Capital Flows: Negotiating the Trilemma and Sequencing Openness

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Financial Sector Developments, Issues and the Way Forward

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Outline

1. Introduction & Motivation
2. India's Approach to Capital Account Openness
   - Evolution of Various Flows
3. Extent of India's Capital Account Openness
4. India's Tryst with the Trilemma
   - Quantifying the Trilemma
   - Indian Experience
5. Conclusion

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- Emerging markets have experienced high volatility in capital flows, largely due to factors outside their control. ▸ Capital Flows
- Such sharp swings create several problems for these countries, and have rekindled the debate on management of international capital flows.
- A country wants to actively manage international capital flows for two main reasons.
  - Unbridled capital flows tend to exacerbate financial fragilities, which can lead to a crisis.
  - Creates difficulties in macroeconomic management – "Trilemma"
- To counter these issues a number of countries have introduced additional measures regulating the flow of international capital.
- In recent years even the IMF has also shown a shift in its doctrine. ▸ IMF

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Sequencing of Capital Account Liberalization

- In the neo classical framework, capital flows contribute to growth mainly by supplementing domestic savings.
- In the endogenous growth framework, capital flows influence growth through spillovers in the form of technology, skills, introduction of new products, increased efficiency of the domestic financial markets and improved resource allocation.
- Since the spillovers and externalities associated with different forms of capital flows would be different, a pecking order approach to the composition of capital flows is required.
- India prioritized certain kinds of flows and agents in the liberalization process.
  - Shift away from debt to non-debt creating flows.
  - Use of multiple instruments, including quantitative limits, price based measures and administrative measures.
  - Restricting short-term debt for trade transactions.
  - Avoiding excessive foreign currency borrowing by domestic entities.
  - Prudential regulations to prevent dollarization of balance sheets of financial sector intermediaries.
  - Gradual liberalization of permissible avenues for outward investments.
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Evolution of Various Flows

- The policy for FDI inflows has been significantly liberalized over the past two decades.
- FDI inflows in India increased from $4.5 billion in 2003-04 to over $38.9 billion in 2008-09. ▸ FDI Flows
- India liberalized outbound FDI in an incremental manner and in recent years there has been a jump in outbound FDI.
- India has been more cautious in terms of liberalizing portfolio investment with separate investment caps on sub accounts of FIIs, individual FII and aggregate FII investment in a company.
- Portfolio investment has also witnessed a strong increase since 2004-05 and reached a peak in 2010-11. ▸ Portfolio Flows
- India has been more conservative in terms of liberalizing debt flows with both borrowers and lenders having to satisfy eligibility criteria, minimum maturity period, cap on all-in-cost payments and end use restrictions.
- Despite these restrictions ECB inflows have increased from $5 billion in 2003-04 to over $30 billion in 2007-08. ▸ ECBs

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Extent of India's Capital Account Openness

- Given the cautious and calibrated approach, India's extent of liberalization has been relatively low compared to other emerging markets.
- In terms of *De Jure* openness measures there has been a significant increase among emerging markets but India has not kept pace with this liberalization process. De Jure Openness
- India has also been on the lower end of the spectrum when openness is measured according to the volume of capital flows. De Facto Openness
- China, which started as lagging behind India in the 1980s, has outstripped India during the last two decades.
- However, India's ranking improves considerably when one looks at Non Debt creating flows. Non Debt

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India's Tryst with the Trilemma

Definition (Trilemma)

A country can simultaneously achieve only two of the following three objectives: free capital flows, an independent monetary policy and a fixed exchange rate.

- India, as other countries, seeks to attain these three objectives with varying degrees.
  - Capital flows aid growth by providing external capital to sustain an excess of investment over domestic savings or by financing the current account deficit.
  - A competitive exchange rate helps Indian exports, a large part of which is labour intensive.
  - An independent monetary policy stabilizes the economy in the face of domestic and exogenous shocks.
- Focus on this issue by following the methodology outlined in Aizenman et al. (2010).

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Quantifying the Trilemma

- Monetary independence is measured as the inverse of the annual correlation of the monthly interest rates between India and the United States.

$$MI = 1 - \frac{corr(i, i^*) - (-1)}{1 - (-1)} \tag{1}$$

- The index for Exchange Rate Stability is calculated using the annual standard deviations of the monthly exchange rate between India and the United States.

$$ERS = \frac{0.01}{0.01 + \sigma(\Delta(\epsilon))} \tag{2}$$

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- It is the actual quantum of flows that creates a conflict between monetary independence and exchange rate rigidity and not just the regulations.
- We use the de facto measure based on the ratio of absolute value of net capital flows to GDP.

$$CapOpen = \frac{|CapFlows|}{GDP} \tag{3}$$

- A possible way to manage the dichotomy between monetary independence and exchange rate stability, over the short-run, is by accumulating or decumulating reserves.

$$\Delta Res = \frac{|Intervention|}{GDP} \tag{4}$$

- We use to diamond charts to look at the Trilemma and measure monetary independence, exchange rate rigidity, capital account openness and reserves on the four vertices. Example

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- We use to diamond charts to look at the Trilemma and measure monetary independence, exchange rate rigidity, capital account openness and reserves on the four vertices. Example

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- Aizenman et al (2010) use *de Jure* measure developed in Chinn and Ito (2008) to calculate the extent of capital account openness.
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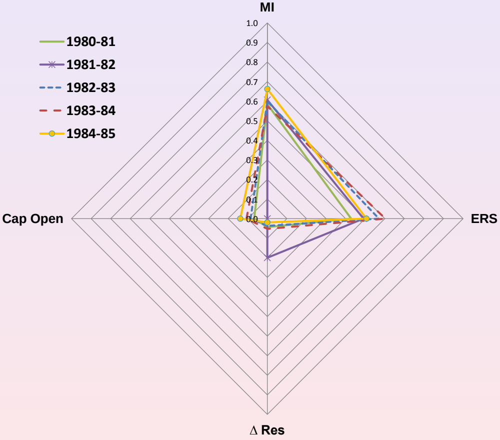
Outline

The Early 1980s: Limited Openness

- Limited extent of international capital movement.
- Allowed policymakers to retain both monetary independence and exchange rate stability.
- Limited degree of international reserve accumulation.



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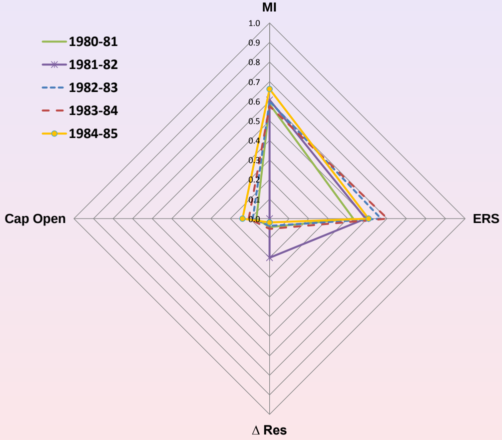

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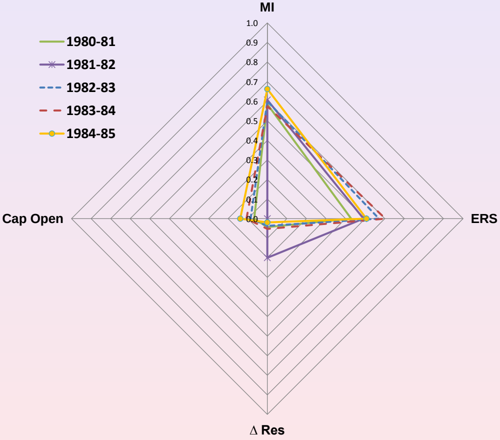
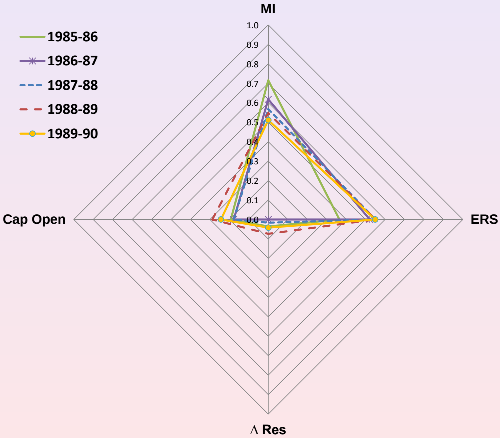


The Late 1980s: Deterioration in Macroeconomic Health

- The current account deficit increased due to partial liberalization of imports, a spike in oil prices due to the Gulf crisis and economic deterioration in major export markets.
- Some of the capital controls were relaxed, and the current account deficit started being financed by non-resident remittances and borrowings at commercial terms.
- While medium and long-term debts more than quadrupled, short-term external debt increased to $6 billion during this period compared to reserve holdings of only $2 billion.
- These steps did not prevent the deterioration of the balance of payments and a full blown crisis broke out in 1991.
- The crisis was resolved by a combination of devaluation and borrowing from the IMF. India initiated a move towards a path of economic reform.



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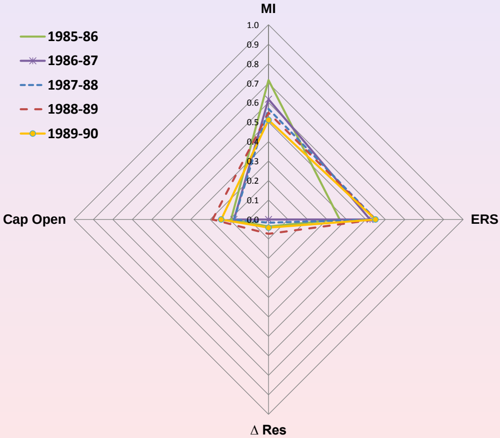

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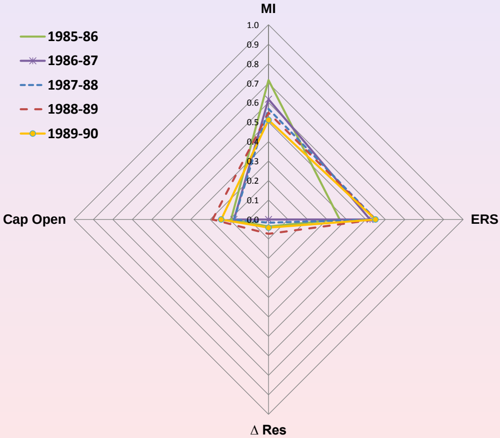

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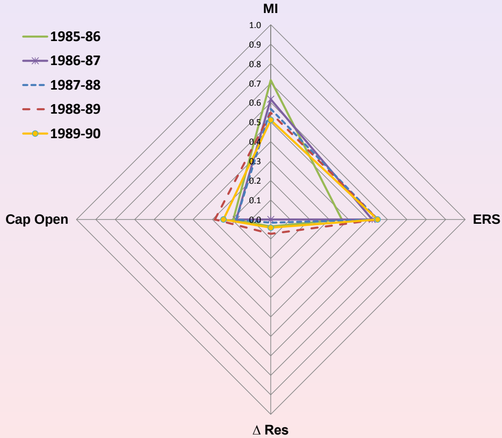

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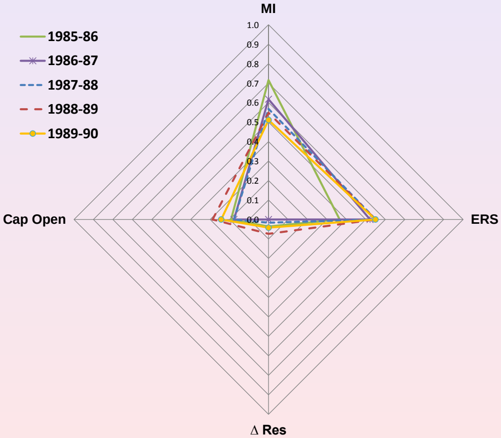

1993 to 1995: Confronting the Trilemma

- Both push and pull factors led to a surge in capital inflows.
- Policymakers faced a choice of either allowing nominal exchange rate to appreciate or allowing the money supply to change.
- The Indian authorities chose exchange rate rigidity over monetary independence.
- The Rupee-Dollar exchange rate remained steady at Rs. 31.4 per dollar from Apr 1993 to Aug 1995 leading to an ERS of 1.
- The RBI intervened heavily causing NFA to rise significantly reflected in ΔRes rising to 0.48 in 1993-94 and 0.32 in 1994-95. ▸ Trilemma
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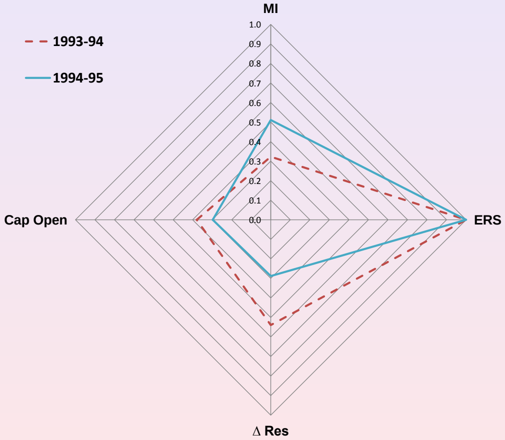

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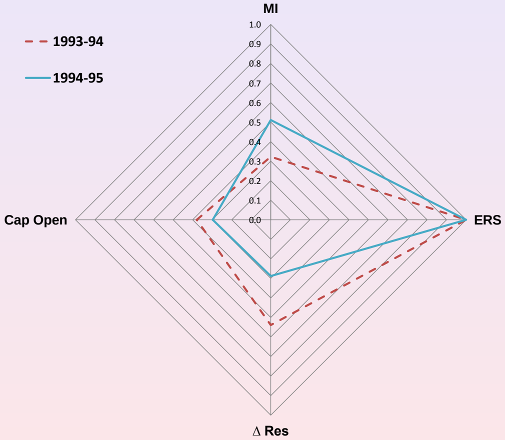

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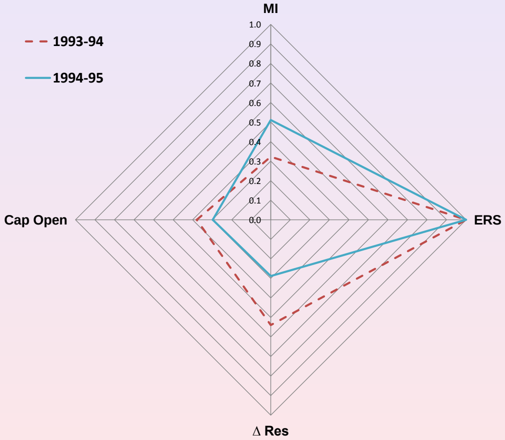

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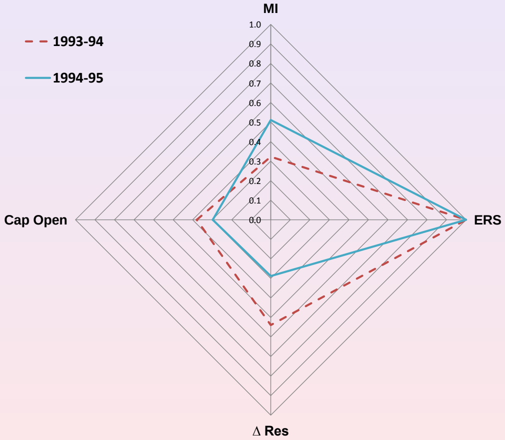

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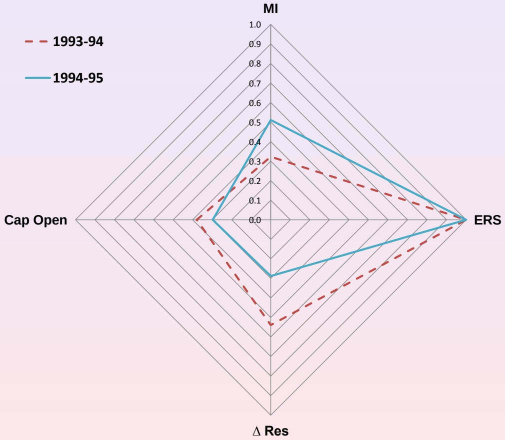

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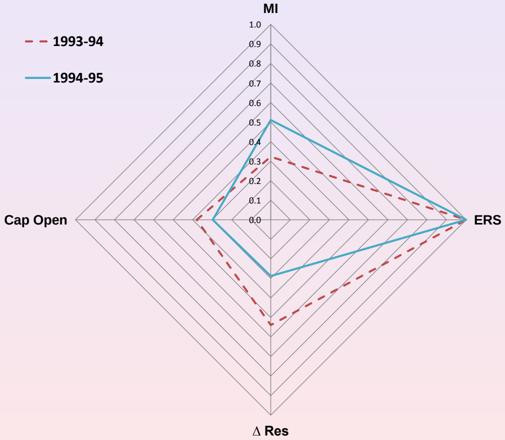
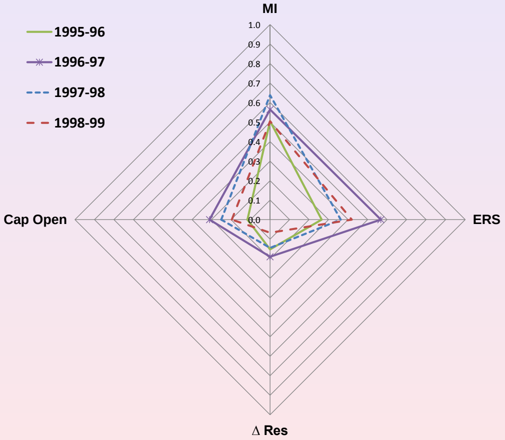


Late 1990s: Moderation of Capital Flows

- The situation reversed in the second half of the 1990s with a series of crisis in Latin America and East Asia leading to a reduction in capital inflows.
- Domestic events also exacerbated the reduction in capital inflows.
- These events led to sporadic downward pressure on the Indian rupee during this period, in response to which the RBI allowed the rupee to depreciate moderately with the ERS index indicating a relatively low value during 1995-96 to 1998-99, ranging between 0.27 and 0.41.
- Flexibility in the exchange rate and the limited volume of capital flows allowed the policymaker to reassert monetary independence.



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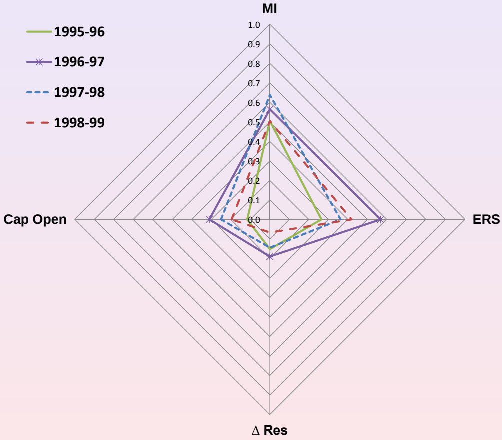

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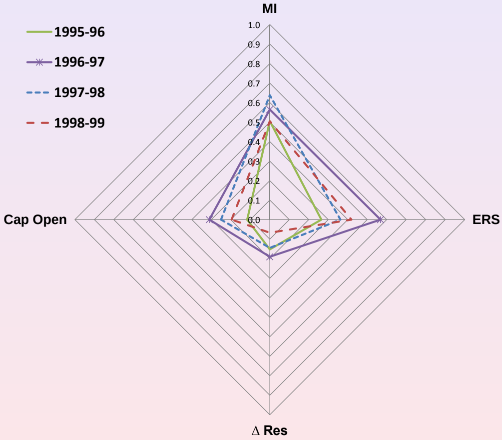

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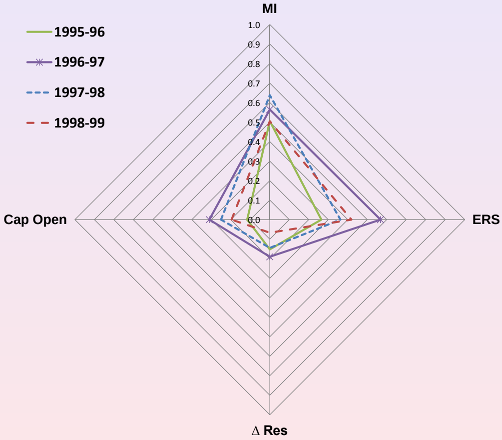
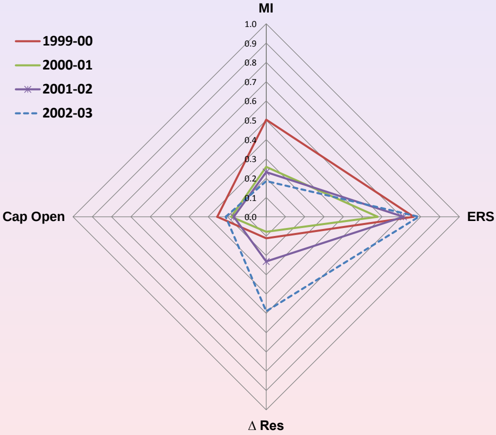


Early 2000s: Signs of Capital Flows Revival

- The decline in capital inflows continued in early 2000s and showed signs of revival only in 2002-03.
- The exchange rate was managed by engineering a moderate depreciation in these years to achieve a competitive REER. The ERS index ranged between 0.57 and 0.79.
- Revival of capital flows and a current account surplus was countered by by active intervention by the RBI in the foreign exchange market, as it accumulated $40 billion of reserves.
- Despite attempts to sterilize these intervention by depleting stock of NDA, there was a steady increase in the growth rate of reserve money. ▸ Management
- Monetary Independence was relinquished to a great extent.



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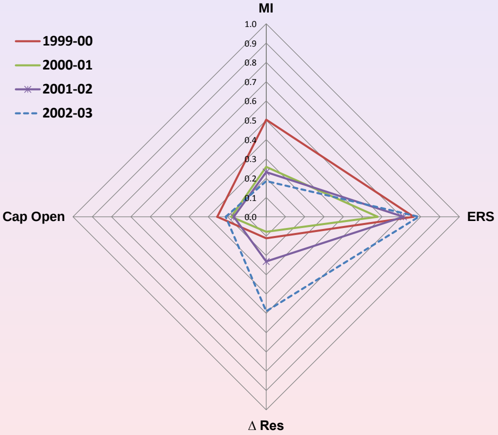

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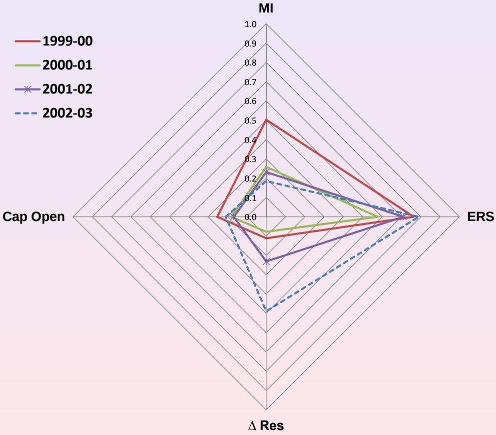

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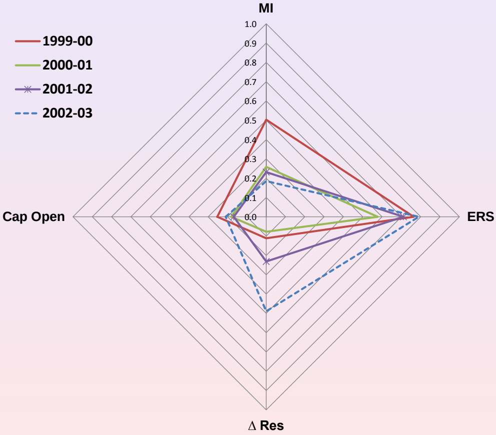

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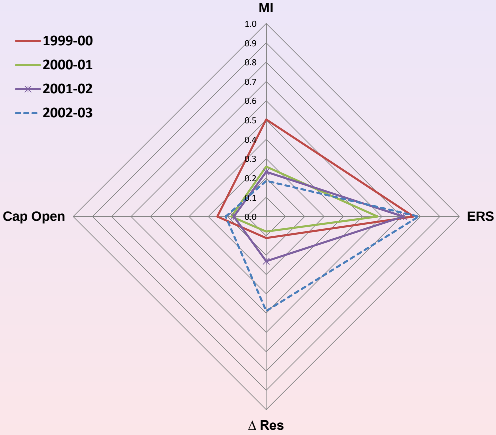
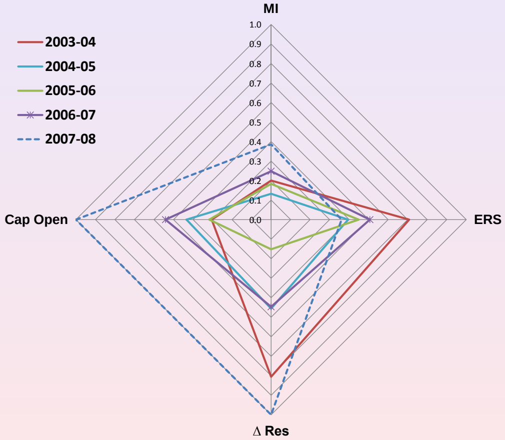


Surge in Capital Flows

- The policy trade offs got exacerbated since 2003 due to a surge in capital inflows with the Cap Open index rising to 0.54 in 2006-07 and 1 in 2007-08.
- The RBI attempted to achieve an 'intermediate regime', and to prevent the Rupee from appreciating rapidly heavily intervened in the foreign exchange market resulting in the ∆Res index rising 0.43 in 2006-07 and 1 in 2007-08.
- While the RBI sterilized some of this intervention, by end 2003 it ran out of government bonds, and in January 2004 introduced a new instrument.
- By August 2005, outstanding MSS bonds rose to Rs. 0.71 trillion, and doubled to Rs. 1.4 trillion by December 2007.



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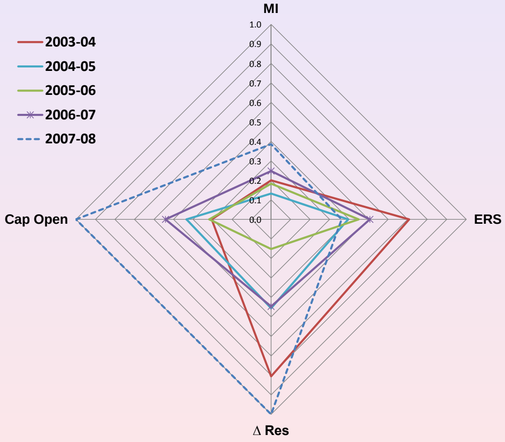

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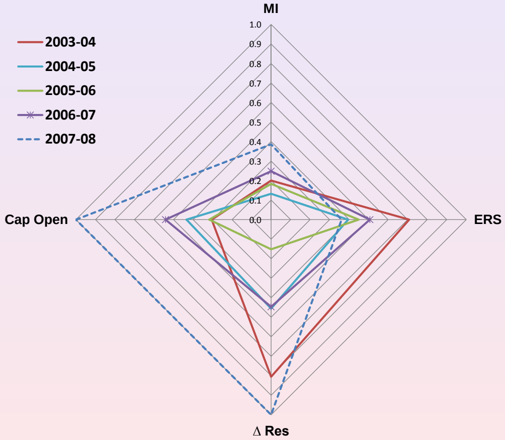

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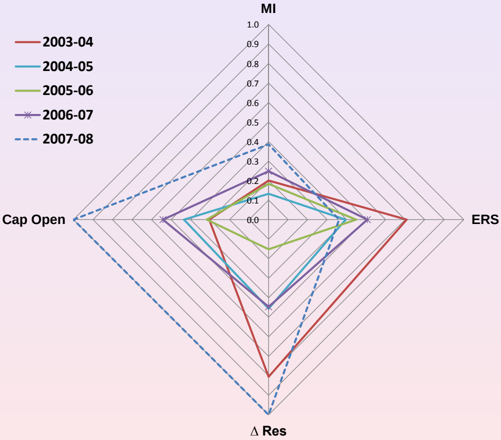

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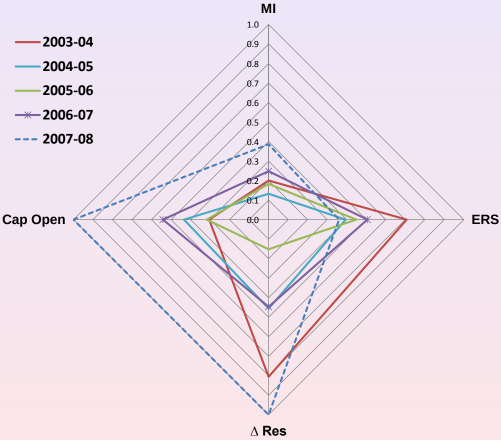
- The Rupee was allowed to appreciate by 18% between mid 2005 and end 2007. ▸ Management



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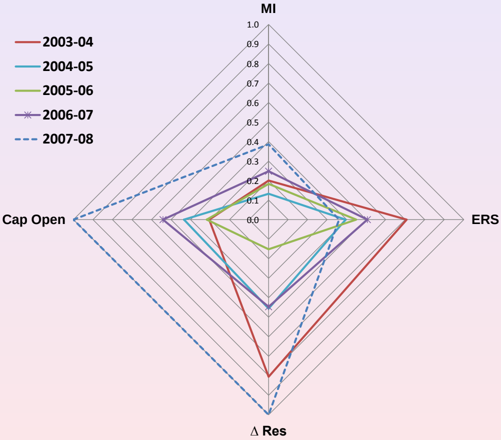

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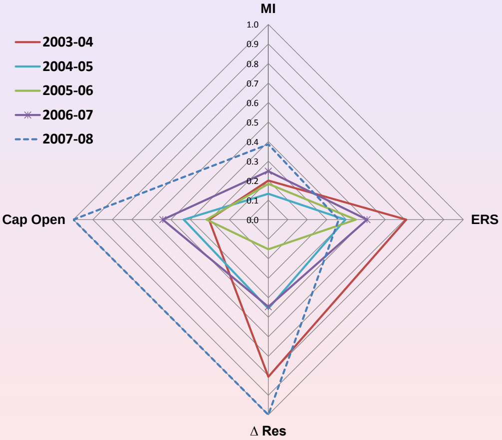

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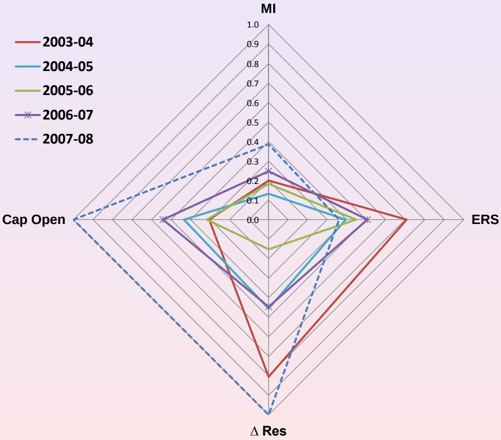
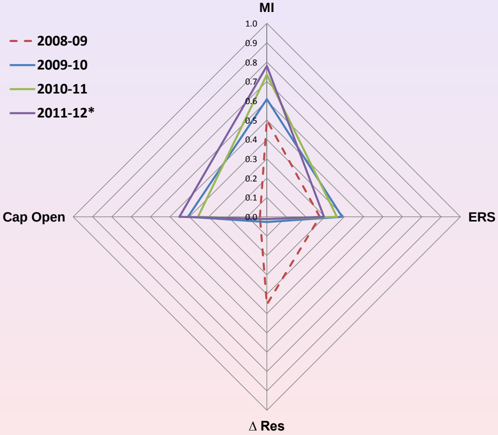
- The rising cost of sterilization forced RBI to incompletely sterilize the capital flows, which led to a rise in money supply growth rate. ▸ Management
- The RBI tried to control the growth in money supply through other instruments.
- Measures restricting capital inflows and encouraging outflows were announced.
- The Rupee was allowed to appreciate by 18% between mid 2005 and end 2007. ▸ Management



Global Financial Crisis and Subsequent Revival

- The outbreak of the sub-prime crisis in the US and the flight to safety, capital started flowing out of the Indian economy since late 2007 with the Cap Open index dropping to 0.04 in 2008-09.
- Reserves were put into use to stem the outflow and manage pressure on the exchange rate with ΔRes index being at 0.42.
- The Rupee was allowed to depreciate by 21.2% resulting in the ERS index dropping to 0.27 in 2008-09.
- Since mid 2009, resumption of capital flows pushed the Cap Open index to 0.43 during 2009-10 and led to RBI imposing certain restrictions on inflow of capital.
- The Rupee was allowed to appreciate by nearly 17.5% between March 2009 and April 2010 resulting in the ERS index dropping to 0.35.



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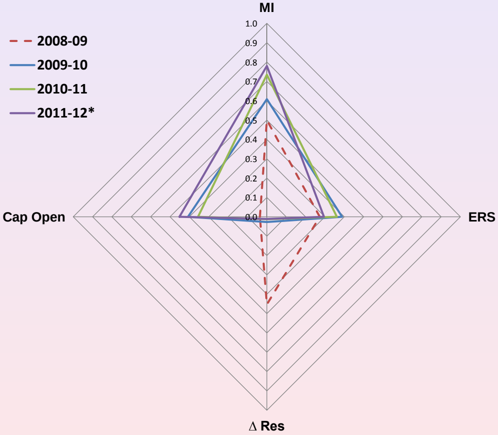

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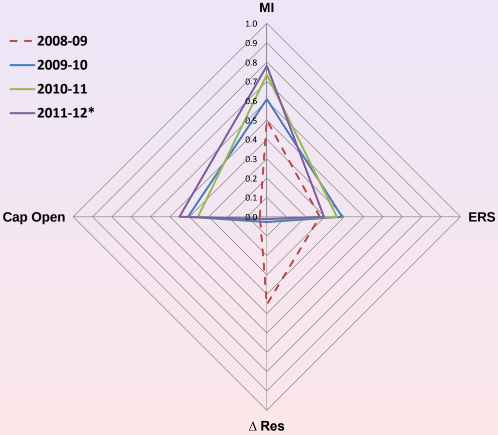

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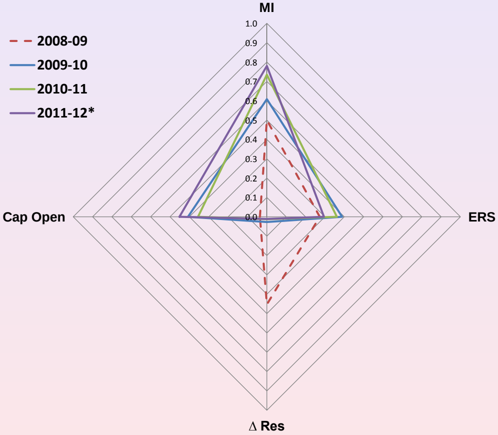

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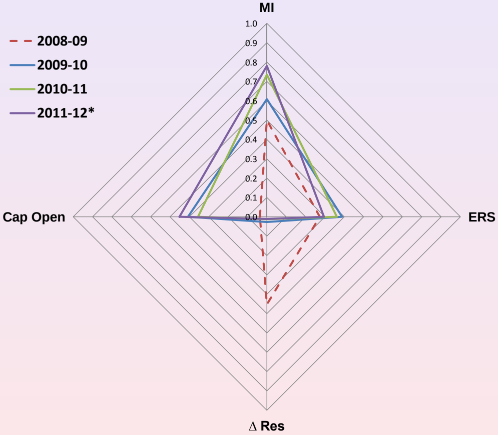

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- The RBI has refrained from intervening in the forex market resulting in ΔRes $\approx$ 0.
  - Prevent interest rate from rising given the borrowing requirements of the government.
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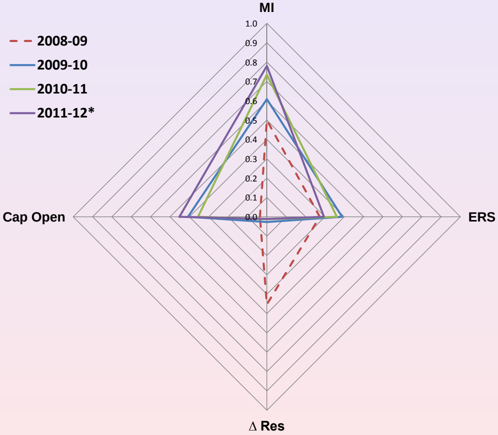
  - Use a strong currency to curb inflationary pressures.
- Domestic and external factors contributed to outflow of portfolio investment since May 2011, though FDI and debt flows have remained strong.
- The Rupee depreciated by 7% during the first half of 2011-12 leading to an ERS index of 0.29.
- Owing to greater exchange rate flexibility the RBI was able to assert greater monetary independence with a rise in the MI index to 0.78 in 2011-12.



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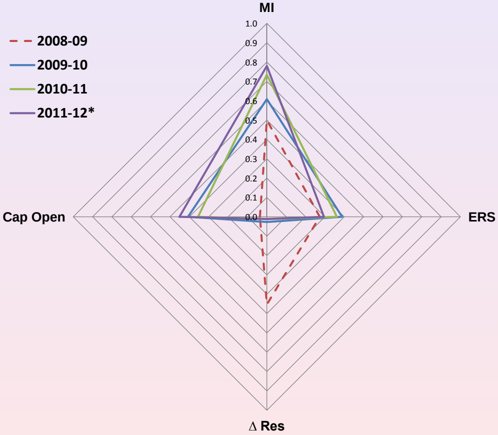

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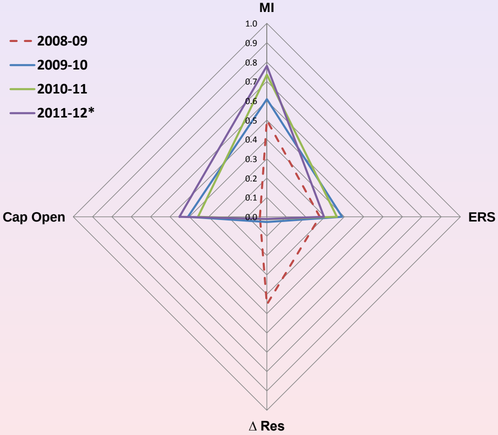

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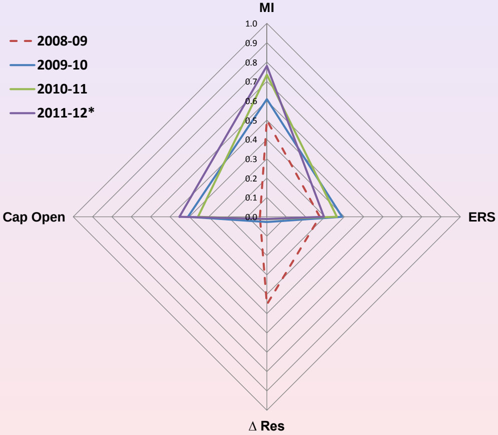

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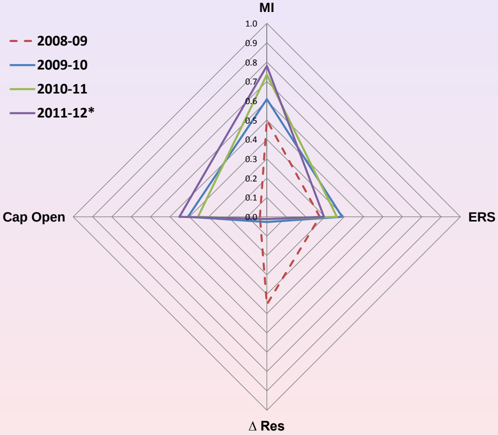

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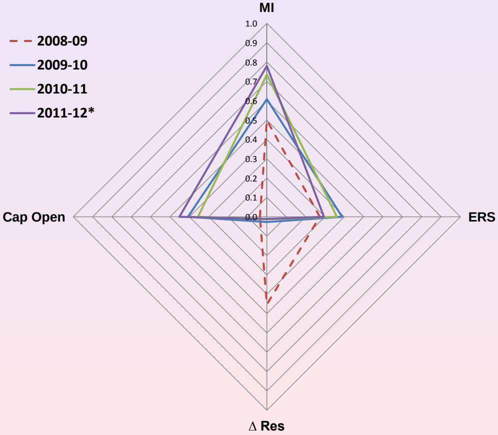

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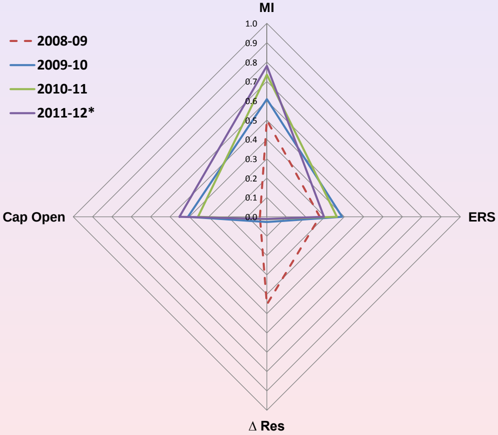

Policy Choices under the Trilemma

- It is evident that India has juggled the various policy choices under the trilemma according to the macroeconomic needs.
- Did India faced trade-offs among the various policy choices?
- The absence of a functional form of the nature of trade-offs under the trilemma can be an obstacle.
- Following Aizenman et al. (2010) we test the validity of the linear framework.

$$2 = \alpha MI_t + \beta ERS_t + \gamma CapOpen_t \tag{5}$$

- A relatively high high goodness of fit indicates that the linear specification explains well the trade-offs among the policy dimensions.

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- However, rising capital flows and a preference for exchange rate stability led to a drop in monetary independence, which bottomed out in 1993-94.
- There was a reversal of trend in the mid 1990s with a resurgence of monetary independence associated with a dip in exchange rate stability.
- With the RBI targeting the REER, the late 1990s and the early 2000s witnessed a secular decline in monetary independence.
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- The extent to which the Trilemma has been binding in the Indian context can be inferred from $\hat{\alpha}MI+\hat{\beta}ERS+\hat{\gamma}CapOpen$. Evolution
- A linear specification entails that the cumulative sum can not exceed 2.
- We do find that the sum of the predicted values lies below 2 through most of our period.
- With the RBI targeting the REER, the late 1990s and the early 2000s witnessed a secular decline in monetary independence.
- There have been periods when the Trilemma has been underutilized.
  - The BOP crisis in 1991 resulted in a sharp drop in the predicted values in 1991-92 and 1992-93 as there was a sharp drop in all the three indices.
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Conclusion

- India has adopted a gradualist and calibrated approach towards integration with the global capital market.
- In recent years, India has resorted to the multiple instrument approach while dealing with capital flows and adopted an intermediate regime juggling capital flows, exchange rate stability and monetary independence.
- This has helped India to manage the policy choices under Trilemma as well as alter the composition of its liabilities.
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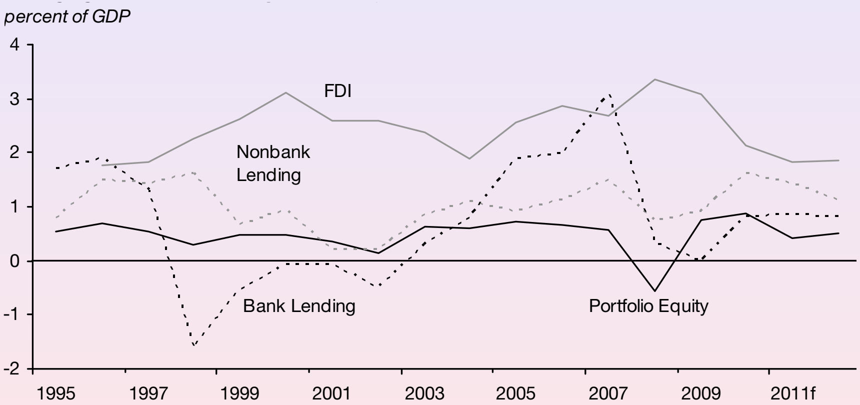
THANK YOU !!

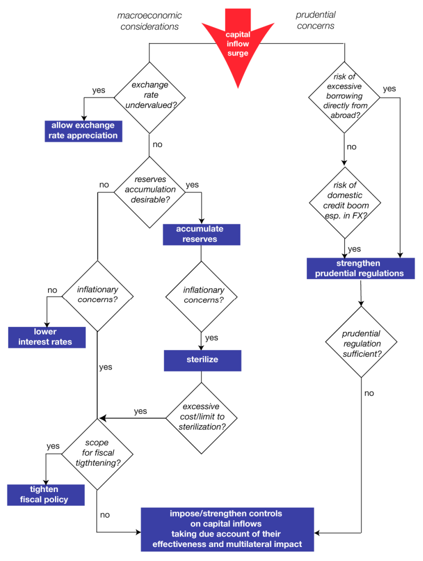
Appendix Outline

Global Capital Flows to Emerging Markets



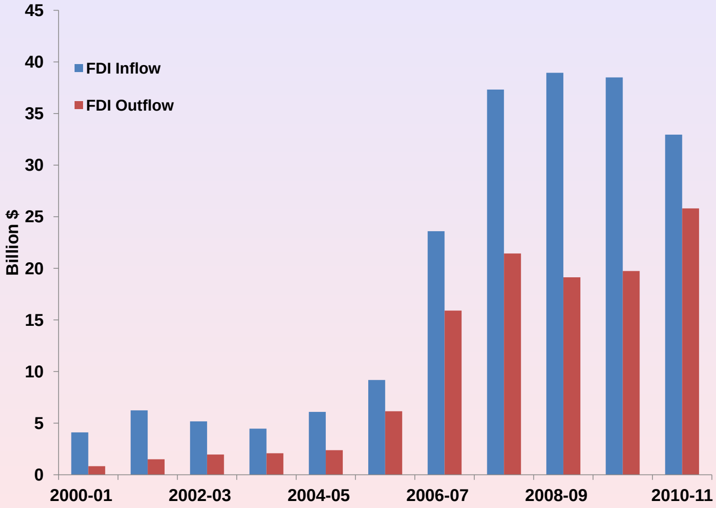
Source: Institute of International Finance ▸ Capital Flows

Coping with Surges in Capital Flows



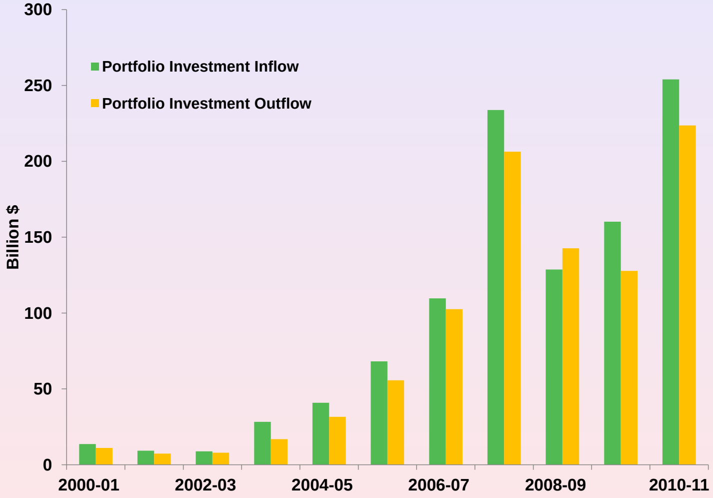
IMF

FDI Flows



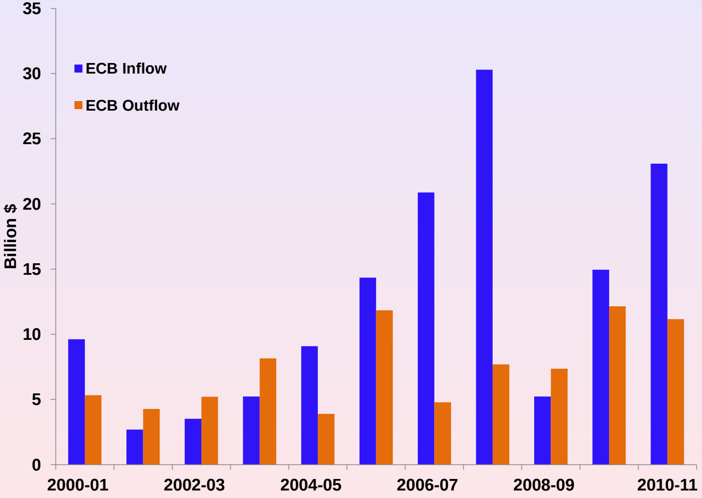
FDI Flows

Portfolio Flows



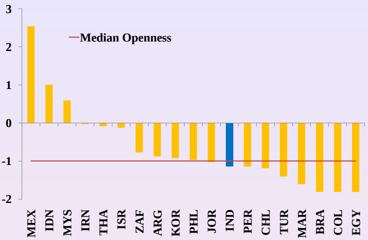
▸ Portfolio Flows

ECBs

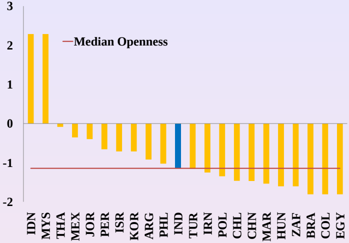

35
30
25
20
15
10
5
0
Billion $
ECB Inflow
ECB Outflow
2000-01
2002-03
2004-05
2006-07
2008-09
2010-11

ECBs

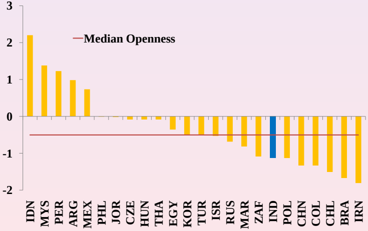
Cross Country Comparison of De Jure Openness



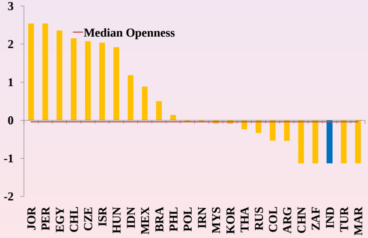
(a) 1970s



(b) 1980s



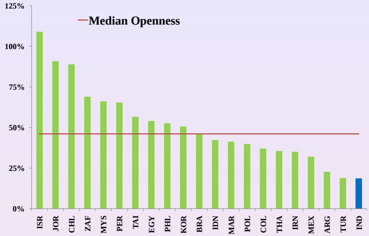
(c) 1990s



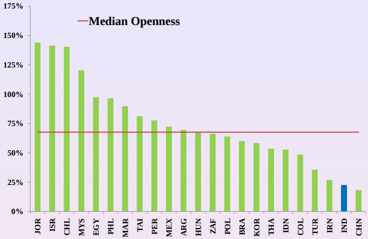
(d) 2000s

Comparison

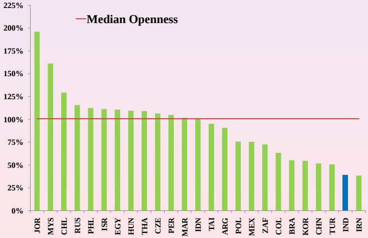
Cross Country Comparison of De Facto Openness



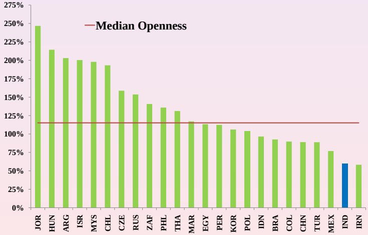
(a) 1970s



(b) 1980s



(c) 1990s

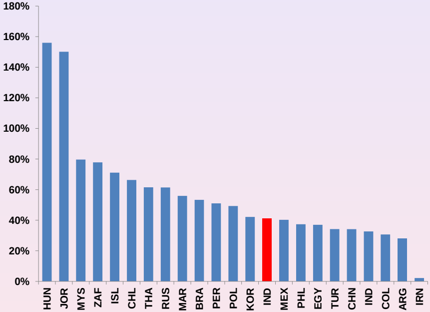


(d) 2000s

▸ Comparison

Non Debt Creating Flows

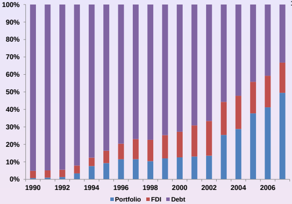
(a) 1993



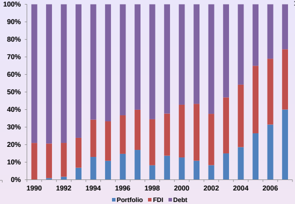
(b) 2007

▸ Comparison

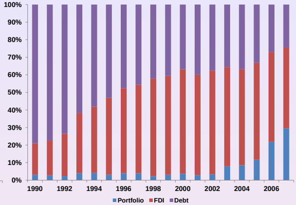
Composition of Liabilities



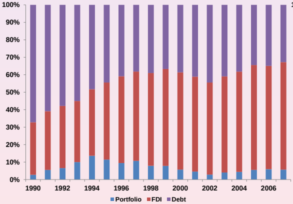
(a) India



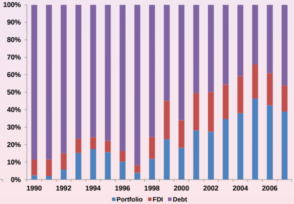
(b) Brazil



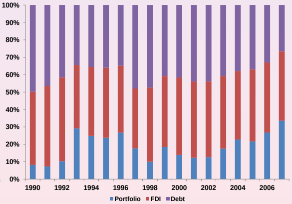
(c) China



(d) Chile



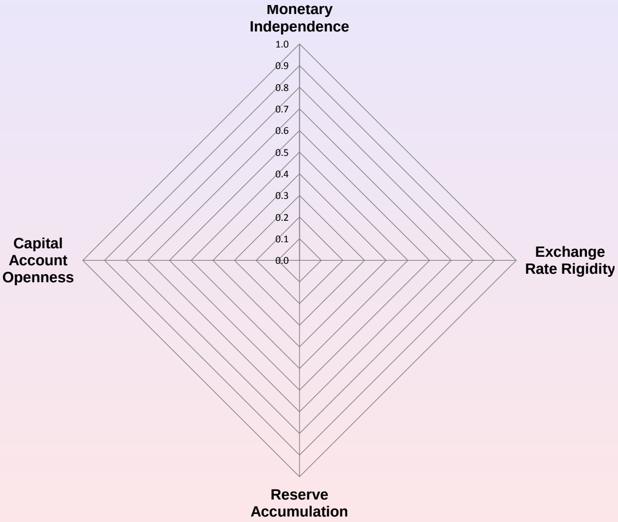
(e) Korea



(f) Malaysia

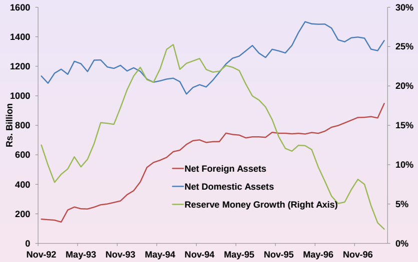
Composition

Quantifying the Trilemma

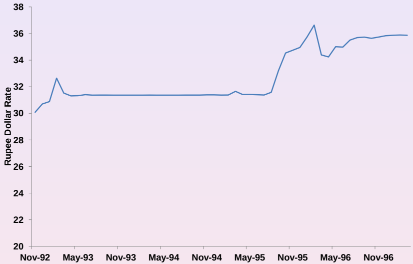


Trinity

1993-1995: Intervention & Sterilization



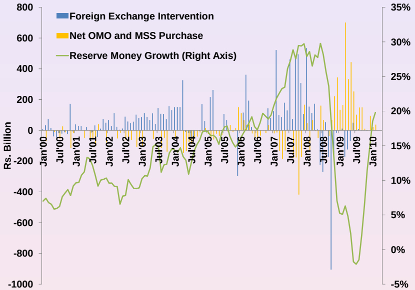
(a) Intervention & Sterilization



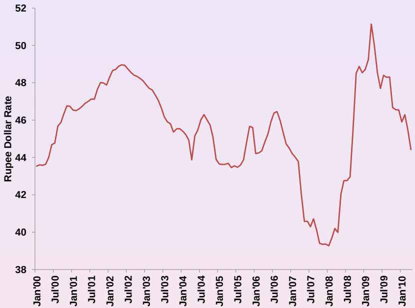
(b) Exchange Rate

Trilemma

2000-10: Intervention & Sterilization



(c) Intervention & Sterilization



(d) Exchange Rate

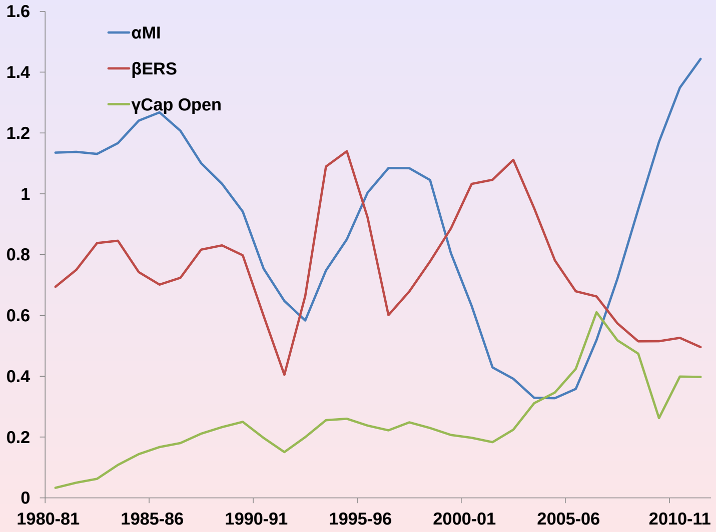
Trilemma Trilemma Trilemma

Policy Choices

	1980-81 to 2011-12	1980-81 to 1991-92	1992-93 to 2011-12	1980-81 to 1997-98	1998-99 to 2011-12
Monetary Independence	1.906***	2.319**	2.013***	2.829***	1.439***
	[6.860]	[2.582]	[4.881]	[8.185]	[4.402]
Exchange Rate Stability	1.510***	0.763*	1.517***	0.224*	2.194***
	[5.041]	[1.616]	[4.496]	[1.642]	[9.316]
Capital Account Openness	0.986***	1.961**	0.909**	1.731*	0.840**
Adj R-squared	0.953	0.970	0.931	0.965	0.974

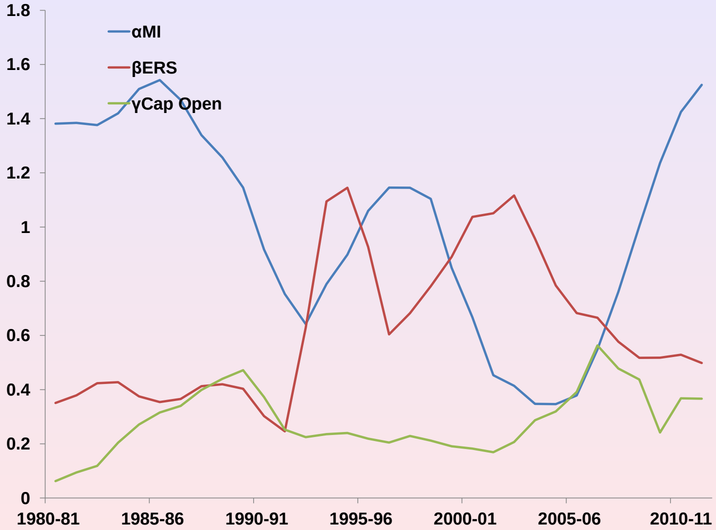
Policy Choice

Evolution of Policy Choices: Entire Period



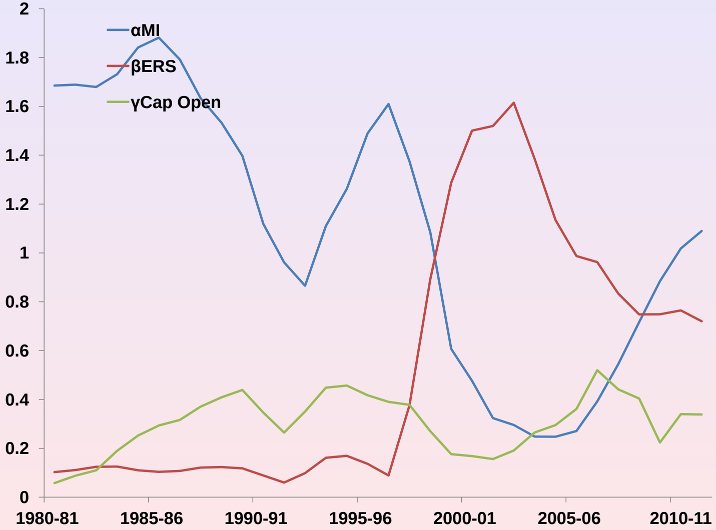
Policy Choices

Evolution of Policy Choices: BOP Crisis



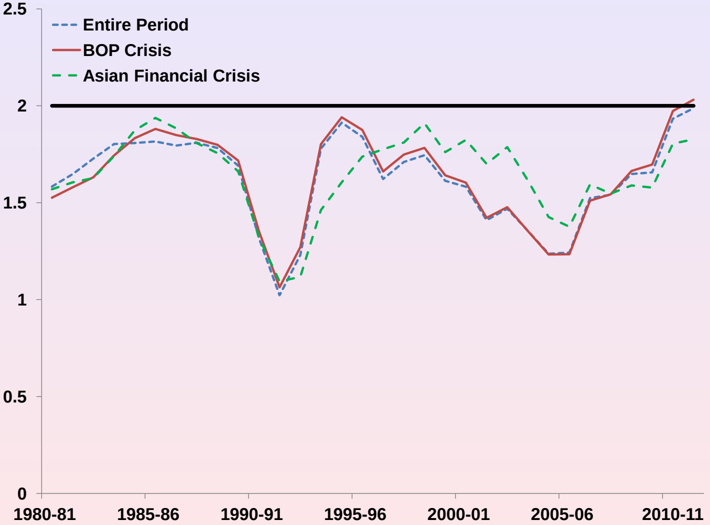
▸ Policy Choices

Evolution of Policy Choices: Asian Crisis



▸ Policy Choices

Cumulative Policy Orientation under Trilemma



▸ Trilemma