

“Inflation Targeting: The Experience of Emerging Markets”

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FACTS

- IT very popular monetary policy strategy
- 21 countries (of which 8 advanced and 13 emerging markets) are now ITers
- Many more are thinking to adopt IT

LITERATURE

- Recently a few papers have looked at whether IT improves macro-performance (“IT matters”) in the context of **industrial economies**
- **Yes:** Kuttner and Posen (2001), Levin et al (2004), Hyvonen (2004), Truman (2004)
- **No:** Ball and Sheridan (2003)

MOTIVATION

- Is it a good idea, from a macro perspective, to adopt IT?
- Are there any other benefits or costs to IT?
- Are there preconditions to adopt IT?
- What should the Fund advice on IT?

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METHODOLOGY

- Use econometric tools to answer questions based both on **survey** and **“hard” data**

- Look at **emerging market economies**

METHODOLOGY (CONT.)

- Survey contains over 130 questions
- 3 parts: **institutional**, **economic** and **political economy** facts
- Asked in person to all emerging market ITers
- Email and phone for other ITers and non-ITers

WHAT IS π T?

- IT is an operational framework for monetary policy aimed at attaining **price stability**
- Contrary to alternative strategies, notably money or exchange rate targeting, IT involves targeting inflation **directly**

WHAT IS IT?

2 main characteristics:

1. **Unique target**, specifying **numerically** the objective of price stability in the form of a **level or a range for annual inflation**
2. The **inflation forecast** is the de facto target variable

OTHER (ANCILLARY) IT CHARACTERISTICS

- Transparency (goal vs. operational)
- Communication
- Accountability

IT VERSUS MONETARY POLICY IN THE US, JAP AND THE EA ?

- **US, JAP:** *no* numerical target on inflation
- **EA:** Inflation numerical objective, *but also* reference value for M3 growth. Not *as great an emphasis* on inflation projection as ITers (“two” pillars: economic *and* monetary analysis)

Proponents say: with IT,

- Unique clear objective and transparency
speed learning & help anchor expectations faster & more durably
- Thanks to medium-term orientation, IT grants **more flexibility** (milder on output gap variability). This requires greater accountability (“constrained discretion”)
- **Lower cost of policy failure**

IT better than PEGS...

- **Milder on business cycle** (exchange rate targeting is price level targeting on one individual price)
- **Target is controllable** under IT, not under pegs (domestic versus international reputational equilibrium)
- IT (as other flex exchange rate regimes) **minimizes negative consequences of exchange rate volatility** on real activity

IT better than MONEY TARGETS...

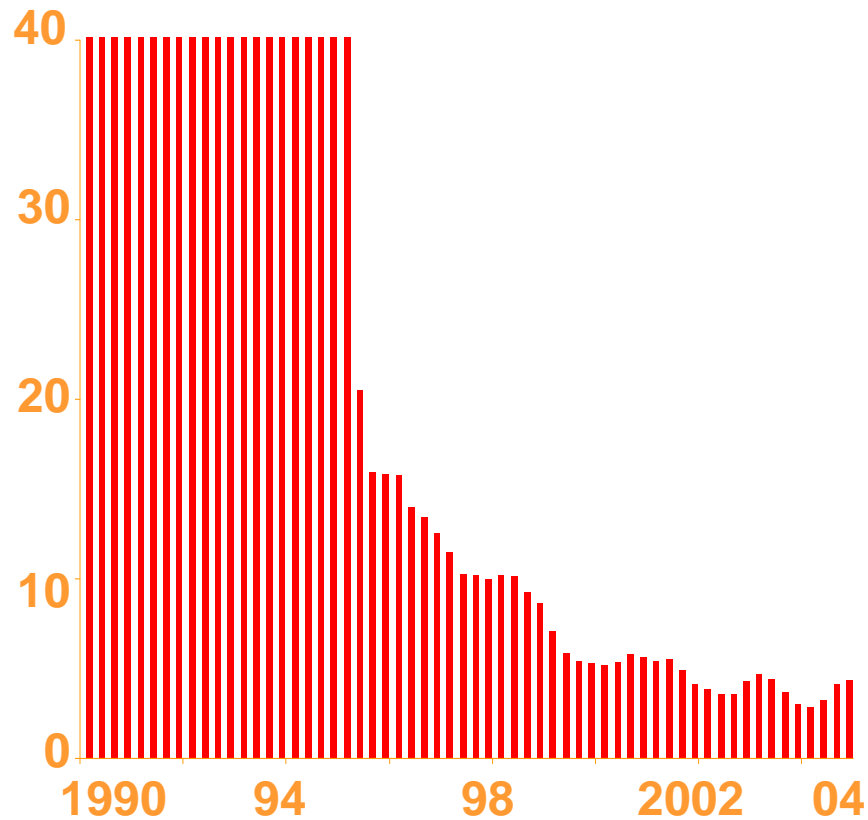
- Better at anchoring expectations (single target, mandate more clear and monitorable)
- More flexible (longer horizon)
- Optimal money growth time-varying. Optimal inflation target static.

Critics say: with IT,

- ❑ Too little discretion, growth unnecessarily restrained
- ❑ Too much discretion—cannot help build credibility
- ❑ Implies exchange rate neglect
- ❑ It cannot work were 'preconditions' are poor

So is IT BETTER or WORSE?

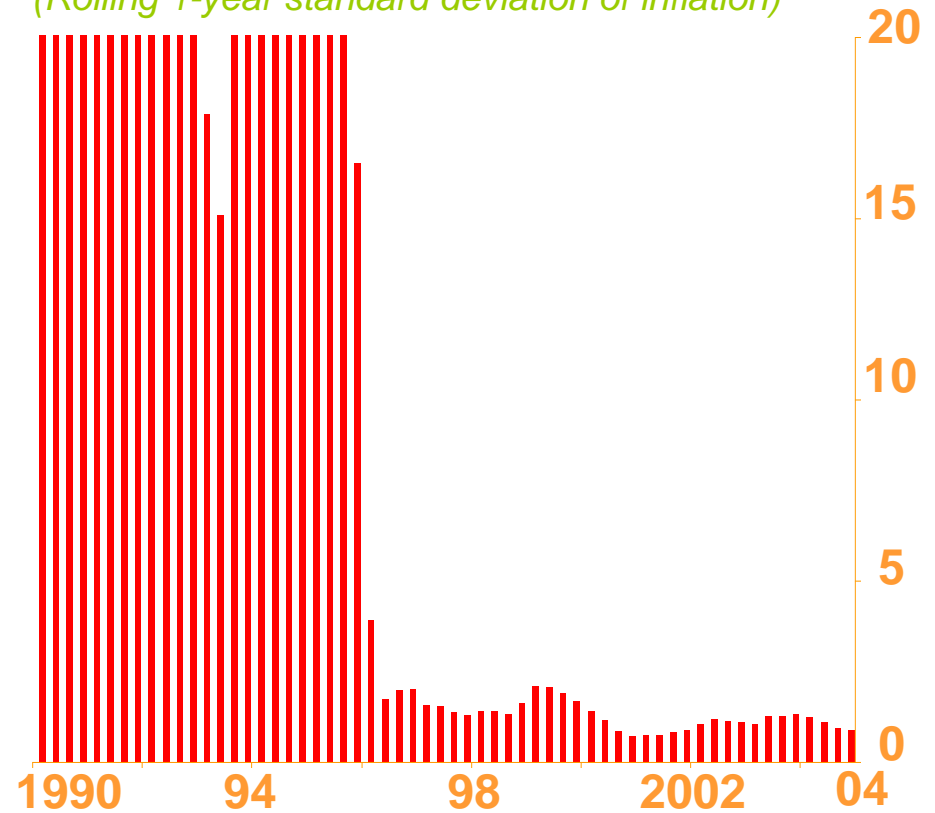
Average Annual Inflation Rate



■ Non-inflation-targeters

Volatility of Inflation Rate

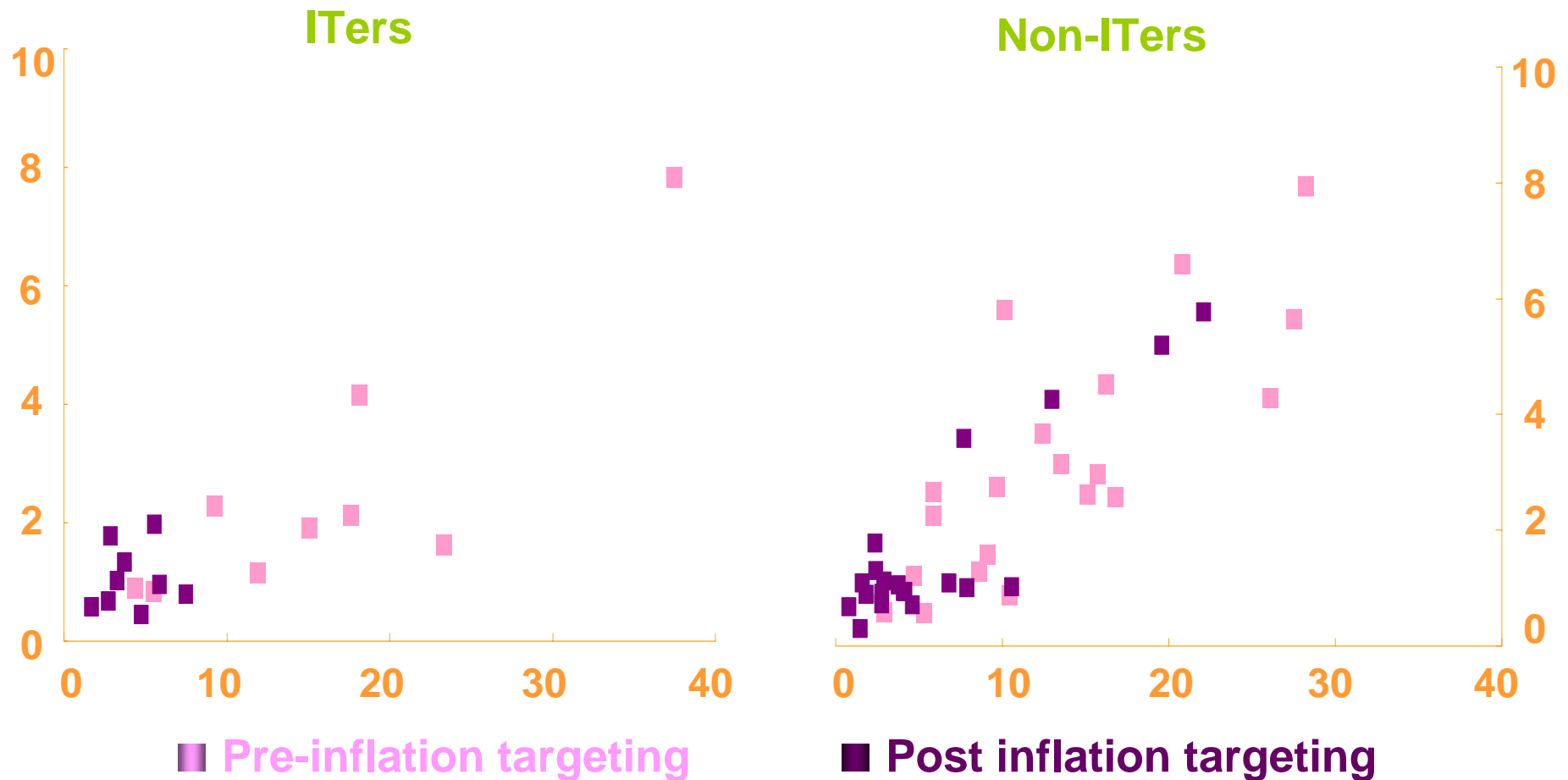
(Rolling 1-year standard deviation of inflation)



■ Inflation targeters (all)

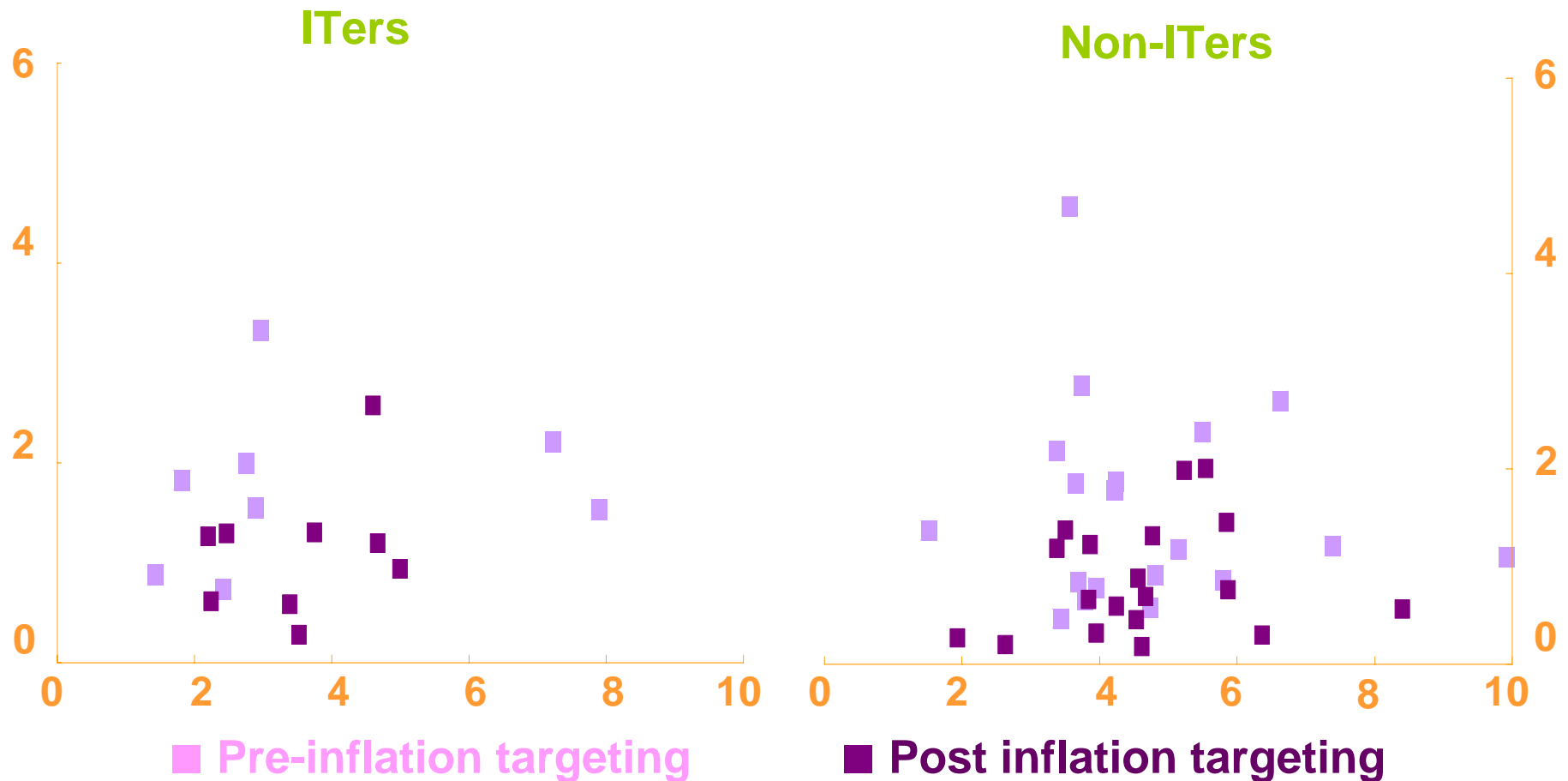
Inflation Performance

(Percent; average on x-axis; volatility on y-axis)



Output Growth Performance

(Percent; average on x-axis; volatility on y-axis)



How does IT affect
macroeconomic
outcomes?

Very hard to answer for industrial economies...

- Small sample.
 - 7 adopters in early-mid 90s, 2 of which joined the Euro area; 3 more in '99-'01.
- Limited set of “control” countries.
 - Many candidates joined the Eurozone.
- Not much room for improvement.
- Most *non-IT* ers did better in the 1990s.

What can EM countries tell us?

- Larger sample:
 - 13 emerging-market adopters since 1997
 - 10 of these prior to 2002
- Larger set of potential “control” countries.
- Much more room for improvement in most cases.

Assessing the EM experience is also difficult...

- *Short* post-IT sample
 - Most adopted between 1999 and 2001
- Extremely heterogeneous sample
 - Lots of things were going on *besides* IT
- Most non-ITer EM countries have *also* done better in recent years.

Bottomline in advance

- Emerging-market ITers *did* do better than comparable non-ITers.
 - Lower inflation
 - More stable inflation
 - More anchored long-run inflation expectations
 - Lower output volatility

- IT beats (successful) pegs.

The empirical method

- Step 1: partition the sample into “pre” and “post” periods.
- Step 2: select the sample of countries.
- Step 3: compare average “pre” to average “post” performance.

How to partition the sample?

Scheme	“pre”	“post”	
Baseline	1971* to $\tau-1$	τ to 2004	<i>IT</i>
	1971* to '99	2000 to '04	<i>non-IT</i>
<hr/>			
Time periods	1994 to '96	2002 to '04	all
<hr/>			
Actual dates	1971* to $\tau-1$	τ to 2004	<i>IT</i>
	1971* to $s-1$	s to 2004	<i>non-IT</i>

* Or beginning of data, if after this date

τ = IT adoption date

s = non-ITers' most recent regime change

How to select the sample?

42 countries:

- 13 emerging market ITers
- Comparable non-IT EM countries
 - 22 emerging market countries (in JPMorgan EMBI index)
 - 7 additional countries:
 - Botswana, Costa Rica, Ghana, Guatemala, India, Jordan, Tanzania

Basic empirical specification

$$X_{i,t} = \phi [\alpha^T d_{i,t} + \alpha^N (1 - d_{i,t})] + (1 - \phi) X_{i,t-1}$$

- X = performance metric: π , $SD(\pi)$, $SD(\Delta y)$
- d = π T dummy
- π Ters “revert” to α^T , non- π Ters to α^N
- ϕ = “speed of reversion”

Letting $\alpha_0 = \phi \alpha^N$, $\alpha_1 = \phi (\alpha^T - \alpha^N)$ and $b = -\phi$,

$$\Delta X_{i,t} = \alpha_0 + \alpha_1 d_{i,t} + b X_{i,t-1} + e_i$$

The Ball-Sheridan regression

$$X_{i,t} = \phi [\alpha^T d_{i,t} + \alpha^N (1 - d_{i,t})] + (1 - \phi) X_{i,t-1}$$

$$X_{i,2} - X_{i,1} = \phi \alpha^T d_{i,t} + \phi \alpha^N (1 - d_{i,t}) - \phi X_{i,1}$$

$$X_{i,2} - X_{i,1} = a_0 + a_1 d_{i,t} + b X_{i,1} + e_i$$

$$\phi = -b \quad \alpha^N = a_0 / \phi \quad \alpha^T = (a_0 + a_1) / \phi$$

$H_0: a_1 = 0 \Leftrightarrow$ level of X is unaffected by IT

Baseline results

Estimates of coefficient on IT dummy

Variables	IT dummy variable
π	-4.820
SD(π)	-3.638
SD($y-y^*$)	-0.010
SD (growth)	-0.633

Significant at 10% level, 5% level, 1% level

Inflation expectations

Variables	IT dummy variable
5-year π forecast, level	-2.672
6-10-year π forecast, level	-2.076
5-year π forecast, SD	-2.185
6-10-year π forecast, SD	-1.737

Significant at 10% level, 5% level, 1% level

Crises proclivity*

Variables	IT dummy variable
EMP index	- 0.340
Reserves volatility	-16.333
Exchange rate volatility	-11.090
Interest rate volatility	-5.025

Significant at 10% level, 5% level, 1% level

** Similar tests on other countries - with flexible exchange rates but non-IT monetary regimes - show either a not significant effect or an even higher crisis likelihood.*

Robustness Checks

1. Sample partitioning
2. High-inflation countries ($\pi > 40\%$)
3. Low-income countries (WB)
4. Countries not incl. in EMBI index
5. Severely indebted countries (WB)
6. Fixed exchange rate regimes
7. Different degrees of fiscal discipline

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Comparing Alternative Regimes: Exchange Rate Targets*

Variables	<i>Coefficient on dummy for:</i>	
	IT	ERT
π	-4.820	-0.084
SD(π)	-3.638	1.124
SD($y-y^*$)	-0.010	0.030

Significant at 10% level, 5% level, 1% level

* We include in this category conventional pegs, currency boards and countries with another currency as legal tender

Conclusion on macro performance

- IT has improved macro outcomes in emerging market economies
- IT confers significantly larger benefits of an exchange rate peg, and without the fragility

The role of institutional and structural conditions

Institutional and structural factors

- To what extent does IT require specific institutional and/or structural conditions to be met?
 - Conventional wisdom: IT requires rigorous preconditions!
- Does the adoption of IT catalyze favorable institutional and/or structural change?

What are these factors?

- Institutional independence
- Technical infrastructure
- Financial system health
- Economic structure

1. Institutional independence

- Operational independence
 - Control over rate setting
- Central bank autonomy
 - No obligation to finance government expenditures
 - Fiscal discipline (low gov. balance & debt)
 - No (threat of) interference from government
- A clear, focused mandate

2. Technical infrastructure

- Forecasting capability
 - Inflation forecast is central to IT
- Analytical & modeling capability
 - Needed to assess likely impact of policy actions
- Data availability & quality

3. Financial system health

- Sound banking sector
- Reasonably well-developed financial markets
- Limited degree of currency mismatch
 - Minimizes likely conflict with monetary policy objectives

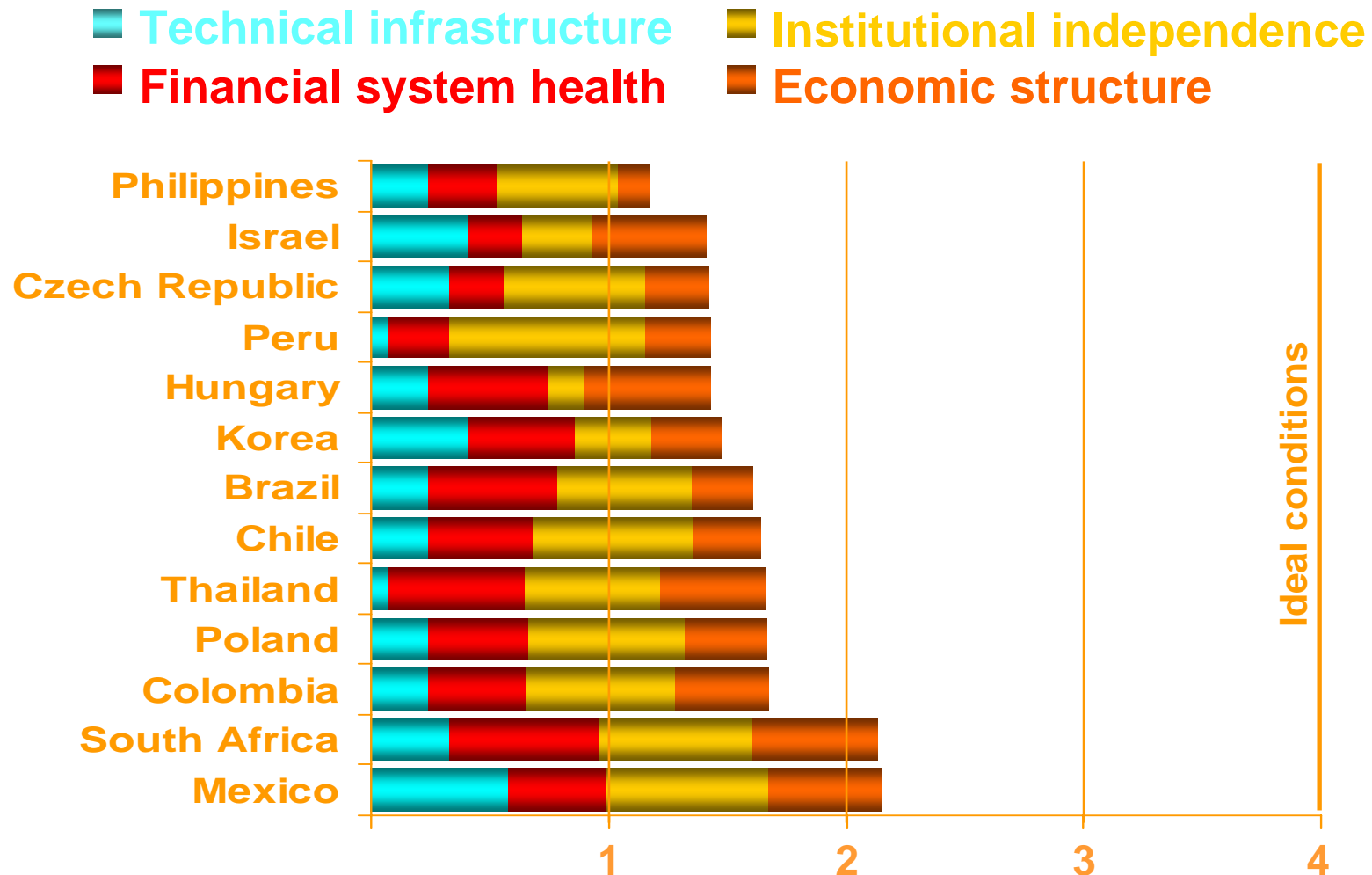
4. Economic structure

- Not too sensitive to exchange rate & commodity price shocks
- Little or no dollarization
- Little trade openness (less exposed to external shocks and spillovers)

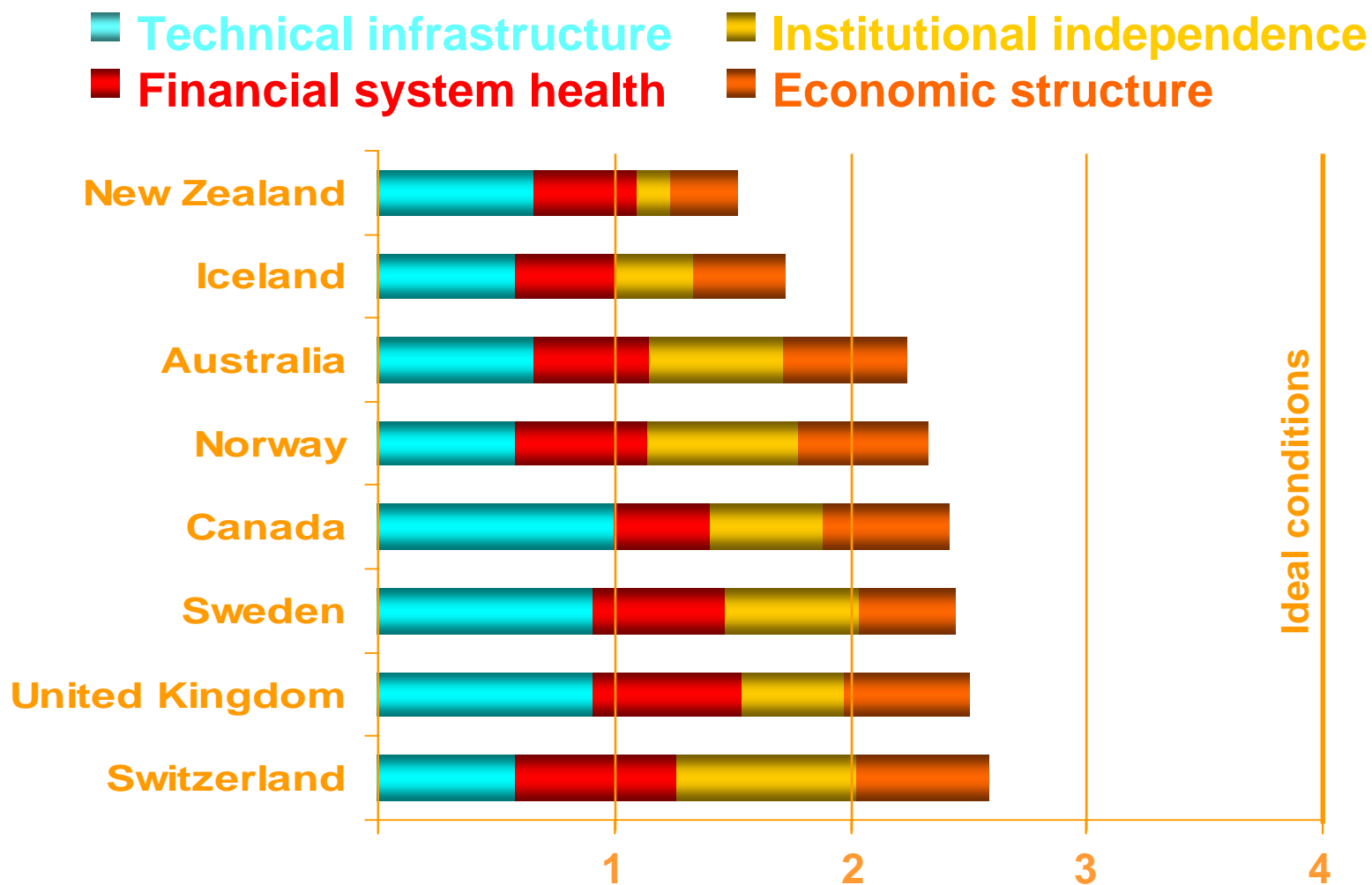
How to measure institutional and structural characteristics?

- Data from our survey of ITers and non-ITers.
 - A wealth of detail and anecdotes—but a challenge to “quantify”.
 - Caveat: reliability of self-reported data!
- Supplemented with more conventional “hard” data.

Emerging Markets: Initial Conditions Prior to Adopting Inflation Targeting *(0 = poor; 1 = ideal; for each of the four categories of initial conditions)*



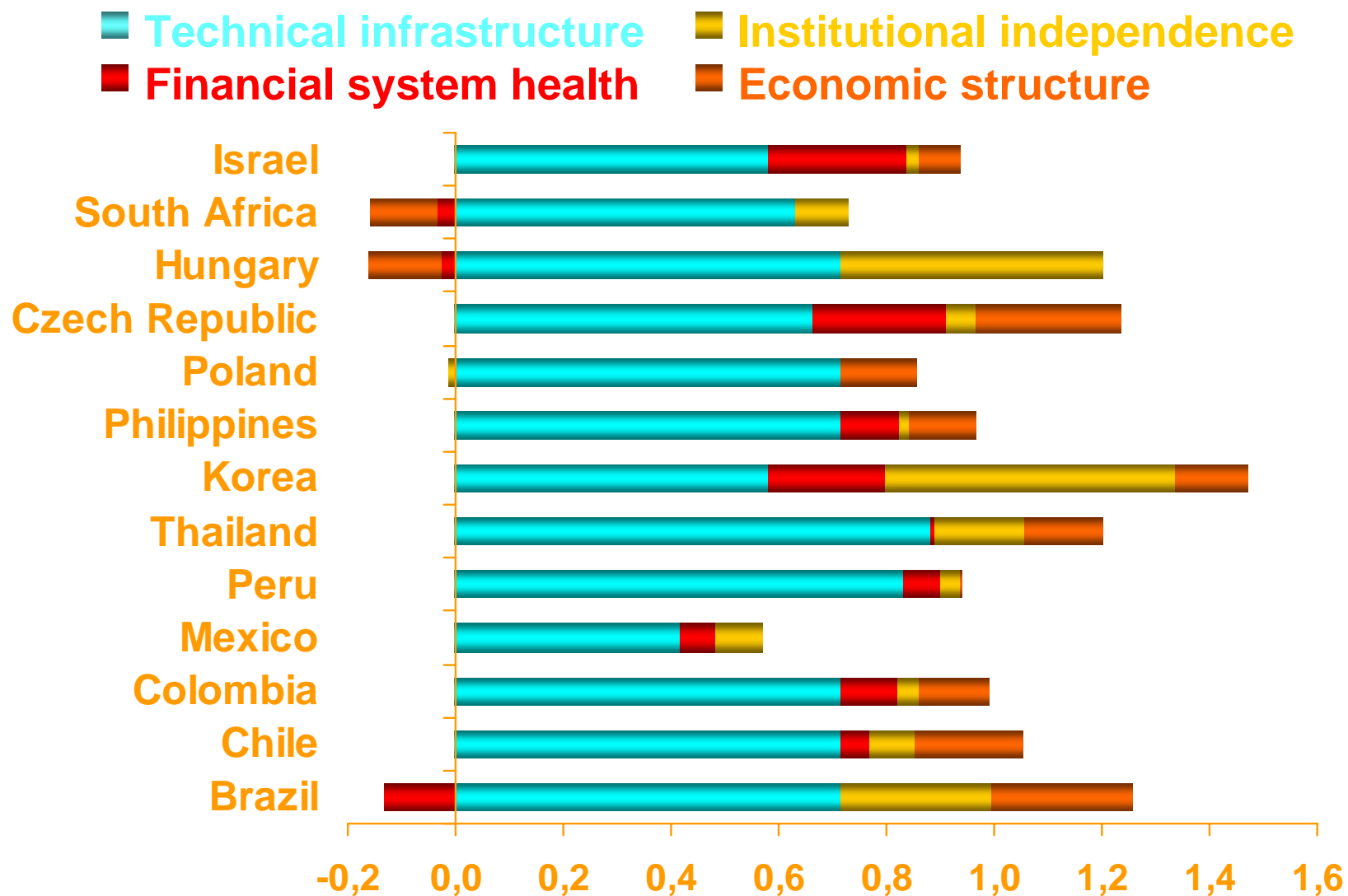
Industrial Countries: Initial Conditions Prior to Adopting Inflation Targeting *(0 = poor; 1 = ideal; for each of the four categories of initial conditions)*



Do preconditions (or lack thereof) affect ITers' performance?

- **No.**
- We constructed preconditions proxies, based on survey + "hard" data.
- These turn out to be insignificant in Ball-Sheridan-style regressions for ITers.

Post-adoption progress on conditions however maybe vital



Conclusions

- It's early days, but evidence so far indicates that IT "matters" for EM economies.
- Preconditions should not be a serious obstacle to adopting IT
- Progress on conditions however may be vital
- Prospective ITers look a lot alike current ITers at time of adoption

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