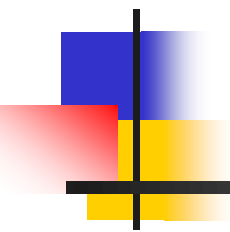


Surfing the Waves of Globalization: Asia and Financial Globalization in the Context of the Trilemma (NBER WP #15876)



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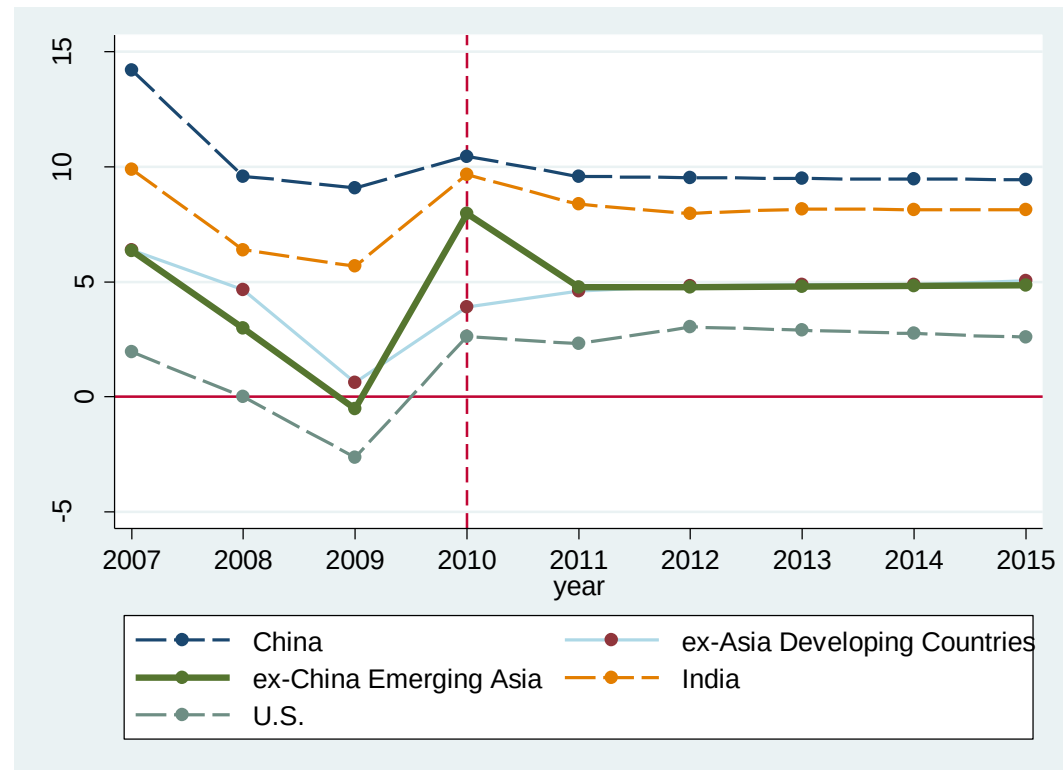
NIPFP-DEA Research Program

Delhi, India

March 15-16, 2011

Resilient Asia – in the aftermath of the “Great Recession”

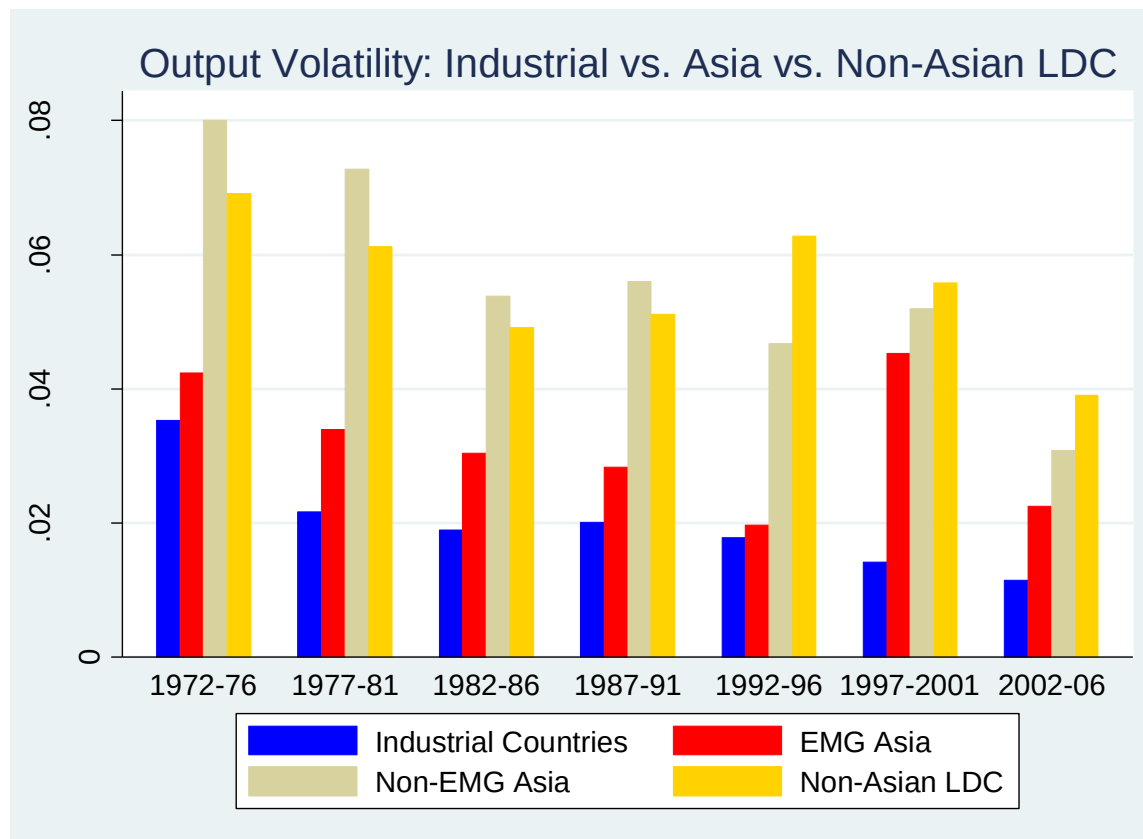
- The world experienced the most severe and persistent recession since the Great Depression
- The global financial crisis dented the Asian growth
- Even recession-afflicted economies showed quick and robust V shape recovery
- Asia's quick and robust recovery is not unprecedented
 - i.e., Post-Asian crisis



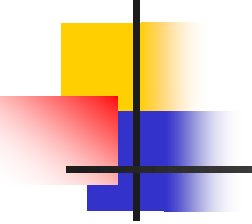
Source: IMF World Economic Outlook, October 2010

Stable Asia (?)

Figure 1: Output Volatility, 1972 – 2006

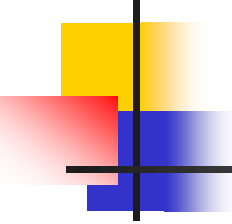


Notes: Output volatility is measured by five-year standard deviations of the growth rate of per capita output. The data for per capita output are extracted from the PWT database.



Keys to Asian macroeconomic stability?

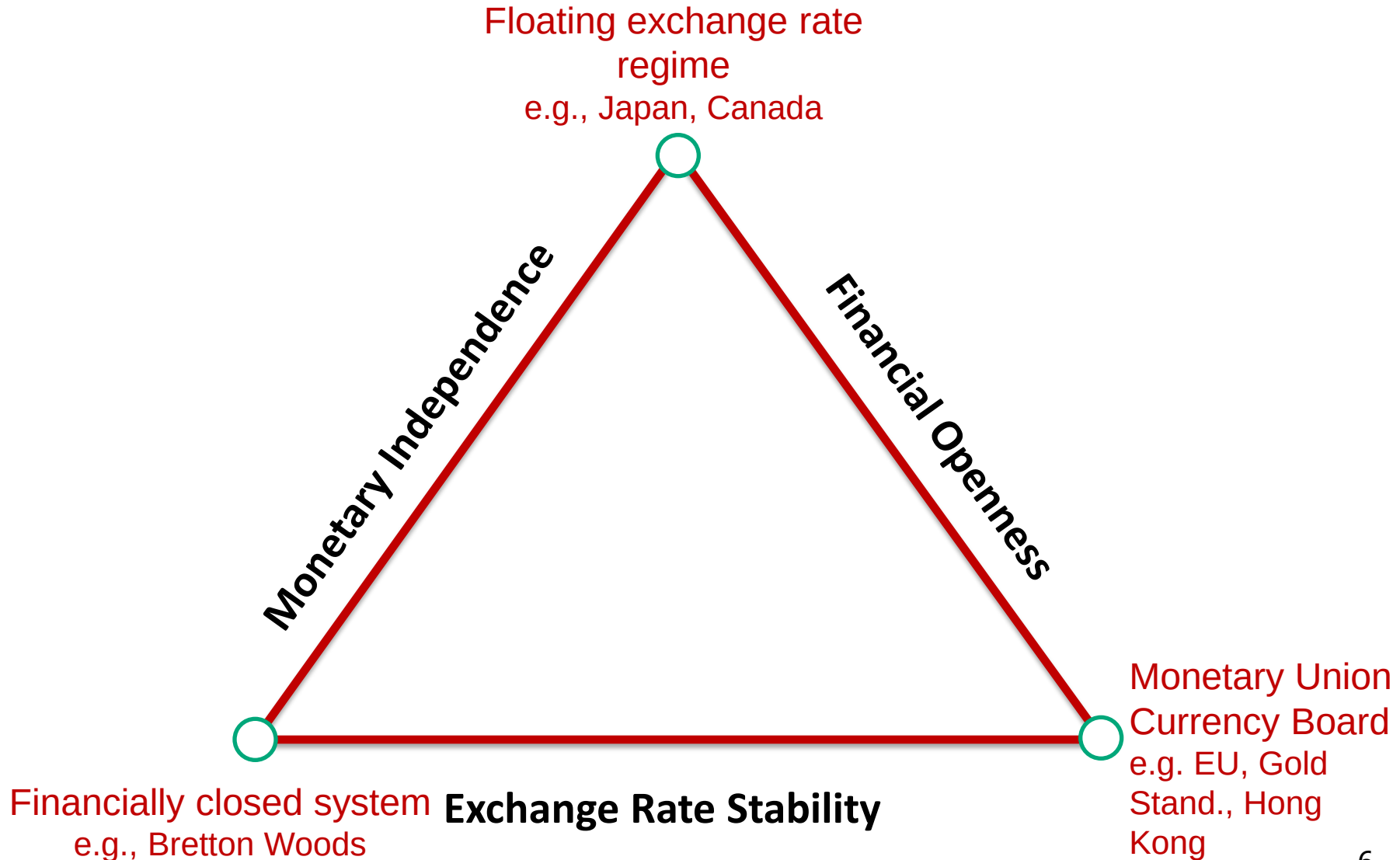
- Asian economies may have adopted int'l economic policies that allow them to experience better macroeconomic performance
 - This paper evaluates the international macroeconomic policies of developing and emerging market economies in the context of the “trilemma hypothesis” and
 - examines if there is any peculiarities among Asian economies that allow them to be better-prepared to cope with globalization



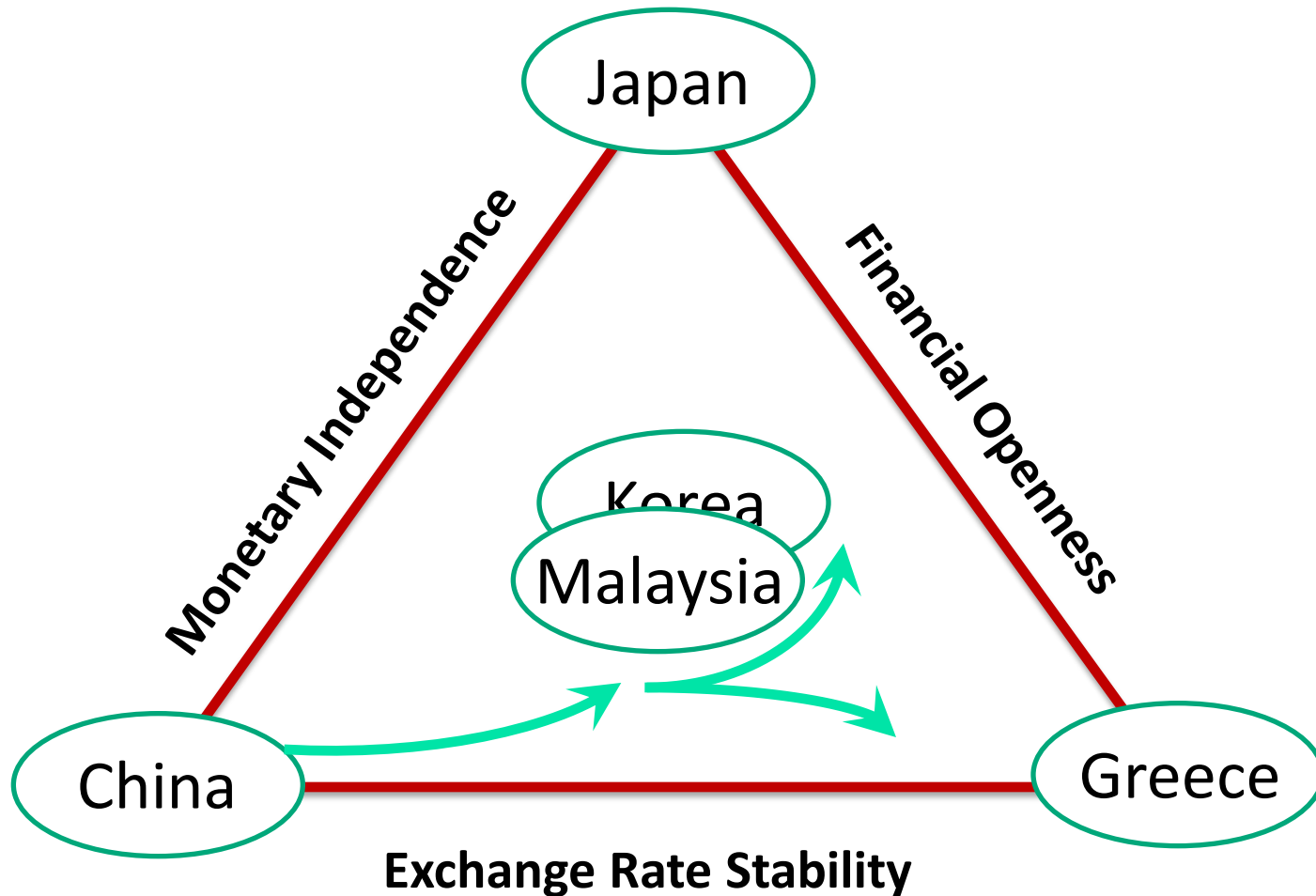
The Trilemma Hypothesis

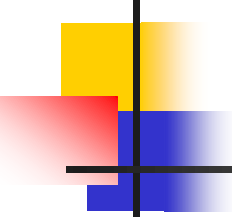
- A country simultaneously may choose any two, but not all, of the following three:
 - monetary independence
 - exchange rate stability
 - financial integration

The Trilemma Hypothesis



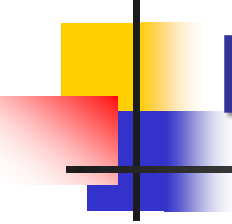
The Trilemma Hypothesis





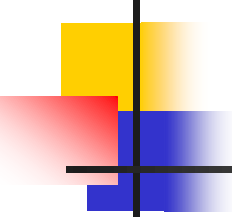
The Trilemma Hypothesis

- Very powerful
- Explains policy constraints
- But countries don't follow it's "corner solutions"
- A goal: identify the varying locations of countries in the trilemma triangle



Metrics for the trilemma

- In Aizenman, et al. (2008), we
 - developed the “trilemma indexes” for more than 170 countries for the period of 1970 through 2006,
 - showed that policy configurations based on the trilemma have changed over time, and
 - Showed empirically that the trilemma is “binding”
- Major economic events have caused structural changes in countries’ preferences for trilemma configurations



Trilemma Indexes – Aizenman, Chinn, and Ito (2009)

Monetary Independence

$$MI = 1 - \frac{\text{corr}(i_i, i_j) + 1}{2}$$

where i refers to home countries and j to the base country.

Exchange Rate Stability

$$ERS = \frac{0.01}{0.01 + \text{stdev}(\Delta(\log(\text{exch_rate})))}$$

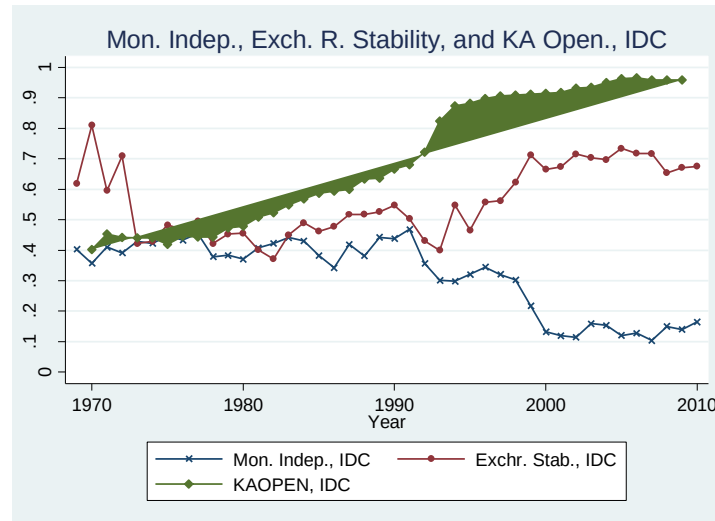
Financial Openness

KAOPEN = Chinn-Ito (2006) index of capital account openness, based on the information in IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions*

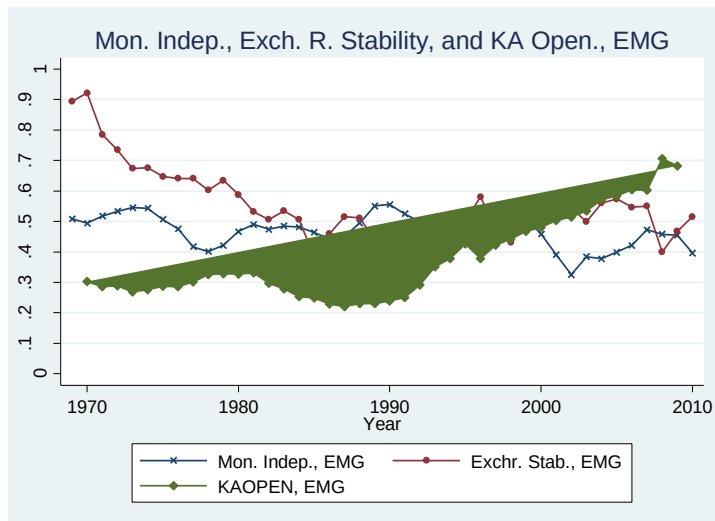
All three indexes are normalized b/w 0 and 1. For all indexes, higher values indicate higher extents of achievement in each of the three policy goals.

Figure 3: Development of the Trilemma Configurations Over Time

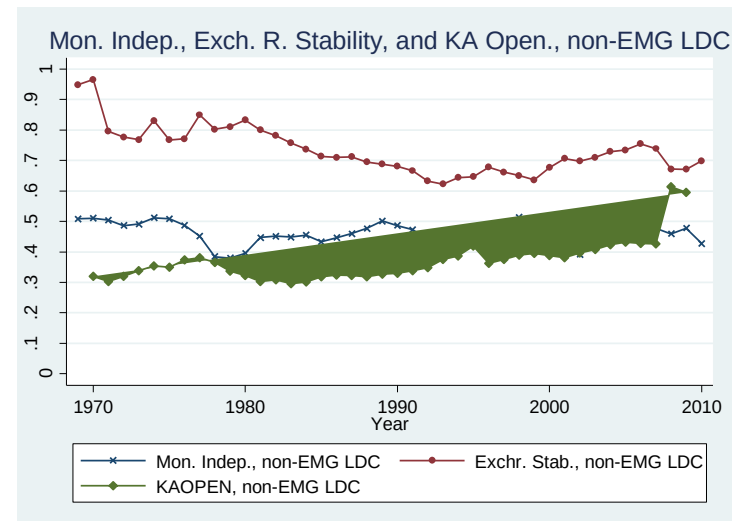
(a) Industrialized Countries

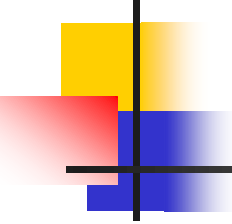


(b) Emerging market economies



(c) Non-Emerging Market Developing Countries



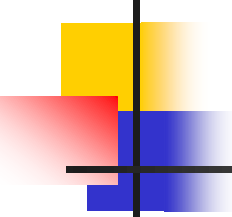


A key result of our project

$$1 = a_j MI_{i,t} + b_j ERS_{i,t} + c_j KAOPEN_{i,t} + \varepsilon_t \quad \text{where } j \text{ can be either IDC, ERM, or LDC.}$$

- The weighted sum of the three indexes adds up to a constant, R^2 about 0.9, all the a , b , c coefficients are positive.

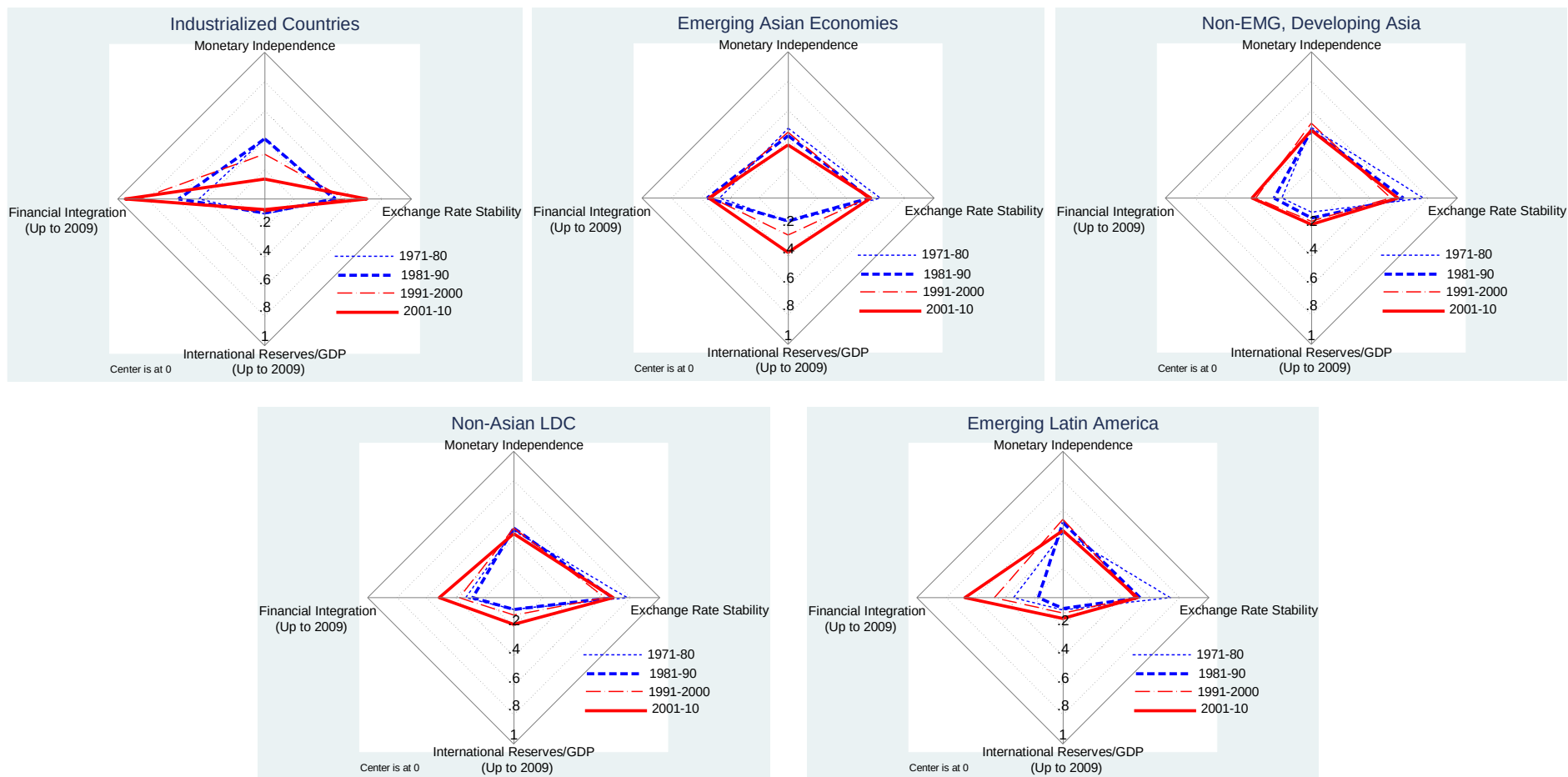
http://econ.ucsc.edu/faculty/aizenman/Aizenman_Chinn_Ito_NBER0409.pdf

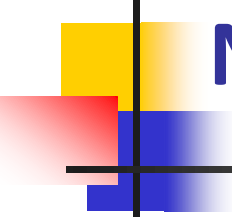


Trends 1990s-2000s

- Greater financial integration and lower exchange rate stability of EMs.
- Growing exposure of developing countries to capital flights, and deleveraging crises.
- The large costs associated with these crises added financial stability to the Trilemma policy goals, modifying the Trilemma framework into the policy Quadrilemma.
- EMs coupled their growing financial integration with accumulation of reserves, as means of self-insuring their growing exposure to financial turbulences.

Figure 5: The “Diamond Charts”: Variation of the Trilemma and IR Configurations Across Different Country Groups

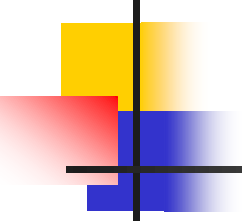




Normative aspects of the trilemma

- Relate the trilemma variables to macro outcomes: output growth volatility, inflation volatility, and inflation rates
- Use a comprehensive dataset composed of more than 100 countries in 1972 – 2006
- Estimate for LDC and EMGs

$$y_{it} = \alpha_0 + \alpha_1 TLM_{it} + \alpha_2 IR_{it} + \alpha_3 (TLM_{it} \times IR_{it}) \\ + ExtFin_{it} B + X_{it} \Gamma + Z_t \Phi + D_i \Theta + \varepsilon_{it}$$



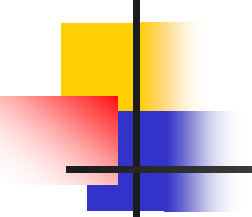
Limitations

- We infer associations [not causality]
- A unique macro history, there is no way to control the “macro experiment”
- At best, the econometric results provide results consistent with *MF*’s theory.

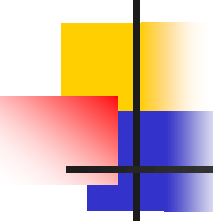
All these limitations were stated, much better and concisely, by Ed Leamer

Journal of Economic Perspectives—2010

Tantalus on the Road to Asymptopia



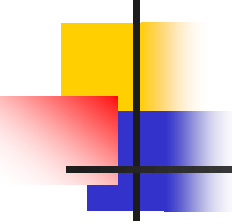
“We economists trudge relentlessly toward Asymptopia, where data are unlimited and estimates are consistent, where the laws of large numbers apply perfectly and where the full intricacies of the economy are completely revealed. But it’s a frustrating journey, since, no matter how far we travel, Asymptopia remains infinitely far away. Worst of all, when we feel pumped up with our progress, a tectonic shift can occur, like the Panic of 2008, making it seem as though our long journey has left us disappointingly close to the State of Complete Ignorance whence we began.”



Normative aspects of the trilemma

$$y_{it} = \alpha_0 + \alpha_1 TLM_{it} + \alpha_2 IR_{it} + \alpha_3 (TLM_{it} \times IR_{it}) \\ + ExtFin_{it} B + X_{it} \Gamma + Z_t \Phi + D_i \Theta + \varepsilon_{it}$$

- Robust regressions with non-overlapping 5-year panels
- y_{it} is either
 - output volatility (measured as the 5-year standard deviations of the per capita real output growth rate);
 - inflation volatility (as the 5-year standard deviations); or
 - the level of inflation (as 5-year averages)
- TLM_{it} is a vector of any *two* of the three trilemma indexes (MI , ERS , $KAOPEN$).
- IR_{it} is the level of IR as a ratio to GDP
- $(TLM \times IR)$ is a vector of the interactions b/w TLM and IR
- $ExtFin_{it}$ is a vector of variables on external finances: net FDI inflows, net portfolio inflows, and net bank lending inflows



Normative aspects of the trilemma

$$y_{it} = \alpha_0 + \alpha_1 TLM_{it} + \alpha_2 IR_{it} + \alpha_3 (TLM_{it} \times IR_{it}) \\ + ExtFin_{it} B + X_{it} \Gamma + Z_t \Phi + D_i \Theta + \varepsilon_{it}$$

X_{it} – Macroeconomic control variables

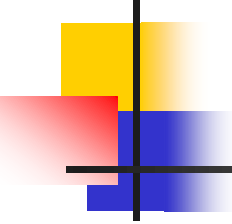
- relative income (to the U.S.);
- trade openness;
- the TOT shock;
- fiscal procyclicality;
- M2 growth volatility;
- private credit creation as a ratio to GDP as a measure of financial development;
- inflation level or volatility.

Z_t – Global shocks

- change in U.S. real interest rate;
- world output gap; and
- relative oil price shocks.

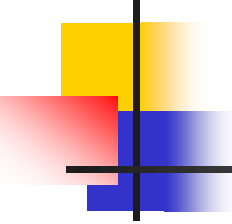
D_i – Characteristic dummies

- regional dummies
- crisis dummies
- Dummy for oil exporters



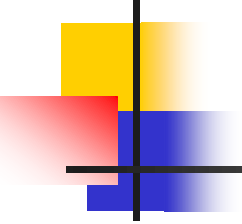
What Do We Find?

- Greater monetary independence is associated with smaller output volatility
- Greater exchange rate stability is associated with greater output volatility for emerging market countries, though its volatility increasing effect can be mitigated by holding IR greater than 13-18% of GDP
 - China (ERS=0.97, IR=0.40), associated with mitigation of 1.4–1.7 ppts
- Higher net bank lending or portfolio inflows is associated with higher output volatility – the “hot money” argument



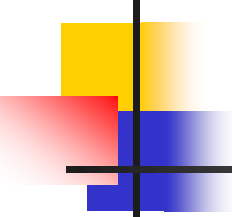
Other Findings

- Little significant findings for the estimation on inflation volatility
- Higher monetary autonomy is associated with higher inflation
- Higher exchange rate stability is associated with lower inflation
- Financial openness may help a country to experience lower inflation
- Higher ERS or KAOPEN but high IR is associated with *higher* inflation.
Possible interpretation: limits to sterilized FOREX intervention?



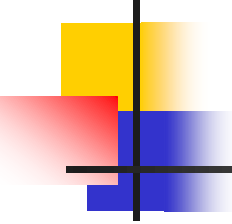
Through What Channel Do the Policy Configurations Affect Output Volatility?

- To answer this question, we repeat the estimation by replacing the dependent variable with
 1. Real exchange rate volatility
 2. Investment volatility
- Results shown in Tables 3-1, 3-2



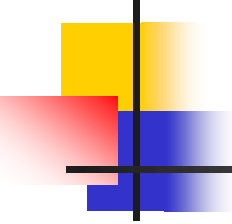
What Do We Find?

- **Greater monetary independence** could help reduce investment volatility, but could lead to higher volatility if $IR > 15-20\%$ of GDP.
- A higher degree of **exchange rate stability** could lead to more volatile investment. But if $IR > 14-28\%$ of GDP, it could reduce investment volatility.
- **Greater exchange rate stability** is associated with more stable real exchange rate movement, though **greater monetary independence** could destabilize real exchange rate movement.



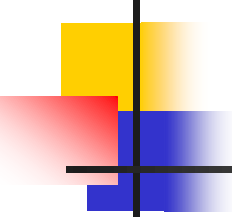
Implications for Asia

- Policy configurations can depend upon how much weight policy makers place between $\text{var}(I)$ and $\text{var}(\text{RelEx})$.
 - For EMGs, greater monetary independence
 - Increases $\text{var}(\text{RelEx})$
 - Increases $\text{var}(I)$ if $\text{IR} > 16\%$ of GDP
 - Greater exchange rate stability reduces $\text{var}(I)$ if $\text{IR} > 15\%$
- ➔ An EMG country with a higher level of IR than 16% as well as greater ERS and *weaker* MI (i.e., a combination of greater ERS and greater KAOPEN) could achieve greater stability of real exchange rate movement and investment
- ➔ May explain why many EMGs are big IR holders



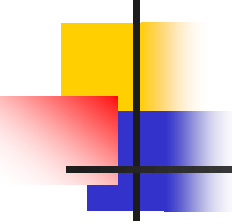
Concluding Remarks

- Emerging Asia has experienced “middle-ground convergence” in its trilemma policy configurations
- A “balanced diamond” is unique for Asia
- A country with greater monetary independence tends to experience smaller output volatility
- Greater exchange rate stability leads to greater output volatility for emerging market countries, though its volatility increasing effect can be mitigated by holding IR greater than 13-18% of GDP
- Many Asian economies seem to have a combination of ERS and IR associated with diminishing the output-volatility-increasing effect of ERS.



Concluding Remarks

- Trilemma policy configurations seem to affect output volatility through the volatility of investment and/or the real exchange rate, depending on the extent of trade openness.
- Greater monetary independence is volatility-reducing for investment, but if $IR > 15\text{-}20\%$ of GDP, it would become volatility-enhancing.
- Greater exchange rate stability could make investment volatile, but could also stabilize the real exchange rate movement. The volatility-enhancing effect of ERS on investment can be cancelled by holding higher levels of IR_{26}

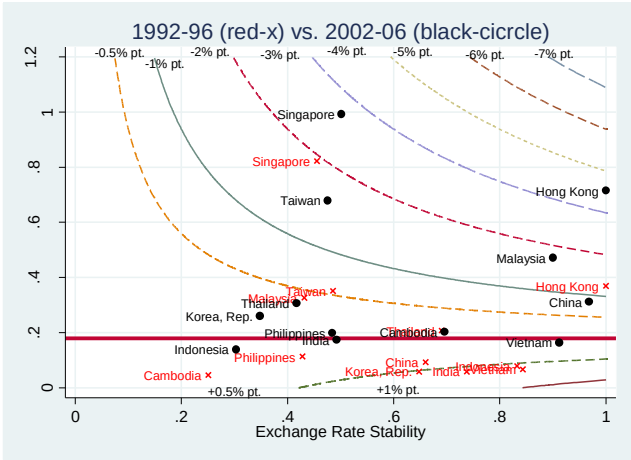


Concluding Remarks

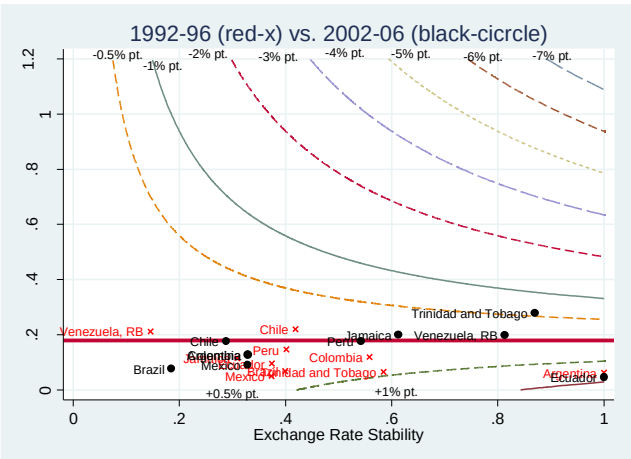
- Policy makers in a more open economy would prefer pursuing greater exchange rate stability and greater financial openness while holding a massive amount of IR, because that may allow the economy to achieve stability in both investment and real exchange rate movement. This may possibly explain why open-small economies in East Asia hold massive amounts of IR.

Thank you!

(a) Asian EMGs



(b) Latin American EMGs



(c) Other EMGs

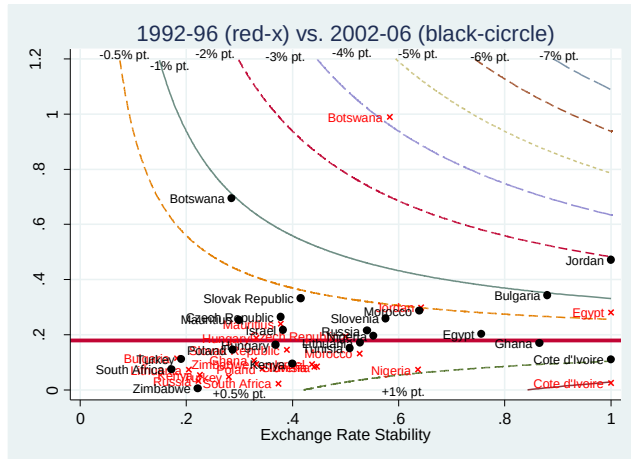


Table 1-1: The Macroeconomic Impact of the Trilemma Configurations: Less Developed Countries (LDC)

	Output volatility			Level of Inflation		
	(1)	(2)	(3)	(4)	(5)	(6)
Relative Income	-0.059 [0.019]***	-0.056 [0.019]***	-0.064 [0.019]***	-0.125 [0.046]***	-0.068 [0.049]	-0.096 [0.047]**
Relative Income, sq.	0.094 [0.022]***	0.094 [0.024]***	0.112 [0.024]***	0.207 [0.055]***	0.123 [0.060]**	0.167 [0.058]***
Change in US real interest rate	0.126 [0.041]***	0.126 [0.042]***	0.132 [0.041]***			
Volatility of TOT*OPN	0.03 [0.007]***	0.03 [0.007]***	0.027 [0.007]***	0 [0.016]	-0.001 [0.017]	-0.002 [0.016]
Inflation volatility	0.026 [0.006]***	0.024 [0.006]***	0.027 [0.006]***	0.336 [0.014]***	0.317 [0.014]***	0.328 [0.014]***
Fiscal Procyclicality	0.004 [0.002]**	0.004 [0.002]**	0.004 [0.002]**	0.002 [0.004]	0.005 [0.004]	0.002 [0.004]
Relative oil price shocks				0.029 [0.005]***	0.023 [0.005]***	0.026 [0.005]***
World Output Gap				0.641 [0.273]**	0.396 [0.282]	0.601 [0.267]**
Trade openness				-0.012 [0.007]*	-0.016 [0.007]**	-0.011 [0.007]*
M2 growth				0.381 [0.019]***	0.419 [0.019]***	0.373 [0.019]***
Private credit creation	-0.002 [0.005]	-0.004 [0.005]	-0.001 [0.005]	-0.008 [0.012]	-0.004 [0.012]	-0.011 [0.012]
Total Reserve (as % of GDP)	0.059 [0.038]	0.015 [0.032]	0.067 [0.024]***	-0.085 [0.091]	-0.08 [0.079]	-0.142 [0.055]***
Monetary Independence (MI)	-0.013 [0.011]	-0.019 [0.011]*		0.012 [0.027]	0.017 [0.027]	
MI x reserves	-0.026 [0.063]	0.012 [0.060]		-0.019 [0.148]	-0.027 [0.146]	
Exchange Rate Stability (ERS)	0.006 [0.005]		0.009 [0.005]*	-0.058 [0.013]***		-0.06 [0.012]***
ERS x reserves	-0.06 [0.031]**		-0.067 [0.029]**	0.074 [0.072]		0.083 [0.067]
KA Openness		-0.003 [0.005]	0 [0.005]		-0.048 [0.013]***	-0.045 [0.012]***
KAOPEN x reserves		-0.008 [0.025]	-0.027 [0.024]		0.126 [0.062]**	0.1 [0.058]*
Observations	417	417	417	417	417	417
Adjusted R-squared	0.26	0.25	0.26	0.84	0.83	0.84

Robust regressions are implemented. * significant at 10%; ** significant at 5%; *** significant at 1%. The regional dummies are included in the regressions for output and inflation, so is the dummy for oil exporters in the output volatility regression. But the estimated coefficients of these dummies are not reported to conserve space.

Table 1-2: The Macroeconomic Impact of the Trilemma Configurations: Emerging market economies (EMG)

	Output volatility			Level of Inflation		
	(1)	(2)	(3)	(4)	(5)	(6)
Relative Income	-0.043 [0.024]*	-0.031 [0.025]	-0.043 [0.025]*	-0.074 [0.084]	-0.022 [0.080]	-0.044 [0.084]
Relative Income, sq.	0.058 [0.030]*	0.041 [0.033]	0.058 [0.034]*	0.12 [0.104]	0.078 [0.102]	0.096 [0.108]
Change in US real interest rate	0.157 [0.049]***	0.145 [0.050]***	0.155 [0.049]***			
Volatility of TOT*OPN	0.021 [0.013]	0.025 [0.013]*	0.02 [0.013]	0.063 [0.040]	0.034 [0.037]	0.047 [0.037]
Inflation volatility	0.038 [0.007]***	0.036 [0.007]***	0.037 [0.007]***	0.348 [0.022]***	0.387 [0.021]***	0.38 [0.021]***
Fiscal Procyclicality	0.003 [0.002]	0.003 [0.002]	0.003 [0.002]	-0.003 [0.007]	-0.003 [0.006]	-0.004 [0.006]
Relative oil price shocks				0.01 [0.008]	0.003 [0.007]	0.006 [0.007]
World Output Gap				0.911 [0.412]**	0.778 [0.380]**	0.855 [0.385]**
Trade openness				0 [0.010]	0.002 [0.010]	0.002 [0.010]
M2 volatility				0.455 [0.028]***	0.424 [0.027]***	0.415 [0.027]***
Private credit creation	-0.002 [0.005]	-0.005 [0.005]	-0.002 [0.005]	-0.02 [0.018]	-0.026 [0.016]	-0.026 [0.017]
Total Reserve (as % of GDP)	0.085 [0.036]**	0.024 [0.035]	0.059 [0.023]**	-0.164 [0.111]	-0.087 [0.096]	-0.106 [0.068]
Monetary Independence (MI)	-0.008 [0.013]	-0.016 [0.014]		-0.022 [0.040]	-0.028 [0.038]	
MI x reserves	-0.048 [0.060]	-0.007 [0.059]		0.099 [0.179]	0.039 [0.165]	
Exchange Rate Stability (ERS)	0.011 [0.007]*		0.012 [0.007]*	-0.053 [0.021]**		-0.04 [0.020]**
ERS x reserves	-0.073 [0.032]**		-0.066 [0.030]**	0.12 [0.095]		0.096 [0.087]
KA Openness		-0.005 [0.006]	-0.002 [0.006]		-0.047 [0.017]***	-0.043 [0.017]**
KAOPEN x reserves		0.013 [0.026]	0.004 [0.025]		0.037 [0.077]	0.025 [0.077]
Observations	196	196	196	196	196	196
Adjusted R-squared	0.3	0.27	0.29	0.87	0.89	0.89

Robust regressions are implemented. * significant at 10%; ** significant at 5%; *** significant at 1%. The regional dummies are included in the regressions for output and inflation, so is the dummy for oil exporters in the output volatility regression. But the estimated coefficients of these dummies are not reported to conserve space.

Table 3-1: Determinants of Output Volatility: Less Developed Countries (LDC)

	Investment volatility			Real exchange rate volatility		
	(1)	(2)	(3)	(4)	(5)	(6)
Relative Income	-0.1 [0.143]	-0.15 [0.142]	-0.125 [0.139]	-0.016 [0.020]	0.027 [0.031]	-0.015 [0.020]
Relative Income, sq.	0.121 [0.264]	0.239 [0.265]	0.211 [0.258]	0.017 [0.037]	-0.041 [0.057]	0.019 [0.038]
Change in US real interest rate	0.39 [0.199]*	0.306 [0.198]	0.259 [0.194]			
Volatility of TOT*OPN	0.095 [0.036]***	0.121 [0.036]***	0.103 [0.035]***	0.008 [0.005]	0.011 [0.008]	0.008 [0.005]
Inflation volatility	0.134 [0.025]***	0.133 [0.025]***	0.131 [0.025]***	0.038 [0.003]***	0.031 [0.005]***	0.038 [0.004]***
(Infl. vol. differentials in (4)-(6))	-0.001 [0.009]	0.003 [0.009]	0.004 [0.009]			
Fiscal Procyclicality						
Trade openness				-0.005 [0.003]*	-0.011 [0.004]***	-0.005 [0.003]*
Currency Crisis	0.01 [0.011]	0.002 [0.011]	0.007 [0.011]	0.009 [0.002]***	0.013 [0.002]***	0.009 [0.002]***
Private credit creation	-0.011 [0.026]	-0.012 [0.026]	-0.001 [0.025]			
Total Reserve (as % of GDP)	-0.229 [0.210]	-0.393 [0.205]*	0.158 [0.132]	0.022 [0.030]	0.038 [0.045]	-0.013 [0.019]
Monetary Independence (MI)	-0.181 [0.056]***	-0.159 [0.057]***		0.004 [0.008]	0.024 [0.012]**	
MI x reserves	1.193 [0.342]***	0.785 [0.351]**		-0.049 [0.048]	-0.086 [0.076]	
Exchange Rate Stability (ERS)	0.077 [0.026]***		0.07 [0.025]***	-0.037 [0.004]***		-0.038 [0.004]***
ERS x reserves	-0.413 [0.179]**		-0.254 [0.170]	-0.007 [0.025]		0.001 [0.024]
KA Openness		-0.042 [0.032]	-0.012 [0.030]		-0.008 [0.007]	-0.004 [0.004]
KAOPEN x reserves		0.223 [0.178]	0.051 [0.165]		0.029 [0.038]	0.019 [0.024]
Net FDI inflows/GDP	0.327 [0.274]	0.347 [0.280]	0.25 [0.272]	-0.041 [0.041]	-0.088 [0.064]	-0.033 [0.042]
Net portfolio inflows/GDP	1.48 [0.493]***	1.414 [0.508]***	1.364 [0.494]***	0.052 [0.069]	0.046 [0.108]	0.054 [0.071]
Net 'other' inflows/GDP	0.376 [0.116]***	0.38 [0.116]***	0.418 [0.112]***	-0.028 [0.016]*	-0.014 [0.025]	-0.028 [0.016]*
Short-term Debt (as % of total external debt)	-0.042 [0.063]	-0.042 [0.063]	-0.042 [0.062]	0.006 [0.008]	0.004 [0.013]	0.007 [0.008]
Total debt service (as % of GNI)	0.264 [0.140]*	0.232 [0.138]*	0.213 [0.136]	0.02 [0.020]	0.081 [0.031]***	0.02 [0.021]
Observations	309	309	309	310	310	310
Adjusted R-squared	0.31	0.26	0.25	0.63	0.29	0.63

Robust regressions are implemented. * significant at 10%; ** significant at 5%; *** significant at 1%. The dummy for Sub-Saharan countries is included in the regressions for output and inflation volatility, so are the dummies for Latin America and Caribbean and East Europe and Central Asia in the regression for the level of inflation.

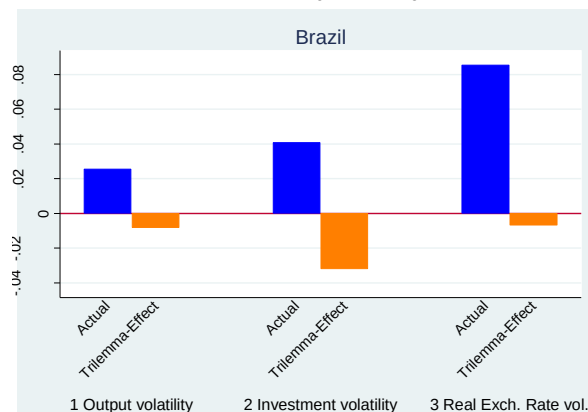
Table 3-2: Determinants of Output Volatility Emerging market economies (EMG)

	Investment volatility			Real exchange rate volatility		
	(1)	(2)	(3)	(4)	(5)	(6)
Relative Income	0.237 [0.254]	0.119 [0.272]	0.193 [0.255]	-0.045 [0.054]	0.072 [0.074]	-0.073 [0.050]
Relative Income, sq.	-0.625 [0.557]	-0.36 [0.604]	-0.452 [0.561]	0.099 [0.118]	-0.108 [0.166]	0.176 [0.112]
Change in US real interest rate	-0.1 [0.218]	-0.07 [0.232]	-0.134 [0.212]			
Volatility of TOT*OPN	-0.098 [0.056]*	-0.022 [0.059]	-0.09 [0.055]	0.021 [0.011]*	0.002 [0.016]	0.019 [0.010]*
Inflation volatility	0.143	0.151	0.142	0.05	0.038	0.051
(Intl. vol. differentials in (4)-(6))	[0.028]***	[0.029]***	[0.027]***	[0.006]***	[0.008]***	[0.005]***
Fiscal Procyclicality	0.017 [0.010]	0.014 [0.011]	0.02 [0.010]*			
Trade openness				-0.004 [0.005]	-0.004 [0.006]	-0.006 [0.004]
Currency Crisis	0.038 [0.012]***	0.033 [0.013]**	0.034 [0.012]***	0.011 [0.003]***	0.013 [0.003]***	0.009 [0.002]***
Private credit creation	0.025 [0.024]	0.004 [0.025]	0.033 [0.024]			
Total Reserve (as % of GDP)	-0.374 [0.192]*	-1.045 [0.211]***	0.368 [0.118]***	0.035 [0.040]	0.052 [0.058]	0.001 [0.023]
Monetary Independence (MI)	-0.286 [0.060]***	-0.365 [0.066]***		0.027 [0.013]**	0.042 [0.018]**	
MI x reserves	1.867 [0.306]***	2.095 [0.353]***		-0.068 [0.064]	-0.123 [0.096]	
Exchange Rate Stability (ERS)	0.127 [0.032]***		0.121 [0.030]***	-0.039 [0.007]***		-0.037 [0.006]***
ERS x reserves	-0.818 [0.183]***		-0.583 [0.173]***	-0.012 [0.037]		-0.006 [0.033]
KA Openness		-0.065 [0.034]*	0.026 [0.029]		-0.001 [0.009]	-0.009 [0.006]
KAOPEN x reserves		0.414 [0.175]**	-0.138 [0.144]		-0.013 [0.047]	0.011 [0.028]
Net FDI inflows/GDP	-0.216 [0.373]	0.237 [0.422]	-0.433 [0.384]	-0.054 [0.081]	-0.114 [0.117]	0.024 [0.077]
Net portfolio inflows/GDP	0.76 [0.488]	1.34 [0.543]**	0.736 [0.497]	-0.043 [0.102]	-0.149 [0.147]	-0.018 [0.097]
Net 'other' inflows/GDP	0.586 [0.131]***	0.637 [0.139]***	0.6 [0.127]***	-0.078 [0.027]***	-0.08 [0.038]**	-0.056 [0.025]**
Short-term Debt (as % of total external debt)	-0.102 [0.067]	-0.07 [0.072]	-0.113 [0.066]*	0.014 [0.013]	-0.002 [0.017]	0.009 [0.011]
Total debt service (as % of GNI)	0.172 [0.155]	0.277 [0.165]*	0.182 [0.151]	0.027 [0.038]	0.034 [0.052]	0.032 [0.035]
Observations	149	149	149	151	151	151
Adjusted R-squared	0.62	0.49	0.49	0.68	0.39	0.69

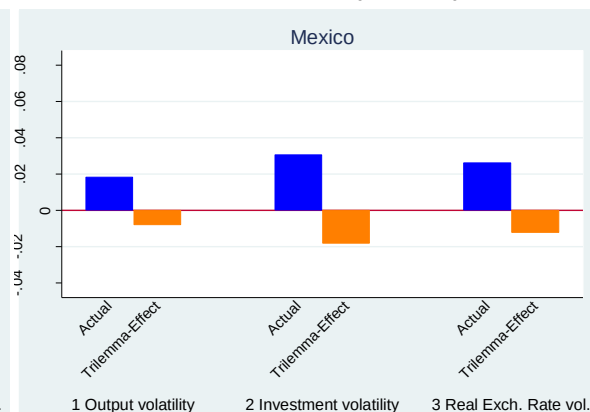
Robust regressions are implemented. * significant at 10%; ** significant at 5%; *** significant at 1%. The dummy for Sub-Saharan countries is included in the regressions for output and inflation volatility, so are the dummies for Latin America and Caribbean and East Europe and Central Asia in the regression for the level of inflation.

Contributions of Trilemma Policies to the Volatilities of Output, Investment, and the Real Exchange Rates

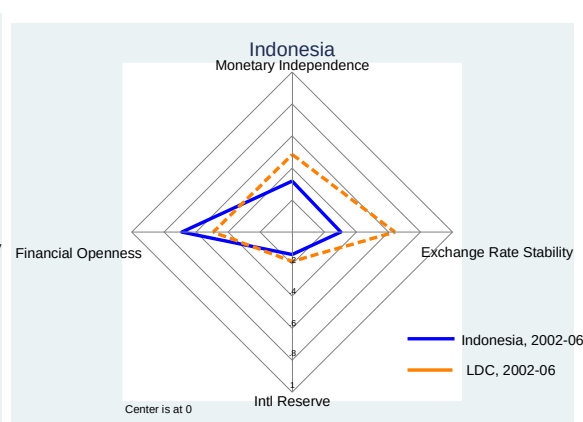
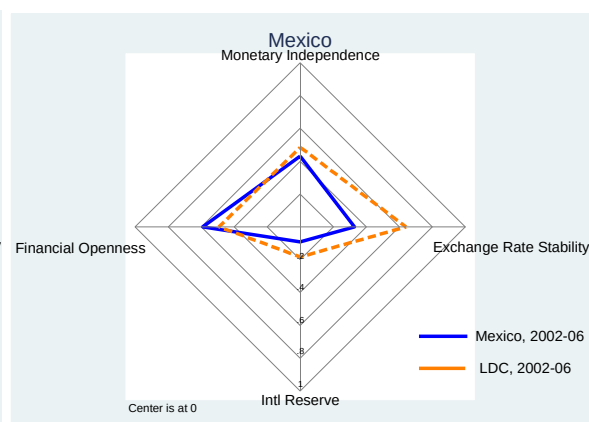
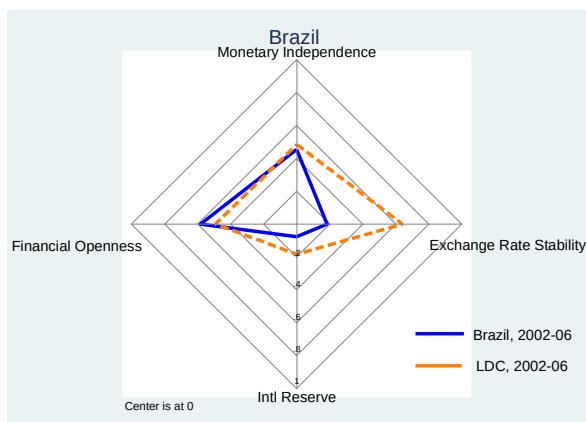
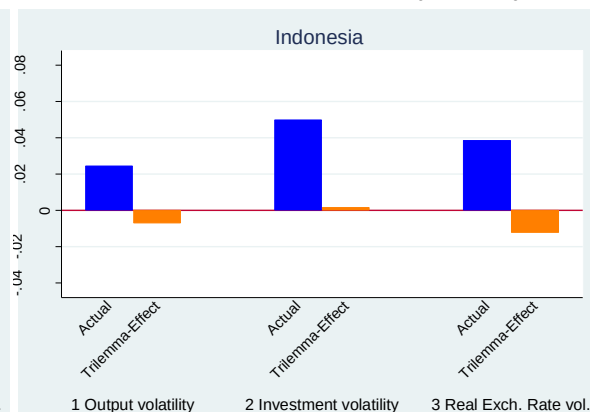
Brazil (1.79)



Mexico (2.41)

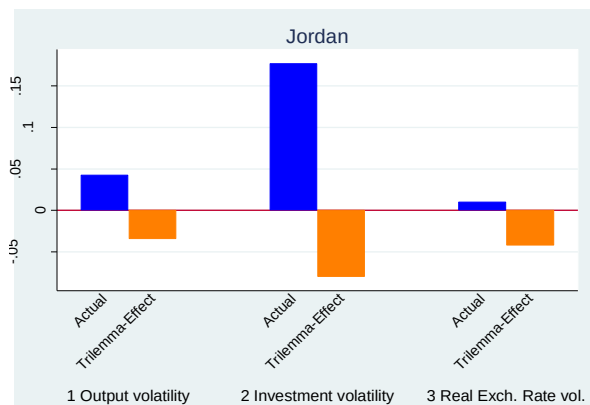


Indonesia (2.56)

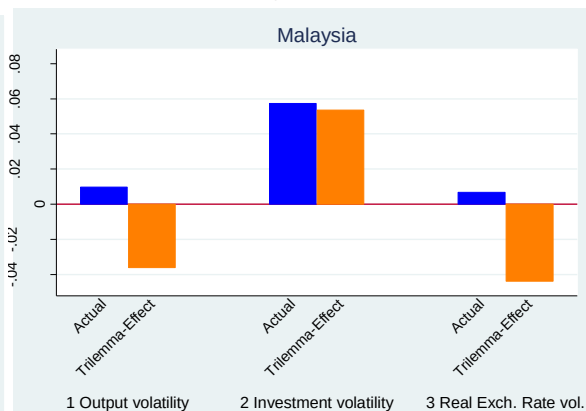


Contributions of Trilemma Policies to the Volatilities of Output, Investment, and the Real Exchange Rates

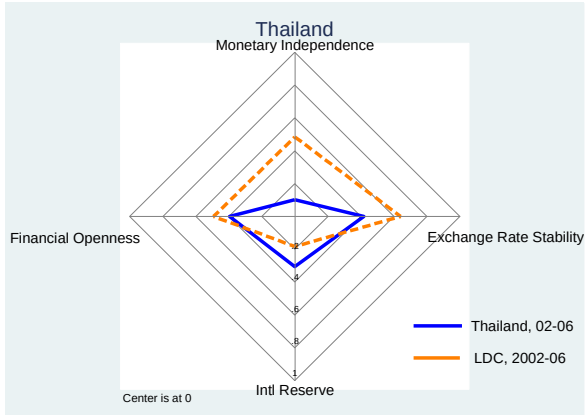
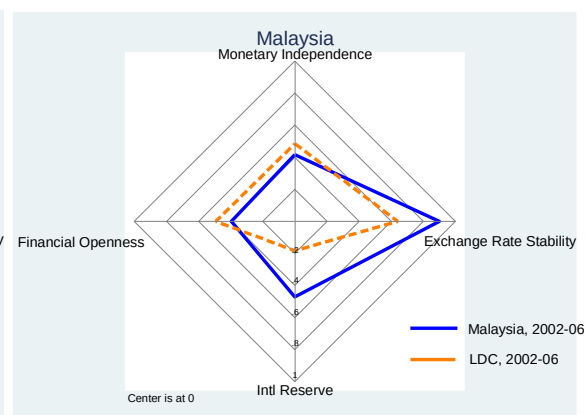
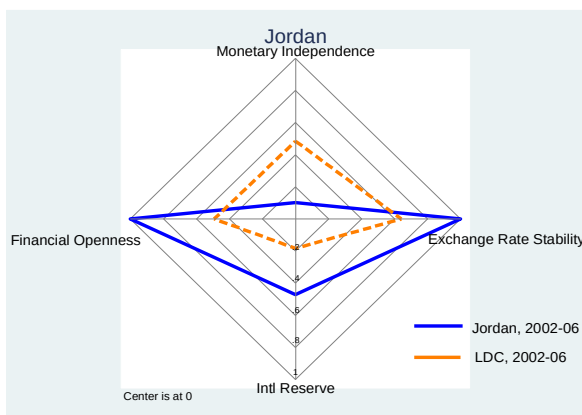
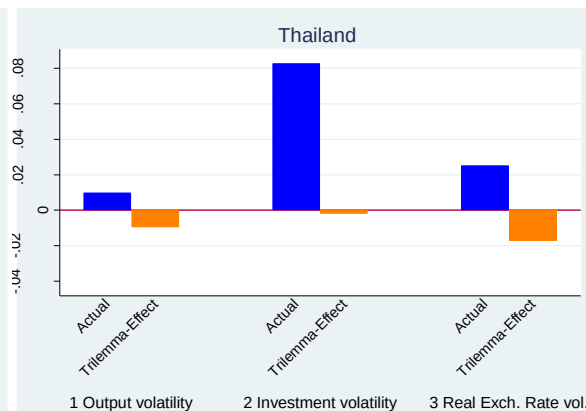
Jordan (6.21)



Malaysia (8.93)



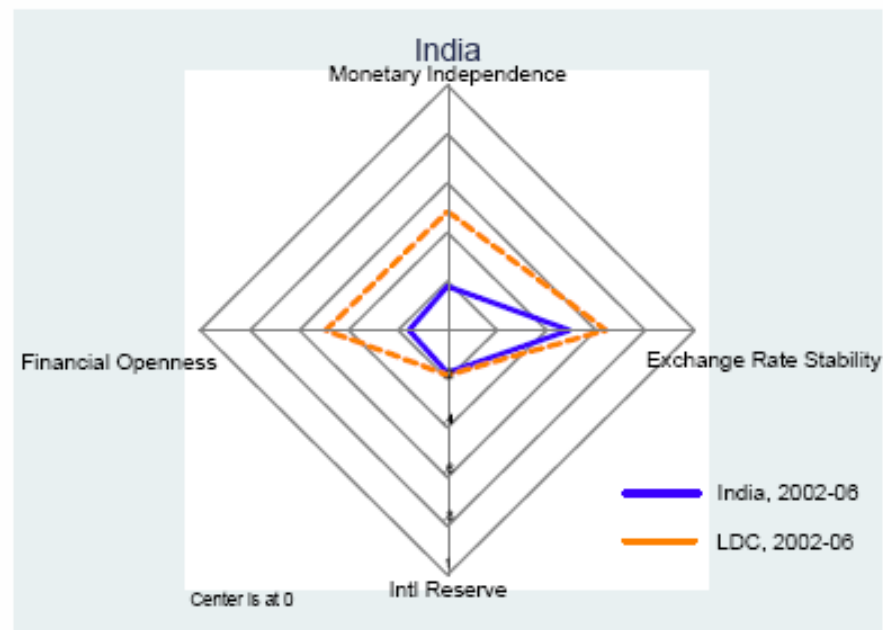
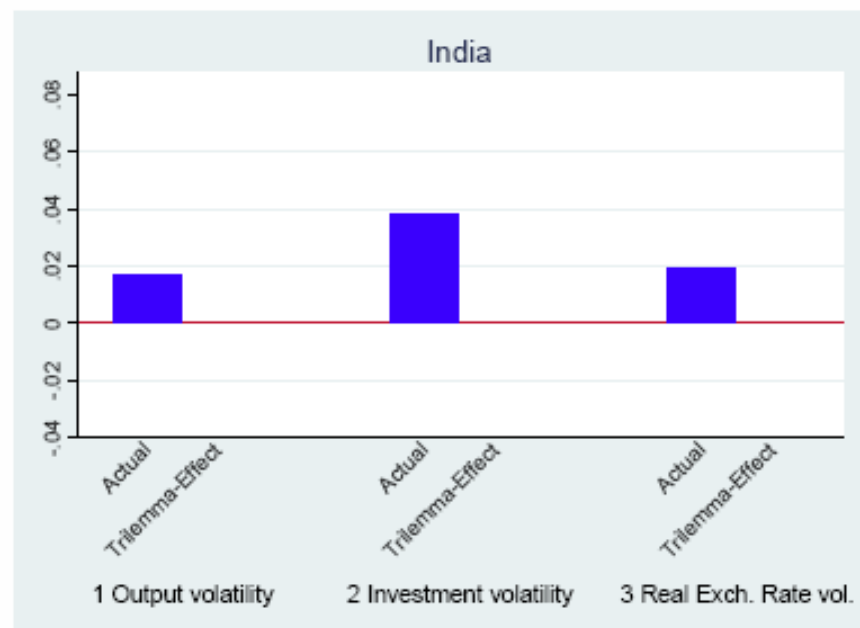
Thailand (5.84)



India

- Indian's relative openness (ratio of investment to trade openness): 1.32
- India's data for 2002-06 was not available at the time of this study, thus the top figure showing the estimated trilemma effect for 2002-06 in India is not reported.

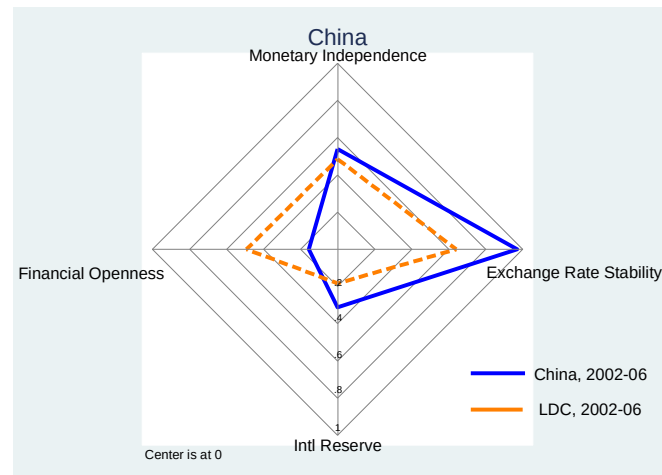
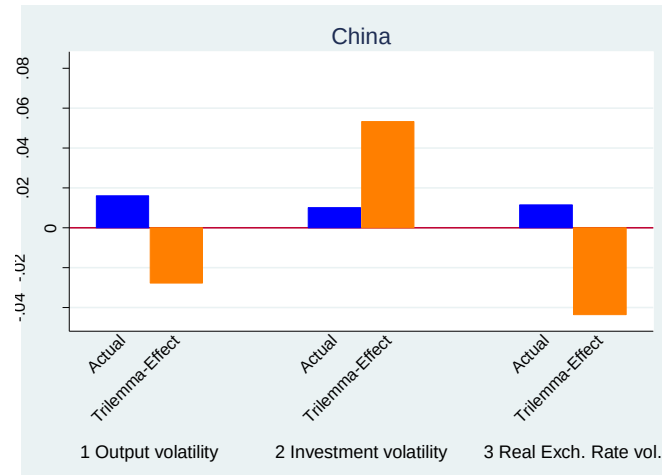
India⁵³

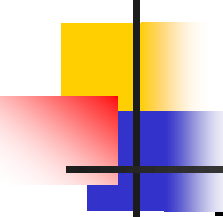


One Outlier

– People's Rep. of China

China (1.54)





Policy Configurations based on Policy Goals

Closed Economy

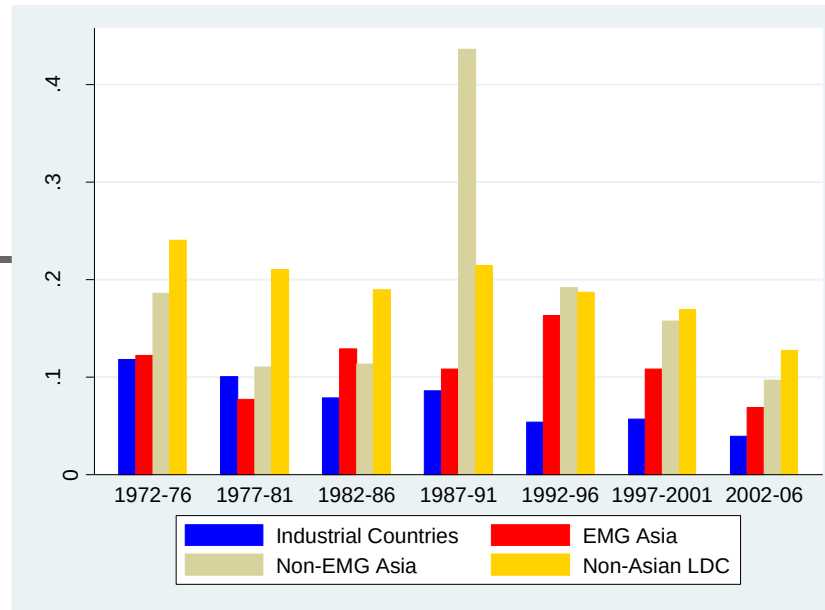
Policy Goals	(a) Lower var(I) and Lower var(q)	(b) Lower var(I) and Not too high var(q)
	High IR Lower MI Higher ERS (Middle ERS if IR is very high) (Higher KAOPEN or middle if IR is very high)	Low IR Higher MI Lower ERS (Higher KAOPEN)

Open Economy

Policy Goals	(c) Lower var(I) and Lower var(q)	(d) Not too high var(I) and Lower var (q)
	High IR Lower MI Higher ERS (Higher KAOPEN)	High IR Middle MI Higher ERS (Middle KAOPEN)

Figure 8: Regional Comparison of Investment Volatility and Real Exchange Rate Volatility

(a) Investment Volatility



(b) Real Exchange Rate Volatility

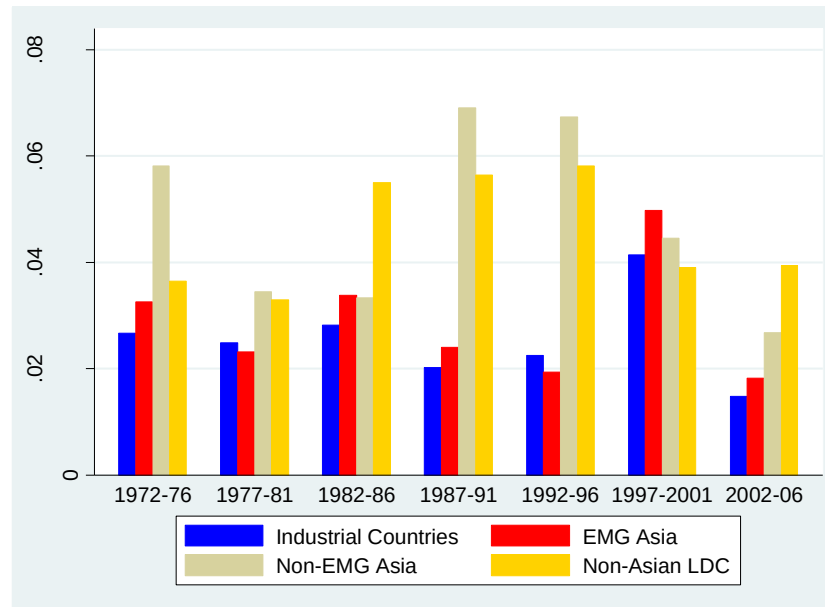
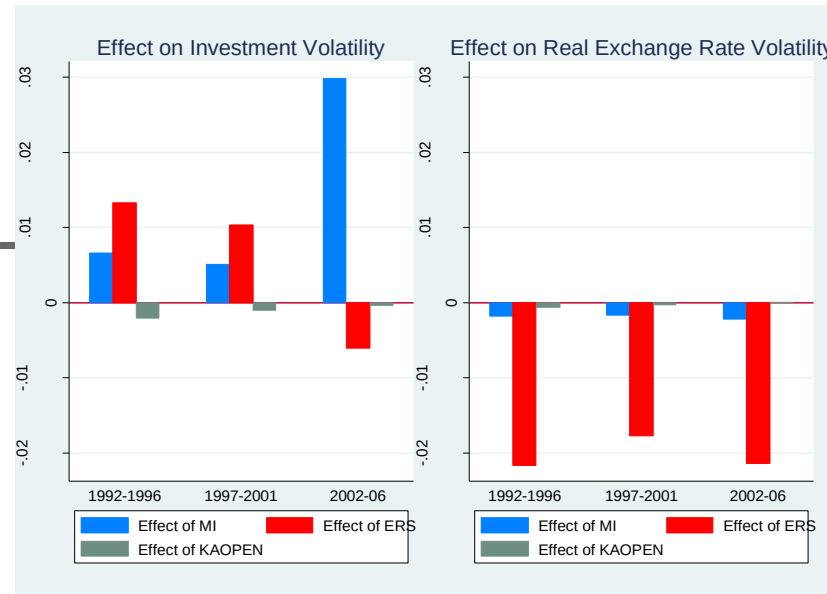


Figure 10: The Impacts of the Trilemma Configurations on Investment Volatility and Real Exchange Rate Volatility

(a) Developing Asia



(b) Non-Asian Developing Economies

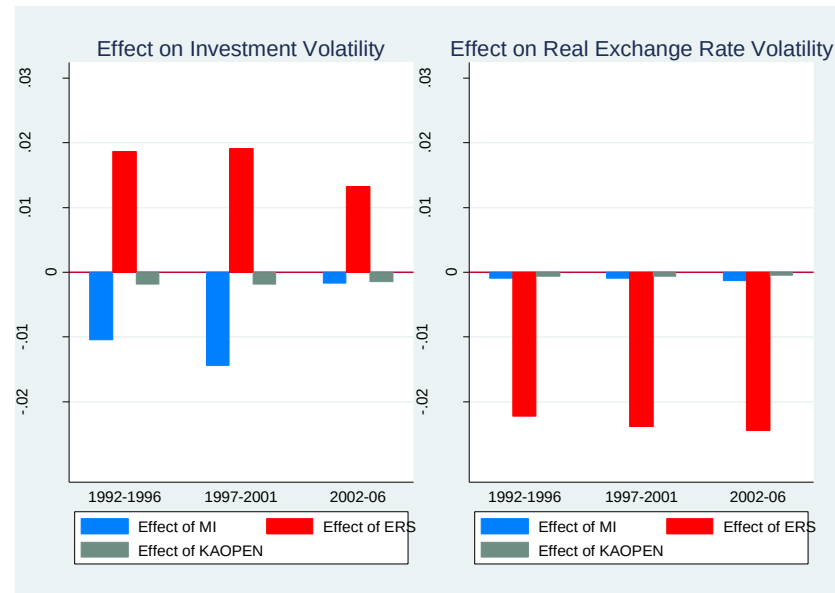
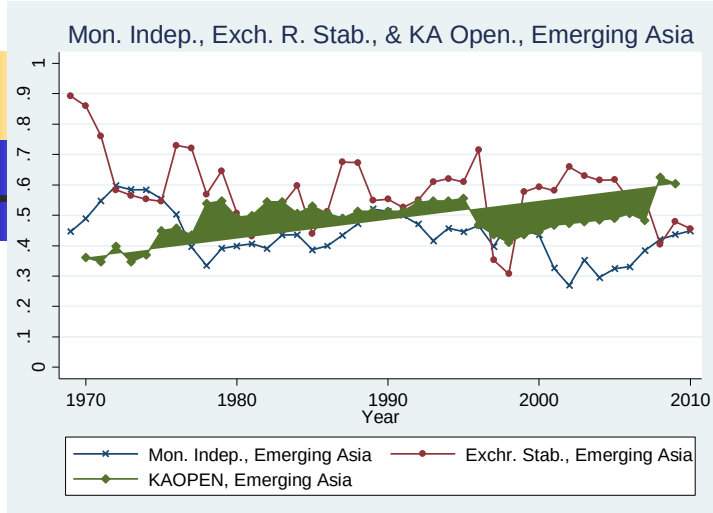
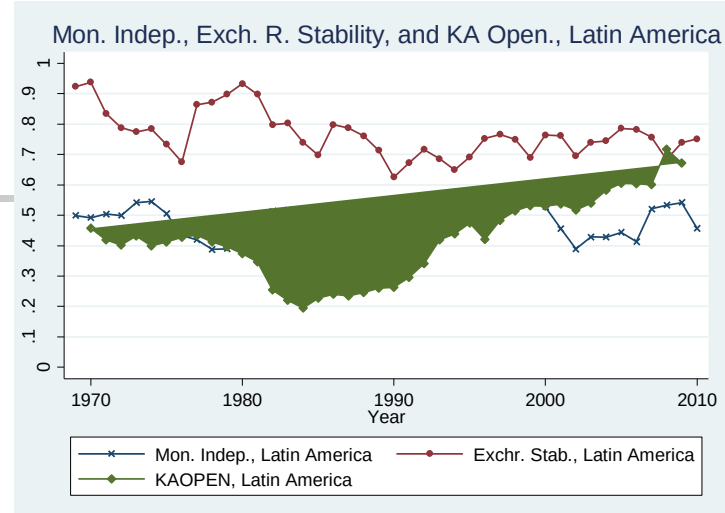


Figure 4: Regional Comparison of the Development of the Trilemma Configurations

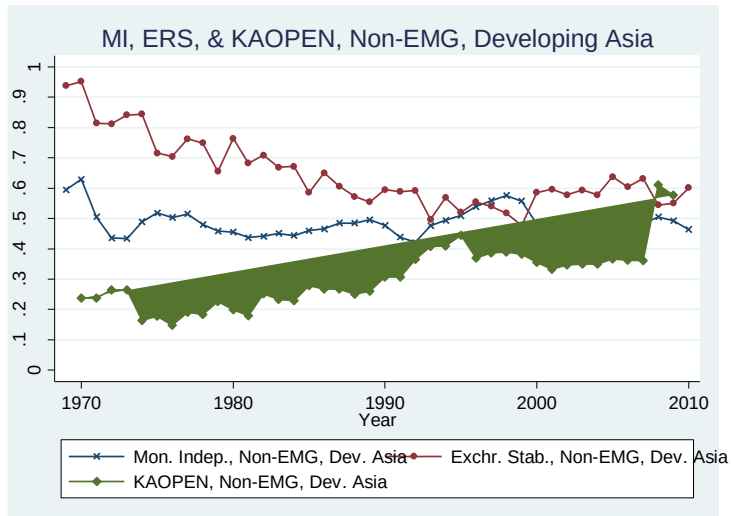
(a) Emerging Market Economies (EMG) in Asia



(c) Latin American Countries



(b) Non-EMG, Developing Asia



(d) Developing Countries (LDC) excluding Asia

