

# Policy Choices and Resilience to International Monetary Shocks

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# Building up resilience to foreign monetary/financial shocks

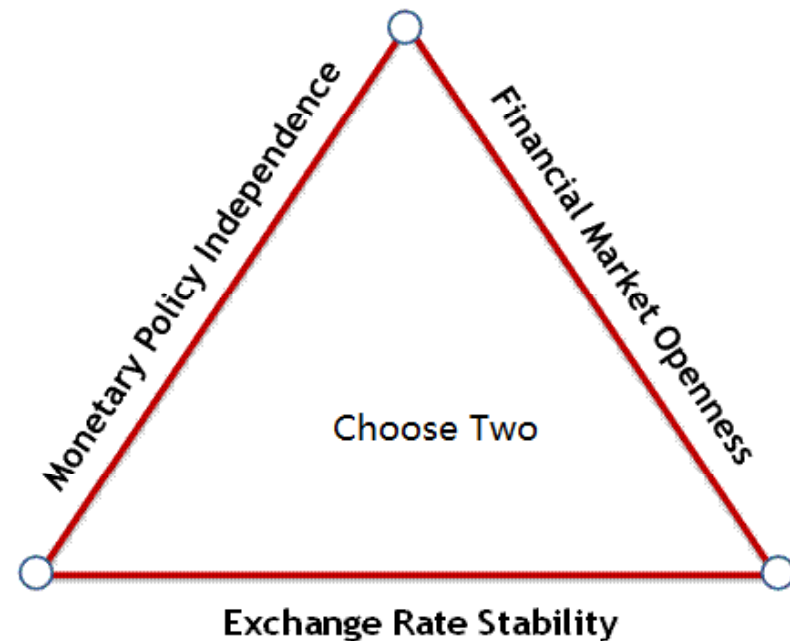
- National policies/fundamentals
- Regional mechanisms
- Global mechanisms

# Do Developing Countries Have to Import US Monetary Policies?

- Conventional view:
  - It depends on a country's nominal exchange rate regime
  - Flexible rate system -> monetary policy autonomy
  - Capital controls might help but too costly
  - Intellectual foundation: Mundell's "trilemma"

# Conventional view-*Trilemma theory*

- No “triangular love”: cannot have a flexible exchange rate, an independent monetary policy, and free capital mobility simultaneously
- A flexible exchange rate regime confers monetary policy autonomy
- Capital controls are leaky and hard to be effective for too long



# Alternative views

- Flexible nominal exchange rate regime might not work
- Calvo and Reinhart, QJE, 2002
  - “Fear of floating”
- H. Tong and S.J. Wei, RFS, 2011
  - The nominal exchange rate regime does not make a difference to the transmission of global financial crisis to developing countries
- H. Rey, Jackson Hole presentation, 2013
  - Capital flows are highly correlated regardless of nominal exchange rate regime.

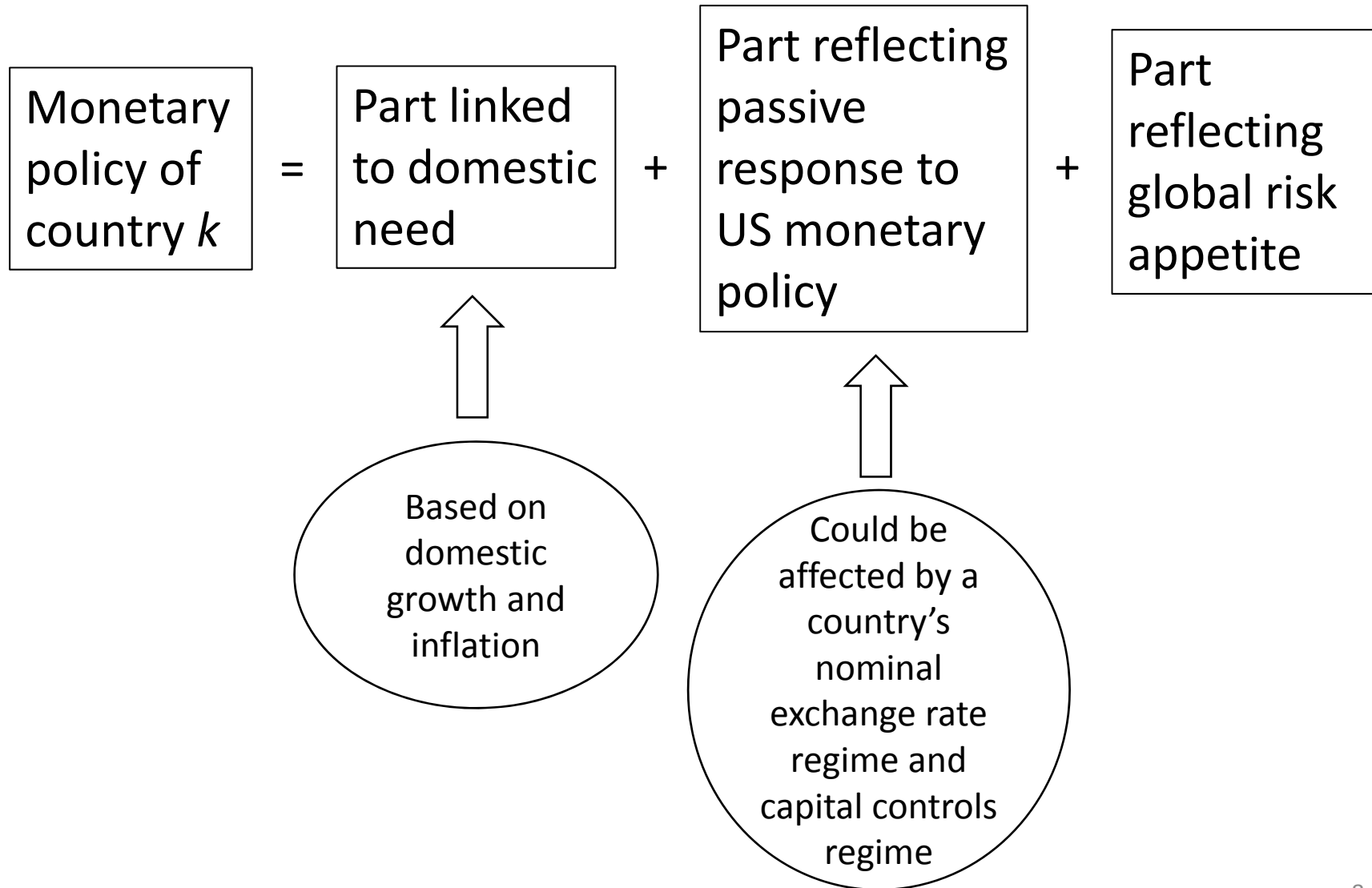
# ***Competing recommendations:***

- For emerging markets: prioritize **exchange rate flexibility** (e.g., IMF's Article IV reports on the People's Republic of China, 2014) since capital controls are leaky (Edwards, 2012) and costly (e.g., Wei and Zhang, 2007)
- Only **capital controls** confer real monetary autonomy (Tong and Wei (2011), Chinn and Wei (2013), and Rey (2013))

# Empirical investigation

- Does a flexible exchange rate regime really confer monetary policy autonomy?
- Capital control or flexible exchange rate regime, which one is more effective?

# The methodology for the investigation



# The Baseline Model

$$(1) \Delta i_{i,t}^p = \lambda i_{i,t-1}^p + \gamma_1 \Delta r_{i,t}^{P*} + \gamma_2 \Delta r_t^{US} + VIX_t + \varepsilon_{i,t}.$$

- $\Delta r_{i,t}^{P*}$ : a desired change based on purely domestic factors;
- $\Delta r_t^{US}$ : an “involuntary” change, responding to a US rate change;
- $VIX_t$ : an indicator of the state of the financial cycle (Chicago Board Options Exchange equity option volatility index)

$$\Delta r_{i,t}^{P*} = \tilde{c} + \tilde{\phi}_1 * \Delta \text{GDP growth}_{i,t} + \tilde{\phi}_2 * \Delta \text{Inflation}_{i,t} + \tilde{e}_{i,t}$$

$$\gamma_2 = \beta_1 D_{\text{fixed.NC}} + \beta_2 D_{\text{fixed.C}} + \beta_3 D_{\text{flex.C}} + \beta_4 D_{\text{flex.NC}}$$

The model used for estimations

$$\begin{aligned} \Delta i_{i,t}^p = & c + \lambda i_{i,t-1}^p + \phi_1 * \Delta \text{GDP growth}_{i,t} + \phi_2 * \Delta \text{Inflation}_{i,t} \\ & + \beta_1 D_{\text{fixed.NC}} \Delta r_{i,t}^{US} + \beta_2 D_{\text{fixed.C}} \Delta r_{i,t}^{US} + \beta_3 D_{\text{flex.C}} \Delta r_{i,t}^{US} \\ & + \beta_4 D_{\text{flex.NC}} \Delta r_{i,t}^{US} + VIX_t + e_{i,t} \end{aligned}$$

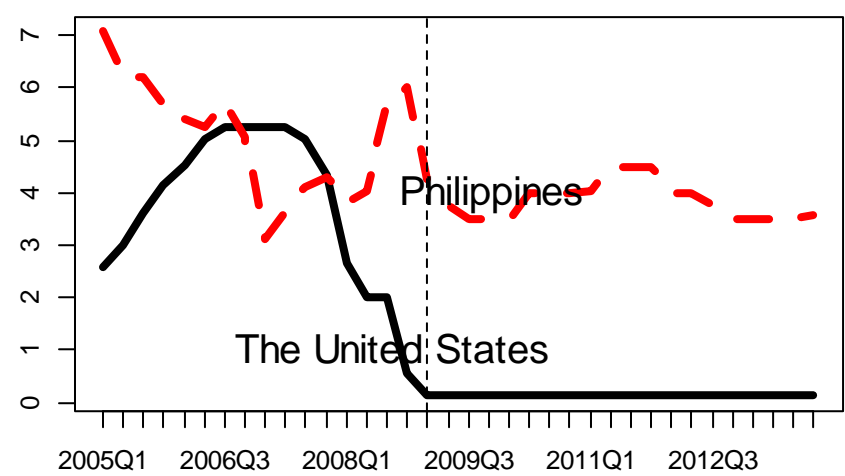
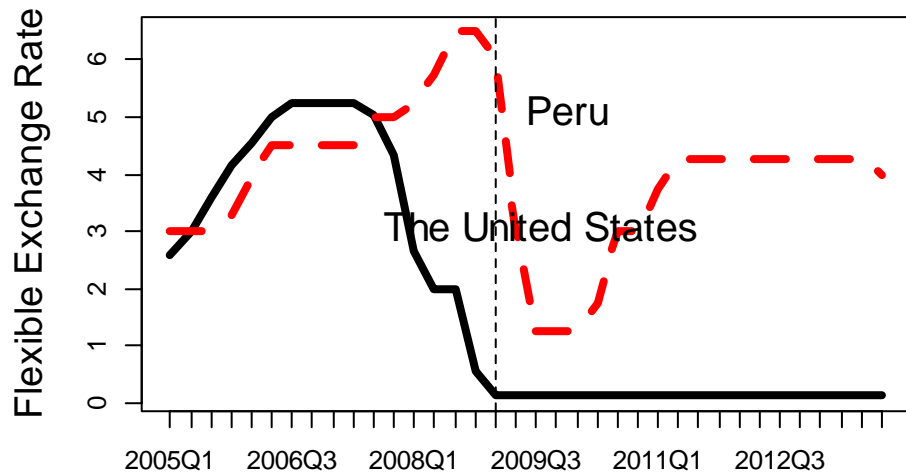
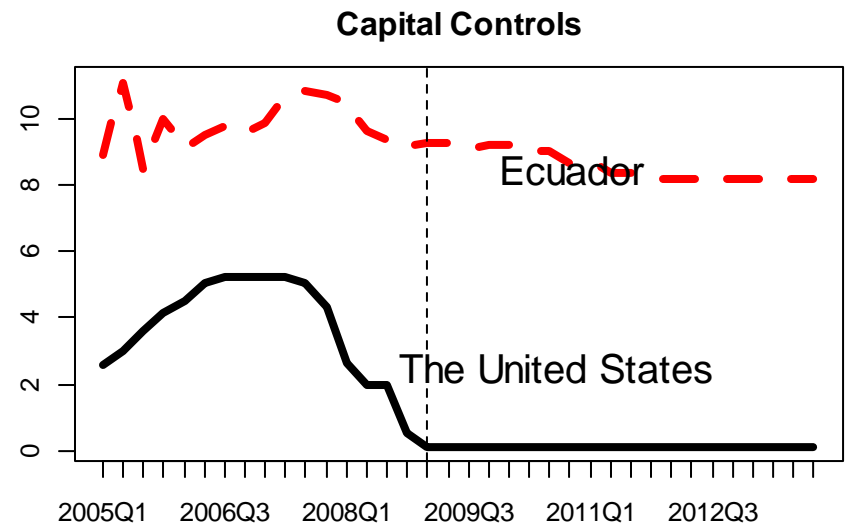
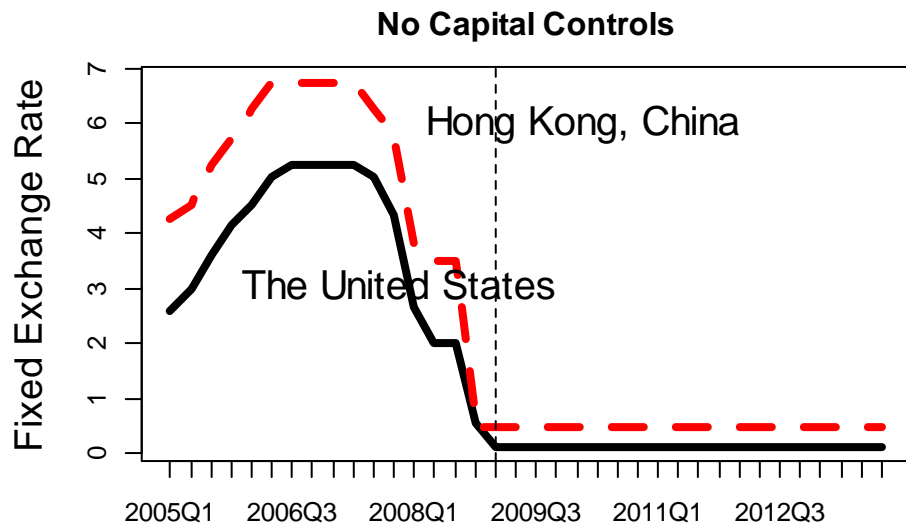
# Data

- Forecasts of GDP growth and Inflation are from WEO (semiannually) starting from 1990;
- Policy interest rate: monetary policy rate and discount rate (when monetary policy rate is not available);
- Capital Control Index:
- Nominal Exchange Rate regime: de facto classification

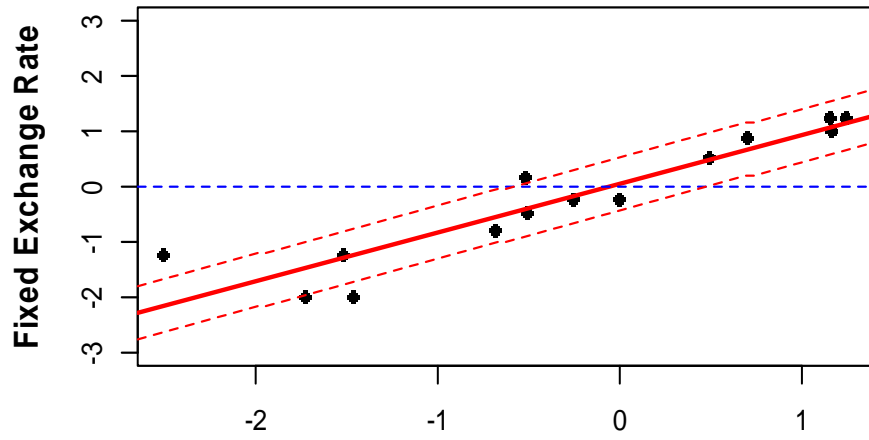
# Hypothesis and Analysis

Table 1 Combinations of exchange rate regimes and capital control scenarios and the coefficients on foreign policy influence

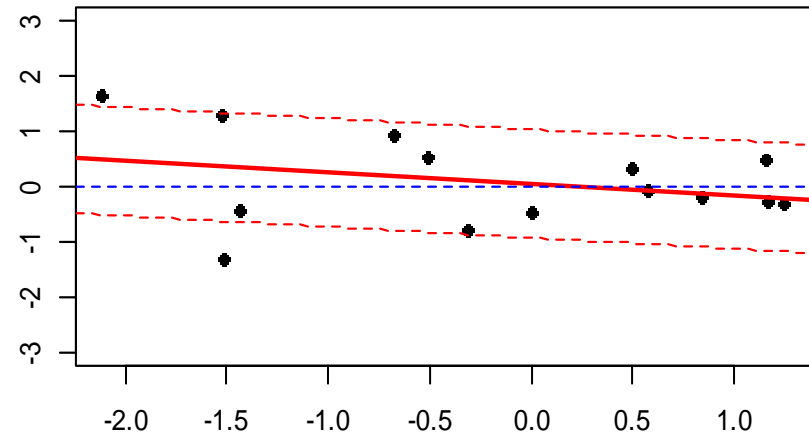
	No Capital Controls	Capital Controls
Fixed Exchange Rate Regime	$\beta_1$	$\beta_2$
Flexible Exchange Rate Regime	$\beta_4$	$\beta_3$



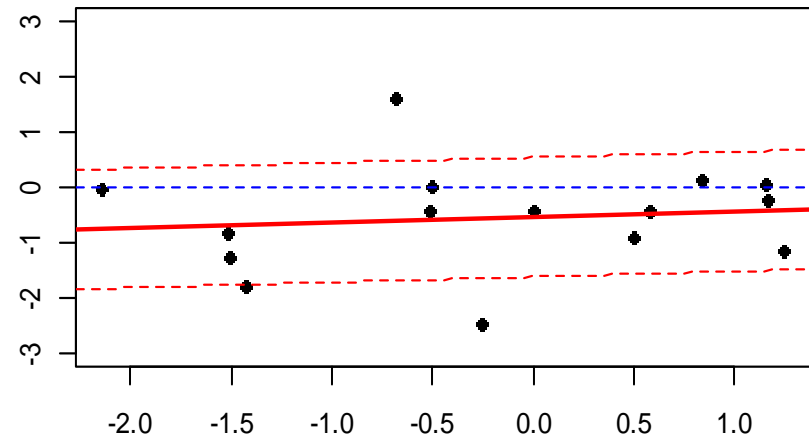
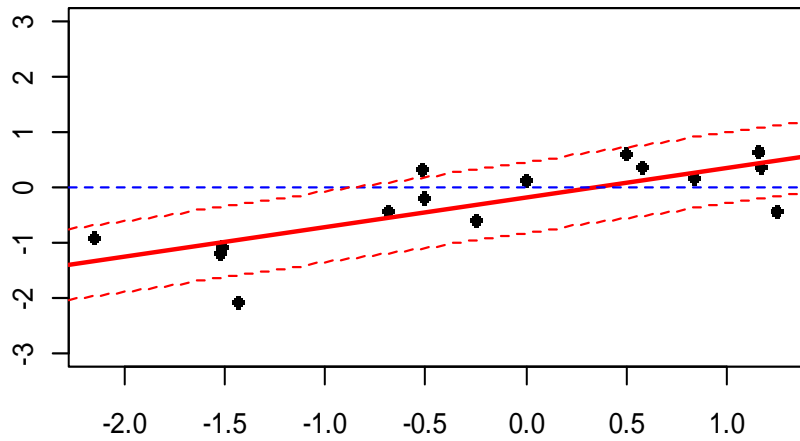
No Capital Control Unconditional Plotting



Capital Control

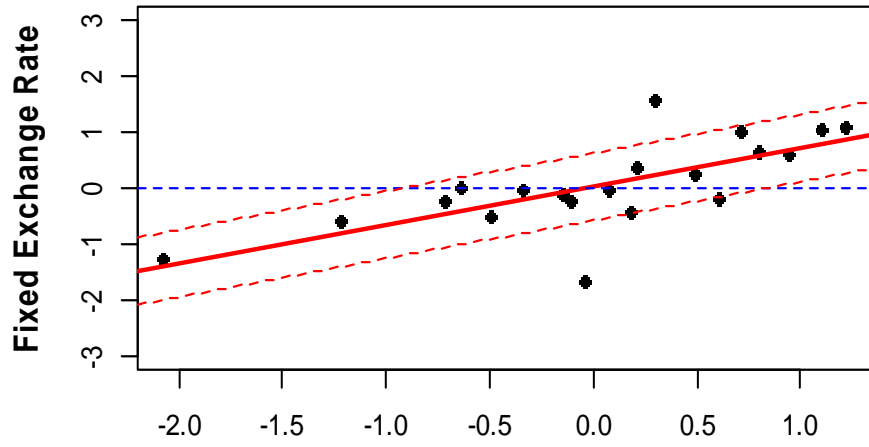


Flexible Exchange Rate

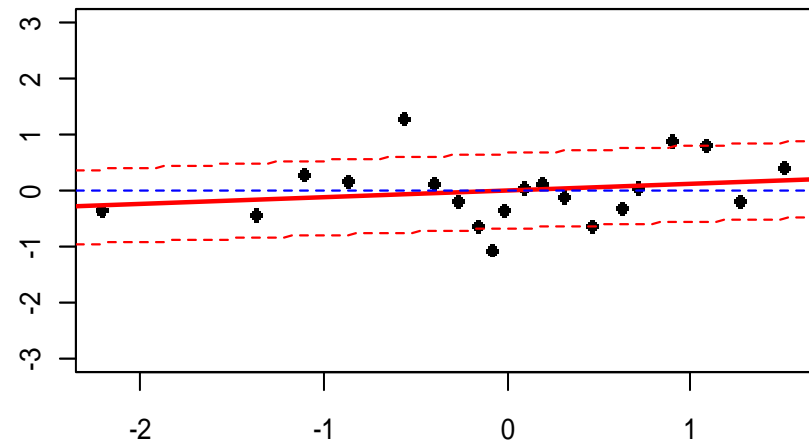
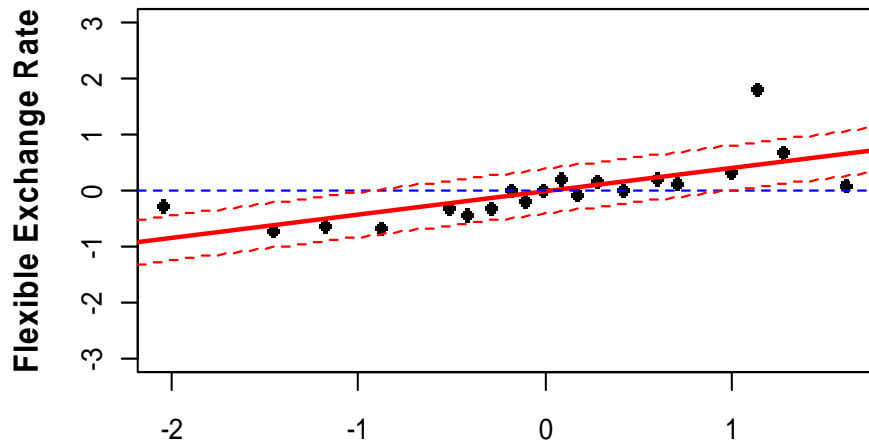
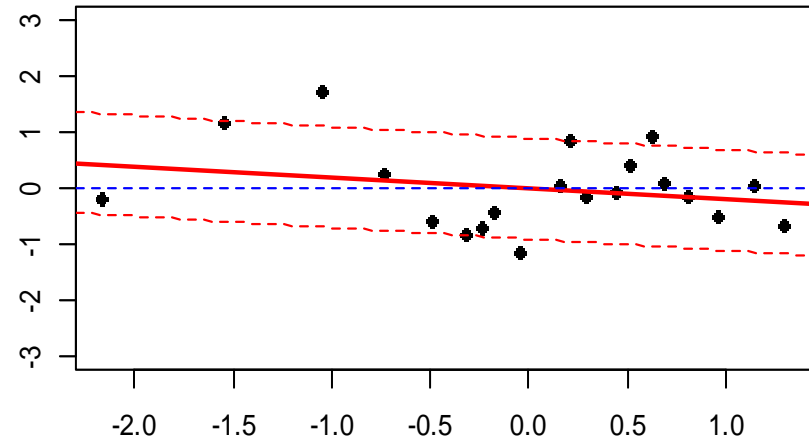


# Conditional Plotting

## No Capital Control



## Capital Control



# Main findings

- With a fixed exchange rate and no capital controls: An increase in the US interest rate by 100 basis points is followed by an increase in the interest rate by 65 basis points on average;
- Flex rate and no capital controls: an increase in interest rate by 45 bps. (still no monetary policy autonomy)
- With capital controls: domestic interest rate is uncorrelated with the US rate -> autonomy

Table 3 Coefficient estimates for baseline model for different periods

	Baseline Model	Model	Model
	1990-2009	1990-1998	1999-2009
$i_{i,t-1}^p$	<b>-0.048*</b>	-0.007	<b>-0.110*</b>
$\Delta \text{GDP growth}_{i,t}$	0.096	0.237	0.041
$\Delta \text{Inflation}_{i,t}$	<b>0.329*</b>	0.134	<b>0.413*</b>
$D_{fixed.NC} \Delta r_{i,t}^{US}$	<b>0.649*</b>	0.402	<b>0.654*</b>
$D_{fixed.C} \Delta r_{i,t}^{US}$	0.034	1.998	-0.249
$D_{flex.NC} \Delta r_{i,t}^{US}$	<b>0.450*</b>	0.492	<b>0.497*</b>
$D_{flex.C} \Delta r_{i,t}^{US}$	0.029	0.008	0.063
VIX	0.230	0.086	0.176
Adjusted R-squared	0.09	0.00	0.30
No. of Observations	827	295	532

# Robustness Check

Table 4. Coefficient estimates using different exchange rate regimes and capital controls indexes

	Re-defining capital controls	Re-defining the exchange rate regime	Using pre-assigned Taylor Rule
$i_{i,t-1}^p$	<b>-0.109*</b>	<b>-0.11*</b>	<b>-0.111*</b>
$\Delta \text{GDP growth}_{i,t}$	0.038	0.041	0.256* x0.5=0.128
$\Delta \text{Inflation}_{i,t}$	<b>0.416*</b>	<b>0.413*</b>	<b>0.256* x1.5=0.384</b>
$D_{fixed.NC} \Delta r_{i,t}^{US}$	<b>0.558*</b>	<b>0.654*</b>	<b>0.571*</b>
$D_{fixed.C} \Delta r_{i,t}^{US}$	<b>-0.659*</b>	-0.249	-0.311
$D_{flex.NC} \Delta r_{i,t}^{US}$	<b>0.322*</b>	<b>0.497*</b>	<b>0.441*</b>
$D_{flex.C} \Delta r_{i,t}^{US}$	0.005	0.063	0.005
VIX	0.17	0.176	0.148
Adjusted R-squared	0.29	0.30	0.30
No. of Observations	532	532	532

Imposed-parameter Taylor rule:  $r_i^{P*} = r^* + \pi^* + 1.5(\pi - \pi^*) + 0.5y$

Table 5 Coefficient estimates for four groups of countries using SUR

	Fixed and no capital controls	Fixed and capital controls	Flexible and no capital controls	Flexible and capital controls
$i_{i,t-1}^p$	0.011	<b>-0.056*</b>	<b>-0.118*</b>	<b>-0.118*</b>
$\Delta\text{GDP growth}_{i,t}$	<b>0.075*</b>	<b>0.075*</b>	<b>0.075*</b>	<b>0.075*</b>
$\Delta\text{Inflation}_{i,t}$	<b>0.26*</b>	<b>0.26*</b>	<b>0.26*</b>	<b>0.26*</b>
$\Delta r_{i,t}^{US}$	<b>0.669*</b>	<b>-0.204*</b>	<b>0.434*</b>	0.047
VIX	<b>-0.55*</b>	0.238	0.059	<b>0.504*</b>

- The results of the baseline model are robust to changes in exchange rate regime definition, capital control index, the Taylor rule specification, and SUR.

# Conclusions

- The trilemma might be a misleading or incomplete guide for developing countries in domestic monetary policy autonomy
- Countries with a flexible exchange rate system do not appear to be able to insulate themselves from the influence of US monetary policy if they do not have capital controls
- Capital controls do appear to buy countries a significant measure of monetary policy independence

