Monetary Policy in Emerging Market Countries

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Monetary policy in emerging markets or, more broadly, macroeconomics in developing countries

- has only recently come into its own as a field,
- has apparently not been included in previous handbooks, or surveyed before.

30 years ago, applying models that had been designed for industrialized countries would have been inappropriate

- with their assumption of financial sectors that were
  - highly market-oriented
  - and open to international flows.
- Rather, developing countries typically suffered from "**financial repression**," which
  - Featured uncompetitive financial intermediaries,
  - kept interest rates artificially low, and
  - allocated capital administratively rather than by market forces.
- Also, capital controls blocked portfolio capital flows.
- This has changed.

Outline

1. **Why do we need different models for emerging markets?**
2. **Goods markets, pricing, and devaluation**
3. **Inflation**
4. **Nominal targets for monetary policy**
5. **Exchange rate regimes**
6. **Procyclicality**
7. **Capital flows**
8. **Crises in emerging markets**

1. Why do emerging markets need their own models?

Characteristics that tend to distinguish them
from large industrialized countries:

- greater exposure to supply shocks
  - such as weather events
  - and trade shocks in particular,
    - due to relatively high trade/GDP ratios,
    - and volatile terms of trade, especially for commodity producers
- procyclicality
  - domestic fiscal policy
  - and international finance;
- lower credibility with respect to
  - price stability
  - and default risk;
- and institutional flaws,
  - such as imperfect property rights.

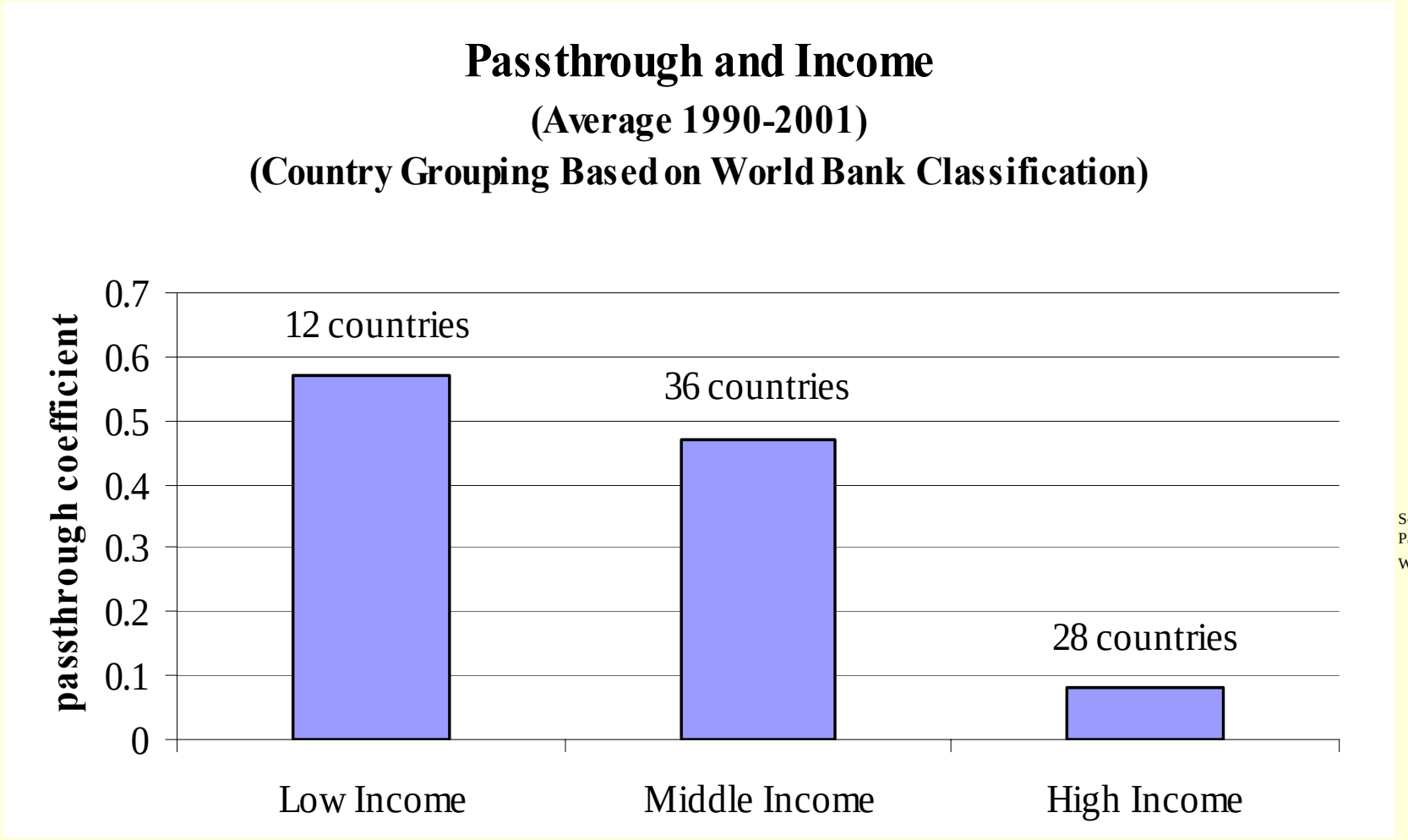
2. Goods markets, pricing, and devaluation

- 2.1 Traded goods and the Law of One Price
- 2.2 Prices of domestic products
- 2.3 The Small Open Economy model
  - Nontraded goods
  - Balassa-Samuelson relationship
  - Salter-Swan-Dornbusch model
- 2.4 Contractionary effects of devaluation

2.1 Traded goods and the Law of One Price

- Pass-through of devaluation to import prices:
  - Long believed ≈ 100% in developing countries.
  - Coefficient has fallen everywhere since the 1980s.
  - Remains higher in developing countries than rich.
  - For simplicity, models usually still assume 100%.

Coefficients for passthrough of exchange rate changes
(to prices of narrowly defined imports)
for low-income countries > for rich.



Source: Frankel, Parsley & Wei (2005)

2.2 Do developing countries have any ability to set prices of their own products?

- For agricultural & mineral commodities, usually no.
- There is evidence of local-currency stickiness in other producer prices, as in industrialized economies.
  - Nominal devaluations are associated with real devaluations
  - Regimes of nominal exchange rate variability are associated with real exchange rate variability.
- Two ways to go:
  - Barriers to arbitrage block the Law of One Price even for traded goods => allow price stickiness. Or
  - Small open economy model:
    PPP failures are due only to NonTraded Goods .

Among two-sector models, the small open economy dominates: Traded Goods and NTGs

- But let's note, first, some frontiers of research that blur the TG/NTG distinction:
  - (1) Even TGs have an important NTG component at the retail level: local distribution costs.
    - E.g., Burstein, Eichenbaum & Rebelo (2002, 04, 05) .
  - (2) The line demarcating what gets exported can usefully be modeled as endogenous:
    - Ghironi & Melitz (2005) and Bergin, Glick, & Taylor (2006).

2.3 The Small Open Economy Model

- Define Q to be the real exchange rate:

$$Q \equiv \frac{E(CPI^*)}{(CPI)}$$

where E ≡ the nominal exchange rate, in units of domestic currency per foreign.

$$Q \equiv \frac{E(P_{TG}{}^{*1-\alpha}\, P_{NTG}{}^{*\alpha})}{(P_{TG}{}^{1-\alpha} P_{NTG}{}^{\alpha})} \equiv \frac{(EP_{TG}^*)P_{TG}{}^{*-\alpha}\, P_{NTG}{}^{*\alpha}}{(P_{TG})P_{TG}{}^{-\alpha} P_{NTG}{}^{\alpha}} .$$

- Price-taker in all TGs => $Q \equiv \frac{(P_{NTG}{}^* / P_{TG}{}^*)^{\alpha}}{(P_{NTG} / P_{TG})^{\alpha}}$.

=> Q is determined by relative price of NTGs.

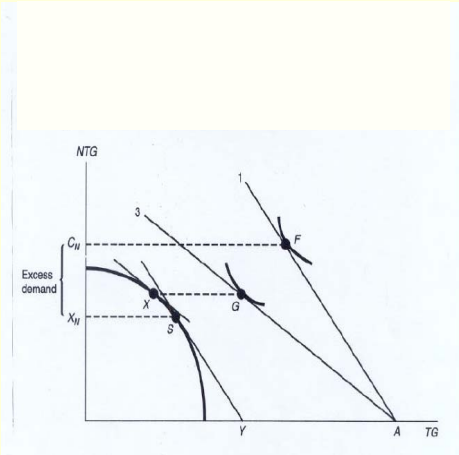
Two very different applications of P_{NTG} / P_{TG} :

(I) The Balassa-Samuelson effect:

In the Long Run, or in cross section, richer countries have higher P_{NTG} / P_{TG} .

(II) Dependent economy model,
in the tradition of Salter (1959),
Swan (1963) & Corden (1994):

In the Short Run, *Q* can be pulled away from its LR equilibrium



Critical comment: Most small open economy models live entirely within (I) or (II) alone.
The evidence is overwhelming: *both* are needed.

(I) The Balassa-Samuelson effect:

- In the Long Run, or in cross section, richer countries have higher P_{NTG} / P_{TG} , and so higher price level (lower Q), usually via higher productivity.

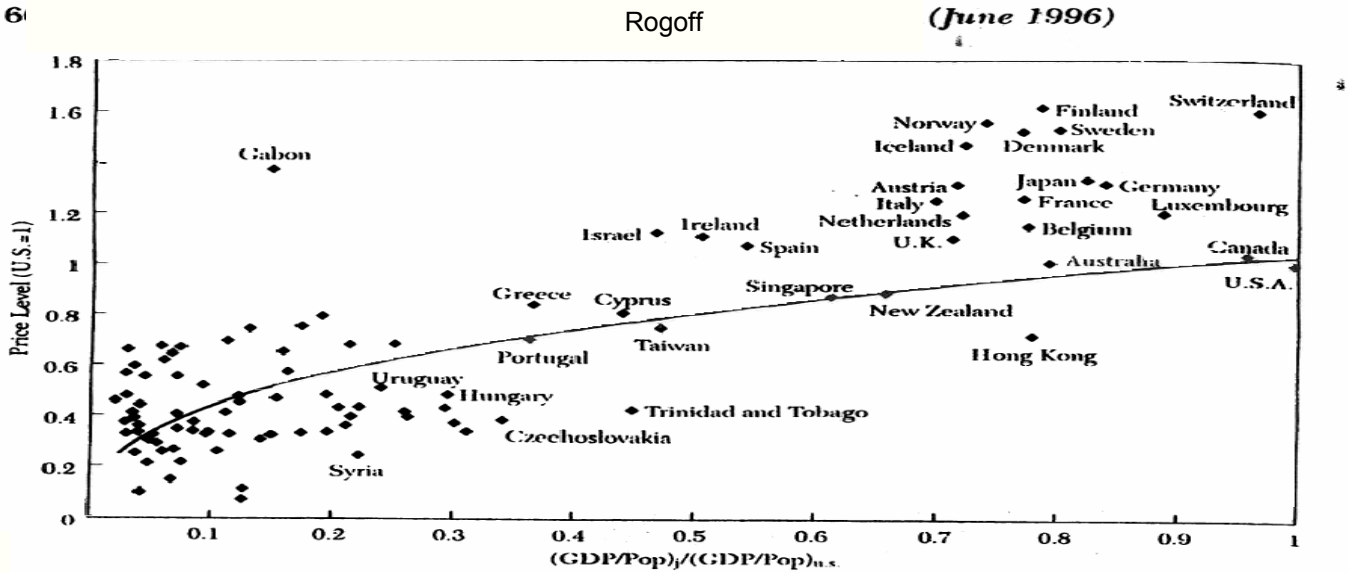
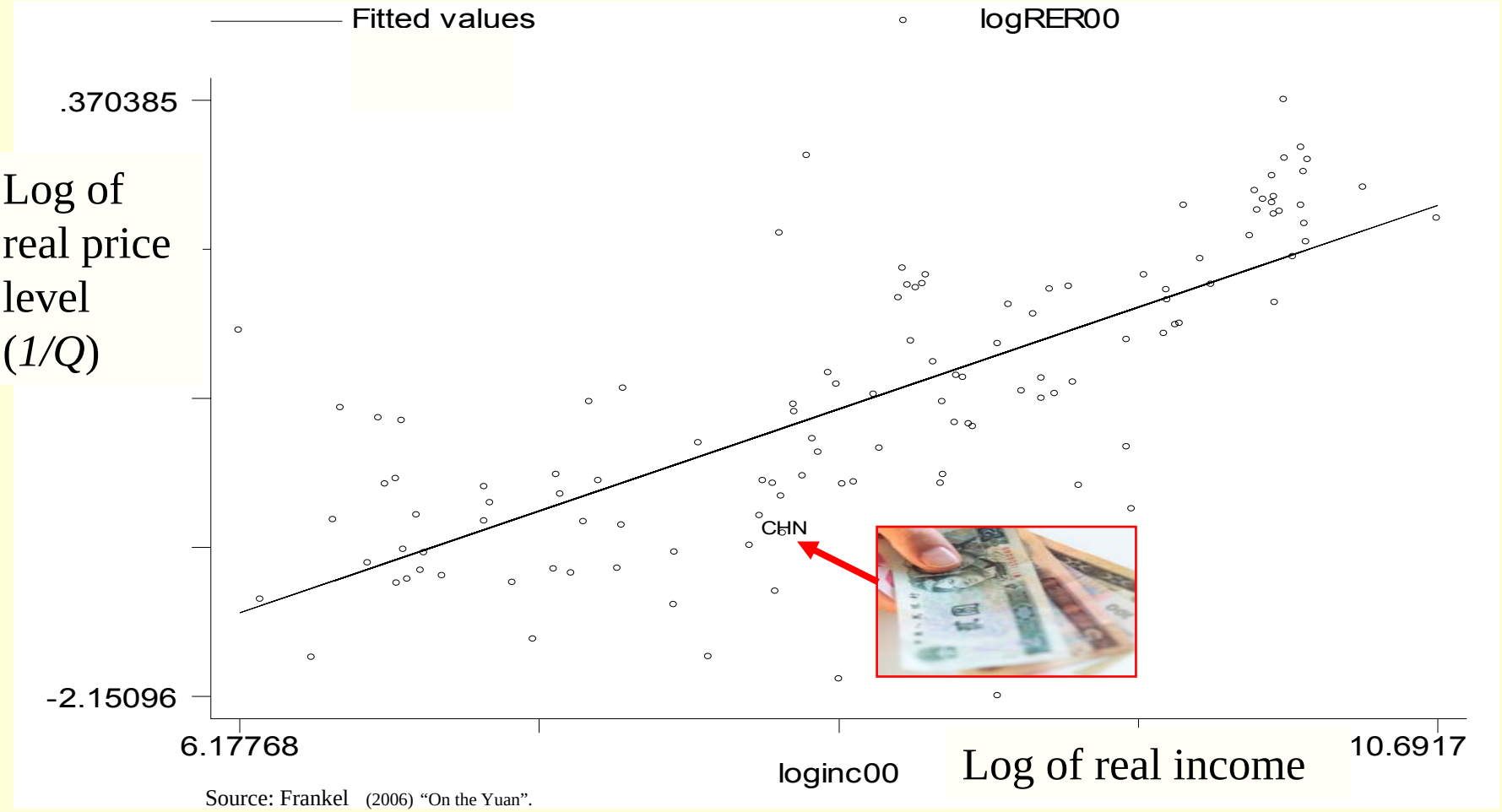


Figure 3. Price Level versus GDP per capita (U.S. = 1) 1990 $\log(P_j/P_{u.s.}) = 0.035 + 0.366 \log(Y_j/Y_{u.s.})$
(0.090) (0.042)

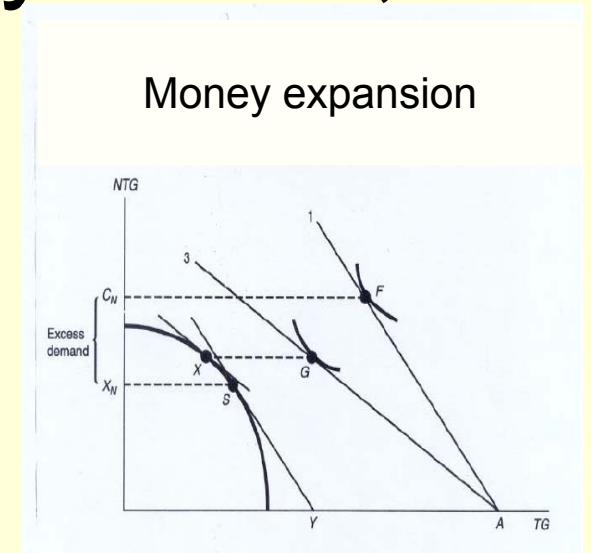
Source: The Penn World Table, Aug. 1994

Balassa-Samuelson estimated for 2000
Cross-section of 118 countries



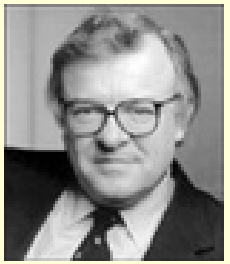
Source: Frankel (2006) "On the Yuan".

(II) Dependent economy model,



in the tradition of Salter(1959), Swan (1963) & Corden (1994):

In the Short Run, *Q* can be pulled away from its LR equilibrium, e.g., by devaluation or credit expansion.



Dornbusch (1973, 1980): even without sticky prices.

To repeat, both (I) *and* (II) are needed.

Example: How did China fall below the Balassa-Samuelson line?
Rapid productivity growth while the nominal exchange rate was fixed.

2.4 Devaluation

- Political costs:
  ½ of leaders lose their job within 6 months.

- Economic costs:

  Some studies find devaluation contractionary.

  – Of many possible contractionary effects,

  the **balance sheet effect** from currency mismatch receives the most attention.

e.g., Aghion, Banerjee & Bacchetta (2000), Bebczuk, Galindo & Panizza (2006), Caballero & Krishnamurty (2002), Calvo, Izquierdo & Meija; Calvo, Izquierdo, & Talvi (2003), Cavallo, Kisselev, Perri & Roubini (2004) , Cespedes, Chang & Velasco (1999, 2000, 2003, 2004), Christiano, Gust & Roldos (2002), Dornbusch (2001, 2002), Jeanne & Zettelmeyer (2005), Kiyotaki & Moore (1997),

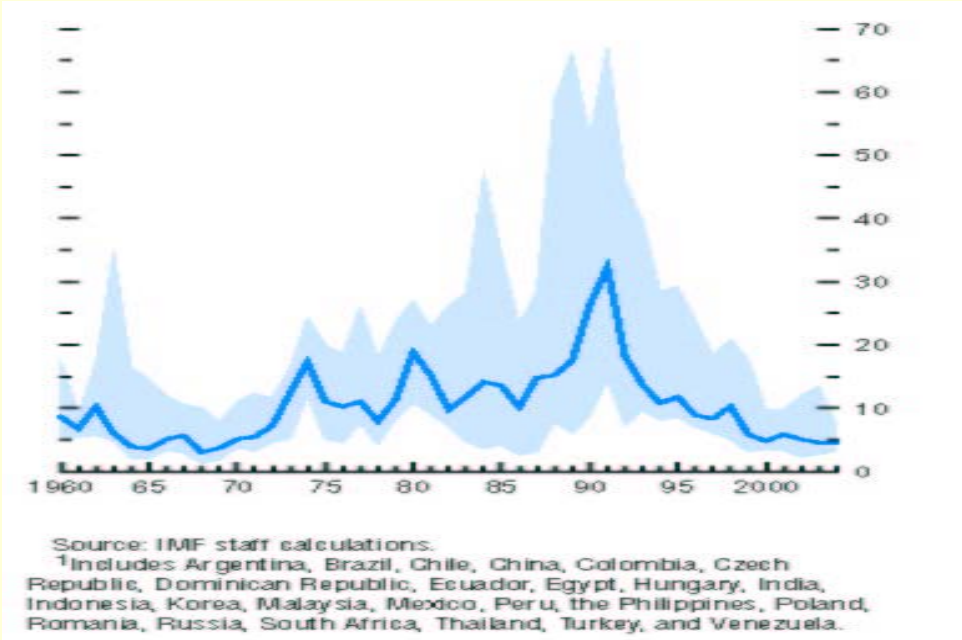
Krugman (1999), Mendoza (2002), Schneider & Tornell (2001). Guidotti, Sturzenegger & Villar (2003).

Why do countries develop weak balance sheets in the first place?

1. "***Original sin:"*** Investors in high-income countries are unwilling to acquire exposure in developing country currencies. -- Hausmann
2. **Adjustable currency pegs** create a false sense of security: currency volatility is required if borrowers are to avoid unhedged dollar liabilities. -- Eichengreen, Velasco
3. ***Moral hazard***: by borrowing in $, well-connected locals put the risk onto the central bank.

   -- Dooley (2000a); Krugman (1999); and Wei & Wu (2002).
4. ***Procrastination of adjustment:*** when foreigner investors abruptly lose enthusiasm for a country, it shifts to short-term and $-denominated debt to postpone adjustment. -- Frankel (2007).

3. Inflation



Source: IMF staff calculations.
[1]Includes Argentina, Brazil, Chile, China, Colombia, Czech Republic, Dominican Republic, Ecuador, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, and Venezuela.

Inflation in the median emerging market was very high in the 1980s, peaked around 1990, then gradually declined.

- 3.1 High inflation
- 3.2 Stabilization programs
- 3.3 Central Bank independence

3.1 High inflation & 3.2 Stabilizations

- High inflation periods defined as > 40%
  tend to lead to lower real growth
  - Bruno & Easterly (1998), Dornbusch & Fischer (1993), Fischer (1991,93).
- Root cause behind excessive money growth:
  - a need to finance public deficits.
  - Must be addressed for successful stabilization.
  - Edwards (1994), Cukierman, Edwards, & Tabellini (1992), Fischer (1982), Catao & Terrones (2005), Burnside, Eichenbaum & Rebelo (2006), and Cukeriman (2008).

- Other reasons for failed attempts at stabilization:
  - Inflation inertia => ex.rate targets become overvalued
    Kiguel & Liviatan (1992) , Uribe (1997), Calvo and Vegh (1994, 1998)
  - Dynamic inconsistency

3.3 Institutions to beat dynamic inconsistency

- Since institutional history and credibility are weaker in developing countries, the need to address dynamic inconsistency is greater
  - **Via Central Bank Independence**

    Most studies in developing countries find CBI does help:

    Cukierman, Miller & Neyapti (2002), Crowe & Meade (2008), Jácome (2001), Gutiérez (2003), Jácome & Vázquez (2008) and Haan, Masciandaro, & Quintyn (2008) ;

    though not all -- Mas (1995) and Landström (2008)

    and/or

  - **Via Rules.**

4. Nominal targets for monetary policy

M1? Exchange rate? CPI? Other choices?

- 4.1 The move from money targeting to exchange rate targeting
- 4.2 The movement from exchange rate targeting to inflation targeting
- 4.3 “Headline” CPI and “Core” CPI

4.1 The successful stabilization programs

of the late 1980s and early 1990s

tended to use exchange rate targets,

more than money targets

- Examples:
  - Chile's tablita,
  - Argentina's convertibility plan,
  - Brazil's real plan
  - Bolivia, Mexico, Israel, Russia…

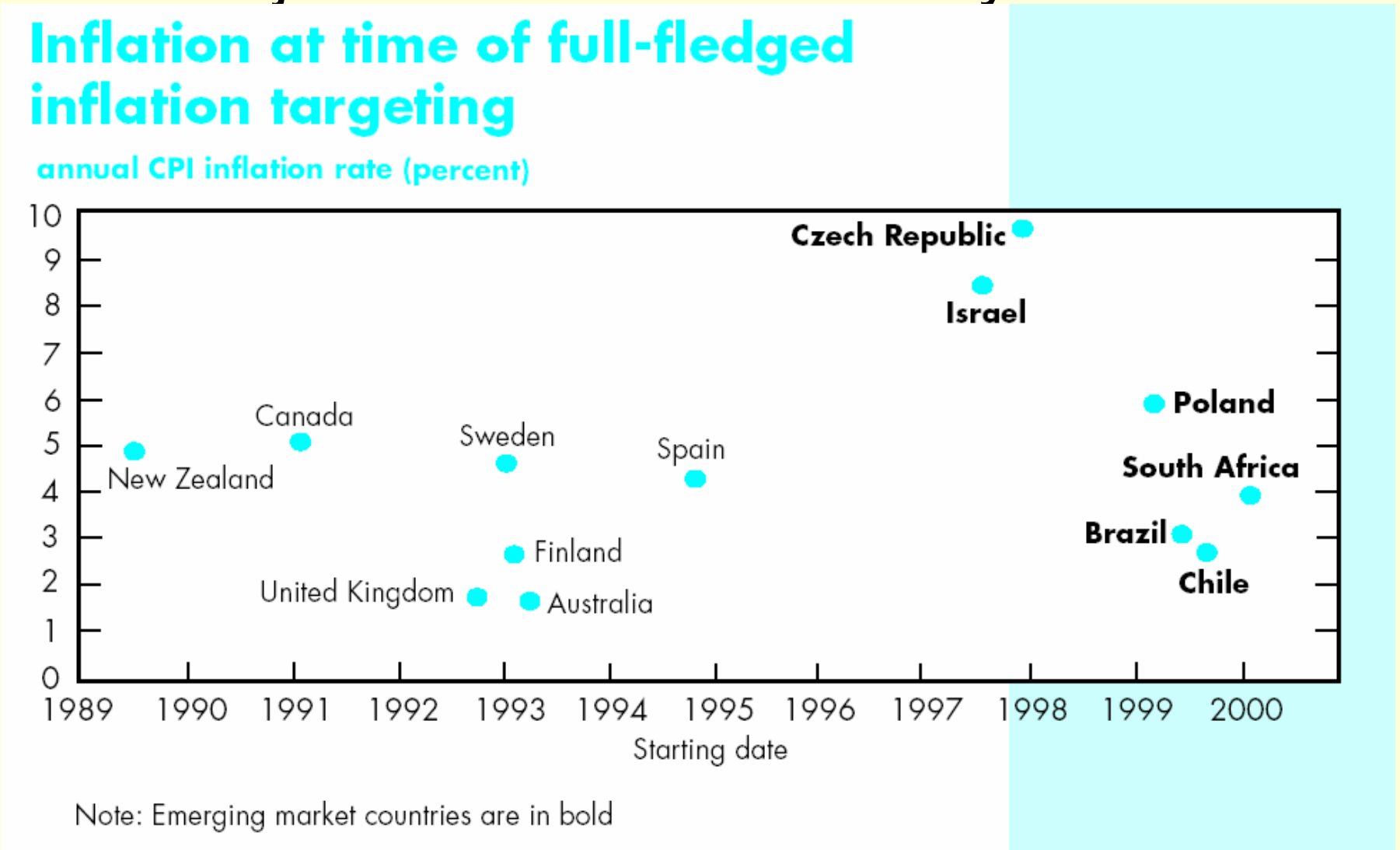
4.2 The move to Inflation Targeting

Broadly speaking, the inflation crises of the 1980s left a consensus that exchange rate targets worked better than money targets.

The currency crises of 1994-2001 left a view that exchange rate pegs were untenable.

What, then, could serve as the new nominal anchor? Inflation Targeting (IT) !

Inflation Targeting:
"It's not just for rich countries anymore"



Source: *IMF Survey*. October 23, 2000. Andrea Schaechter, Mark Stone, Mark Zelmer in the IMF MEA Dept. Online at: http://www.imf.org/external/pubs/ft/survey/2000/102300.pdf
The background papers for the high-level seminar "Implementing Inflation Targets," held in Washington in March 2000, are available on the IMF Website: http://www.imf.org/external/pubs/ft/seminar/2000/targets/index.htm

In many ways, IT has functioned well.

- It apparently anchored expectations and avoided a return to inflation in Brazil, for example, despite two severe challenges:
  - early 1999, as the country exited the real plan,
  - and 2002, when a presidential candidate who at the time was considered anti-market & inflationary pulled ahead in the polls.

- E.g., Giavazzi, Goldfajn & Herrera (2005); Mishkin (2004) .

Provocative claim: The events of 2007-2009 have now put strains on IT,

- analogously to the way the events of 1994-2001 put strains on the regime of exchange rate targeting.

- Three kinds of nominal variables have forced their way into the attentions of central bankers, beyond the CPI:
  - the exchange rate
  - asset prices
  - commodity prices.

1. **The exchange rate** never really left
   -- Fear of Floating (Calvo & Reinhart).

2. **Prices of equities and real estate**
   have been key in advanced countries, but not there alone.[2]
   The global financial crisis has forced central bankers everywhere to re-think their focus on inflation to the exclusion of asset bubbles.

3. **Prices of agricultural and mineral products**
   are particularly relevant for developing countries. The heightened volatility of commodity prices, culminating in the spike of 2008, resurrects arguments about the desirability of a currency regime that accommodates terms of trade shocks.

[2] Caballero & Krishnamurthy (2006), Ventura (2002), Edison, Luangaram, & Miller (2000), Aizenman & Jinjarak (2009) and Mendoza & Terrones (2008) explore how credit booms lead to rising asset prices in emerging markets, often preceded by capital inflows and followed by financial crises.

Proponents of IT have always left themselves the loophole of conceding that central banks should pay attention to exchange rates, asset prices, commodity prices to the extent that they portend future inflation.

In many of the last century's biggest bubbles and crashes, however, monetary policy that in retrospect had been too expansionary pre-crisis never showed up as goods inflation, only as asset inflation. (Borio & White.)

Studies of IT in emerging markets

- Savastano (2000) offered a concise summary of much of the research as of that date.
- Amato & Gerlach (2002): IT can be good for emerging markets, but only after certain conditions are satisfied.
- Batini & Laxton (2006): pre-conditions have not been necessary.
- Laxton & Pesenti (2003): because central banks in emerging market countries tend to have lower credibility, they need to move the interest rate more strongly in response to movements in forecasted inflation than a rich country would.
- Fraga, Goldfajn & Minella (2003): inflation-targeting central banks in emerging market countries miss their declared targets by far more than they do in industrialized countries.
- Others include Debelle (2001); Eichengreen (2005); Jonas & Mishkin (2005); Masson, Savastavano & Sharma (1997); and Mishkin (2000; 2004).

Most IT analysis is better suited to big industrialized countries than to developing countries, in several respects.

1. The models usually do not feature exogenous shocks in trade conditions or difficulties in the external accounts.

1. They assume countries need not worry about financing trade deficits, presumably because international capital markets function well enough to smooth consumption in the face of external shocks.
2. But for developing countries, international capital markets often *exacerbate* external shocks, rather than the opposite.

2. IT can be vulnerable to supply shocks, which are larger for developing countries.

1. Under strict IT, to prevent the price index from rising in the face of an adverse supply shock, monetary policy would have to tighten so much that the entire brunt of the fall in nominal GDP is borne by real GDP.
2. Most reasonable objective functions would, instead, have the monetary authorities allow part of the shock to show up as a rise in the price level.

4.3 “Core” CPI vs. “Headline” CPI

- In practice, Inflation-Targeting central bankers know they shouldn’t respond to oil import price shocks by tightening proportionately;
  - they want to exclude oil shocks from the measure of the year’s CPI that is targeted.
  - Some explain ex ante that their target is the Core CPI.
  - Others to talk of the CPI *ex ante*, but then in the face of an adverse supply shock explain *ex post* that the increase in farm or energy prices is being excluded due to special circumstances.

- Neither tactic – trying to explain core CPI to the public either *ex ante* or *ex post* – is ideal for communication & credibility.
- Perhaps this is why IT central banks apparently don't make full use of the "core CPI escape clause":
  - When countries adopt inflation targeting, the correlation between the $ price of oil & the $ price of local currency turns positive! (Frankel, 2010)

5. Exchange rate regimes

- 5.1 The advantages of fixed exchange rates,
  - Including nominal anchor.
- 5.2 The advantages of floating rates
  - Including accommodation of terms of trade
- 5.3 Choosing an exchange rate regime.
- 5.4 Classifying countries by regime
- 5.5 The Corners Hypothesis

6. Procyclicality

- 6.1 The procyclicality of capital flows in developing countries
- 6.2 The procyclicality of demand policy in developing countries
  - a. The procyclicality of fiscal policy
  - b. The political business cycle.
  - c. The procyclicality of monetary policy
- 6.3 Commodities and the Dutch Disease
- 6.4 Product-oriented choices for price index under inflation targeting

6.1 The procyclicality of capital flows in emerging markets

- According to intertemporal optimization theory, countries should borrow during temporary downturns, to sustain consumption and investment, and repay during temporary upturns.

- In practice, capital flows are more procyclical than countercyclical.[1]
  - Most theories to explain this involve imperfections in capital markets: asymmetric information or the need for collateral.
  - Aguiar & Gopinath (2006, 2007), however, demonstrate that the observation of procyclical current accounts in developing countries might be explained in an optimizing model if shocks are changes in the permanent trend of productivity.

[1] Kaminsky, Reinhart, and Vegh (2005); Reinhart & Reinhart (2009); Perry (2009); Gavin, Hausmann, Perotti & Talvi (1996); and Mendoza & Terrones(2008).

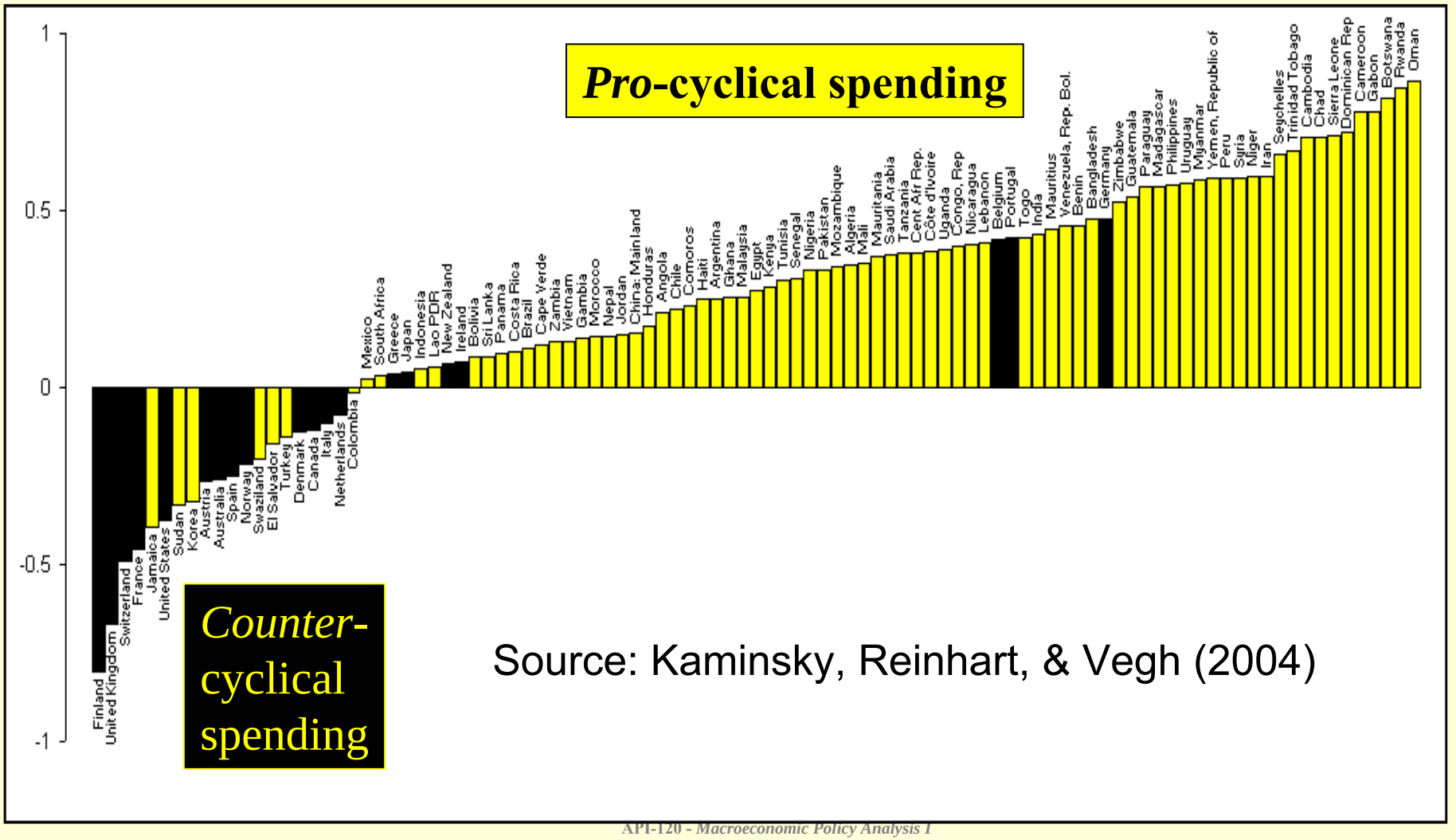
6.2 The procyclicality of fiscal policy

- Many authors have documented that fiscal policy also tends to be procyclical in developing countries,
  - compared with industrialized countries:
  - Gavin & Perotti(1997), Lane & Tornell (1999), Kaminsky, Reinhart, & Vegh (2004), Talvi & Végh (2005), Alesina, Campante & Tabellini (2008), Mendoza & Oviedo (2006).

- Explanations?
  - Political business cycle
    - A feature of new democracies -- Brender and Drazen (2005)
  - Dutch Disease, for commodity producers

Correlations between government spending & GDP

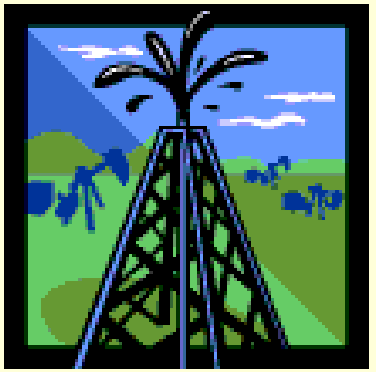
G is *pro*-cyclical for most developing countries (yellow) :
rises in booms and falls in recessions; esp. commodity-exporters



Source: Kaminsky, Reinhart, & Vegh (2004)

6.3 The Dutch Disease

Commodity boom:



- $P_{\text{natural resource}} \uparrow \Rightarrow TB \uparrow$ or
- oil discovery => capital inflow to develop oil.

Primary side effect:
real appreciation & crowding-out of manufactured exports

- Under fixed rate, *Reserve* inflows => $MB \uparrow$
  => inflation in P_{NTG} . <u>or</u>
- Under floating, appreciation $E \downarrow$ => $P_{TG} \downarrow$.
  Either way, => $(P_{NTG}/P_{TG}) \uparrow$

Second side effect:
Government gets more foreign exchange revenue, and spends it.

6.4. Product-oriented choices for price index to be targeted

- Alternative product-oriented choices for price index of Inflation Targeters
  - Price of leading commodity export
    - **P**eg the **E**xport **P**rice
  - Index of all export prices
    - **P**eg the **E**xport **P**rice **I**ndex
  - Index of all domestic goods prices
    - Target the **P**roducer **P**rice **I**ndex

Why is the PPI better than the CPI

in inflation targeting for countries with volatile terms of trade?

Better response to adverse terms of trade shocks:

- If the $ price of imported commodity goes up, CPI target says to tighten monetary policy enough to appreciate currency. Wrong.
  (E.g., Korea in 2007-08.)
- If the $ price of the export commodity goes up, PPI target says to tighten monetary policy enough to appreciate currency. Right.
  (E.g., Gulf currencies in 2007-08.)

7. Capital flows

- 7.1 The opening of emerging markets
  - The boom-bust cycle
  - Measures of financial integration
  - Sterilization and capital flow offset
  - Controls, capital account liberalization, sequencing
- 7.2 Does financial openness improve welfare?
  - Benefits of financial integration
  - Markets don’t quite work that way
  - Capital inflow bonanzas

7.1 Quantifying financial opening

- Direct observation of the legal barriers to integration:
  - e.g., Quinn (1997)
- Measurements based on quantities of capital flows:
  - Feldstein-Horioka-type tests show inability for developing countries to finance saving shortfalls
  - Prasad, Rogoff, Wei, & Kose (2003), for example: the consumption volatility in developing countries has, if anything, gone up rather than down.
- Measurements based on the inferred ability of arbitrage to equalize returns across countries:
  - Sovereign spreads alone show default risk premium.
  - Stronger interest rate parity conditions (UIP, RIP) fail *a fortiori*

The framework of Mundell-Fleming with imperfect capital mobility

- It is one interpretation of the carry trade 1/
- Sterilization and offset
  - An application of the Impossible Trinity:
    - Has capital mobility increased so much in emerging markets (on fixed rates) that they have lost monetary independence?
      - Answer (e.g., Mexico): yes, but not completely. 2/
      - China was able to sterilize for ≈ 5 years 3/
  - Our Handbook editors would erase the LM curve 4/
    - But we need it to think about sterilization of reserve flows in emerging markets

1/ Bansal & Dahlquist (2000); Brunnermeier, Nagel, & Pedersen (2008); Burnside, Eichenbaum, & Rebelo (2007); Frankel & Poonawala (2010), and Ito & Chinn (2007).

2/ Cumby & Obstfeld. (1983); Kamas (1986); .Calvo, Leiderman & Reinhart (1993, 94ab, 95); Frankel & Okongwu (1996).

3/ Liang, Ouyang & Willett (2009)

4/ Woodford (2003); Friedman (2003).

7.2 Does financial openness improve welfare?

- By now, lots of useful surveys
  - Fischer (1997), Obstfeld (1998, 2009), Edison, Klein, Ricci, & Sloek (2004); Prasad, Rogoff, Wei, & Kose (2003), Henry (2007), and Kose, Prasad, Rogoff, & Wei (2009).

Potential benefits of financial integration, in theory

Gains from international trade in financial assets are analogous to the gains from international trade in goods.

- 1st, it enables rapidly-developing countries to finance their investment more cheaply by borrowing from abroad than if they were limited to domestic savings.
- 2nd, it allows consumption smoothing.
- 3rd, it allows diversification across countries.
- 4th: it facilitates emulation of foreign banks and institutions.
- 5th: it promotes discipline on macro policy.

Increasing doubts, in practice

Financial markets do not work quite as smoothly in practice as some of the textbooks theories suggest.

- *Capital flows uphill.*

  - Lucas (1990),
    Prasad, Rajan, & Subramanaian (2007); Alfaro, Kalemli-Ozcan & Volosovych (2005); Reinhart & Rogoff (2004); Gourinchas & Jeanne (2007), Kalemli-Ozcan, Sebnem, Reshef, Sorensen, & Yosha (2009).

- *Procyclicality.*

- *Debt crises* don't seem to fit the model.

Empirical attempts to weigh up

- Some find overall benefits from financial liberalization
  - King & Levine (1993), Gourinchas &Jeanne (2003); Hoxha, Kalemli-Ozcan & Vollrath (2009); Chari & Henry (2004, 2008), Edison & Warnock (2003), Claessens & Rhee (1994). Henry & Sasson; and Henry (2000a,b, 2003).
- Others do not
  - Edison, Levine, Klein, Ricci, & Sloek (2002) and Prasad & Rajan

Conditions under which capital inflows are likely beneficial

Sequencing.[1]

For financial opening to be benefit a country, it must first achieve:

- a certain level of economic development; [2]
- a certain level of income; [3]
- macroeconomic stabilization; [4] or
- financial institutional development [5]

[1] Edwards (2008) McKinnon (1993), Edwards (1984), and Kaminsky & Schmukler (2003).
[2] Kose Prasad & Taylor (2009), Aizenman, Chinn & Ito (2008); Bekaert, Harvey & Lundblad (2009)
[3] Biscarri, Edwards, & Perez de Gracia (2003); Klein & Olivei (1999); Edwards (2001); Martin & Rey (2002) Ranciere, Tornell & Westermann (2008); Kaminsky & Schmukler (2003)
[4] Arteta, Eichengreen, & Wyplosz, (2003). .
[5] Chinn & Ito (2002); Klein (2003); Obstfeld (2009); Kose, Prasad & Taylor (2009); Wei & Wu (2002); Prasad, Rajan, & Subramanian (2007).

8. **Crises in emerging markets**

- 8.1 Reversals, sudden stops, speculative attacks, crises
  - Definitions
  - Contagion
  - Management of crises
- 8.2 Default and how to avoid it
- 8.3 Early warning indicators

8.1 Definitions: Reversals, stops, attacks, & crises

- ***Current account reversals***
  - Edwards (2004a, b) and Milesi-Ferretti & Razin (1998, 2000).

- ***"Sudden Stops"***
  - Dornbusch, Goldfajn & Valdes (1995); Calvo (1998); Calvo, Izquierdo and Mejia (2003); Arellano & Mendoza (2002), Calvo (2003), Calvo, Izquierdo & Talvi (2003, 2006), Calvo & Reinhart (2001), Calvo , Izquierdo & Loo-Kung (2006), Guidotti, Sturzenegger & Villar, (2004), Mendoza (2002, 2006); Edwards(2004b); Calvo, Izquierdo and Loo-Kung (2006).

- ***"Speculative attacks"***

Speculative attacks

- 1st generation: macro fundamentals
  - Krugman (1979); Flood & Garber (1984); Obstfeld (1986a)
- 2nd generation: multiple equilibria
  - Obstfeld (1986, 1996); Morris & Shin (1998)
  - Endogenous monetary policy
    - Obstfeld (1996), Jeanne (1997), Burnside, Eichenbaum, & Rebelo (2000).
  - Bank runs
    - Diamond & Dybvyg (1983); Chang & Velasco (1997, 99a, b, 2001); Diamond & Rajan (2000); Radelet & Sachs (1998)
  - Nash non-cooperative game among speculators
    - Corsetti, Pesenti & Roubini (2002); Corsetti, Dasgupta, Morris & Shin (2004); and Dasgupta, Morris, & Shin (2004**).**

- 3rd generation (my preferred definition): moral hazard
  - Diaz-Alejandro (1985), Dooley (2000a), Krugman (1998), McKinnon & Pill (1996); Corsetti, Pesenti & Roubini (1998a, b); Chinn, Dooley & Shrestha (1999); Burnside, Eichenbaum, & Rebelo (2001, 2004), Calvo & Mendoza (1996).

8.2 **Contagion**

Eichengreen, Rose & Wyplosz (1996), Bae, Karolyi, & Stulz (2000); Forbes & Rigobon (2000); Rigobon (2000); Kaminsky & Reinhart (2001); and Kaminsky, Reinhart & Vegh (2003).

- Common external shocks ("monsoonal" -- Masson, 1999) such as an increase in US interest rates (e.g., Uribe & Yue, 2003).

- Some specific channels of contagion from one country to another have been identified empirically
  - Kaminsky & Reinhart (2003): through major financial centers.
  - Donohue & Froot (2002): portfolio flows of institutional investors
  - Kaminsky & Schmukler (2002) via rating agencies
  - Forbes (2001) and Forbes & Chinn (2001): via trade linkages.

- Pure contagion, e.g., information cascades.
  - Calvo and Mendoza (2000)…

8.3 Managing Emerging Market Crises

- ***Adjustment* of national policies**
  - Monetary tightening: the "interest rate defense"
    - Flood & Rose (2002); Christiano, Gust, & Roldos (2002); Caballero & Krishnamurthy (2001); Drazen (2003); Eichengreen & Rose (2003); Furman & Stigltiz (1998); and Lahiri & Vegh (2003, 2007).
- ***Private Sector Involvement***
  - Creditors agree to roll over loans as part of the package
- ***The International Financial Institutions***
  - The IMF and MDBs
    - Impact of programs
    - The IFI moral hazard critique

8.4 Default and avoiding it

- Default has relatively been rare. “Why?”

(1) Debtors fear losing future capital market access --

Bulow & Rogoff (1989):

this threat can’t sustain an equilibrium in a repeated game.

(2) They fear losing trade --

Eaton & Gersovitz (1981); Rose (2005); Rose & Spiegel (2008)

Ex ante measures for better risk-sharing

- Arrangements to avoid costs of restructuring negotiations, such as costs of debt overhang
  - Krugman (1989), Sachs (1983), Edwards (2002).
- Need an international analog to domestic bankruptcy law.
  - Friedman (2000), Claessens, Klingebiel, & Laeven (2003)
  - such as "debt workout" office at the IMF
    - Sachs (1998). Krueger ( ) and Shleifer (2003)
- Other possibilities
  - Collective Action Clauses
    - Eichengreen & Portes (1995), Eichengreen (1999), Eichengreen & Mody (2000b).
  - Collateral
    - Caballero & Krishnamurthy (2000, 01, 03, 05); Kiyotaki & Moore (1997)
  - Index bonds, equity, FDI…

8.5 Early warning indicators –

the ones more successful at predicting crises:

- Equity prices
  - Kaminsky, Lizondo, & Reinhart (1998) and Rose & Spiegel (2009)
- Reserves
  - Sachs, Tornell & Velasco (1996), Frankel & Rose (1996), Kaminsky, Lizondo & Reinhart (1998), Guidotti ( ), Aizenman ( )
  - Economists wondered if emerging market reserves had gotten too high by 2007 –
    - Jeanne (2007), Summers (2006), Rodrik (2006)
  - But high reserves appear to have been paid off in 2008.
    - Aizenman (2009) and Obstfeld, Shambaugh & Taylor (2009, 2010)

Early warning indicators, continued

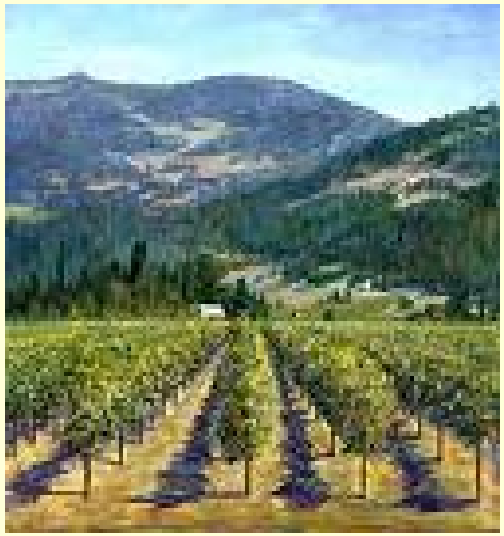
- Composition of inflows
  - Equity or FDI “good”, bank lending “bad”
  - Currency mismatch
    - Alesina & Wagner (2003); Guidotti et. al. (2003); Goldstein & Turner (2004); Arteta (2005a, b).
  - Maturity mismatch…

Some Conclusions

- Some models of monetary policy originally designed for industrialized countries apply even more strongly to developing countries:
  - Dynamic inconsistency in monetary policy and the resulting need for Central Bank Independence and commitment to nominal targets.
- But other aspects of developing countries merit special care
  - Because most are price-takers on world markets, the small open economy model, with nontraded goods, is more often useful than the two-country two-good model.
  - Contractionary effects of devaluation are important,
    - particularly balance sheet effects that arise from currency mismatch.
  - Fiscal policy is procyclical, especially among commodity producers.
  - Capital flows are procyclical as well.
  - High terms of trade volatility
    - can render IT destabilizing, if the CPI is targeted literally;
    - A PPI target would be more robust to terms of trade shocks.

What about financial crises? An analogy

- In the latter part of the 19th century most of the vineyards of France were destroyed by Phylloxera.
- Eventually a desperate last resort was tried: grafting susceptible European vines onto resistant American root stock.
- Purist French vintners initially disdained what the considered compromising the refined tastes of their grape varieties.
- But it saved the European vineyards, and did not impair the quality of the wine.
- The New World had come to the rescue of the Old.



Implications of the 2008 financial crisis for macroeconomics?

- In 2007-08, the global financial system was grievously infected by “toxic assets” originating in the United States.
- Many ask what fundamental rethinking will be necessary to save orthodox macroeconomic theory.
- Some answers may lie with models that have been designed to fit the realities of emerging markets, models that are at home with financial market imperfections that have now turned up in industrialized countries as well (asymmetric information, need for collateral, balance sheet effects, moral hazard…).
- Purists may be reluctant to seek help from this direction.
- But they should not fear that the hardy root stock of emerging market models is incompatible with fine taste.

Appendices

- Bruno-Easterly on costs of high inflation
- Loungani-Sheets on CBI
- Targeting the CPI: Correlation between $ oil price and $ value of local currency
- Fiscal policy in Chile:
  - Bachelet & Velasco beat the commodity cycle
- Henry on effects of opening equity markets

Inflation above a threshold ≈ 40% tends to have a negative effect on growth.

Table 2
Growth before and after inflation crises of 40% and above, 1961–1994[a] (*t*-statistics in parentheses)

	No. of annual observations	Inflation rate (%)[b]	Per capita growth[b]
Before first inflation crises	518	11% (24.46)	1.3% (4.91)
During inflation crises	269	151% (17.22)	− 1.1% (−3.23)
After inflation crises	176	17% (24.11)	2.2% (8.18)
t-stat for H_0: equality of means during–before		15.17	− 5.57
t-stat for H_0: equality of means after–during		− 14.12	7.64
t-stat for H_0: equality of means after–before		6.70	2.42

[a]There were 41 high inflation crises in 31 countries, with a median crisis length of 6 years

[b]GDP per capita growth from World Bank Economic and Social Database (BESD), inflation from International Financial Statistics (CPI December over December); averages are geometric averages.

Source: *M. Bruno, W. Easterly / Journal of Monetary Economics 41 (1998) 3–26*

Transition economies

"Central Bank Independence, Inflation and Growth in Transition Economies,"
P. Loungani & Nathan Sheets , IFDPS95-519 (1995)

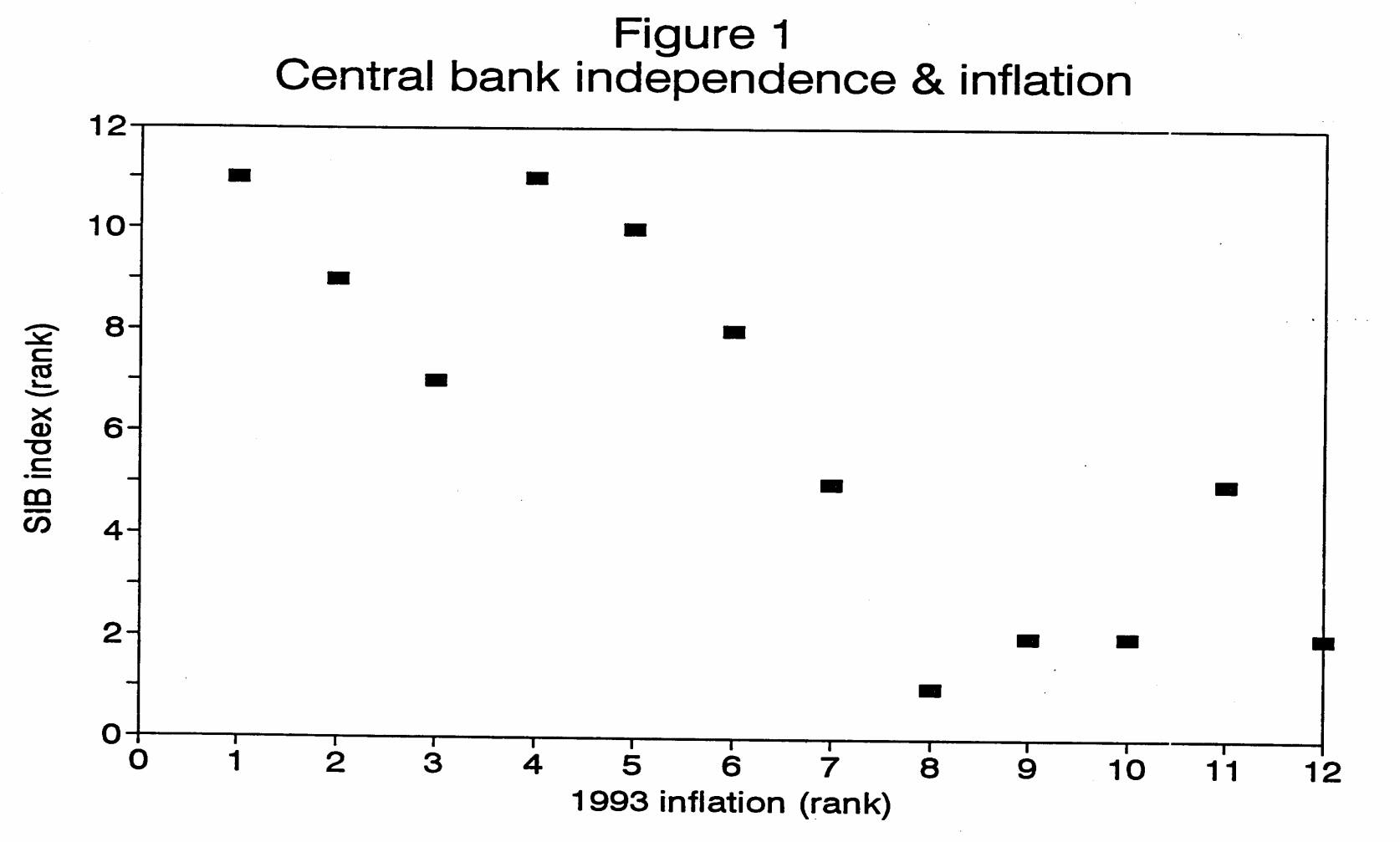


Table 1 LAC Countries' Current Regimes and Monthly Correlations of Exchange Rate Changes ($/local currency) with $ Import Price Changes

Import price changes are changes in the dollar price of oil.

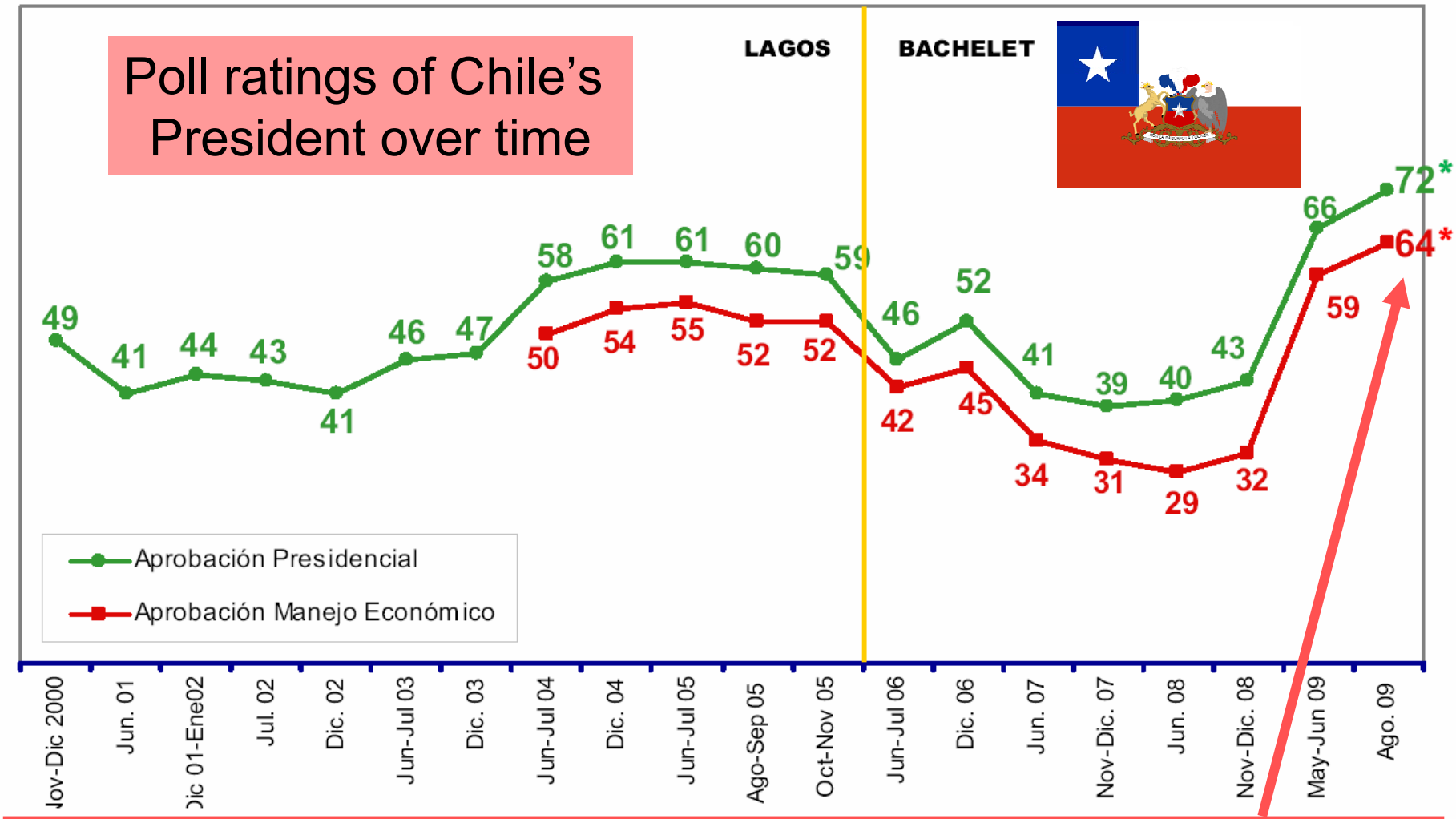
	Exchange Rate Regime	Monetary Policy	1970-1999	2000-2008	1970-2008
ARG	Managed floating	Monetary aggregate target	-0.0212	-0.0591	-0.0266
BOL	Other conventional fixed peg	Against a single currency	-0.0139	0.0156	-0.0057
BRA	Independently floating	Inflation targeting framework (1999)	0.0366	0.0961	0.0551
CHL	Independently floating	Inflation targeting framework (1990)*	-0.0695	0.0524	-0.0484
CRI	Crawling pegs	Exchange rate anchor	0.0123	-0.0327	0.0076
GTM	Managed floating	Inflation targeting framework	-0.0029	0.2428	0.0149
GUY	Other conventional fixed peg	Monetary aggregate target	-0.0335	0.0119	-0.0274
HND	Other conventional fixed peg	Against a single currency	-0.0203	-0.0734	-0.0176
JAM	Managed floating	Monetary aggregate target	0.0257	0.2672	0.0417
NIC	Crawling pegs	Exchange rate anchor	-0.0644	0.0324	-0.0412
PER	Managed floating	Inflation targeting framework (2002)	-0.3138	0.1895	-0.2015
PRY	Managed floating	IMF-supported or other monetary program	-0.023	0.3424	0.0543
SLV	Dollar	Exchange rate anchor	0.1040	0.0530	0.0862
URY	Managed floating	Monetary aggregate target	0.0438	0.1168	0.0564
Oil Exporters					
COL	Managed floating	Inflation targeting framework (1999)	-0.0297	0.0489	0.0046
MEX	Independently floating	Inflation targeting framework (1995)	0.1070	0.1619	0.1086
TTO	Other conventional fixed peg	Against a single currency	0.0698	0.2025	0.0698
VEN	Other conventional fixed peg	Against a single currency	-0.0521	0.0064	-0.0382

IT coun-tries show correl-ations > 0.

* Chile declared an inflation target as early as 1990; but it also had an exchange rate target, under an explicit band-basket-crawl regime, until 1999.

Frankel (2010)

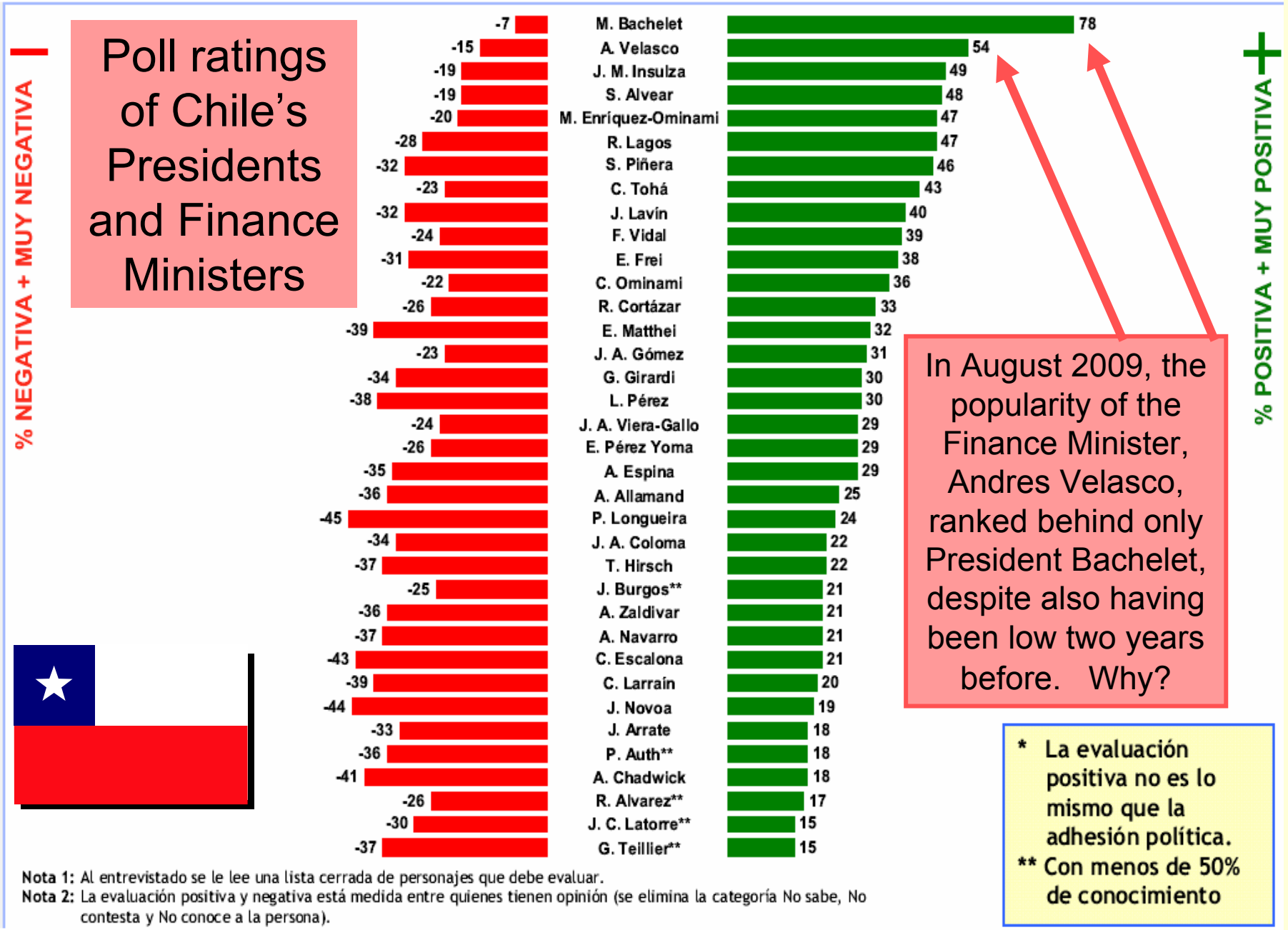
Poll ratings of Chile's President over time



In 2009, the popularity of the Socialist President of Chile Michelle Bachelet rose sharply (both with respect to handling of the economy and overall), to the highest levels since the restoration of democracy 20 years earlier. More remarkable: the rise in the polls, from very low to very high, came just as the economy moved from rapid growth to slow growth -- not the usual pattern. Why?

Chart source: Eduardo Engel, Christopher Neilson & Rodrigo Valdés, "Fiscal Rules as Social Policy," Commodities Workshop, World Bank, Sept. 17, 2009

Poll ratings of Chile's Presidents and Finance Ministers



In August 2009, the popularity of the Finance Minister, Andres Velasco, ranked behind only President Bachelet, despite also having been low two years before. Why?

* La evaluación positiva no es lo mismo que la adhesión política.
** Con menos de 50% de conocimiento

Chart source: Eduardo Engel, Christopher Neilson & Rodrigo Valdés, "Fiscal Rules as Social Policy," Commodities Workshop, World Bank, Sept. 17, 2009

Effect, when countries open their stock markets to foreign investors, on cost of capital .
Liberalization occurs in “Year 0.”

CAPITAL ACCOUNT LIBERALIZATION:
THEORY, EVIDENCE, AND SPECULATION

Peter Blair Henry
Working Paper 12698
http://www.nber.org/papers/w12698

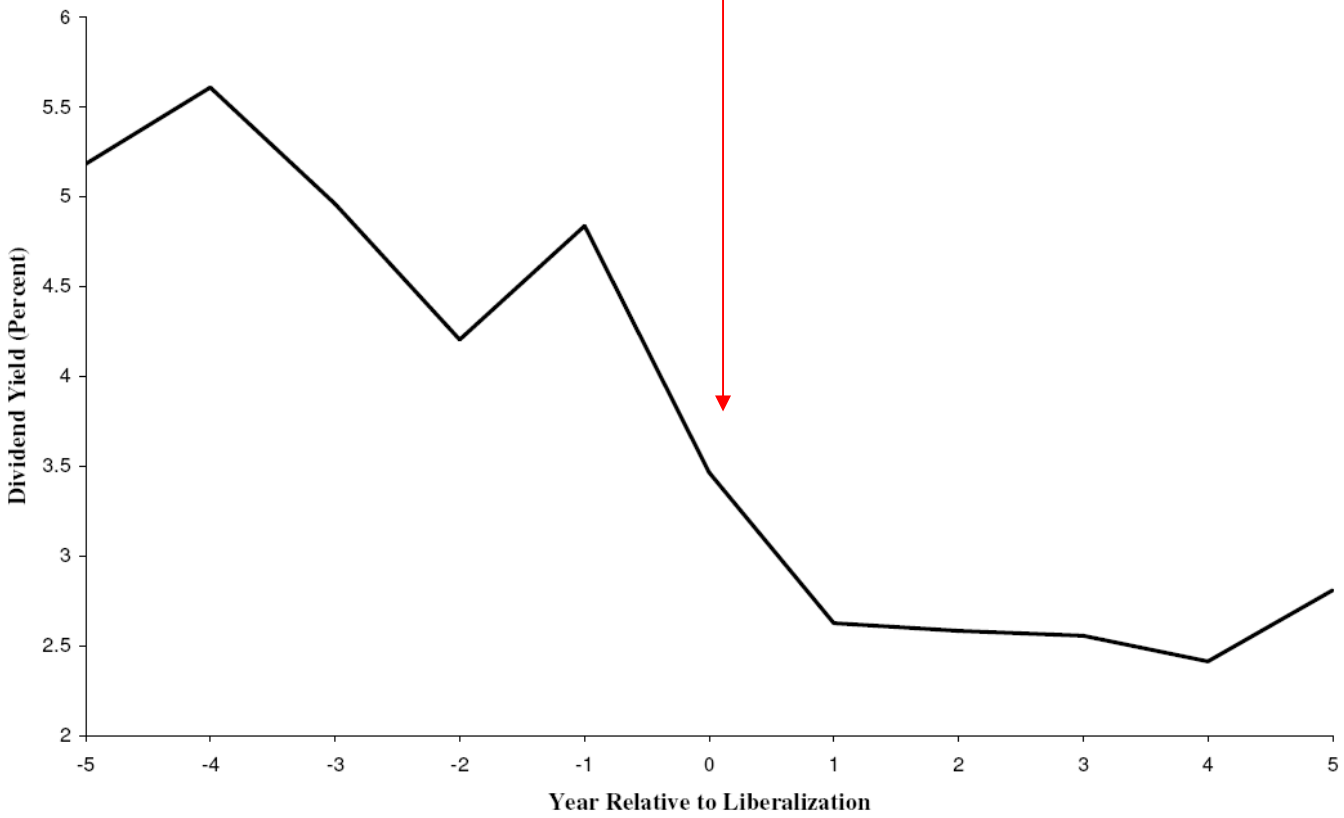


Figure 3. The Cost of Capital Capital Falls When Countries Liberalize the Capital Account.

Effect, when countries open their stock markets to foreign investors, on investment

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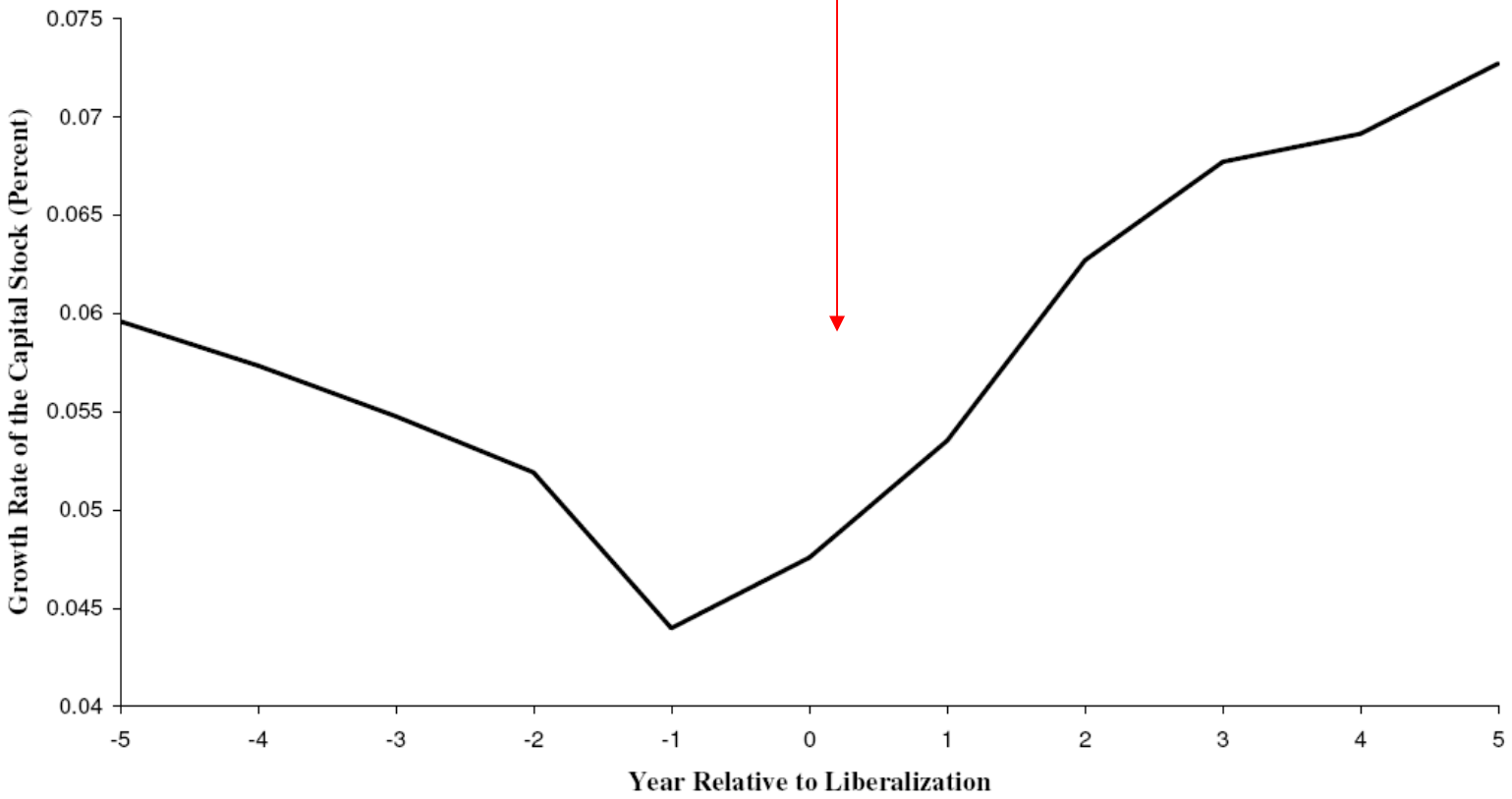

Figure 4. Investment Booms When Countries Liberalize the Capital Account .

Effect, when countries open their stock markets to foreign investors, on growth

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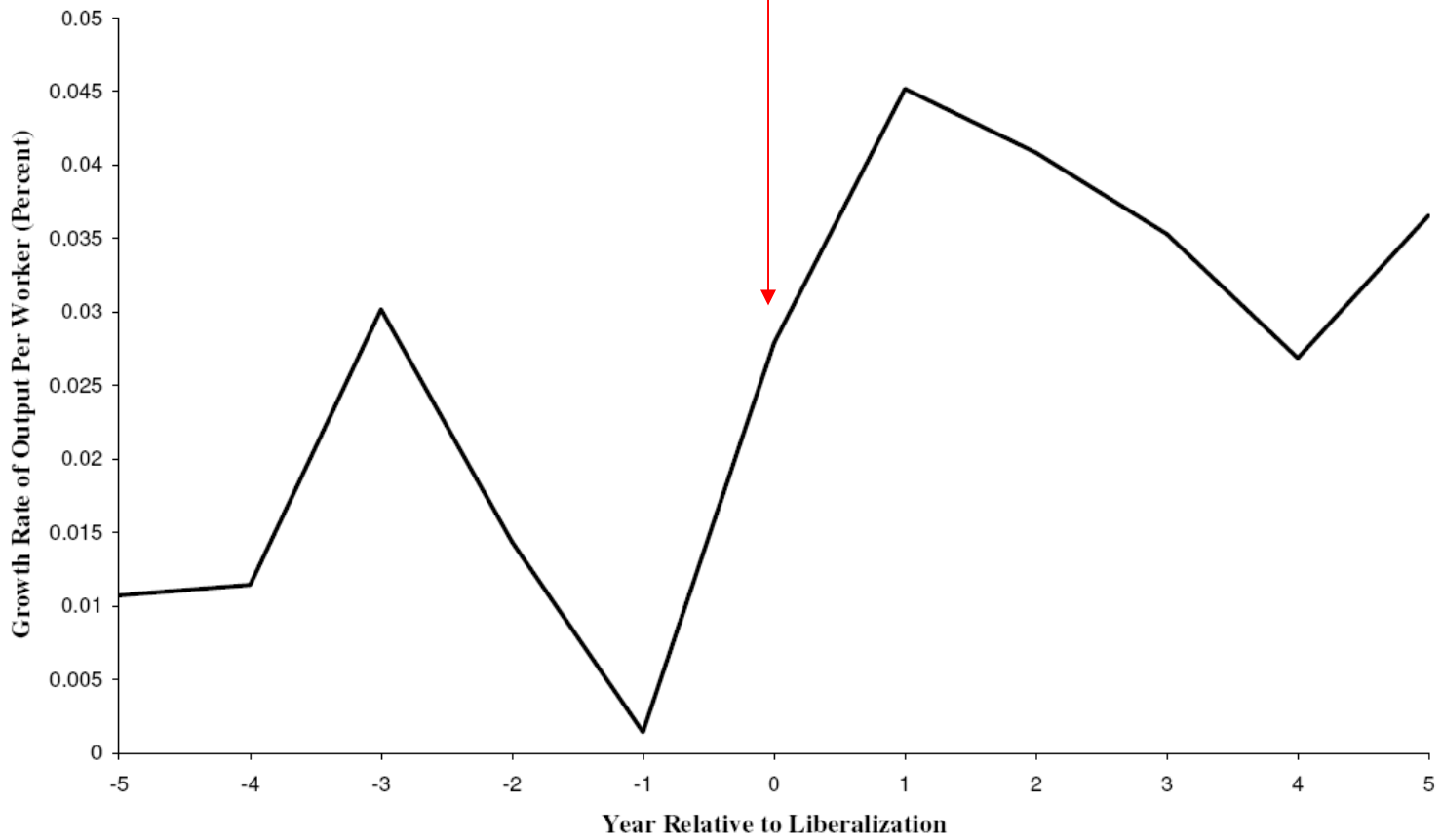

Figure 5. The Growth Rate of Output Per Worker Increases When Countries Liberalize.