International Reserves Level in Chile and a Few Thoughts on Pooling

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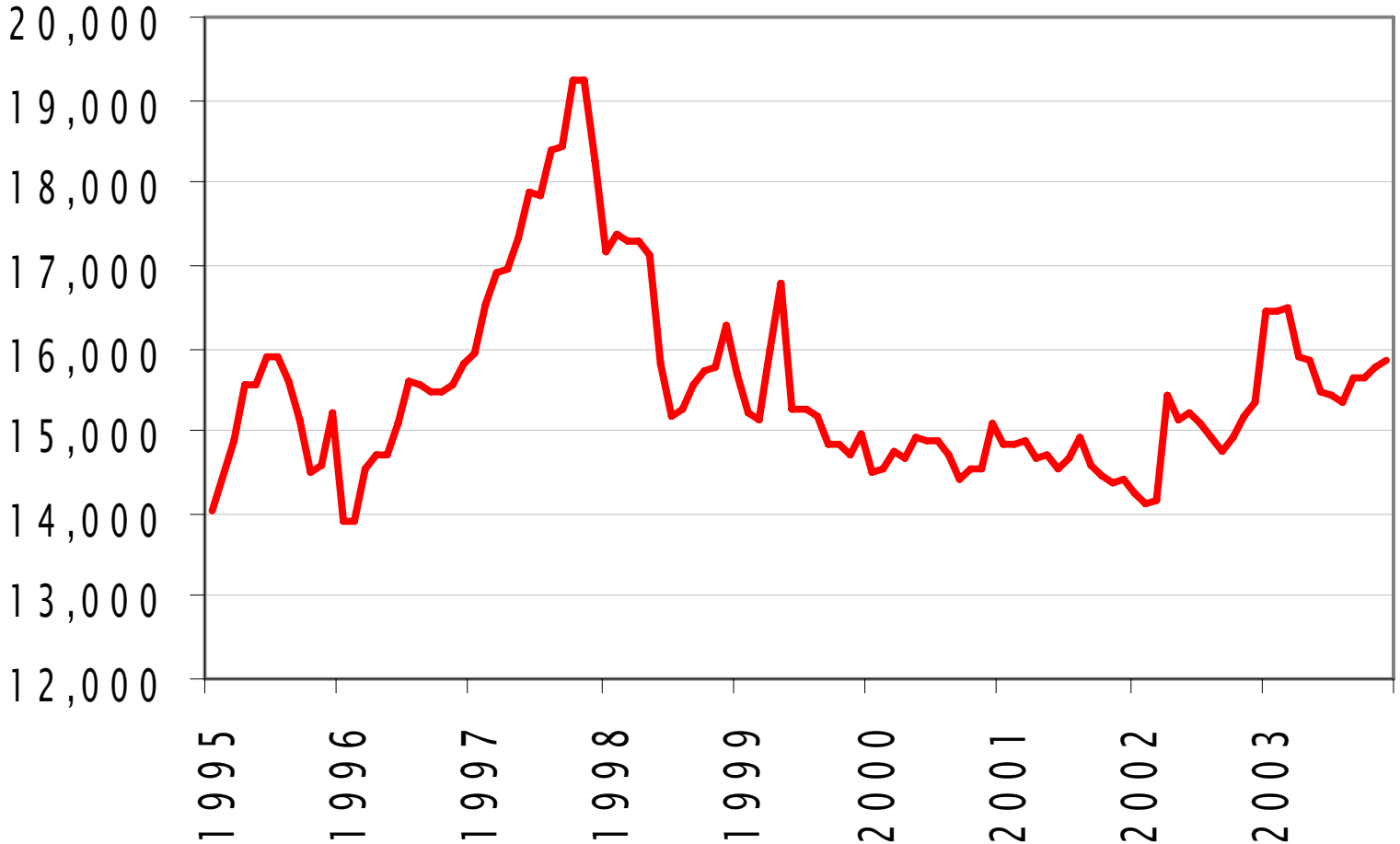
*The views expressed here are my own and do not necessarily reflect the official position of the Central Bank of Chile.

Two issues:

- 1. The (recent) Chilean experience with the IR level
  - In 2003 the CB decided to reduce its IR holdings
  - Rationale?
  - Implementation within a floating regime
- 2. IR pooling: Does it make sense within Latin America?
  - Relative size for Latam
  - Correlation of shocks
  - Sovereign risk

International Reserves in Chile: 2004-2005

- International Reserves (US$ mill. 1995-2003)



Source: Central Bank of Chile

International Reserves in Chile: 2004-2005

- In December 2003, stock of exchange rate-indexed debt of aprox. US$ 6 bn.
  - More than US$ 5 bn falling due in 2004 and 2005

- Financial cost was not small
  - Spread = 140bp vs Chilean EMBI = 90bp in November 2003
  - Rationale #1 = Cost of maintaining reserves financed with XR-indexed debt

International Reserves in Chile: 2004-2005

- At the same time: revaluation of optimal IR level for Chile
  - Cross-country comparisons and demand for IR
  - Cost-benefit analysis
  - Rationale #2 = optimal level of IR

- Good opportunity to modify IR level
  - Without the need of modifying CB Forex risk (i.e., "without XR intervention")
  - Fostering credibility of the floating regime

International Reserves in Chile: 2004-2005

- Cross country comparisons and demand for IR are not very informative
  - Fixed effects explain almost all cross country variation
  - Still, Chile appeared with "rather large" fixed effect
- Cost-benefit analysis
  - Present in CBC internal discussions for some time
  - Standard marginal analysis showed that savings from a small decline in IR outweighed the benefits of having these extra IR

International Reserves in Chile: 2004-2005

- Implementation
  - Initially, exchange auctions BCD x 1-year US$ denominated debt (BCX)
  - Since June 2004 issues of BCX-1
  - Payment with IR at maturity

- Results
  - "Own" IR declined from US$15.3 bn. in Dec. 2003 to US$12 bn in Sept. 2006
  - "Total" (incl. fiscal and bank deposits, swaps, etc.) IR *increased* from US$15.8 bn to 17.4 bn.

IR Pooling in Latam?

- Replicating Asian arrangement
  - Chiang Mai Initiative + ASEAN Swap arrangement = US$ 77 bn.
  - IR of ASEAN + 3 = US$ 2,250 bn.
  - Given Latam IR of US$ 230 bn, proportionally this is only US$ 7.9 bn.

IR Pooling in Latam?

- Correlation of shocks
  - Current account reversals (CAR)
  - Exchange rate pressures
  - By region: ASA (ASEAN Swap Arrangement), CMI (Chiang Mai Initiative), ASIA8 (8 largest Asian countries), LAC11 (MERCOSUR+Mexico)
- CAR episodes (Edwards, 2005)
  - Reduction in deficit of at least 4 pp of GDP in one year.
  - Reduction in deficit of at least 5 pp of GDP in a three-year period.
- Currency crisis episodes (ECB, 2002)
  - ERP index = weighted average of: ΔRER, Δr and ΔIR; three standard deviations or more above country average.

IR Pooling in Latam?

Current account reversal episodes (1980-2001)

region	*at least one country in a year*	*at least two countries in a year*	*at least twenty percent of members*	*at least twenty percent of GDP*
ASA	8	3	4	3
CMI	8	3	3	0
ASIA8	6	2	2	0
ASIA8 (exc. JPN&CHN)	6	2	6	2
LAC11	9	4	1	0
MERCOSUR (exc. BRA)	8	4	3	2

Currency crisis episodes (1980-2001)

region	*at least one country in a year*	*at least two countries in a year*	*at least twenty percent of members*	*at least twenty percent of GDP*
ASA	4	2	3	0
CMI	4	2	2	0
ASIA8	4	2	2	0
ASIA8 (exc. JPN&CHN)	4	2	3	0
LAC11	7	4	4	2
MERCOSUR (exc. BRA)	6	4	4	3

IR Pooling in Latam?

- Sovereign risk
  - Region's default history
  - Local currency debt default
  - Foreign currency debt default

Default episodes (mean of country members)

region	*Local and foreign currency debt (1975-2004)*	*Foreign currency debt (1824-2004)*
ASA	1	0.7
CMI	0.8	0.8
ASIA8	0.5	0.9
ASIA8 (exc. JPN&CHN)	0.7	0.7
LAC11	2.2	6.7
MERCOSUR (exc. BRA)	2.3	6.6

Source: Standard & Poor's (2004).

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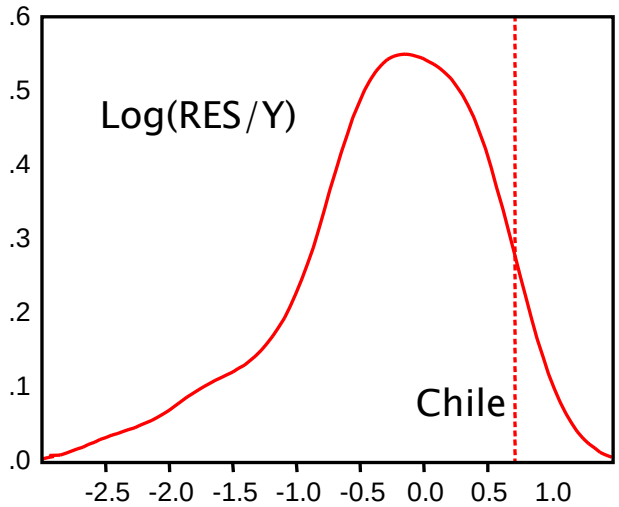
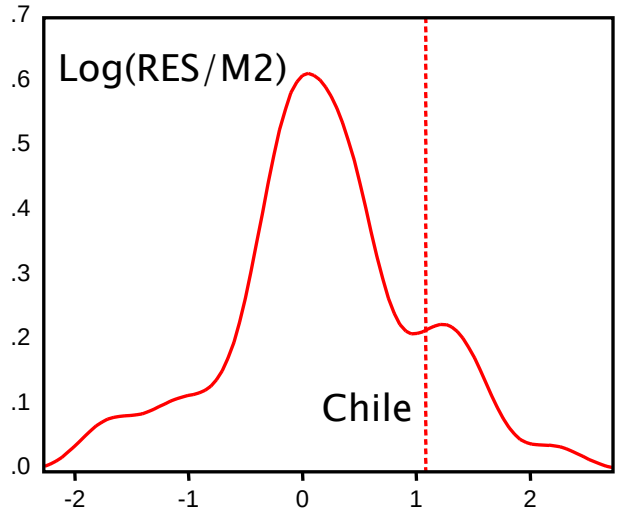
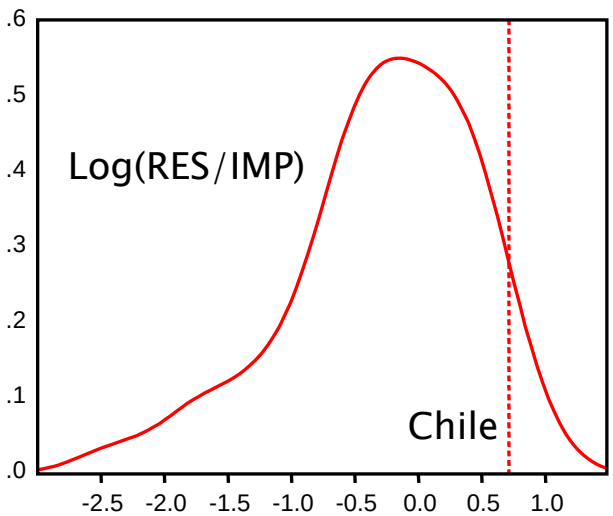
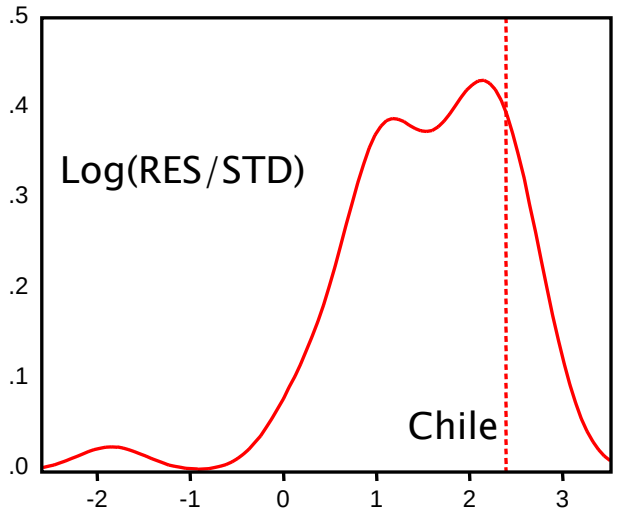
Demand for IR (fixed effects distribution)









Cost-Benefit Analysis

- Marginal cost of holding reserves:
  - +/- sovereign spread
  - Observable
- Marginal benefit:
  - Smaller probability of crisis $\times$ cost of crisis
  - Several papers give broad estimates
- Interior solution?
  - Non-linear effect of IR on probability of crisis (and sometimes spread)
  - Could also consider risk aversion and other refinements