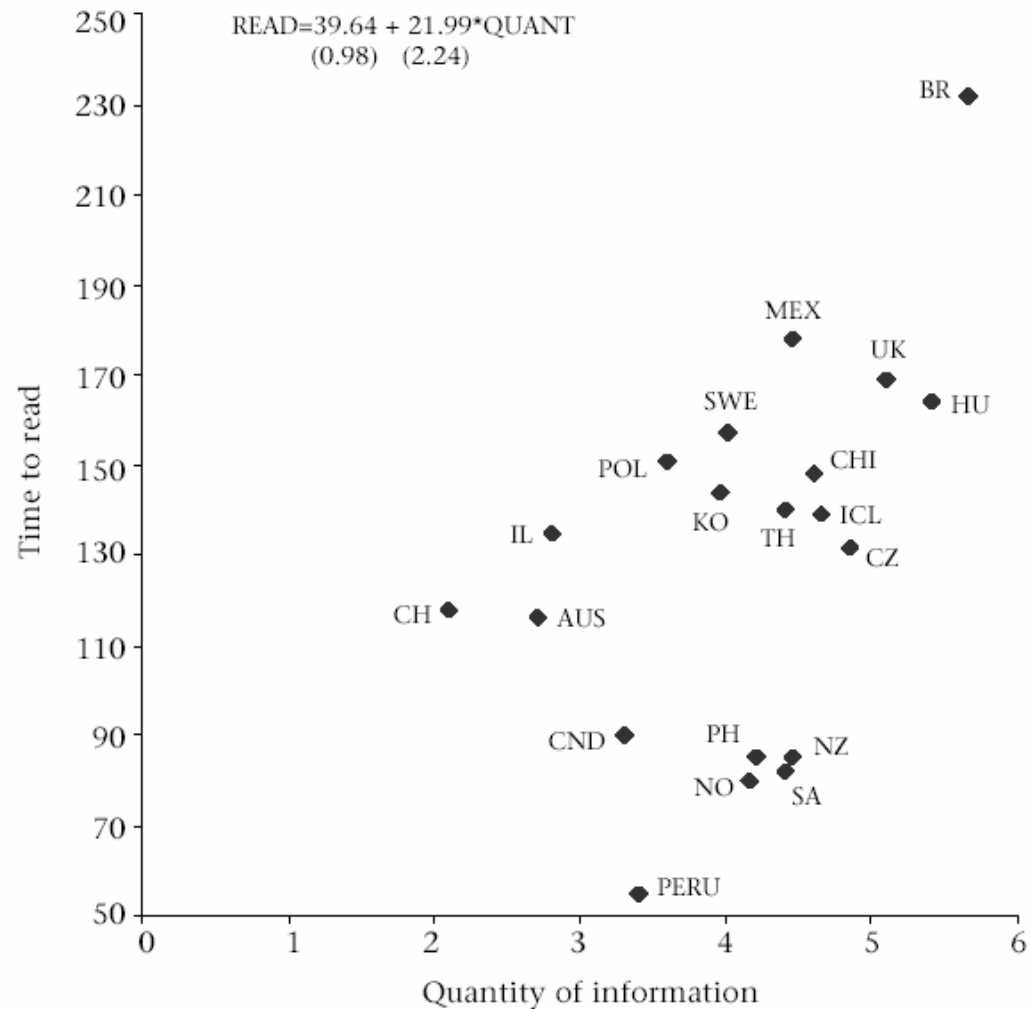
How is the impact of IRs on the private sector?



Source: Schmidt-Hebbel and Tapia (2002)

Inflation Reports

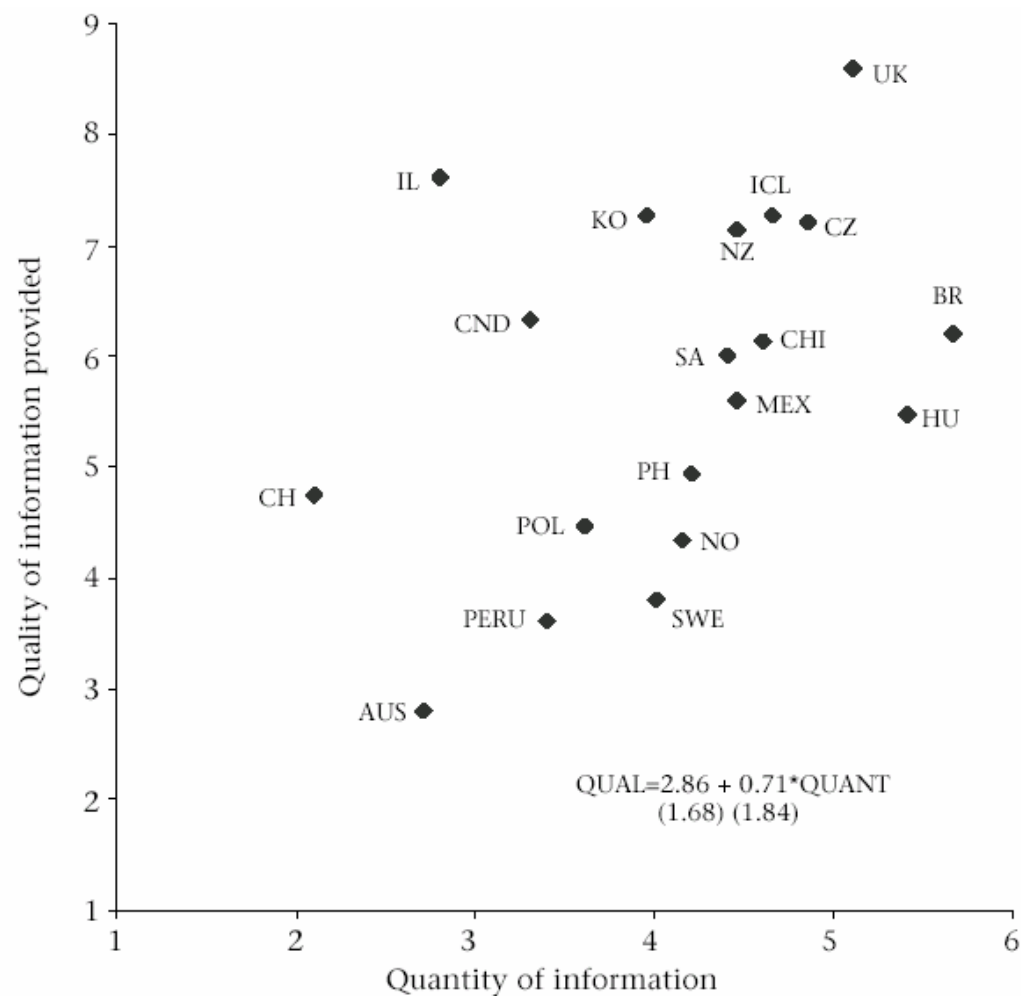
Inflation reports: time to read and quantity of information



Source: Fracasso et al (2003)

Inflation Reports

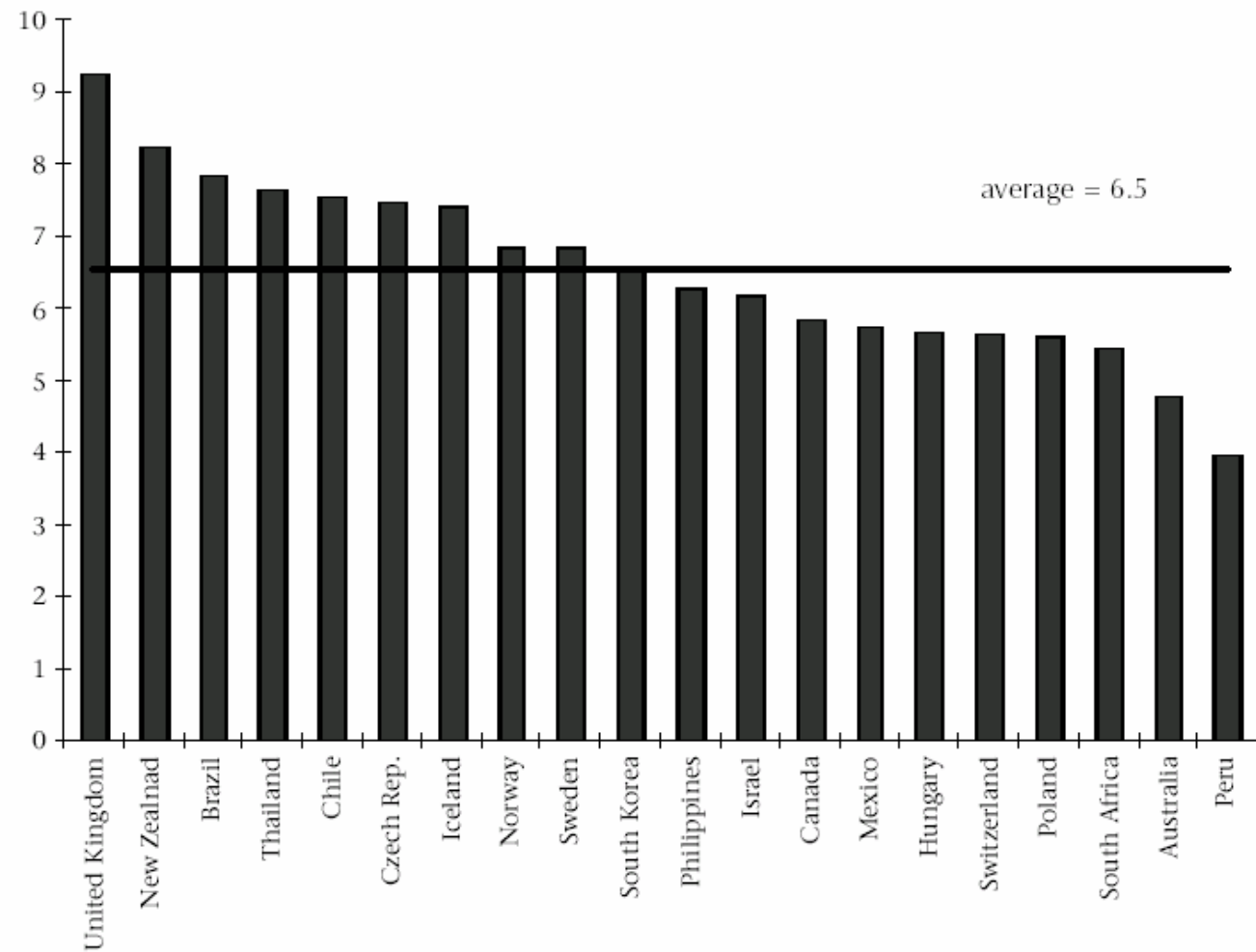
Inflation reports:
quality and
quantity of
information



Source: Fracasso et al (2003)

Inflation Reports

Inflation reports: overall quality ranking of 20 inflation-targeting central banks



Source: Fracasso et al (2003)

3. Transparency

Transparency

Tapia and Schmidt-Hebbel (2002):

- Literature identifies several dimensions of transparency in the conduct of MP (Geraats, 2000; Posen et al, 2000; Gerbasch and Hahn, 2001)
 - Transparency in objectives
 - Transparency in knowledge / methods (models, projections)
 - Transparency in decisions
 - Transparency in operations.

Transparency

Why more transparency?

- Raises accountability: consensus
- Raises efficiency: different views
- In favor:
 - Blinder (1998): Transparency raises predictability of MP, lowering volatility of expectations
 - Given asymmetric information of policy objectives and analysis between central banks and markets, transparency lowers market confusion and makes people understand policy reversals
- Against:
 - Cukierman and Metzler (1986), Cukierman (2001): only monetary surprises have real effects
 - Information is noisy and may increase volatility (“hostage of market sentiments”, Remsperger and Worms, 1999); CBs would have to be extremely conservative.

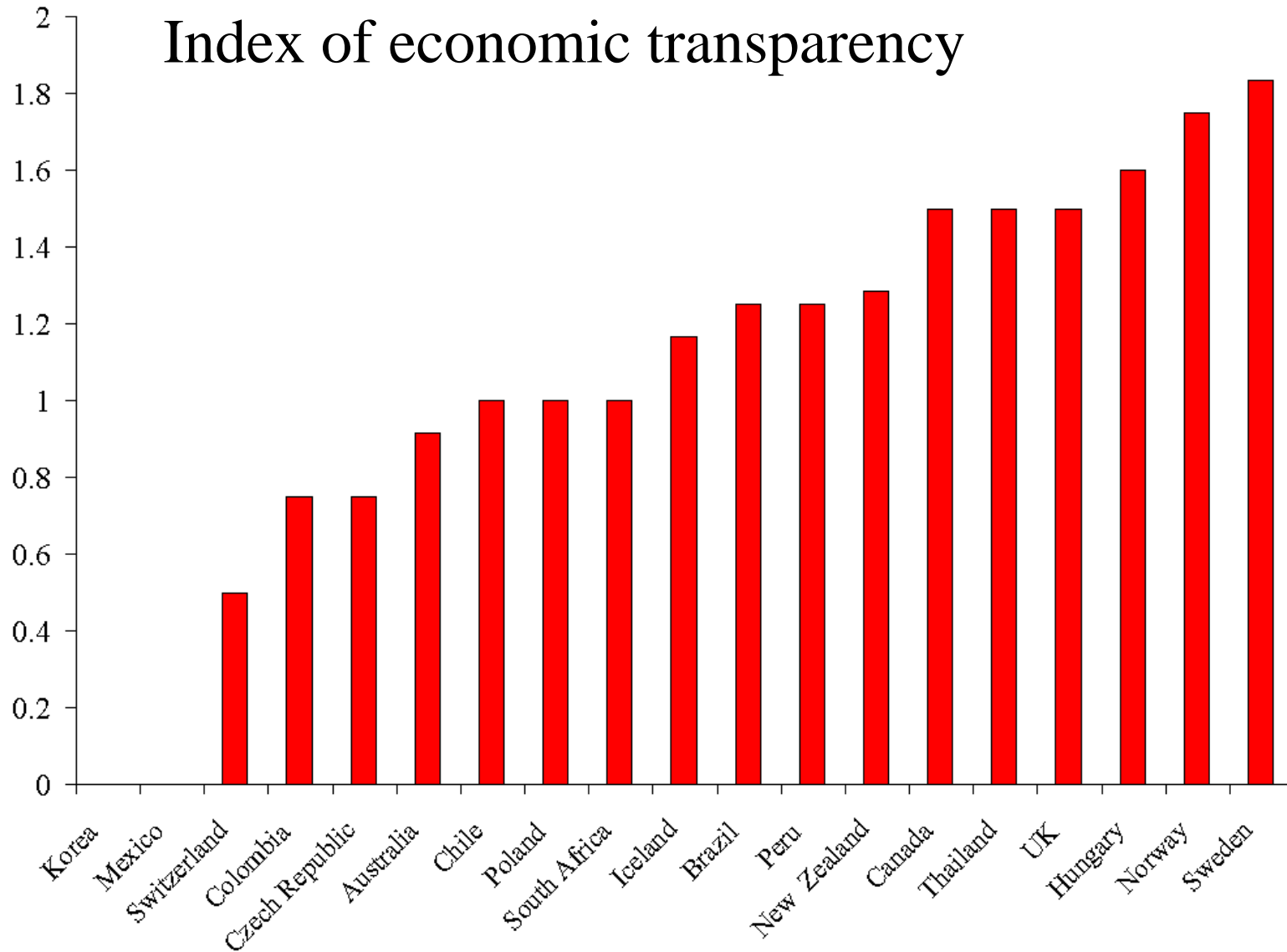
Transparency

- Although IT raises transparency (explicit targets, monetary reports, pre-announced meetings), transparency varies widely among ITers
- Main question assessed by Schmidt-Hebbel and Tapia (2004):
How does transparency affect
macroeconomic performance?

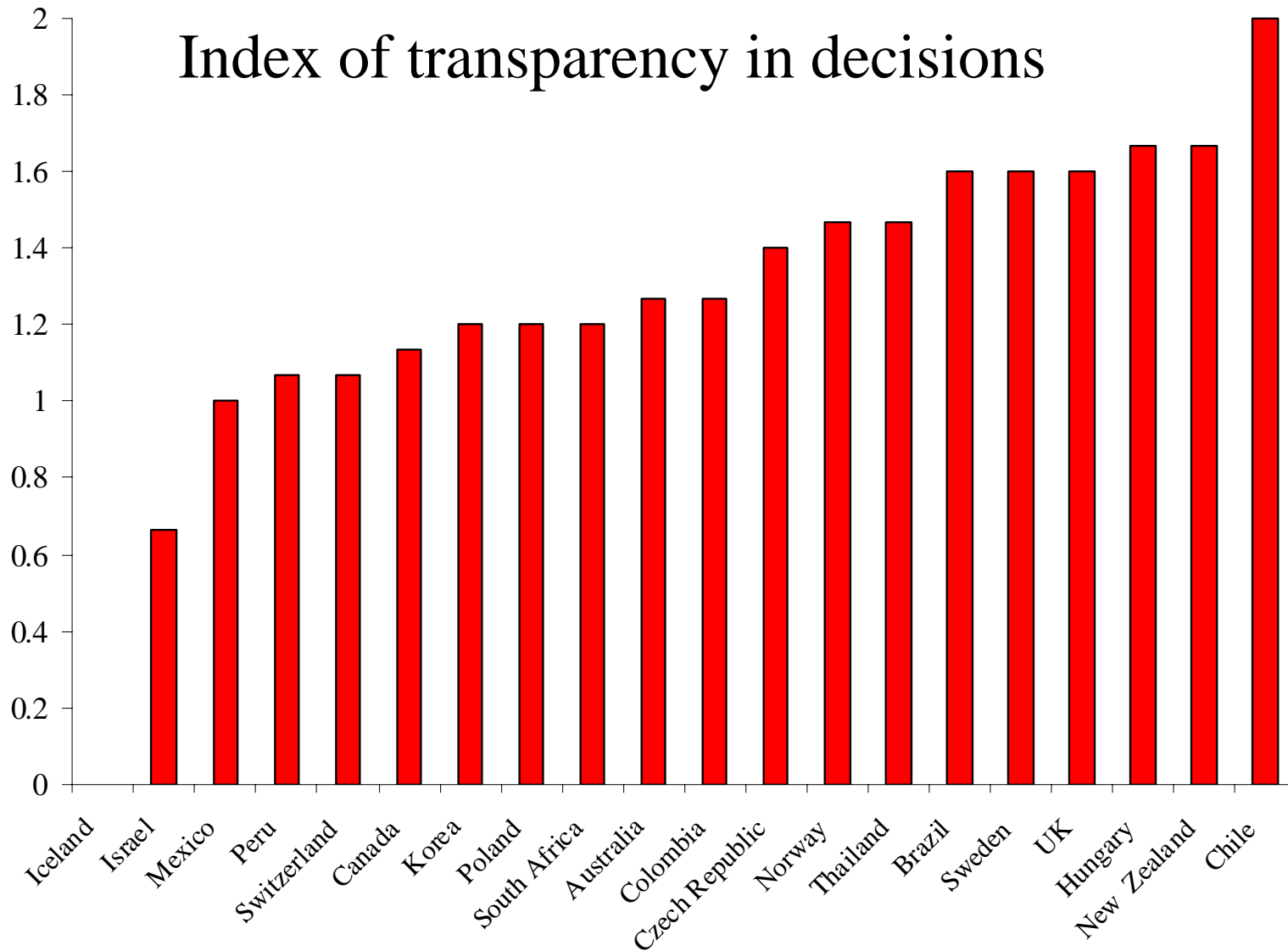
Transparency

- Data: 19 ITers surveyed in 2001/2002
- 3 transparency indicators:
 - Economic transparency
 - Publication of explicit stochastic forecasts for inflation and GDP growth
 - Share of economic models used within the CB that are revealed to the public
 - Transparency in decisions
 - monetary decision process and its relation with information released in inflation reports
 - Overall transparency
 - Combination of two latter.

Transparency



Transparency



Transparency

- How is transparency related to economic performance?

1. Simple correlations

	Overall transparency	Transparency in decisions	Economic transparency
Size of maximum output effect	-0.14	-0.26	0.01
Size of maximum inflation effect	-0.41	-0.25	-0.38
“Sacrifice ratio”	0.04	-0.01	0.07
Absolute inflation error (average)	-0.25	-0.6	0.07
Average inflation	-0.29	-0.04	-0.36
Inflation volatility	-0.46	-0.21	-0.51
Average GDP growth	-0.23	-0.28	-0.14
GDP growth volatility	-0.25	0.07	-0.42

Source: Authors' calculations

Transparency

2. OLS regressions

	Average inflation	Inflation volatility	Output volatility	Size of maximum output effect (x)	Size of maximum inflation effect (x)	Sacrifice ratio (Output effect/Inflation effect)
Overall transparency	-0.037 (0.061)	-0.01 (0.025)	-0.025 (0.029)	-0.001 (0.01)	-0.003 (0.004)	-1.278 (1.203)
Constant	0.069 (0.025)	0.024 (0.009)	0.014 (0.019)	0.009 (0.001)	0.003 (0.002)	3.383 (0.991)
Inflation volatility			0.721 (0.332)	-0.051 (0.02)	0.049 (0.047)	-37.309 (14.251)
Average inflation		0.2 (0.101)				
Average Fiscal Position	-0.013 (0.002)	-0.002 (0.0042)				
Adjusted R2	0.54	0.55	0.59	0.59	0.18	0.08
Included observ:	19	19	19	16	16	16

	Average inflation	Inflation volatility	Output volatility	Size of maximum output effect (x)	Size of maximum inflation effect (x)	Sacrifice ratio (Output effect/Inflation effect)
Economic transparency	-0.021 (0.014)	-0.008 (0.004)	0.004 (0.011)	-0.0015 (0.0006)	-0.0014 (0.002)	-0.425 (0.487)
Transparency in decisions	-0.006 (0.006)	-0.003 (0.003)	0.009 (0.004)	-0.0016 (0.0008)	-0.0008 (0.004)	-0.169 (0.343)
Constant	0.065 (0.022)	0.024 (0.009)	0.012 (0.021)	0.006 (0.001)	0.003 (0.002)	3.37 (1.004)
Inflation volatility			0.694 (0.406)	-0.031 (0.017)	0.046 (0.046)	-38.74 (16.65)
Average inflation			0.192 (0.112)			
Average Fiscal Position	-0.013 (0.003)		-0.001 (0.002)			
Adjusted R2	0.52	0.54	0.56	0.72	0.12	0.01
Included observ:	19	19	19	16	16	16

Transparency

- Conclusion: our preliminary statistical results are weak
- Cross-country evidence suggests that more economic transparency reduces inflation levels, inflation volatility, and the size of the maximum output effect of monetary policy
- No significant results for transparency in decisions and overall transparency
- More data and analysis required.

4. IT Accuracy

IT accuracy

Albagli and Schmidt-Hebbel (2004) pursue two objectives:

1. Measuring IT performance and accuracy in all inflation-targeting countries, using consistent and robust measures and high-frequency data
2. Explaining IT performance: the role of policy credibility / investment credit risk in determining IT accuracy, controlling for relevant inflation shocks.

IT accuracy

1. Measuring IT performance

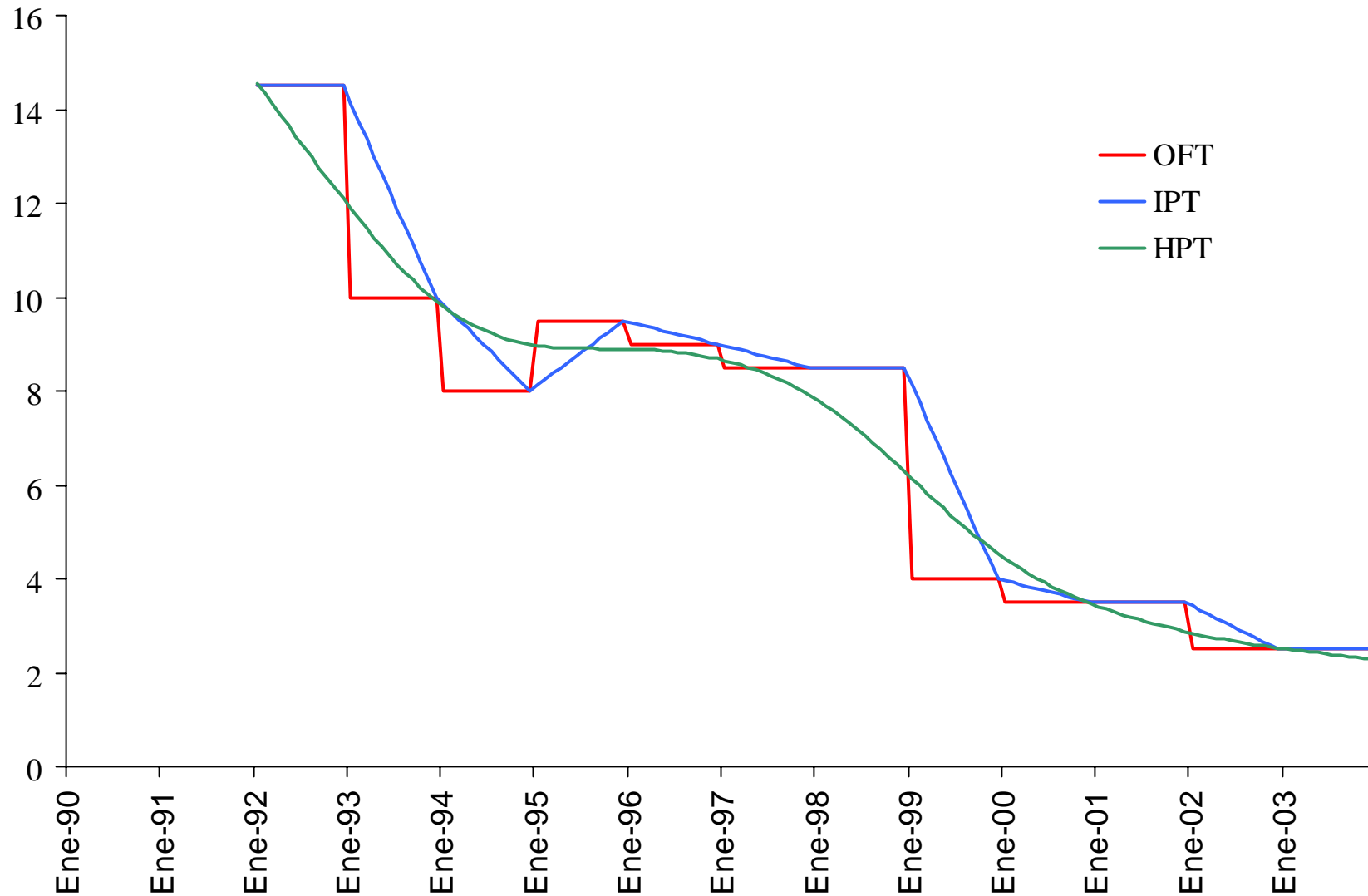
– Data and methodology

- Monthly data, 1990-2003, 19 countries
- Inflation point target or center of target range
- Target measurement: 3 alternatives (official, linear interpolation, Hodrick-Prescott filter)

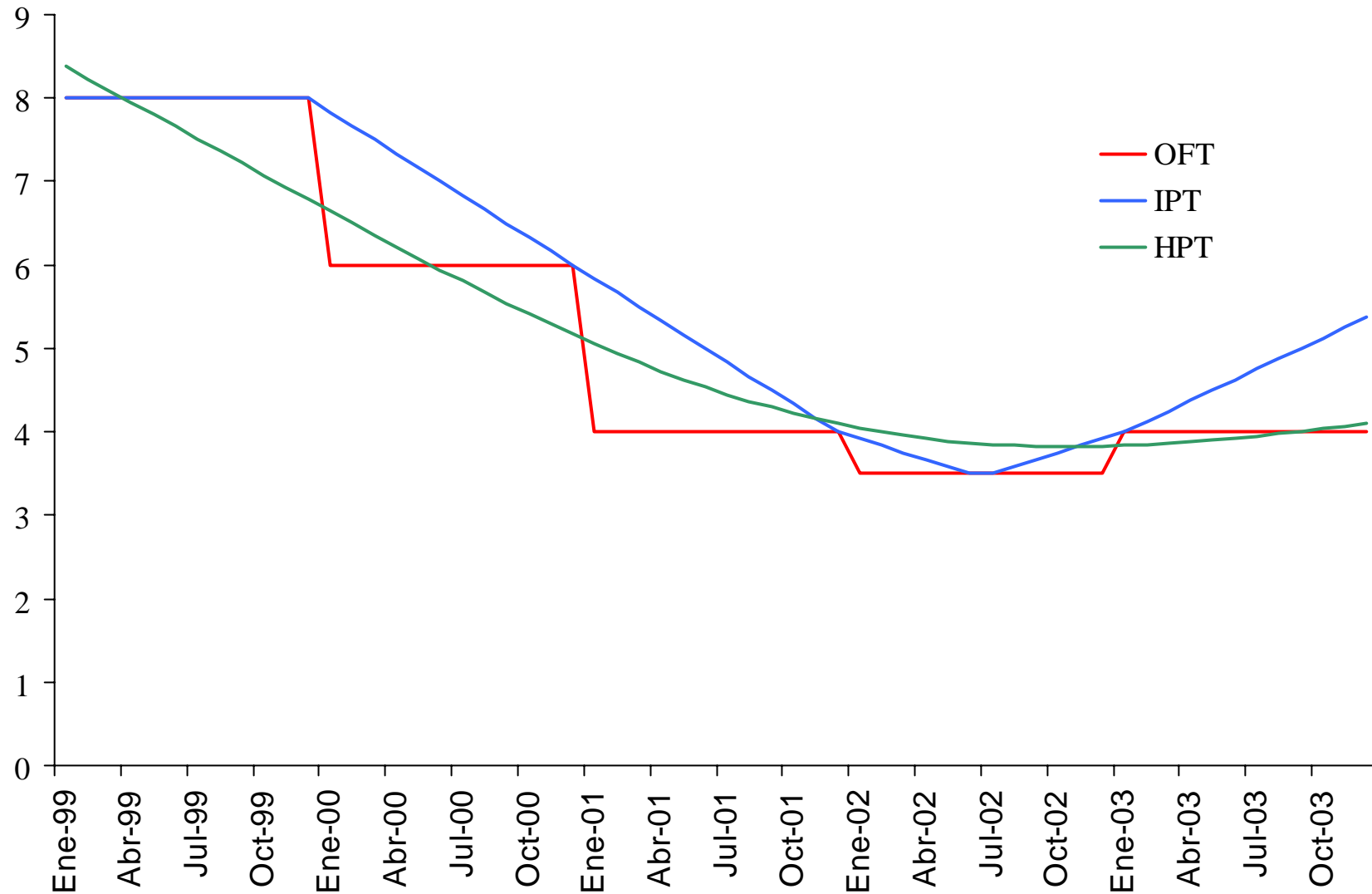
– Measures of inflation deviations

- Mean absolute deviation
- Normalized mean absolute deviation
- Deviation persistence
- Large deviation episodes.

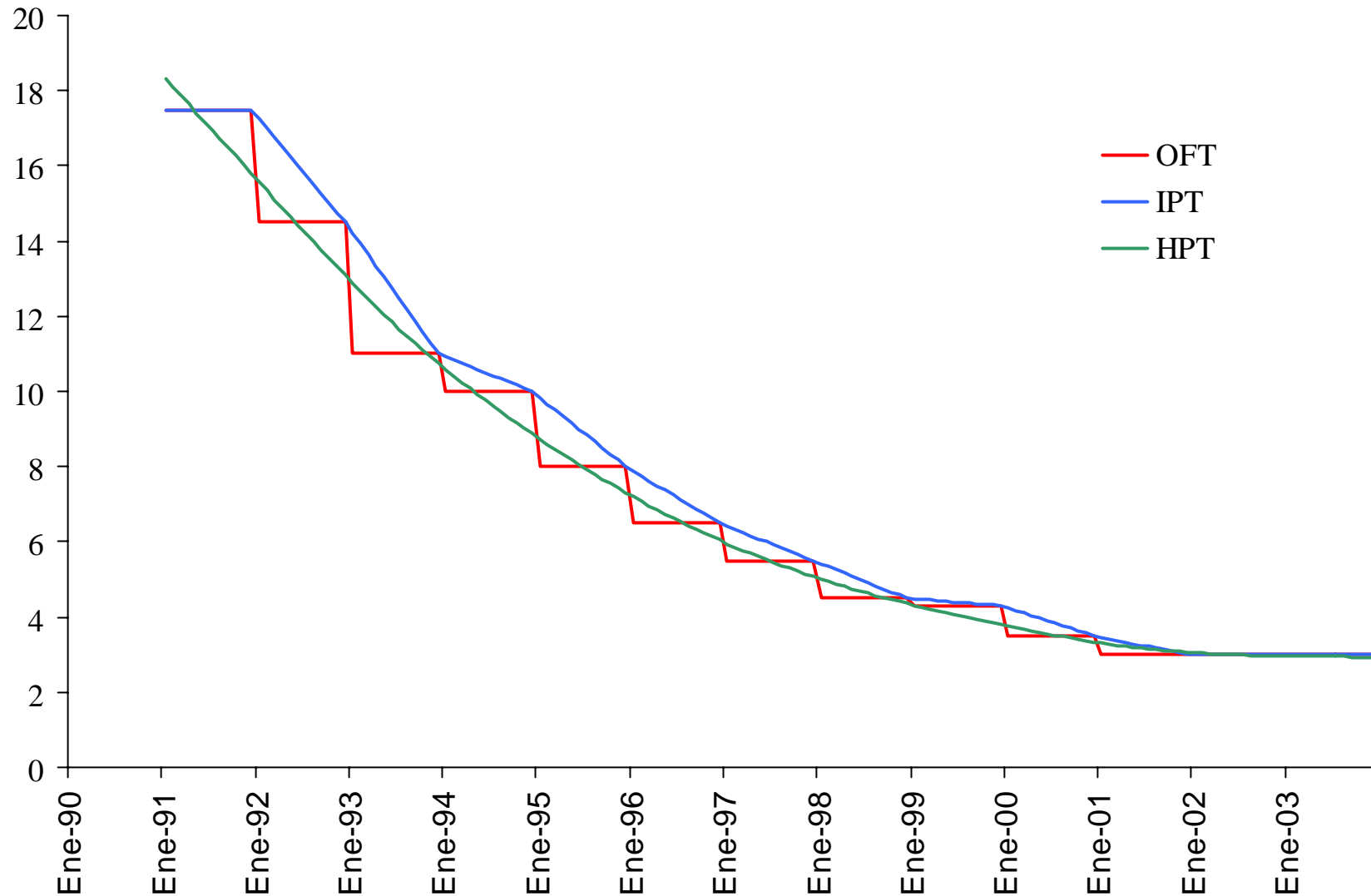
Alternative targets: Israel



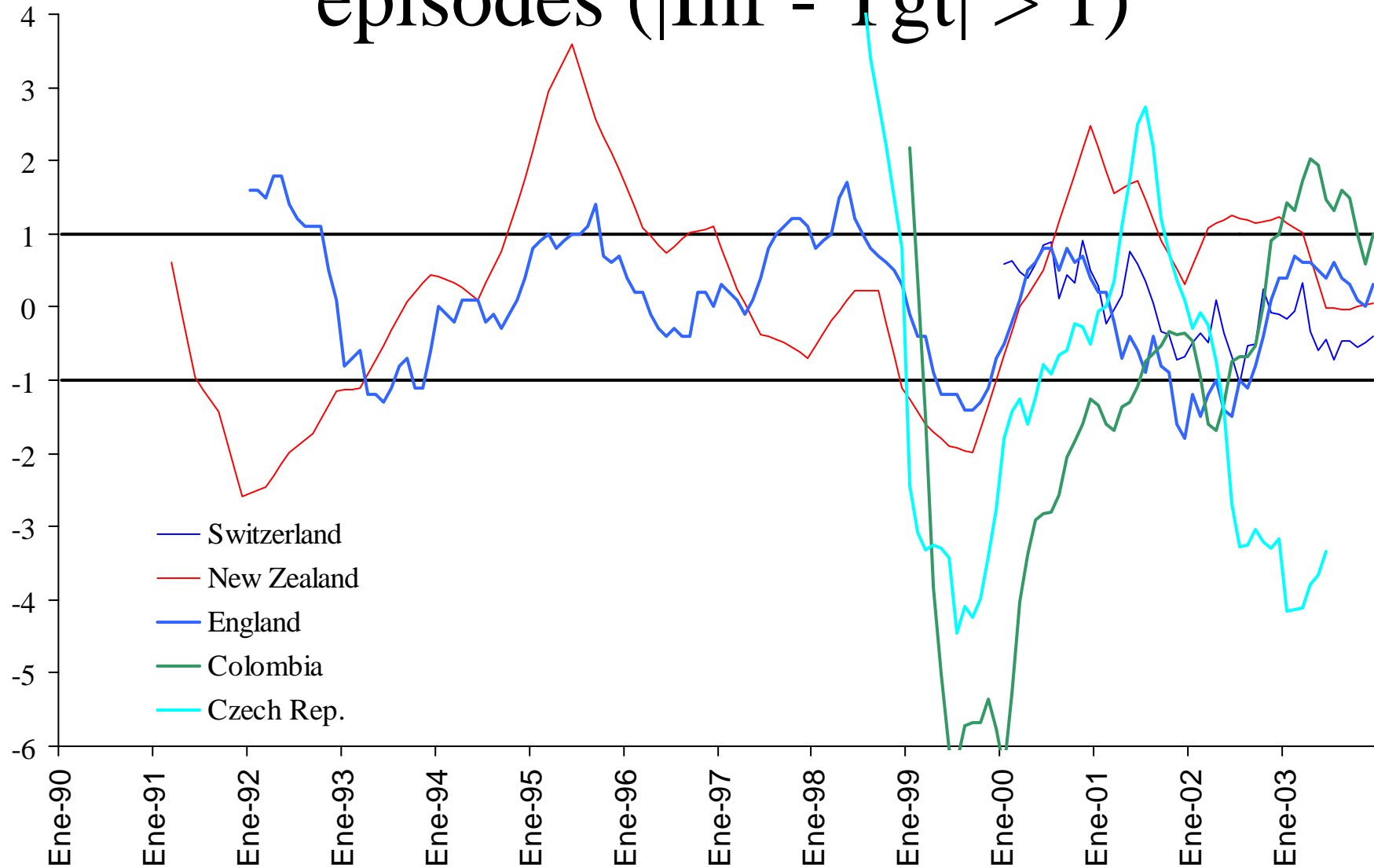
Alternative targets: Brasil



Alternative targets: Chile



Large inflation deviation (LID) episodes ($|\text{Inf} - \text{Tgt}| > 1$)



IT accuracy: Descriptive data

Country	Mean absolute deviation			Normalized mean absolute deviation			Inflation deviations half-life (months)		
	OFT	IPT	HPT	OFT	IPT	HPT	OFT	IPT	HPT
Australia	1.74	1.74	1.74	0.54	0.54	0.54	41		
Brazil	4.60	4.14	4.46	1.08	0.88	1.02	11	25	40
Canada	1.03	1.12	1.04	0.42	0.43	0.42	5	13	11
Chile	1.30	1.13	1.20	0.19	0.16	0.18	28	5	4
Colombia	1.46	2.08	1.53	0.15	0.20	0.18	14	18	14
Czech Rep.	2.44	2.59	2.34	0.56	0.54	0.52	18	14	16
England	0.70	0.70	0.70	0.28	0.28	0.28	16	11	11
Iceland	1.88	1.82	1.89	0.62	0.55	0.61	9	18	18
Israel	2.55	2.42	2.20	0.52	0.47	0.47	11	11	10
Korea	1.46	1.90	1.54	0.45	0.45	0.46	7	18	13
Mexico	1.48	1.78	1.48	0.24	0.22	0.25	25	15	16
New Zealand	1.04	1.09	1.00	0.76	0.73	0.74	6	22	20
Norway	1.11	1.11	1.11	0.44	0.44	0.44	17	6	6
Peru	1.70	2.12	1.87	0.29	0.32	0.31	19	9	15
Poland	2.63	2.85	2.58	0.46	0.46	0.45	16	21	27
South Africa	2.79	2.79	2.79	0.62	0.62	0.62	25	16	16
Sweden	0.99	0.99	0.99	0.50	0.50	0.50	5	25	25
Switzerland	0.47	0.47	0.47	0.47	0.47	0.47	17	5	5
Thailand	1.15	1.15	1.15	0.66	0.66	0.66	11	17	17
Average	1.71	1.79	1.69	0.49	0.47	0.48	15.83	14.94	15.78
Median	1.46	1.78	1.53	0.47	0.47	0.47	15.83	15.50	15.50

Country	Episode frequency		Average episode length		Maximum episode length		Average episode cummulative deviation	
	>1 (%)	<-1	>1 (months)	<-1	>1 (months)	<-1	>1 (%)	<-1
Australia	23.7	23.7	13.5	13.5	15	21	35.5	-26.0
Brazil	60.0	15.0	12.0	9.0	33	10	67.5	-38.8
Canada	13.2	32.1	4.2	7.3	9	37	8.0	-13.9
Chile	18.9	17.6	3.8	3.5	9	6	10.8	-6.1
Colombia	17.5	49.2	5.5	15.5	10	28	8.7	-50.3
Czech Rep.	25.8	47.0	8.5	15.5	11	17	33.9	-47.8
England	12.9	14.3	4.8	3.5	10	7	6.4	-4.5
Iceland	41.0	7.7	16.0	1.5	16	2	60.1	-1.7
Israel	30.6	43.8	6.3	12.6	20	27	19.6	-38.7
Korea	20.0	29.3	5.0	11.0	10	22	9.6	-47.1
Mexico	27.0	44.4	4.3	28.0	10	28	13.3	-48.4
New Zealand	30.6	21.7	12.0	17.0	19	21	20.7	-29.0
Norway	28.6	28.6	4.0	4.0	5	6	6.4	-6.4
Peru	17.1	47.2	3.5	11.6	9	25	16.6	-28.0
Poland	34.7	52.0	13.0	19.5	16	32	42.2	-62.4
South Africa	58.0	16.0	14.5	4.0	17	5	56.0	-12.2
Sweden	5.4	34.2	2.0	9.5	2	20	2.4	-16.7
Switzerland	0.0	3.9	0.0	1.0	0	1	0.0	-1.1
Thailand	21.6	37.3	5.5	6.3	15	12	9.4	-10.0
Average	25.6	29.7	7.3	10.2	12.4	17.2	22.5	-25.7
Median	23.7	29.3	5.5	9.5	10.0	20.0	13.3	-26.0

IT accuracy: Overall ranking

Country	Inflation deviations		Episode features			Overall ranking
	Mean absolute deviation (%)	Normalized mean absolute deviation (%)	Frequency (%) Total deviations	LID1 avg. length	LID1 avg. cumm. deviation	
Switzerland	1	10	1	1	1	2.8
England	2	4	2	4	4	3.2
Chile	8	2	3	2	6	4.2
Sweden	3	12	4	6	2	5.4
Norway	6	7	13	3	3	6.4
Canada	5	6	5	5	5	5.2
Thailand	7	17	14	7	7	10.4
Colombia	11	1	11	14	9	9.2
Korea	10	8	8	9	8	8.6
Peru	14	5	10	8	10	9.4
Mexico	9	3	12	18	12	10.8
Australia	12	13	7	16	15	12.6
Iceland	13	15	6	10	18	12.4
New Zealand	4	18	9	17	13	12.2
Israel	15	11	17	12	11	13.2
Czech Rep.	16	14	15	15	14	14.8
Poland	17	9	19	19	16	16.0
South Africa	18	16	16	11	17	15.6
Brazil	19	19	18	13	19	17.6

IT accuracy

2. IT performance: Which role do credibility / institutions play in IT accuracy?

– Hypothesis:

- Accuracy is higher in countries with more mature institutions and lower risk that support stronger policy credibility and closer alignment of inflation expectations with inflation targets

– Data and methodology:

- Quarterly data, 1990-2003, 19 ITers
- Cross-country averages and panel data
- Dependent variable: Inflation deviations (absolute value)
- Explanatory variables:
 - Control variables: oil price, US GDP, exchange rates
 - Credibility variables: Central Bank formal independence, country risk spreads, Institutional Investor's credit rating.

- Cross-section averages:

$$MAD_i = \alpha + \beta_1 TARGET_i + \beta_2 RANGE_i + \beta_3 DNER_i + \beta_4 IICR_i + \beta_5 CBI_i$$

MAD: Mean absolute deviation

TARGET: target average

RANGE: Average target range

DNER: Nominal exchange rate depreciation standard deviation

IICR: Institutional Investor's Credit Rating average

CBI: Central Bank independence Dummy

	MAD1	MAD2	MAD3	MAD1	MAD2	MAD3
TARGET	0.263***	0.236***	0.259***	0.299***	0.279***	0.305***
RANGE	0.285**	0.239*	0.211*	0.311**	0.273*	0.238*
DNER	0.082***	0.096***	0.104***	0.065**	0.082**	0.087***
RISK	-0.008	-0.007*	-0.007*	-0.005	-0.007	-0.008*
CBI	-0.414	-0.230	-0.359	-0.420	-0.283	-0.291
R2	0.79	0.81	0.81	0.74	0.75	0.78
Sample	90-03	90-03	90-03	98-03	98-03	98-03
N° Obs	19	19	19	19	19	19

- Panel data regressions

$$AD_{it} = \alpha_i + \beta_1 abs(OIL_t) \\ + \beta_2 abs(NER_{it}) + \beta_3 IICR_{it}$$

AD: Absolute value of inflation deviation

OILG: Oil price GAP (HP filter).

NER: Nominal exchange rate depreciation (YoY)

IICR: Institutional Investor's Credit Rating

- TSLS instruments: Exogenous variables (lagged), and RISK(-1).....RISK(-j).

	AD1	AD1	AD2	AD3	AD1	AD2	AD3
AD(-1)	0.794***	0.720***	0.843***	0.823***	0.720***	0.849***	0.823***
ABS(NER(-1))	0.009*	0.008*	0.008**	0.009**	0.009*	0.029***	0.008**
ABS(NER(-3))	0.008**	0.008*			0.008*		
ABS(OILG)			0.006**			0.009*	
ABS(OILG(-1))	-0.004*	-0.005*	-0.010***		-0.005*	-0.012***	
ABS(OILG(-2))	0.007**	0.006**	0.006**	0.003	0.006**	0.006**	0.003
CBI		-0.122**					
IICR	-0.009***	-0.019***	-0.012**	-0.018***	-0.019***	-0.009	-0.018***
R2	0.50	0.53	0.61	0.613	0.529	0.575	0.61
Durbin's H	0.48	-0.18	-0.61	-0.05	-0.18	-1.07	-0.05
Sample	90-03	90-03	90-03	90-03	90-03	90-03	90-03
Method	Pooled OLS	F-E OLS	F-E OLS	F-E OLS	F-E TSLS	F-E TSLS	F-E TSLS
N° obs.	517	517	536	517	517	517	517

	AD1	AD2	AD3	AD1	AD2	AD3
AD(-1)	0.901***	0.967***	0.981***	0.806***	0.948***	0.946***
ABS(NER(-1))	0.006	0.007	0.007	0.004	0.006	0.230
ABS(OILG)		0.007**			0.006*	
ABS(OILG(-1))	-0.003	-0.007*		-0.003	-0.006	
ABS(OILG(-2))	0.004	0.003	0.000	0.004	0.002	0.000
CBI	-0.093	-0.064	-0.050			
SPREAD	0.053***	0.047***	0.048***			
SPREAD(-1)				0.131**	0.089**	0.124**
R2	0.55	0.60	0.63	0.59	0.66	0.700
Durbin's H	1.65	-1.14	-1.77	-0.45	-0.66	-0.56
Sample	90-03	90-03	90-03	90-03	90-03	90-03
Method	Pooled OLS	Pooled OLS	Pooled OLS	F-E OLS	F-E OLS	F-E OLS
N° obs.	317	326	317	314	314	314

Results: Gains in IT Accuracy

A change in institutional perception ...leads to a reduction in absolute
through... inflation deviation by (BP)

Central Bank Independence (CBI dummy from 0 to 1)	10
1 St. dev. decline in SPREAD (287 BP)	14
1 St. dev. decline in IICR (19)	28

5. Conclusions

Conclusions

1. IT has helped many emerging / transition / developing economies to reduce inflation
2. Inflation reports are key tools in reaching markets and the public -- but they still vary widely in scope and quality
3. CB transparency may contribute to better performance in IT countries
4. IT accuracy rises -- inflation deviations fall -- with institutional quality and credibility.

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