

The Trilemma and Monetary Policy Spillovers

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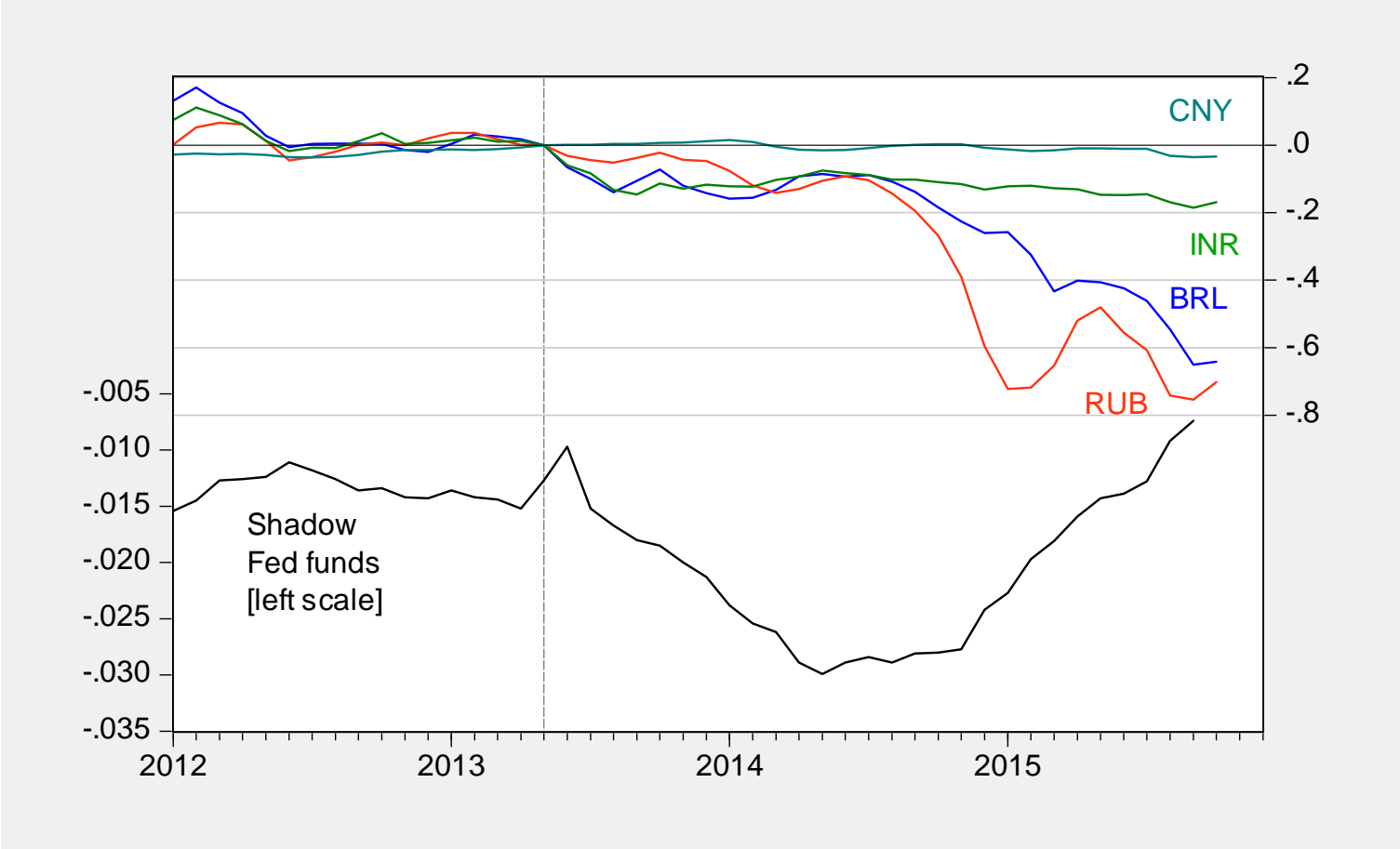
“The international monetary and financial system”

London, October 20, 2015

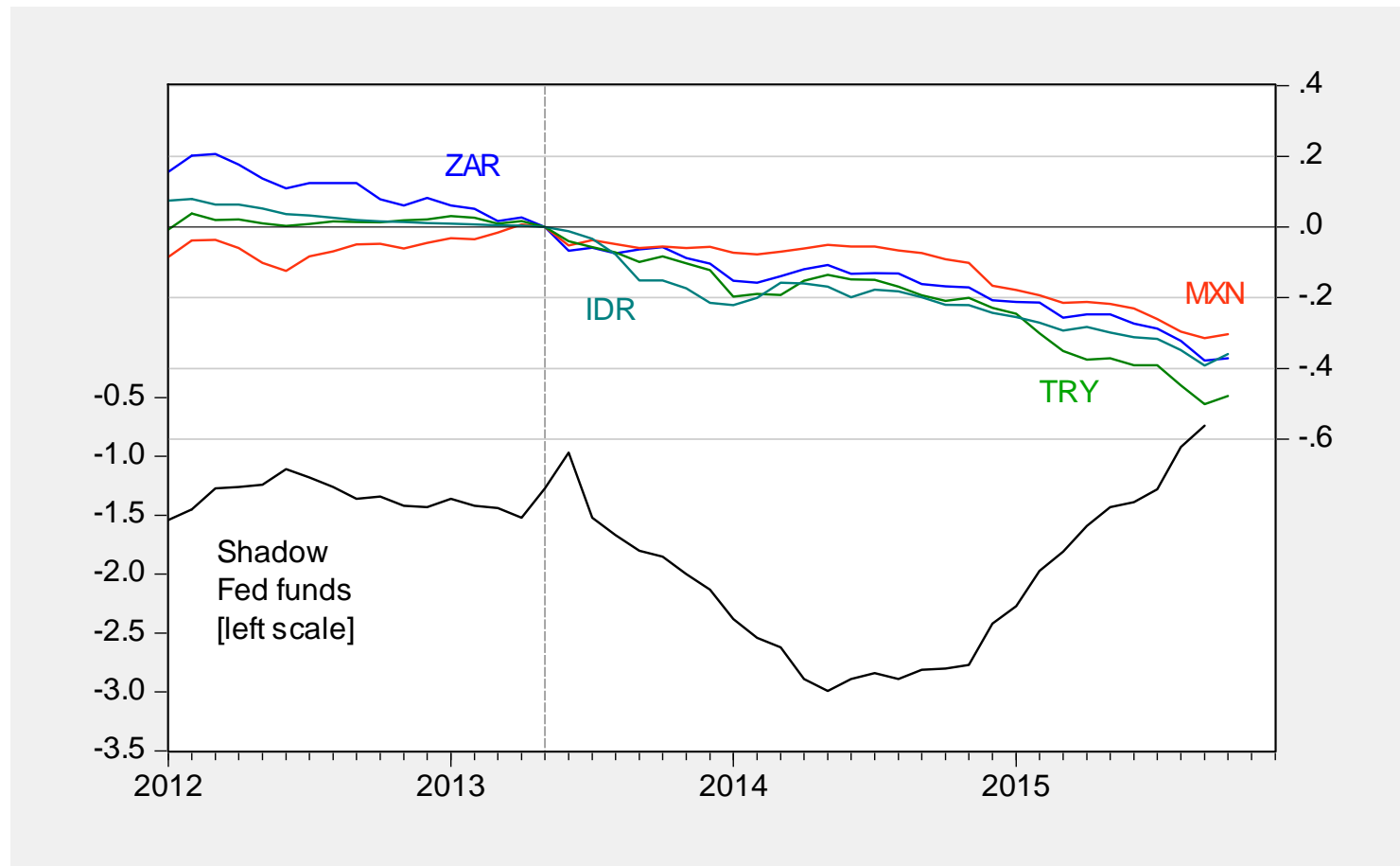
Global Financial Cycles?

- Policymakers around the globe anxiously await decisions in major economies
- Small open economies are particularly sensitive to policy changes in the economic centers (CEs)
 - “Taper tantrum”
 - Anticipated “takeoff” in the U.S.

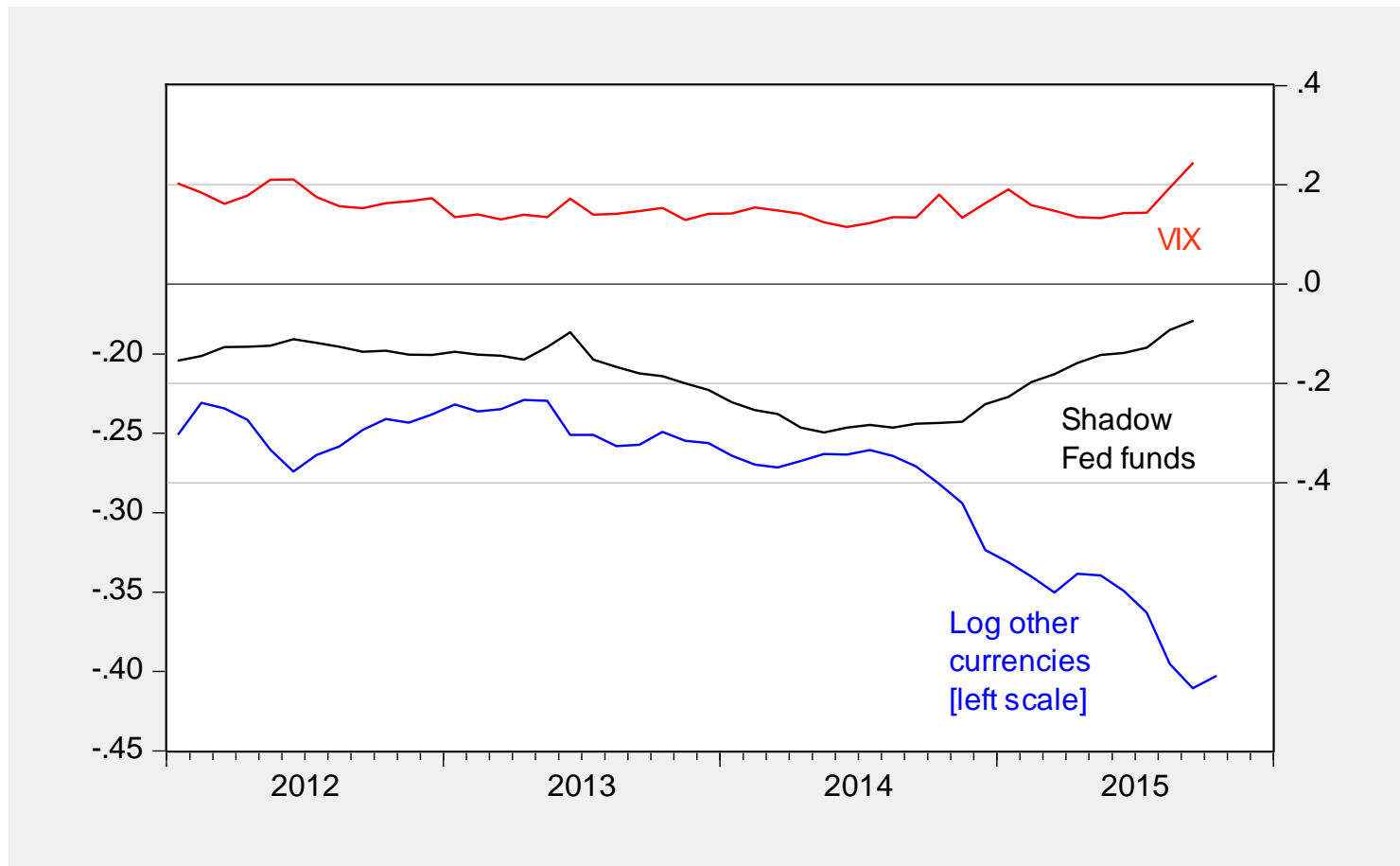
BRIC Exchange Rates



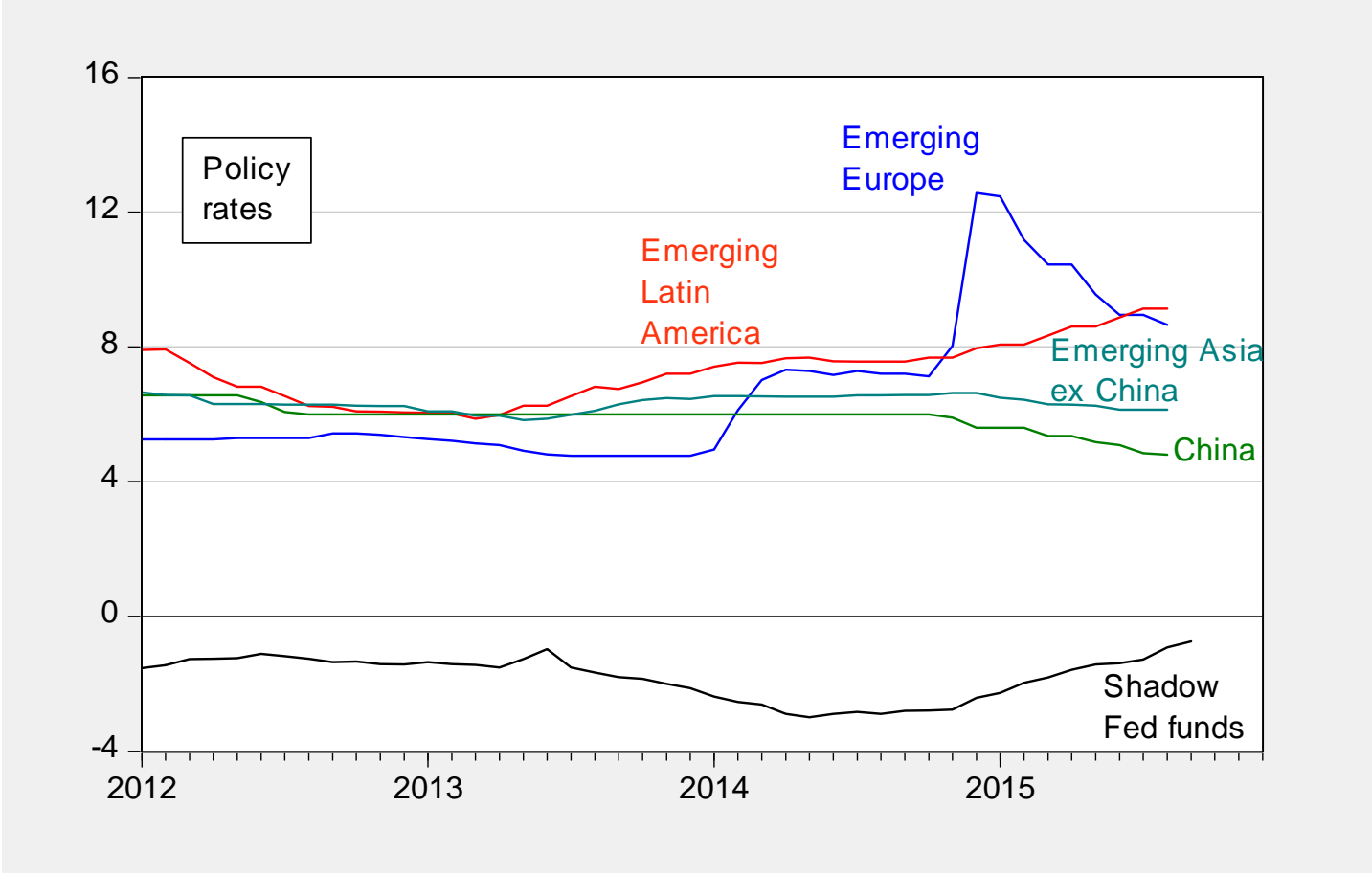
Emerging Market Exchange Rates



Core Rates, VIX, Exchange Rates



Policy Rates



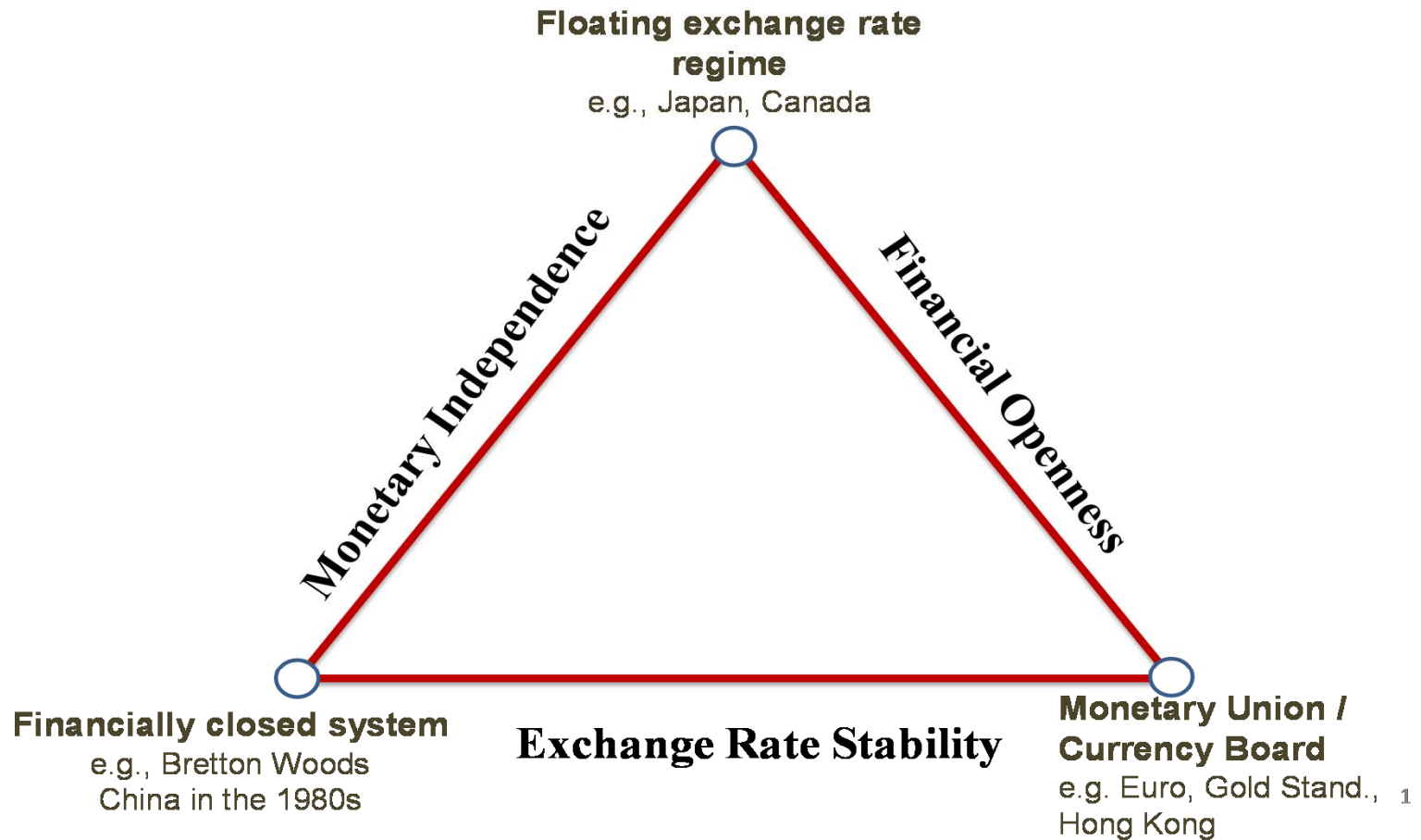
The Debate Begins

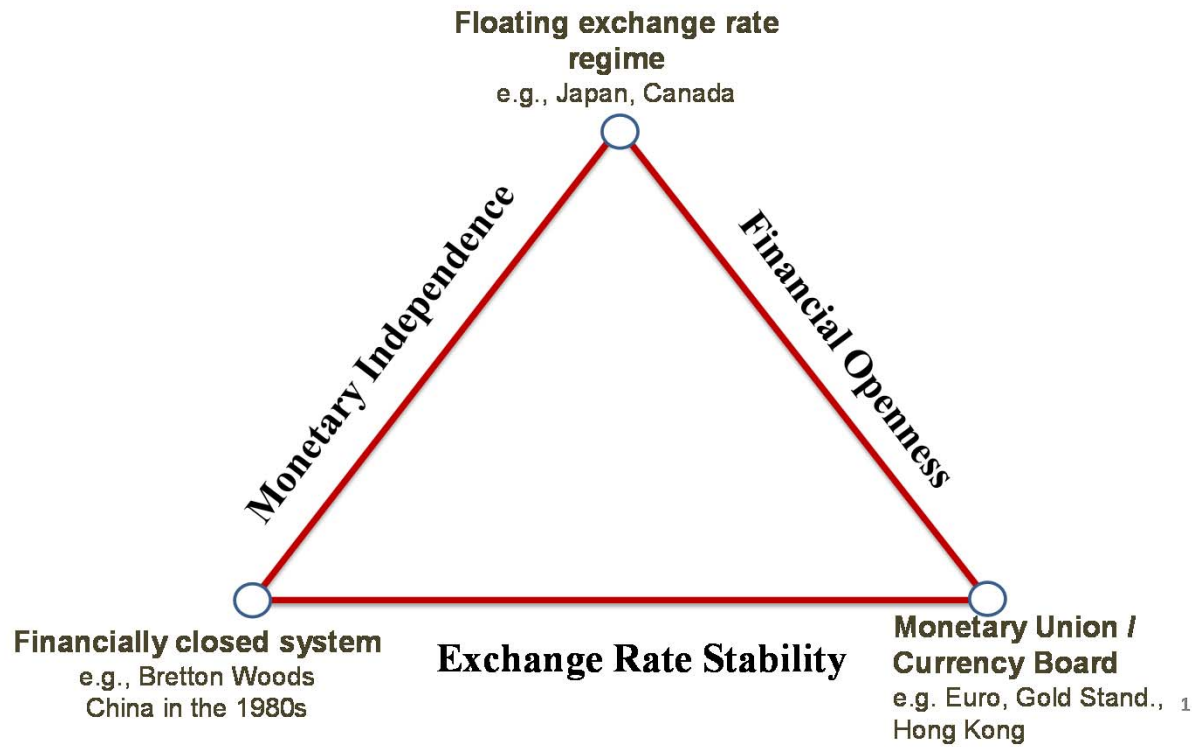
Hélène Rey @ Jackson Hole, 2013:

“Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence”

- “Whenever capital is freely mobile, the global financial cycle constrains national monetary policies *regardless of the exchange rate regime.*”
- It is a dilemma between capital mobility and monetary policy independence, not trilemma

The Trilemma





Rey (2013)

Capital
Mobility

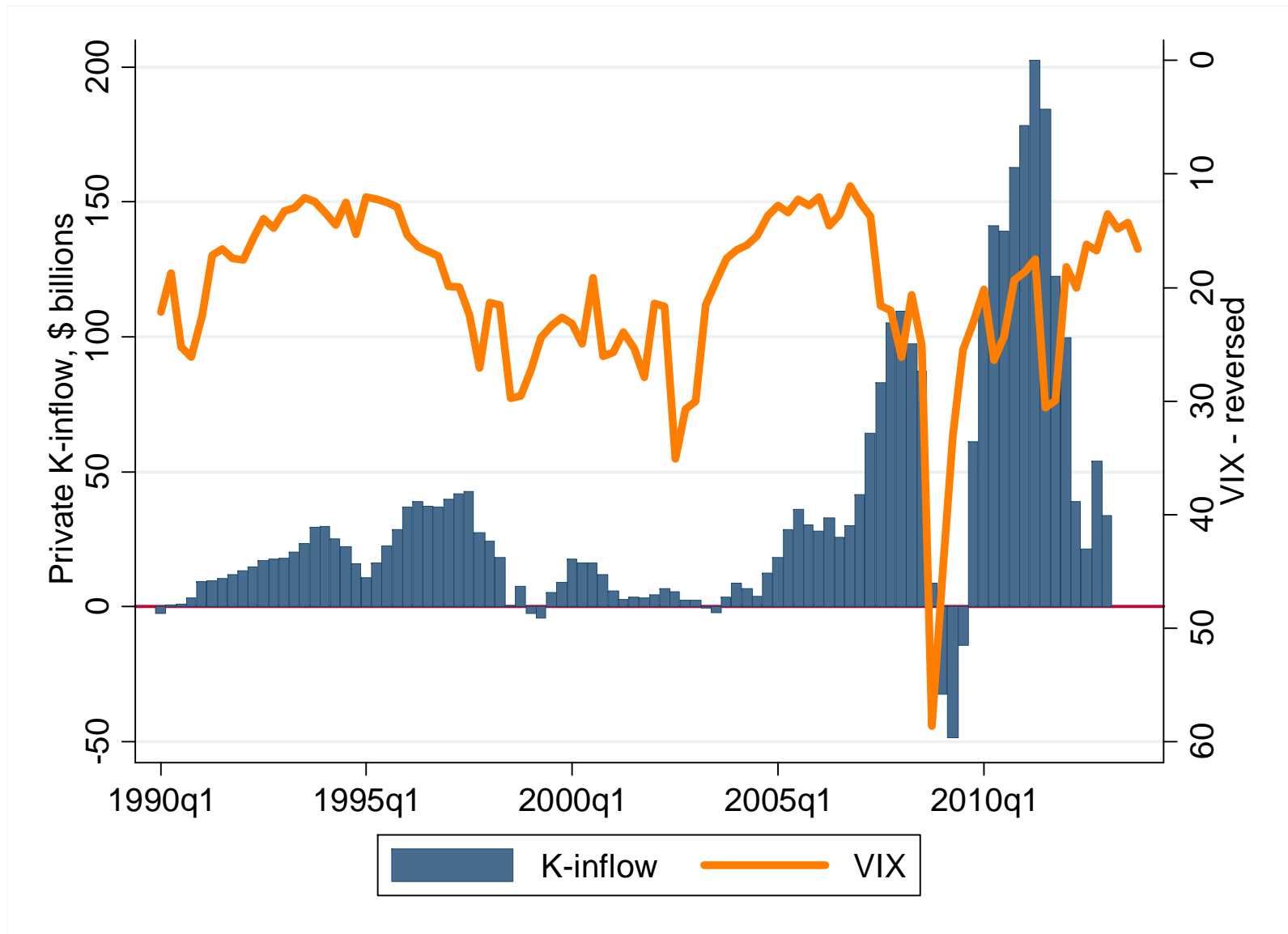
Monetary
Independence

“irreconcilable duo”

Rey (2013)

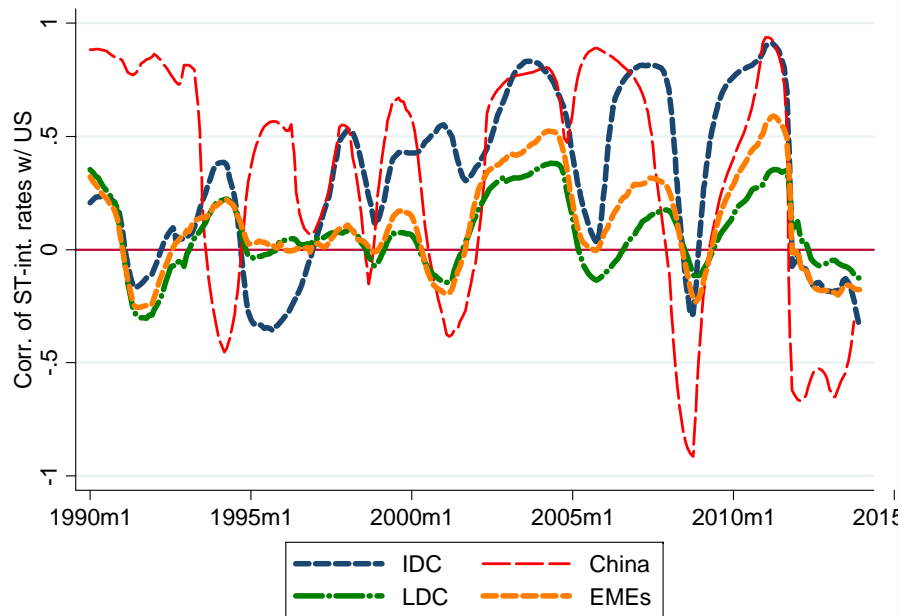
- The CE's monetary policy influences other countries' national MPs through capital flows, credit growth, and bank leverages
- The “trilemma” reduces to an “*irreconcilable duo*” of monetary independence and K mobility
 - The types of exchange rate regime of the non-CEs no longer matter
 - Restricting capital mobility is the only way for non-central countries to retain monetary autonomy

Net capital flow to EMEs is highly correlated with perceived risk

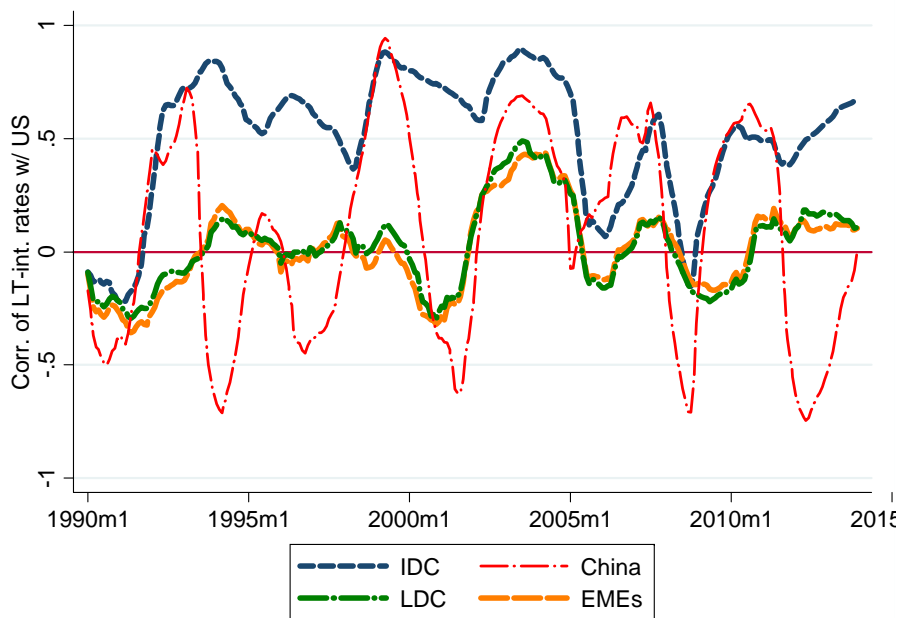


36 month
Rolling
correlations

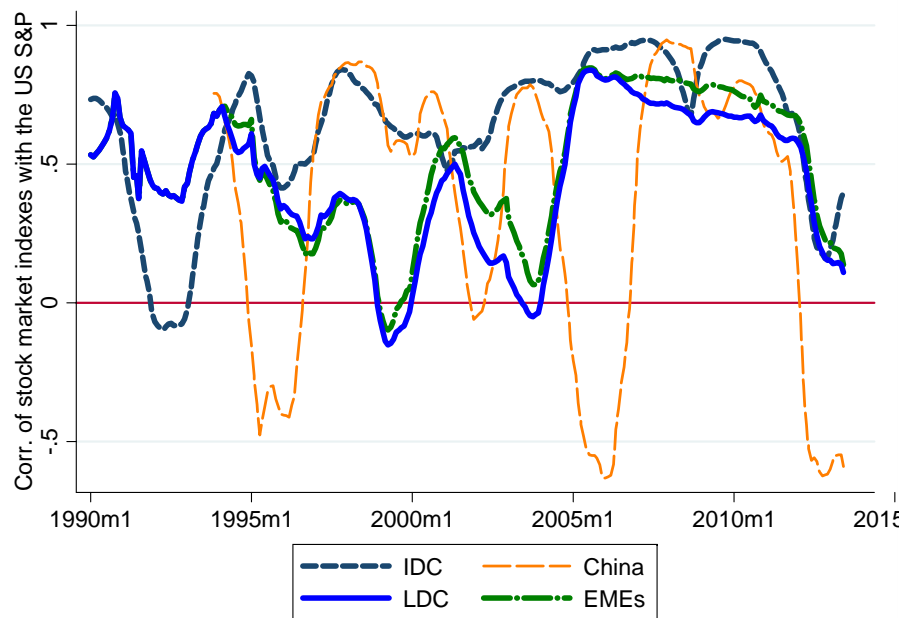
ST-Interest Rates



LT-Interest Rates



Stock Market Price Indexes



The Bottom Line ...

- The extent of sensitivity to core economies' conditions differs across policy regimes and economies w/ different structures
- We investigate:
 - How the sensitivity to the core economies' conditions differs across countries, over time for different types of financial variables
 - What factors determine the extent to which the financial conditions of the center economies affect those of developing countries and EMEs

Two-Step Approach to Measuring Impact

Step 1: Estimate sensitivities

$$R_{it}^F = \alpha_{Fit} + \sum_{g=1}^G \beta_{Fit}^G Z_{it}^G + \sum_{c=1}^C \gamma_{Fit}^C X_{it}^C + \phi_{Fit} Y_{it} + \varepsilon_{it}. \quad (1)$$

Step 2: Relate sensitivities to macro variables

$$\hat{\gamma}_{Fit}^C = \theta_0 + \theta_1 OMP_{Fit} + \theta_2 MC_{Fit} + \theta_3 LINK_{Fit} \\ + \theta_4 INST_{Fit} + \theta_5 CRISIS_{Fit} + u_{Fit}. \quad (2)$$

Step 1 – estimate γ 's

$$R_{it}^F = \alpha_{Fit} + \sum_{g=1}^G \beta_{Fit}^G Z_{it}^G + \sum_{c=1}^C \gamma_{Fit}^C X_{it}^C + \phi_{Fit} Y_{it} + \varepsilon_{it}. \quad (1)$$

- R^F : a return in local country
Policy ST interest rates, sovereign bond term spread, changes in stock market price indexes, and changes in the REER
- X^c : a vector of corresponding returns of the “center economies”
- Z^G : global factors
 - **Real**: PC of the U.S., ECB, and BOJ policy rates, oil, commodity
 - **Financial**: VIX, Ted-spread
- Y : local factor (y/y IP growth)
- Rolling estimation w/ 36-month windows, each of 100 countries
- Model w/ and w/out China as one of the CEs

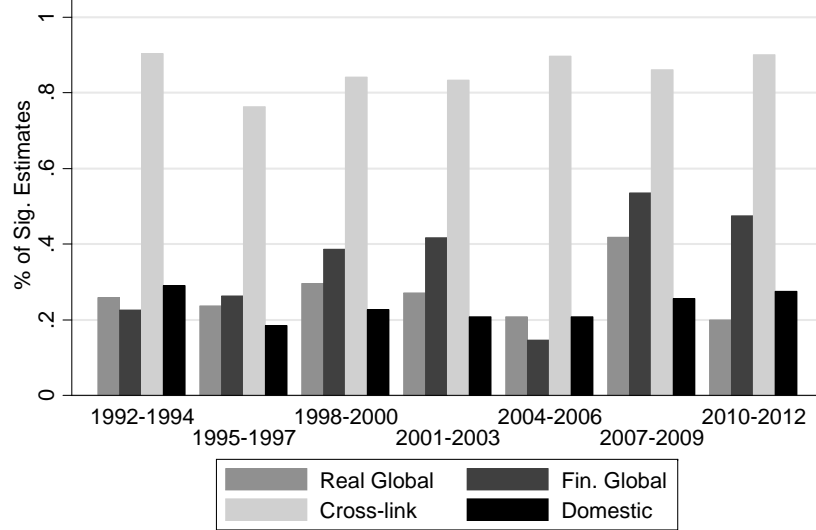
Step 2 – Relate γ 's to Policies, Conditions, Institutions

$$\hat{\gamma}_{Fit}^C = \theta_0 + \theta_1 OMP_{Fit} + \theta_2 MC_{Fit} + \theta_3 LINK_{Fit} + \theta_4 INST_{Fit} + \theta_5 CRISIS_{Fit} + u_{Fit}. \quad (2)$$

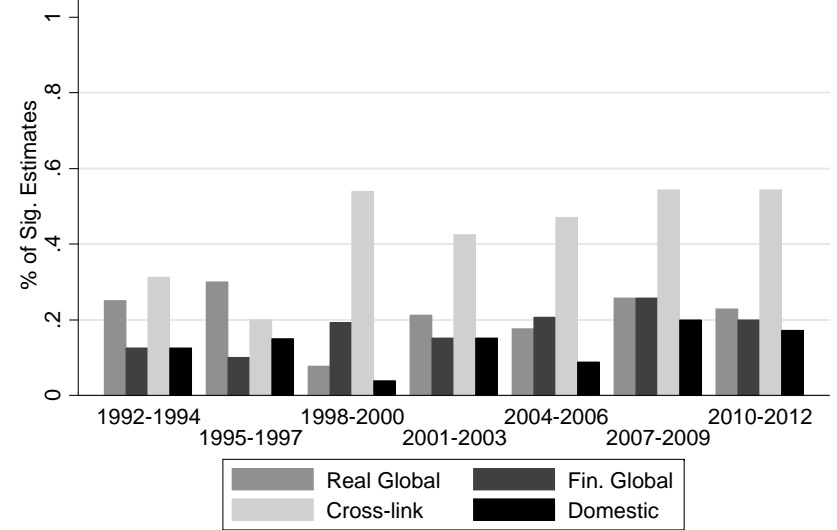
- **OMP**: Open Macro Policies – Exchange rate stability, financial openness (Chinn-Ito), Int'l reserve accumulation
- **MC**: Macro conditions – infl. volatility, CA balances, public finances (budget balance or gov't gross debt)
- **LINK**: Import Demand by CEs, bank lending by CEs, FDI provided by CEs, degree of trade competition w/r/t CEs
- **INST**: LEGAL (PC of BQ, LAO, Anti-corrupt), Fin. Dev.
- **CRISIS**: currency and banking
- 1986-2012, 3-yr panels, about 60 countries
- $(i \times 3 \times t)$ γ 's

Proportion of Significant F-Tests

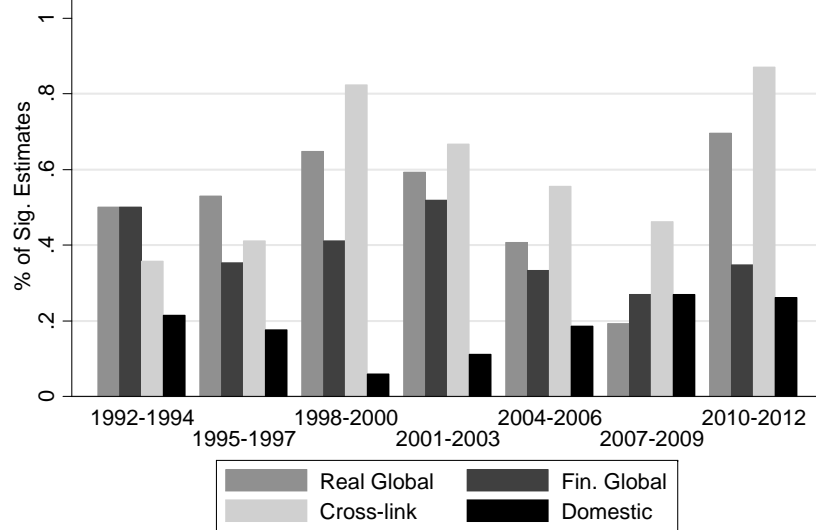
Policy Interest Rate



Stock Market Price Changes



Sovereign Term Spread



REER

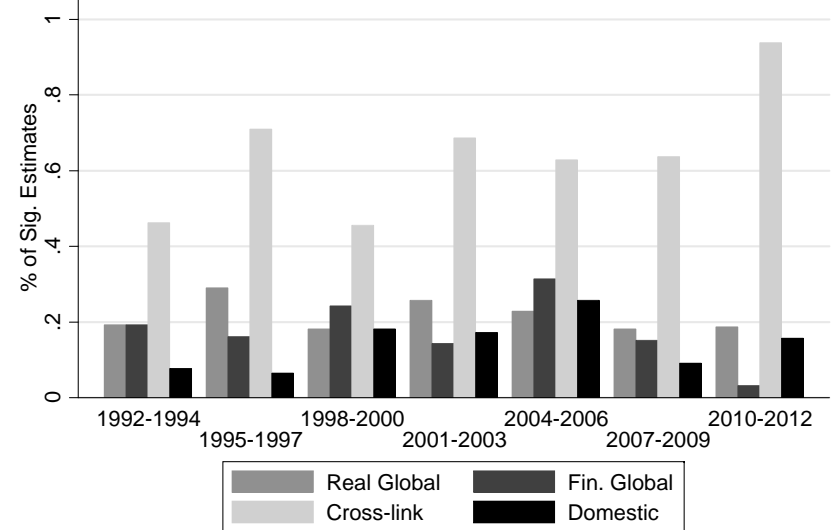
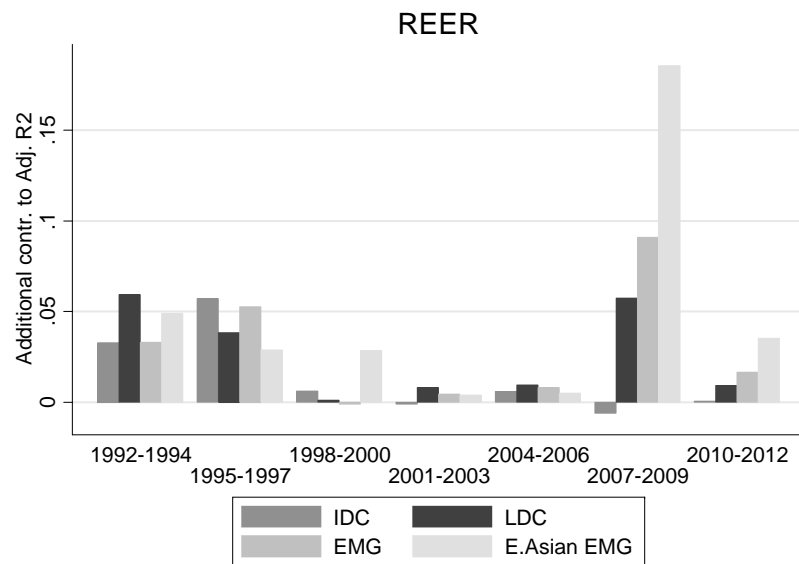
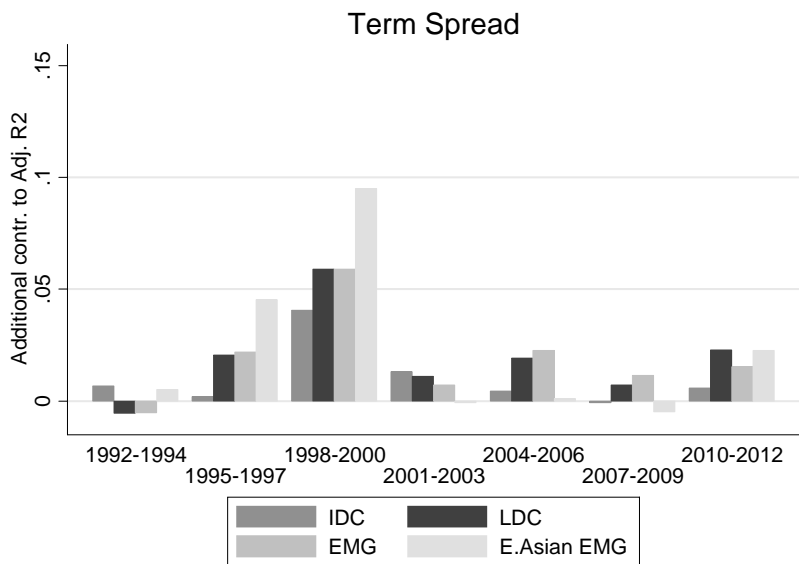
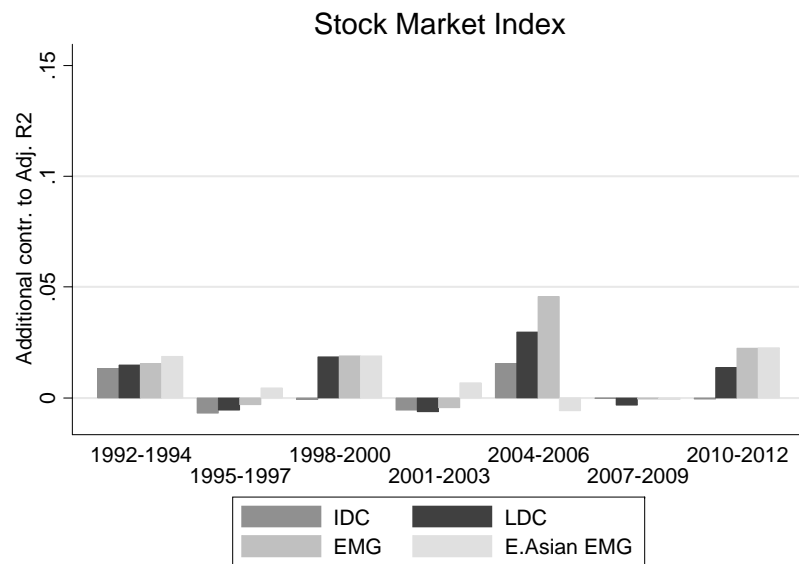
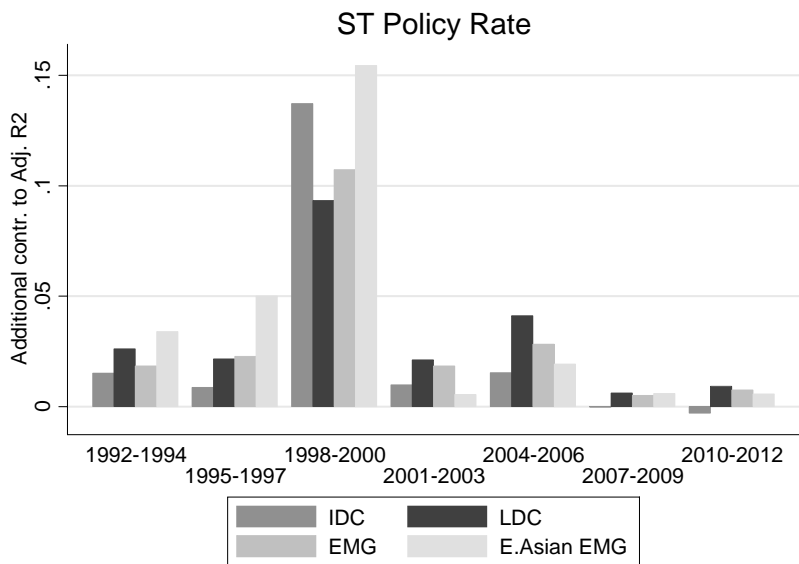


Figure 6: Contribution to Adjusted R2 of Adding China as a Center economy



First-Step Estimates: Summary

- The link with the CEs has been dominant for developing and emerging market economies in the last two decades
- The movements of policy interest rate and term spreads are more sensitive to global financial shocks in the late 1990s through early 2000s and since 2008
- China does not exert substantial influence in financial markets

Table 1-1: Factors Affecting Policy Interest Rate Sensitivity, 1986-2012

		LDC (5)	LDC (6)	EMG (7)	EMG (8)
<i>Open Macro Policy (OMP)</i>	Exchange rate stability	4.862 (2.693)*	3.392 (2.447)	3.657 (2.448)	3.098 (2.268)
	Financial openness	5.455 (2.403)**	5.777 (2.259)**	7.930 (2.245)***	7.491 (2.154)***
	IR Holding	-13.803 (7.342)*	-11.343 (6.541)*	-12.400 (6.254)**	-13.557 (5.820)**
<i>Macro. Conditions (MC)</i>	CA balance (%)	19.282 (9.666)**	24.284 (10.541)**	41.092 (10.507)***	39.017 (10.451)***
	Inflation Vol.	19.270 (34.312)	23.910 (15.012)	9.839 (28.624)	10.727 (12.515)
	Gross debt (%)	-0.963 (1.592)		-1.420 (1.289)	
	Budget balance (%)		-2.145 (15.342)		22.313 (16.492)
<i>External Link (LINK)</i>	Trade competition	-4.540 (9.166)	-6.454 (7.550)	-11.187 (7.868)	-11.246 (6.633)*
	Trade demand	6.868 (11.125)	8.340 (10.116)	11.068 (9.170)	11.898 (8.609)
	FDI from CEs	49.264 (16.003)***	44.044 (15.113)***	42.633 (13.001)***	41.347 (12.732)***
<i>Institutional Dev. (INST)</i>	Fin. Dev.	9.570 (2.500)***	7.651 (2.427)***	8.137 (2.207)***	7.931 (2.168)***
	Legal Dev.	-4.831 (6.555)	-5.933 (5.974)	-7.132 (5.530)	-7.115 (5.199)
<i>Crises (CRISIS)</i>	Currency crisis	-3.589 (2.595)	-2.712 (2.178)	-3.212 (2.167)	-3.422 (1.872)*
	Banking crisis	0.544 (2.096)	1.410 (1.838)	0.766 (1.870)	1.292 (1.676)
	<i>N</i>	386	432	327	371
	Adj. R2	0.09	0.08	0.12	0.13
	# of countries	41	41	31	31

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	Inflation Vol.	19.270 (34.312)	23.910 (15.012)	9.839 (28.624)	10.727 (12.515)
	Gross debt (%)	-0.963 (1.592)		-1.420 (1.289)	
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<i>External Link (LINK)</i>	Trade competition	-4.540 (9.166)	-6.454 (7.550)	-11.187 (7.868)	-11.246 (6.633)*
	Trade demand	6.868 (11.125)	8.340 (10.116)	11.068 (9.170)	11.898 (8.609)
	FDI from CEs	49.264 (16.003)***	44.044 (15.113)***	42.633 (13.001)***	41.347 (12.732)***
<i>Institutional Dev. (INST)</i>	Fin. Dev.	9.570 (2.500)***	7.651 (2.427)***	8.137 (2.207)***	7.931 (2.168)***
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	<i>N</i>	386	432	327	371
	Adj. R2	0.09	0.08	0.12	0.13
	# of countries	41	41	31	31

Table 1-2: Factors Affecting **Stock Market Sensitivity, 1986-2012**

		LDC (5)	LDC (6)	EMG (7)	EMG (8)
<i>Open Macro Policy (OMP)</i>	Exchange rate stability	-0.291 (0.124)**	-0.189 (0.125)	-0.318 (0.139)**	-0.220 (0.139)
	Financial openness	-0.207 (0.101)**	-0.101 (0.113)	-0.089 (0.116)	0.013 (0.126)
	IR Holding	0.133 (0.302)	-0.027 (0.326)	0.216 (0.330)	0.057 (0.368)
<i>Macro. Conditions (MC)</i>	CA balance (%)	-0.104 (0.384)	0.341 (0.475)	-0.047 (0.545)	0.381 (0.585)
	Inflation Vol.	2.111 (1.618)	1.341 (0.695)*	1.400 (1.691)	1.111 (0.716)
	Gross debt (%)	0.171 (0.066)***		0.175 (0.068)**	
	Budget balance (%)		-0.714 (0.703)		-0.840 (0.963)
<i>External Link (LINK)</i>	Trade competition	0.692 (0.368)*	0.712 (0.399)*	0.441 (0.404)	0.490 (0.434)
	Trade demand	-0.038 (0.452)	-0.003 (0.477)	0.178 (0.473)	0.198 (0.503)
	FDI from CEs	-1.040 (0.606)*	-0.431 (0.651)	-1.270 (0.626)**	-0.626 (0.676)
<i>Institutional Dev. (INST)</i>	Fin. Dev.	-0.202 (0.101)**	-0.154 (0.112)	-0.154 (0.110)	-0.108 (0.120)
	Legal Dev.	0.008 (0.265)	-0.282 (0.276)	-0.015 (0.276)	-0.329 (0.287)
<i>Crises (CRISIS)</i>	Currency crisis	-0.052 (0.115)	-0.032 (0.109)	-0.058 (0.118)	-0.038 (0.112)
	Banking crisis	0.008 (0.083)	-0.002 (0.085)	-0.003 (0.092)	-0.023 (0.094)
	<i>N</i>	325	357	290	322
	Adj. R2	0.05	0.03	0.03	0.01
	# of countries	31	31	26	26

Table 1-3: Factors Affecting REER Sensitivity, 1986-2012

		LDC (5)	LDC (6)	EMG (7)	EMG (8)
<i>Open Macro Policy (OMP)</i>	Exchange rate stability	0.718 (0.132)***	0.807 (0.121)***	0.725 (0.135)***	0.760 (0.123)***
	Financial openness	0.377 (0.126)***	0.311 (0.121)**	0.157 (0.137)	0.074 (0.132)
	IR Holding	1.038 (0.334)***	0.919 (0.320)***	0.761 (0.331)**	0.606 (0.314)*
<i>Macro. Conditions (MC)</i>	CA balance (%)	0.921 (0.545)*	0.459 (0.536)	1.360 (0.563)**	0.684 (0.553)
	Inflation Vol.	2.824 (1.674)*	-0.840 (0.671)	2.706 (1.672)	-0.868 (0.634)
	Gross debt (%)	-0.072 (0.078)		-0.138 (0.075)*	
	Budget balance (%)		1.018 (0.963)		2.366 (0.956)**
<i>External Link (LINK)</i>	Trade competition	-1.625 (0.427)***	-1.262 (0.372)***	-1.275 (0.429)***	-0.866 (0.374)**
	Trade demand	1.763 (0.483)***	1.877 (0.460)***	2.022 (0.463)***	2.151 (0.439)***
	FDI from CEs	-0.335 (0.673)	-0.372 (0.668)	-0.110 (0.643)	-0.272 (0.639)
<i>Institutional Dev. (INST)</i>	Fin. Dev.	-0.171 (0.119)	-0.211 (0.117)*	-0.076 (0.119)	-0.125 (0.117)
	Legal Dev.	-0.007 (0.296)	-0.212 (0.290)	0.076 (0.296)	-0.234 (0.289)
<i>Crises (CRISIS)</i>	Currency crisis	0.282 (0.127)**	0.165 (0.113)	0.349 (0.120)***	0.207 (0.108)*
	Banking crisis	0.001 (0.096)	-0.108 (0.087)	-0.092 (0.102)	-0.204 (0.091)**
	<i>N</i>	294	332	254	290
	Adj. R2	0.22	0.23	0.27	0.28
	# of countries	30	30	23	23

Table 1-3: Factors Affecting REER Sensitivity, 1986-2012

		LDC (5)	LDC (6)	EMG (7)	EMG (8)
<i>Open Macro Policy (OMP)</i>	Exchange rate stability	0.718 (0.132)***	0.807 (0.121)***	0.725 (0.135)***	0.760 (0.123)***
	Financial openness	0.377 (0.126)***	0.311 (0.121)**	0.157 (0.137)	0.074 (0.132)
	IR Holding	1.038 (0.334)***	0.919 (0.320)***	0.761 (0.331)**	0.606 (0.314)*
	CA balance (%)	0.921 (0.545)*	0.459 (0.536)	1.360 (0.563)**	0.684 (0.553)
<i>Macro. Conditions (MC)</i>	Inflation Vol.	2.824 (1.674)*	-0.840 (0.671)	2.706 (1.672)	-0.868 (0.634)
	Gross debt (%)	-0.072 (0.078)		-0.138 (0.075)*	
	Budget balance (%)		1.018 (0.963)		2.366 (0.956)**
	Trade competition	-1.625 (0.427)***	-1.262 (0.372)***	-1.275 (0.429)***	-0.866 (0.374)**
<i>External Link (LINK)</i>	Trade demand	1.763 (0.483)***	1.877 (0.460)***	2.022 (0.463)***	2.151 (0.439)***
	FDI from CEs	-0.335 (0.673)	-0.372 (0.668)	-0.110 (0.643)	-0.272 (0.639)
	Fin. Dev.	-0.171 (0.119)	-0.211 (0.117)*	-0.076 (0.119)	-0.125 (0.117)
<i>Institutional Dev. (INST)</i>	Legal Dev.	-0.007 (0.296)	-0.212 (0.290)	0.076 (0.296)	-0.234 (0.289)
	Currency crisis	0.282 (0.127)**	0.165 (0.113)	0.349 (0.120)***	0.207 (0.108)*
<i>Crises (CRISIS)</i>	Banking crisis	0.001 (0.096)	-0.108 (0.087)	-0.092 (0.102)	-0.204 (0.091)**
	<i>N</i>	294	332	254	290
	Adj. R2	0.22	0.23	0.27	0.28
	# of countries	30	30	23	23

Summary

- An economy that pursues greater exchange rate stability and financial openness would face a stronger link with the center economies through policy interest rates and real effective exchange rate movements

Table 2-1: Interactive Effects and **Interest Rate Sensitivity**

	LDC (4)	LDC (5)	LDC (6)	EMG (7)	EMG (8)	EMG (9)
Exchange rate stability	5.309 (2.751)*	-7.884 (7.206)	-11.771 (8.226)	5.130 (2.570)**	-5.971 (5.128)	-3.383 (5.496)
Financial openness	-1.269 (5.169)	6.516 (3.105)**	5.335 (7.412)	0.974 (4.436)	9.544 (2.450)***	3.303 (4.863)
IR Holding	-12.865 (7.555)*	-13.232 (9.713)	-10.147 (10.706)	-10.817 (6.644)	-9.973 (7.006)	-9.538 (7.298)
CA balance (%)	28.248 (23.271)	41.970 (29.384)	63.029 (39.890)	19.791 (20.440)	32.486 (22.619)	21.459 (26.431)
Gross debt (%)	0.497 (3.049)	-0.544 (4.196)	1.770 (5.395)	-0.799 (2.508)	-0.481 (2.829)	0.318 (3.406)
Trade demand	-4.779 (23.448)	-56.321 (26.507)**	-100.895 (40.442)**	-2.923 (19.569)	-23.766 (18.546)	-37.035 (26.549)
Fin. Dev.	17.031 (4.719)***	30.152 (5.726)***	30.181 (7.591)***	17.133 (3.992)***	19.735 (3.985)***	23.187 (4.896)***
KAO x CAB	-8.557 (31.196)		-35.884 (44.266)	41.950 (28.319)		32.968 (31.667)
KAO x Debt	-2.212 (5.014)		-6.466 (7.066)	-1.060 (4.206)		-1.710 (4.516)
KAO x Trade Demand	16.625 (29.872)		43.098 (41.279)	31.202 (25.211)		33.056 (26.674)
KAO x FD.	-15.549 (6.714)**		18.749 (9.583)*	-17.676 (5.954)***		-11.610 (6.511)*
ERS x CAB		-49.790 (43.898)	-52.504 (49.343)		7.265 (35.144)	-2.590 (37.970)
ERS x Debt		-3.001 (7.163)	-1.671 (7.990)		-2.863 (4.841)	-2.430 (5.062)
ERS x Trade Demand		123.275 (48.777)**	148.706 (53.871)***		67.204 (35.799)*	62.633 (36.936)*
ERS x FD.		-30.529 (9.015)***	-43.333 (10.280)***		-21.751 (6.665)***	-16.831 (7.173)**
<i>N</i>	386	386	386	327	327	327
Adj. R2	0.09	0.15	0.18	0.16	0.15	0.16
# of countries	41	41	41	31	31	31

Table 2-1: Interactive Effects and **Interest Rate Sensitivity**

	LDC (4)	LDC (5)	LDC (6)	EMG (7)	EMG (8)	EMG (9)
Exchange rate stability	5.309 (2.751)*	-7.884 (7.206)	-11.771 (8.226)	5.130 (2.570)**	-5.971 (5.128)	-3.383 (5.496)
Financial openness	-1.269 (5.169)	6.516 (3.105)**	5.335 (7.412)	0.974 (4.436)	9.544 (2.450)***	3.303 (4.863)
IR Holding	-12.865 (7.555)*	-13.232 (9.713)	-10.147 (10.706)	-10.817 (6.644)	-9.973 (7.006)	-9.538 (7.298)
CA balance (%)	28.248 (23.271)	41.970 (29.384)	63.029 (39.890)	19.791 (20.440)	32.486 (22.619)	21.459 (26.431)
Gross debt (%)	0.497 (3.049)	-0.544 (4.196)	1.770 (5.395)	-0.799 (2.508)	-0.481 (2.829)	0.318 (3.406)
Trade demand	-4.779 (23.448)	-56.321 (26.507)**	-100.895 (40.442)**	-2.923 (19.569)	-23.766 (18.546)	-37.035 (26.549)
Fin. Dev.	17.031 (4.719)***	30.152 (5.726)***	30.181 (7.591)***	17.133 (3.992)***	19.735 (3.985)***	23.187 (4.896)***
KAO x CAB	-8.557 (31.196)		-35.884 (44.266)	41.950 (28.319)		32.968 (31.667)
KAO x Debt	-2.212 (5.014)		-6.466 (7.066)	-1.060 (4.206)		-1.710 (4.516)
KAO x Trade Demand	16.625 (29.872)		43.098 (41.279)	31.202 (25.211)		33.056 (26.674)
KAO x FD.	-15.549 (6.714)**		18.749 (9.583)*	-17.676 (5.954)***		-11.610 (6.511)*
ERS x CAB		-49.790 (43.898)	-52.504 (49.343)		7.265 (35.144)	-2.590 (37.970)
ERS x Debt		-3.001 (7.163)	-1.671 (7.990)		-2.863 (4.841)	-2.430 (5.062)
ERS x Trade Demand		123.275 (48.777)**	148.706 (53.871)***		67.204 (35.799)*	62.633 (36.936)*
ERS x FD.		-30.529 (9.015)***	-43.333 (10.280)***		-21.751 (6.665)***	-16.831 (7.173)**
<i>N</i>	386	386	386	327	327	327
Adj. R2	0.09	0.15	0.18	0.16	0.15	0.16
# of countries	41	41	41	31	31	31

Table 2-3: Interactive Effects and REER Sensitivity

	LDC (4)	LDC (5)	LDC (6)	EMG (7)	EMG (8)	EMG (9)
Exchange rate stability	0.735 (0.134)***	0.552 (0.327)*	0.566 (0.331)*	0.743 (0.136)***	0.520 (0.329)	0.528 (0.335)
Financial openness	0.523 (0.277)*	0.431 (0.122)***	0.537 (0.266)**	0.381 (0.269)	0.188 (0.131)	0.392 (0.255)
IR Holding	1.042 (0.344)***	1.682 (0.333)***	1.668 (0.342)***	0.717 (0.342)**	1.188 (0.326)***	1.131 (0.339)***
CA balance (%)	-0.139 (1.056)	-2.651 (1.024)**	-2.966 (1.285)**	0.110 (1.044)	-0.849 (1.036)	-1.175 (1.217)
Gross debt (%)	-0.215 (0.155)	-0.435 (0.155)***	-0.525 (0.195)***	-0.278 (0.146)*	-0.464 (0.147)***	-0.541 (0.184)***
Trade demand	1.920 (1.019)*	1.135 (0.879)	1.200 (1.286)	2.404 (0.972)**	1.030 (0.843)	1.072 (1.212)
Fin. Dev.	-0.253 (0.217)	0.461 (0.195)**	0.371 (0.256)	-0.260 (0.213)	0.475 (0.186)**	0.276 (0.239)
KAO x CAB	1.426 (1.424)		0.535 (1.383)	1.873 (1.487)		0.533 (1.463)
KAO x Debt	0.258 (0.249)		0.182 (0.242)	0.247 (0.237)		0.151 (0.226)
KAO x Trade Demand	-0.052 (1.340)		0.052 (1.292)	-0.291 (1.279)		0.032 (1.215)
KAO x FD.	0.087 (0.330)		0.078 (0.318)	0.271 (0.337)		0.388 (0.324)
ERS x CAB		4.950 (1.640)***	4.834 (1.672)***		2.873 (1.634)*	2.722 (1.713)
ERS x Debt		0.727 (0.281)**	0.714 (0.284)**		0.638 (0.273)**	0.631 (0.277)**
ERS x Trade Demand		0.759 (1.750)	0.748 (1.782)		1.893 (1.734)	1.809 (1.761)
ERS x FD.		-1.326 (0.348)***	-1.280 (0.354)***		-1.217 (0.341)***	-1.263 (0.354)***
<i>N</i>	294	294	294	254	254	254
Adj. R2	0.21	0.32	0.31	0.27	0.37	0.36
# of countries	30	30	30	23	23	23

Table 2-3: Interactive Effects and REER Sensitivity

	LDC (4)	LDC (5)	LDC (6)	EMG (7)	EMG (8)	EMG (9)
Exchange rate stability	0.735 (0.134)***	0.552 (0.327)*	0.566 (0.331)*	0.743 (0.136)***	0.520 (0.329)	0.528 (0.335)
Financial openness	0.523 (0.277)*	0.431 (0.122)***	0.537 (0.266)**	0.381 (0.269)	0.188 (0.131)	0.392 (0.255)
IR Holding	1.042 (0.344)***	1.682 (0.333)***	1.668 (0.342)***	0.717 (0.342)**	1.188 (0.326)***	1.131 (0.339)***
CA balance (%)	-0.139 (1.056)	-2.651 (1.024)**	-2.966 (1.285)**	0.110 (1.044)	-0.849 (1.036)	-1.175 (1.217)
Gross debt (%)	-0.215 (0.155)	-0.435 (0.155)***	-0.525 (0.195)***	-0.278 (0.146)*	-0.464 (0.147)***	-0.541 (0.184)***
Trade demand	1.920 (1.019)*	1.135 (0.879)	1.200 (1.286)	2.404 (0.972)**	1.030 (0.843)	1.072 (1.212)
Fin. Dev.	-0.253 (0.217)	0.461 (0.195)**	0.371 (0.256)	-0.260 (0.213)	0.475 (0.186)**	0.276 (0.239)
KAO x CAB	1.426 (1.424)		0.535 (1.383)	1.873 (1.487)		0.533 (1.463)
KAO x Debt	0.258 (0.249)		0.182 (0.242)	0.247 (0.237)		0.151 (0.226)
KAO x Trade Demand	-0.052 (1.340)		0.052 (1.292)	-0.291 (1.279)		0.032 (1.215)
KAO x FD.	0.087 (0.330)		0.078 (0.318)	0.271 (0.337)		0.388 (0.324)
ERS x CAB		4.950 (1.640)***	4.834 (1.672)***		2.873 (1.634)*	2.722 (1.713)
ERS x Debt		0.727 (0.281)**	0.714 (0.284)**		0.638 (0.273)**	0.631 (0.277)**
ERS x Trade Demand		0.759 (1.750)	0.748 (1.782)		1.893 (1.734)	1.809 (1.761)
ERS x FD.		-1.326 (0.348)***	-1.280 (0.354)***		-1.217 (0.341)***	-1.263 (0.354)***
<i>N</i>	294	294	294	254	254	254
Adj. R2	0.21	0.32	0.31	0.27	0.37	0.36
# of countries	30	30	30	23	23	23

$$(\beta_0 + \beta_1 ERS + \beta_2 KAOPEN)\Delta X$$

MM-MM Estimation

(a) Effect of Financial Development
(+10 ppt)

		KAOPEN*		
		0.00	0.50	1.00
ERS*	0.00	3.02	3.96	4.89
	0.50	0.85	1.79	2.73
	1.00	-1.32	-0.38	0.56

(b) Effect of Trade Demand (+5 ppt)

		KAOPEN		
		0.00	0.50	1.00
ERS*	0.00	-5.04	-3.97	-2.89
	0.50	-1.33	-0.25	0.83
	1.00	2.39	3.47	4.55

SMT-SMT Estimation

(c) Effect of Trade Demand (+5 ppt)

		KAOPEN		
		0.00	0.50	1.00
ERS*	0.00	-0.07	-0.07	-0.08
	0.50	0.01	0.01	0.00
	1.00	0.10	0.09	0.09

REER-REER Estimation

(e) Effect of CAB Deterioration
(-2 ppt)

		KAOPEN		
		0.00	0.50	1.00
ERS*	0.00	0.06	0.05	0.05
	0.50	0.01	0.01	0.00
	1.00	-0.04	-0.04	-0.05

(f) Effect of Gross Debt (+10 ppt)

		KAOPEN		
		0.00	0.50	1.00
ERS*	0.00	-0.05	-0.04	-0.03
	0.50	-0.02	-0.01	0.00
	1.00	0.02	0.03	0.04

(g) Effect of Financial Development
(+10 ppt)

		KAOPEN		
		0.00	0.50	1.00
ERS*	0.00	0.04	0.04	0.04
	0.50	-0.03	-0.02	-0.02
	1.00	-0.09	-0.09	-0.08

Summary

- Greater import demand for a developing country increases policy interest rate or stock market price correlations at higher levels of exchange rate stability
- Greater exchange rate stability also amplifies the impact of gross debt on the REER link

What about the link between

- Country i 's **Exchange Market Pressure (EMP)** and
- The CE's financial variables, i.e.,
 - policy interest rates
 - REER
 - EMP
- We repeat the two-step approach
- **The gamma now refers to the correlation between the EMP and the CE's financial variables**
- The CE's REER matters more than policy interest rates

Table 5: Exchange Market Pressure Sensitivity to Core Economies' Conditions, 1986-2012

	Corr. b/w CE's MM and Countries' EMP			Corr. b/w CE's REER and Countries' EMP			Corr. b/w CE's EMP and Countries' EMP		
	FULL (1)	LDC (2)	EMG (3)	FULL (4)	LDC (5)	EMG (6)	FULL (7)	LDC (8)	EMG (9)
Exchange rate stability	-186.31 (171.16)	-84.62 (371.54)	-161.73 (314.44)	8.351 (6.225)	19.587 (6.890)***	18.713 (7.407)**	-0.277 (0.220)	0.402 (0.302)	0.439 (0.322)
Financial openness	51.15 (153.17)	-258.35 (331.24)	-262.67 (272.59)	-10.296 (5.571)*	-21.161 (6.143)***	-17.558 (6.421)***	-0.204 (0.197)	0.097 (0.269)	0.118 (0.280)
IR Holding	561.50 (245.98)**	1,090.15 (487.00)**	888.59 (427.27)**	-20.095 (8.947)**	-14.726 (9.031)	-6.901 (10.064)	0.460 (0.317)	-0.058 (0.395)	-0.087 (0.438)
CA balance (%)	-593.36 (1,051.28)	-2,641.66 (1,780.93)	-652.60 (1,482.22)	59.261 (38.237)	67.269 (33.026)**	28.283 (34.914)	1.191 (1.353)	0.973 (1.446)	2.029 (1.520)
Gross debt (%)	-156.83 (131.08)	-313.78 (241.32)	-240.79 (191.05)	-5.544 (4.768)	-2.352 (4.475)	-0.804 (4.500)	-0.029 (0.169)	-0.281 (0.196)	-0.357 (0.196)*
Trade demand	-537.11 (992.73)	-1,027.42 (1,784.10)	-2,726.26 (1,478.31)*	39.433 (36.107)	8.589 (33.085)	14.270 (34.822)	-2.600 (1.278)**	-3.573 (1.448)**	-3.522 (1.516)**
Fin. Dev.	-250.45 (202.33)	-500.85 (342.08)	-276.97 (280.57)	-11.077 (7.359)	-10.351 (6.344)	-12.094 (6.609)*	0.827 (0.260)***	0.495 (0.278)*	0.240 (0.288)
KAO x CAB	-1,912.78 (1,103.96)*	-2,522.00 (1,990.26)	-817.90 (1,803.57)	-54.082 (40.153)	-24.893 (36.908)	-68.213 (42.483)	-3.164 (1.421)**	-3.496 (1.616)**	-2.907 (1.849)
KAO x Debt	-122.31 (147.74)	-129.68 (312.96)	-39.58 (251.57)	5.922 (5.373)	-7.144 (5.804)	-5.077 (5.926)	-0.108 (0.190)	-0.170 (0.254)	-0.198 (0.258)
KAO x Trade Demand	-32.80 (1,022.77)	748.99 (1,834.10)	984.54 (1,487.89)	-21.672 (37.200)	18.136 (34.012)	-0.896 (35.047)	4.677 (1.317)***	5.619 (1.489)***	5.333 (1.526)***
KAO x FD.	514.79 (216.95)**	56.77 (427.73)	-304.72 (364.40)	-8.619 (7.891)	-16.551 (7.932)**	-19.001 (8.584)**	-0.635 (0.279)**	-0.326 (0.347)	-0.243 (0.374)
ERS x CAB	4,295.00 (1,219.04)***	6,439.94 (2,204.84)***	2,488.60 (2,141.21)	-65.220 (44.338)	-108.129 (40.888)***	-1.265 (50.437)	3.797 (1.569)**	4.131 (1.790)**	1.684 (2.196)
ERS x Debt	269.16 (188.07)	508.41 (358.44)	298.50 (286.88)	6.127 (6.840)	10.041 (6.647)	6.626 (6.758)	-0.013 (0.242)	0.313 (0.291)	0.431 (0.294)
ERS x Trade Demand	2,276.38 (1,168.05)*	3,485.31 (2,392.58)	4,992.84 (2,099.68)**	-75.257 (42.484)*	-90.629 (44.369)**	-89.484 (49.458)*	-1.263 (1.504)	-2.984 (1.942)	-2.035 (2.153)
ERS x FD.	-783.07 (254.94)***	-502.29 (471.76)	97.01 (426.71)	17.335 (9.273)*	26.167 (8.749)***	32.941 (10.051)***	-0.510 (0.328)	-0.038 (0.383)	0.225 (0.438)
<i>N</i>	625	382	321	625	382	320	625	382	321
Adj. R2	0.23	0.22	0.13	0.16	0.18	0.16	0.22	0.31	0.32
# of countries	59	40	30	59	40	30	59	40	30

Summary

- The greater exchange rate stability or less of financial openness a country pursues, the more **financial development** makes its economy's **EMP** levels more sensitive to changes in the center economies' **REER**
- If a non-center economy runs a **current account *deficit***, its **EMP** sensitivity to the **REER** of the CEs rises esp. when it pursues greater exchange rate stability
- A **CA deficit** country finds its **EMP** more positively correlated with the **EMP** of the CEs if it pursues greater financial openness and greater exchange rate *flexibility*
- Having greater **trade linkages** with the CE contributes to more positive **EMP-EMP** linkages if a country pursues greater financial openness.

Concluding Remarks

- The link with the CEs has been dominant for developing and emerging market economies
- China does not exert substantial influence in financial markets (so far)
- Exchange rate regime and financial openness have *direct* influences on the sensitivity to the CEs.
 - Greater exchange rate stability and financial openness means a stronger link with the CEs through policy interest rates and REER movements.
- And *interactive* effects with CAB, gross nat'l debt, trade demand, and financial development.
 - A PH with stronger trade ties with the CEs and with greater exchange rate stability and financial openness faces greater sensitivity through policy interest rates or stock market price movements.
 - Such a policy arrangement also makes the impact of gross debt on the PH-CE REER link larger.

Concluding Remarks

- The EMP of the PHs is sensitive to the movements of the CEs' REER and EMP during the GFC and the following period.
- A PH with higher levels of financial development can mitigate the effect of changes in the center economies' policy interest rates on the level of EMP it faces.
- The real appreciation of the CEs could lead to higher EMP of the PHs
- Higher levels of financial development, greater financial openness, strong trade ties with the CEs, and more stable inflation would help reduce the EMP sensitivity to CEs' REER.
- There are interaction effects b/w open macro policies and macroeconomic and institutional conditions.

Concluding Remarks

- Open macro policy choice is “*still*” dictated by the trilemma hypothesis.
- The type of exchange rate regime does affect the sensitivity to changes in CEs’ financial conditions or policies.
- But not in straightforward ways.