Modeling & Forecasting the International Dimensions: Business cycles, exchange rates, and crossborder flows capital and trade flows (Day 1 Afternoon)

> Menzie Chinn UW Madison ISF at Darden School June 24-25, 2023

Trade Balances

Motivation



The Debate

- Does Houthakker-Magee persist?
- Why are income elasticities increasing?
- Are price elasticities really low?
- How hard is it to explain trade flow dynamics in the last recession?
- What are the prospects for rebalancing?

Outline

- Literature, recent and not so recent
- Theory
- Data
- Empirical methodology
- Basic results
- Supply side
- Vertical specialization, the dot com boom, etc.
- Conclusions

Literature

- Houthakker-Magee finds income elasticity asymmetry.
- Income elasticities are high!
- And rising!
- Price elasticities (wrt exchange rates) small for US imports.

The data: US Exports



The Data: US Imports



Data: Real Exchange Rates



Data: GDP's



A (Partial Equilibrium) Theory

$$D_{im}^{US} = f_1^{US}(Y^{US}, \hat{P}_{im}^{US})$$

$$D_{im}^{RoW} = f_1^{RoW}(Y^{RoW}, \hat{P}_{im}^{RoW})$$

$$S_{ex}^{US} = f_2^{US}(\hat{P}_{ex}^{US}, Z^{US})$$

$$S_{ex}^{RoW} = f_2^{RoW}(\hat{P}_{ex}^{RoW}, Z^{RoW})$$

Quasi-Reduced Form Eqns.

 $\hat{P}_{im}^{US} \times P^{US} = E \times \hat{P}_{ex}^{RoW} \times P^{RoW} \Rightarrow \hat{P}_{im}^{US} = Q\hat{P}_{ex}^{RoW}$

$$Q = \frac{EP^{RoW}}{P^{US}}$$

$$im_t = \beta_0 + \beta_1 q_t + \beta_2 y_t^{US} + \beta_3 z^{RoW} + \varepsilon_{2t}$$

$$ex_{t} = \delta_{0} + \delta_{1}q_{t} + \delta_{2}y_{t}^{RoW} + \delta_{3}z^{US} + \varepsilon_{1t}$$

Exports: Cointegrating Relation

Date: 06/23/23 Time: 22:50	
Sample (adjusted): 1986Q2 2023Q1	
Included observations: 148 after adjustments	
Trend assumption: Linear deterministic trend	
Series: LOG(EXPG12-EXPG_PET12+EXPS12) LOG(RGDP_ROW) I	_OG
Lags interval (in first differences): 1 to 4	

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.131151	29.39298	29.79707	0.0556
At most 1	0.056209	8.586204	15.49471	0.4050
At most 2	0.000164	0.024311	3.841465	0.8760

Trace test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.131151	20.80678	21.13162	0.0554
At most 1	0.056209	8.561893	14.26460	0.3244
At most 2	0.000164	0.024311	3.841465	0.8760

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating	Coefficients	(normalized	by b'*S11*b)=I):
		`		

LOG(EXPG1	LOG(RGDP	LOG(REALDOLLAR_BROADGS_SPL)
6.029977	-5.851196	9.382184
0.512874	0.628854	-11.94959
-8.083335	13.56749	-2.731407

Unrestricted Adjustment Coefficients (alpha):

D(LOG(EXP	-0.007434	-0.000437	-0.000277
D(LOG(RGD	-0.000934	-0.000288	-0.000130
D(LOG(REA	0.001989	0.005001	1.82E-05

1 Cointegrating Equation(s):	Log likelihood	1251.557	
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Normalized cointegrating coefficients (standard error in parentheses) LOG(EXPG1... LOG(RGDP... LOG(REALDOLLAR BROADGS SPL)

1.000000	-0.970351	1.555924	-
	(0.13577)	(0.50383)	

Adjustment coefficients (standard error in parentheses)

D(LOG(EXP	-0.044824	
	(0.01507)	
D(LOG(RGD	-0.005632	
	(0.00547)	
D(LOG(REA	0.011991	
	(0.01133)	

Imports: Cointegrating Relation (?)

Date: 06/23/23 Time: 22:53 Sample (adjusted): 1974Q2 2023Q1			Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):						
Included observations: 196 after adjustments Trend assumption: Linear deterministic trend Series: LOG(IMPG_NOPET12+IMPS12) LOG(GDP12) LOG(REALDOLL Lags interval (in first differences): 1 to 4				LOG(IMPG 16.89836 15.21119 0.446380	LOG(GDP12) -39.16416 -33.96125 1.426431	LOG(REALDOL 3.924291 -11.47680 3.817883	LAR_BROADGS_SPL)	
Unrestricted Cointegration Rank Test (Trace)									
Hypothesized Trace 0.05 No. of CE(s) Eigenvalue Statistic Critical Value Prob.**				Unrestricted Adj	justment Coeffic	cients (alpha):			
None At most 1 At most 2	0.072597 0.028487 0.005703	21.55735 6.785487 1.120907	29.79707 15.49471 3.841465	0.3238 0.6027 0.2897	D(LOG(IMP D(LOG(GDP D(LOG(REA	-0.001079 0.001239 -0.004081	-0.003751 -0.000629 0.002349	-0.001501 -0.000710 -0.000626	
Trace test indicates no cointegration at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values			1 Cointegrating I	Equation(s):	Log likelihood	1572.968			
Unrestricted Coi	ntegration Rank	Test (Maximum	Eigenvalue)		Normalized coint	earating coeffic	ionts (standard o	rror in parentheses)	
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**	LOG(IMPG 1.000000	LOG(GDP12) -2.317631	LOG(REALDOL 0.232229	LAR_BROADGS_SPL))
None At most 1 At most 2	0.072597 0.028487 0.005703	14.77186 5.664581 1.120907	21.13162 14.26460 3.841465	0.3052 0.6566 0.2897	Adjustment coeff	(0.04117) ficients (standar	(0.18533) d error in parenth	neses)	
Max-eigenvalue test indicates no cointegration at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level			D(LOG(IMP	-0.018229 (0.03766)					
**MacKinnon-Ha	aug-Michelis (19	99) p-values			D(LOG(GDP	0.020938 (0.01383)			
					D(LOG(REA	-0.068969 (0.02731)			

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Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**	LOG(IMPG 1.000000	<u>LOC(CDP12)</u> -2.317631 (0.04117)	LOG (REALDOL 0.232229 (0.18533)	LAR_BROADGS_SPL)
At most 1 At most 2	0.072397 0.028487 0.005703	5.664581 1.120907	14.26460 3.841465	0.6566 0.2897	_Adjustment coeff	ficients (standar	d error in parenth	neses)
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Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value 21.13162	Prob.**	LOG(IMPG 1.000000	LOG(GDP12) -2.317631 (0.04117)	UOG(REALDOL 0.232229 (0.18533)	LAR_BROADGS_SPL)
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					D(LOG(REA	-0.068969 (0.02731)		

Previous "Fixes"

- Disaggregation
- Supply factors
- Tariffs/Vertical Specialization

Estimates from a Standard Model

Table 1: Estimates of Export and Import Elasticities, 1975q1-2010q1

	Exports of	f Goods ar	nd	6	Imports o	f Goods an	nd	а. -
5	Services			3	Services			3
	OLS	DOLS <u>a</u>	ECM ^{⊵⁄}	VECM	OLS	DOLS <u>a</u>	ECM ^{⊵′}	VECM
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Income (Demand) Exchange rate	1.780 [0.032] 0.435 [0.094]	1.811 [0.031] 0.568 [0.095]	1.820 [0.056] 0.944 [0.259]	1.991 [0.042] 0.947 [0.166]	2.174 [0.036] -0.197 [0.074]	2.190 [0.028] -0.151 [0.086]	2.171 [0.052] -0.308 [0.200]	2.222 [0.035] -0.163 [0.126]
Adj. R2	0.99	0.99	0.37	Na	0.99	0.99	0.41	Na
SER	0.066	0.052	0.019	Na	0.055	0.047	0.024	Na
Ν	140	138	141	141	141	139	141	141
Coint. Vectors	Na	na	1	1,1	na	na	1	1,1

Exports



Imports



Imports

Table 3: Import Equations, 1975q1-2010q1

	Total goods & svcs. [1]	Total goods & svcs. [2]	Total goods [3]	Total goods [4]	Total goods ex oil [5]	Total goods ex oil [6]	Total svcs. [7]	Total svcs. [8]
Income	2 190	2 891	2 306	3 221	2 612	2 537	1 650	1 219
(Demand)	[0.028]	[0.337]	[0.035]	[0.434]	[0.017]	[0.332]	[0.029]	[0.404]
Exchange Rate	-0.151	-0.138	-0.120	-0.103	0.445	-0.446	0.289	-0.296
	[0.086]	[0.067]	[0.116]	[0.094]	[0.075]	[0.075]	[0.110]	[0.106]
time		-0.005		-0.007		0.001		0.003
		[0.003]		[0.003]		[0.003]		[0.003]
Adj. R2	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
SER	0.047	0.045	0.061	0.059	0.038	0.038	0.056	0.056
Ν	139	139	139	139	139	139	139	139

Supply Capacity



Incorporating Supply Capacity

Table 4: Supply Augmented Specifications, 1975q1-2010q1

		Exp	orts	• 		Imp	oorts	
	Total goods, supply side	Total goods, supply side	Total goods, ex. Agric., Supply side	Total goods, ex. Agric., Supply side	Total goods supply side	Total goods supply side	Total goods ex Oil, supply side	Total goods ex Oil, supply side
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Income (Demand) Output (Supply) Exchange Rate time	0.890 [0.184] 1.048 [0.186] 0.711 [0.080]	2.451 [0.787] 0.977 [0.177] 0.575 [0.101] -0.013 [0.016]	0.193 [0.178] 1.766 [0.178] 1.026 [0.073]	-0.111 [4.012] 1.789 [0.198] 1.052 [0.117] 0.002 [0.007]	4.073 [0.308] -1.416 [0.261] 0.049 [0.077]	3.707 [0.267] -4.711 [0.783] 0.386 [0.094] 0.034 [0.008]	2.213 [0.312] 0.328 [0.248] -0.477 [0.081]	2.251 [0.323] 0.672 [0.598] -0.508 [0.094] 0.006 [0.006]
Adj. R2	0.99	0.99	0.99	0.99	.99	.99	0.99	0.99
SER N	0.044 138	0.042 138	0.048 138	0.048 138	0.052 138	0.039 138	0.037 138	0.037 138

Capital Goods and VS



Durable Exports and Tariffs



Durable Imports and Tariffs



Vertical Specialization: Imports

	Imports of goods ex oil	Imports of goods ex Oil	Imports of goods ex Oil, ex Capital goods	Imports of Durable goods	Imports of Non- durable goods	Imports of Capital goods
	[7]	[8]	[9]	[10]	[11]	[11]
Income (Demand) Income (Supply) Exchange Rate Tariff rate Tariff rate (sq.) Transport cost	2.213 [0.312] 0.328 [0.248] -0.477 [0.081]	0.903 [0.448] 1.033 [0.330] -0.428 [0.104] -208.65 [86.02] 95.48 [39.84] -0.030 [0.021]	1.736 [0.386] 0.206 [0.270] -0.560 [0.088] -88.78 [71.70] 42.18 [32.91] 0.032 [0.016]	1.047 [0.586] 0.988 [0.433] -0.365 [0.131] -192.75 [111.19] -86.55 [51.16] -0.031 [0.027]	2.836 [0.632] -0.703 [0.457] 0.040 [0.163] -525.44 [129.59] 253.60 [60.53] -0.010 [0.025]	-0.618 [0.880] 2.842 [0.652] -0.084 [0.192] 240.18 [166.65] -128.09 [77.68] -0.199 [0.039]
Adj. R2 SER N	0.99 0.037 <u>138</u>	0.99 0.033 <u>138</u>	0.99 0.027 138	0.99 0.042 138	0.99 0.039 138	0.99 0.061 138

Summary

- Houthakker-Magee lives on.
- The income asymmetry is less marked in the disaggregated series.
- Disaggregated price elasticities are higher especially for US imports.
- Inclusion of proxy measures for supply capacity reduces the implied income elasticities
- Durable/Capital goods behave differently than nondurable perhaps due to VS.

Global Imbalances

Interpreted as Current Account Imbalances

- Global imbalances could be of as asset/liabilities
- Latter makes more sense since large valuation effects
- IMF current reports both CA and gross position imbalances (See IMF World Economic Outlook)

Current Account Prospects



Fig. 1. Global Current Balances for Select Country Aggregates. Source: IMF, WEO, October 2019.

Chinn, Ito (JIMF, 2021)

Saving-Inv't based CA Imbalances

- Recount the Chinn-Prasad (2003), expanded to Chinn-Ito framework
- Re-examine institutional prism of Chinn-Ito (various)
- Allow for "Exorbitant Privilege"

Theories of the current account

- Basic approach, focusing on determinants of national saving and investment (demographics, public sector)
- Intertemporal approach (expectations of growth)
- Mercantilism
- Global saving glut/financial development and Bretton Woods II

Framework

• Basic approach uses National Saving Identity

$$C + S + T \equiv Y$$
$$C + I + G + CA \equiv Y$$
$$S + T \equiv I + G + CA$$
$$(S - I) + (T - G) \equiv CA$$

Assume causality runs from S, I, (T-G) to CA in "medium run"

The empirical approach

- Macro variables: Budget balance, initial NFA, per capita income, per capita income squared, income growth, TOT variability
- Demographics: youth, elderly dependency ratios.
- Structural/Policy: Trade, capital acct openness (Chinn-Ito)
- Financial deepening, institutional measures (LEGAL)

The empirical model

$$y_{i,t} = \alpha + \beta_1 B B_{i,t} + \beta_2 F D_{i,t} + \beta_3 LEGAL_i + \beta_3 KAOPEN_{i,t} + \beta_4 (F D_{i,t} \times LEGAL_{i,t}) + \beta_5 (LEGAL_{i,t} \times KAOPEN_{i,t}) + \beta_6 (KAOPEN_{i,t} \times F D_{i,t}) + X_{i,t} \Gamma + u_{i,t}.$$
(2)

Dependent variables (y) = the CA balance, national saving, and investment

The empirical approach

- Data span 1973-2018, incl. IDCs and EMs and LDCs
- Use five year panels
- Data from World Development Indicators, International Financial Statistics, World Economic Outlook database, ICRG, IMF AREAER

Measures of Financial Development & Openness, Legal Development

- LEGAL = first principle component of Law and Order, Corruption and Bureaucratic Quality (Sourced from ICRG).
- KAOPEN = Chinn-Ito index, based upon the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)

Measures of Financial Development & Openness, Legal Development

- FD: Financial development
 - Private credit to GDP
 - In Ito and Chinn (2009), we try alternative measures (incl stock market size, trading volume, bond market)
 - IMF financial development index based on market, institutional development

Conclusions in Earlier Studies

- Current account is tracked by the model
- Level of CA for certain countries are not well explained (US, China), but changes are
- Fiscal consolidation in the US is not enough to close balance CA
- Financial development in China is not enough to close the balance
- Much of 2006-08 imbalances are unexplained

Table 1

	FULL	IDC	LDC	EMG
	(1)	(2)	(3)	(4)
Gov't budget balance	0.481	0.422	0.499	0.277
	(0.061)***	(0.089)***	(0.069)***	(0.066)***
NFA (initial cond.)	0.027	0.015	0.028	-0.001
	(0.008)***	(0.009)*	(0.009)***	(0.004)
Relative income	0.050	0.051	0.045	0.190
	(0.015)***	(0.021)**	(0.022)**	(0.024)***
Relative income squared	-0.005	-0.015	-0.004	0.092
	(0.003)	(0.032)	(0.004)	(0.031)***
Relative dependency ratio (young)	-0.017	-0.037	-0.022	-0.030
	(0.010)*	(0.020)*	(0.013)*	(0.013)**
Relative dependency ratio (old)	-0.002	0.028	-0.005	-0.046
	(0.008)	(0.018)	(0.008)	(0.012)***
Fin Dev PCGDP	-0.004	0.001	0.003	0.009
	(0.007)	(0.009)	(0.011)	(0.010)
TOT volatility	0.075	-0.143	0.076	0.109
	(0.045)*	(0.143)	(0.048)	(0.075)
output growth, 5-yr avg	-0.276	0.086	-0.277	0.114
	(0.154)*	(0.222)	(0.154)*	(0.094)
Trade Openness	-0.015	0.020	-0.025	-0.015
	(0.006)***	(0.009)**	$(0.008)^{***}$	(0.008)**
oil exporting countries	0.037		0.037	0.044
en enfermig commun	(0.010)***		(0.011)***	$(0.015)^{***}$
Ν	1.107	201	906	321
Adj. R2	0.39	0.44	0.38	0.47

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Relative dependency ratio (old)	-0.002	0.028	-0.005	-0.046
	(0.008)	(0.018)	(0.008)	(0.012)***
Fin Dev PCGDP	-0.004	0.001	0.003	0.009
	(0.007)	(0.009)	(0.011)	(0.010)
TOT volatility	0.075	-0.143	0.076	0.109
	(0.045)*	(0.143)	(0.048)	(0.075)
output growth, 5-yr avg	-0.276	0.086	-0.277	0.114
	(0.154)*	(0.222)	(0.154)*	(0.094)
Trade Openness	-0.015	0.020	-0.025	-0.015
	(0.006)***	$(0.009)^{**}$	$(0.008)^{***}$	$(0.008)^{**}$
oil exporting countries	0.037		0.037	0.044
	(0.010)***		(0.011)***	(0.015)***
Ν	1.107	201	906	321
Adj. R2	0.39	0.44	0.38	0.47

Table 1

	FULL	IDC	LDC	EMG
	(1)	(2)	(3)	(4)
Gov't budget balance	0.481	0.422	0.499	0.277
	(0.061)***	$(0.089)^{***}$	(0.069)***	(0.066)***
NFA (initial cond.)	0.027	0.015	0.028	-0.001
	$(0.008)^{***}$	$(0.009)^*$	$(0.009)^{***}$	(0.004)
Relative income	0.050	0.051	0.045	0.190
	(0.015)***	(0.021)**	(0.022)**	(0.024)***
Relative income squared	-0.005	-0.015	-0.004	0.092
	(0.003)	(0.032)	(0.004)	(0.031)***
Relative dependency ratio (young)	-0.017	-0.037	-0.022	-0.030
	(0.010)*	(0.020)*	(0.013)*	(0.013)**
Relative dependency ratio (old)	-0.002	0.028	-0.005	-0.046
	(0.008)	(0.018)	(0.008)	$(0.012)^{***}$
Fin Dev PCGDP	-0.004	0.001	0.003	0.009
	(0.007)	(0.009)	(0.011)	(0.010)
TOT volatility	0.075	-0.143	0.076	0.109
	(0.045)*	(0.143)	(0.048)	(0.075)
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	(0.154)*	(0.222)	(0.154)*	(0.094)
Trade Openness	-0.015	0.020	-0.025	-0.015
	$(0.006)^{***}$	$(0.009)^{**}$	$(0.008)^{***}$	$(0.008)^{**}$
oil exporting countries	0.037		0.037	0.044
	$(0.010)^{***}$		$(0.011)^{***}$	$(0.015)^{***}$
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	$(0.008)^{***}$	$(0.009)^{*}$	$(0.009)^{***}$	(0.004)
Relative income	0.050	0.051	0.045	0.190
	(0.015)***	(0.021)**	(0.022)**	(0.024)***
Relative income squared	-0.005	-0.015	-0.004	0.092
	(0.003)	(0.032)	(0.004)	(0.031)***
Relative dependency ratio (young)	-0.017	-0.037	-0.022	-0.030
	(0.010)*	$(0.020)^{*}$	(0.013)*	(0.013)**
Relative dependency ratio (old)	-0.002	0.028	-0.005	-0.046
	(0.008)	(0.018)	(0.008)	(0.012)***
Fin Dev PCGDP	-0.004	0.001	0.003	0.009
	(0.007)	(0.009)	(0.011)	(0.010)
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	(0.045)*	(0.143)	(0.048)	(0.075)
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	(0.154)*	(0.222)	$(0.154)^*$	(0.094)
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oil exporting countries	0.037		0.037	0.044
	$(0.010)^{***}$		$(0.011)^{***}$	$(0.015)^{***}$
Ν	1,107	201	906	321
Adj. R2	0.39	0.44	0.38	0.47

The "Savings Glut", Financial Development and Institutions

- Bernanke model suggests saving directed to US because of lack of property rights, institutions in emerging market economies.
- One can use proxy measures for financial development, and institutional development
- Financial development proxy measures are imperfect
- Institutional development proxy measures are subjective, and (mostly) time invariant

With Inst. Variables (Chinn & Ito (2021))

Table 2

Basic Model Augmented with Saving Glut Variables.

	FULL	IDC	LDC	EMG
	(1)	(2)	(3)	(4)
Gov't budget balance	0.483	0.339	0.507	0.291
	(0.055)***	(0.086)***	(0.064)***	(0.062)***
NFA (initial cond.)	0.035	0.016	0.034	0.033
	$(0.004)^{***}$	(0.014)	(0.004)***	(0.006)***
Relative income	0.024	0.030	0.024	0.108
	(0.013)*	(0.028)	$(0.014)^{*}$	(0.025)***
Relative income squared	-0.000	0.089	-0.000	0.039
	(0.002)	(0.071)	(0.003)	(0.026)
Relative dependency ratio (young)	-0.016	-0.063	-0.017	-0.011
	(0.010)*	$(0.025)^{**}$	(0.012)	(0.012)
Relative dependency ratio (old)	0.004	0.032	0.003	-0.026
	(0.006)	(0.018)*	(0.007)	(0.012)**
Fin Dev. – PCGDP	0.002	0.004	0.028	-0.004
	(0.007)	(0.011)	$(0.014)^{**}$	(0.019)
Legal	0.004	0.013	0.009	0.010
	(0.003)	(0.006)**	(0.005)*	(0.011)
$pcgdp \times legal$	0.001	-0.018	0.009	0.002
	(0.003)	(0.013)	$(0.004)^{**}$	(0.013)
Financial Openness (KAOPEN)	-0.002	-0.003	-0.001	-0.008
	(0.003)	(0.004)	(0.005)	(0.007)
KAOPEN \times legal	0.001	0.011	0.000	0.002
	(0.001)	$(0.004)^{***}$	(0.002)	(0.002)
$KAOPEN \times pcgdp$	-0.001	0.014	0.001	-0.011
	(0.003)	(0.007)**	(0.004)	(0.007)
TOT volatility	0.078	-0.086	0.077	0.257
	$(0.047)^{*}$	(0.145)	(0.049)	$(0.077)^{***}$
output growth, 5-yr avg	-0.054	0.155	-0.070	0.032
	(0.090)	(0.199)	(0.095)	(0.088)
Trade Openness	-0.007	0.012	-0.020	-0.008
	(0.005)	(0.009)	(0.009)**	(0.010)
oil exporting countries	0.027		0.030	0.027
	(0.011)**		(0.011)***	(0.015)*
Ν	912	193	719	316
Adj. R2	0.49	0.47	0.49	0.53

With Inst. Variables (Chinn & Ito (2021))

Table 2

Basic Model Augmented with Saving Glut Variables.

	FULL	IDC	LDC	EMG
	(1)	(2)	(3)	(4)
Gov't budget balance	0.483	0.339	0.507	0.291
	(0.055)***	$(0.086)^{***}$	(0.064)***	(0.062)***
NFA (initial cond.)	0.035	0.016	0.034	0.033
	(0.004)***	(0.014)	(0.004)***	(0.006)***
Relative income	0.024	0.030	0.024	0.108
	(0.013)*	(0.028)	$(0.014)^*$	(0.025)***
Relative income squared	-0.000	0.089	-0.000	0.039
	(0.002)	(0.071)	(0.003)	(0.026)
Relative dependency ratio (young)	-0.016	-0.063	-0.017	-0.011
	(0.010)*	$(0.025)^{**}$	(0.012)	(0.012)
Relative dependency ratio (old)	0.004	0.032	0.003	-0.026
	(0.006)	(0.010)*	(0.007)	(0.012)**
Fin Dev. – PCGDP	0.002	0.004	0.028	-0.004
	(0.007)	(0.011)	(0.014)**	(0.019)
Legal	0.004	0.013	0.009	0.010
	(0.003)	$(0.006)^{**}$	(0.005)*	(0.011)
$pcgdp \times legal$	0.001	-0.018	0.009	0.002
	(0.003)	(0.013)	$(0.004)^{**}$	(0.013)
Financial Openness (KAOPEN)	-0.002	-0.003	-0.001	-0.008
	(0.003)	(0.004)	(0.005)	(0.007)
$KAOPEN \times legal$	0.001	0.011	0.000	0.002
	(0.001)	$(0.004)^{***}$	(0.002)	(0.002)
KAOPEN \times pcgdp	-0.001	0.014	0.001	-0.011
	(0.003)	(0.007)**	(0.004)	(0.007)
TOT volatility	0.078	-0.086	0.077	0.257
	(0.047)*	(0.145)	(0.049)	$(0.077)^{***}$
output growth, 5-yr avg	-0.054	0.155	-0.070	0.032
	(0.090)	(0.199)	(0.095)	(0.088)
Trade Openness	-0.007	0.012	-0.020	-0.008
	(0.005)	(0.009)	(0.009)**	(0.010)
oil exporting countries	0.027		0.030	0.027
	(0.011)**		(0.011)***	(0.015)*
Ν	912	193	719	316
Adi, R2	0.49	0.47	0.49	0.53
	0.10	0.17	0.10	0.00

What about Exorbitant Privilege?

- US current account is flip side of US financial account.
- US can borrow more cheaply because of dollar hegemony
- I.e., USD is the key international currency
- Suggests country fixed effect for US
- Models will not say where effect comes from

Are Savings, Investment Exogenous?

- Gagnon suggests Foreign Exchange intervention can affect current account
- FX intervention should impact saving, investment decisions as well.

With Forex Intervention

Table 3

Basic OLS Model Augmented with Net Official Flows.

Gov't budget balance(1)(2)(3)(4)Gov't budget balance0.4150.3280.4500.282NFA (initial cond.)0.0310.0080.0290.031Relative income0.0390.0310.0044''0.0880.0390.0310.015)0.0031/''0.0023'''Relative income squared-0.0090.031-0.0100.023''Relative dependency ratio (young)-0.004-0.061-0.0130.013)Relative dependency ratio (young)0.0040.0623'''0.013)(0.013)Relative dependency ratio (old)0.0320.3220.3450.3360.210'Net official flows0.3320.3450.3360.210'Net official flows0.3320.012''0.0180.009'''Fin Dev PCDP-0.006-0.0140.0180.091''pcgdp × legal-0.001-0.0170.007''0.0110.011'pcgdp × legal-0.001-0.0130.002''0.011'0.001''fin Devn × pcgdp-0.0020.0130.002''0.001''0.001''findenci Morense(MOOP)0.001''0.001''0.001''0.001''findenci Opennes(MOOP)0.002'''0.001'''0.001'''0.001'''findenci Opennes(MOOP)0.002''''0.001''''0.001''''''''''''''''''''''''''''''''''		FULL	IDC	LDC	EMG
Gov't budget balance0.4150.3280.4450.282(0.059)***(0.096)***(0.069)***(0.068)**NFA (initial cond.)0.031(0.003)***(0.003)***(0.004)***(0.015)(0.003)***(0.003)***Relative income squared-0.0090.031(0.018)**(0.023)***(0.008)(0.066)(0.009)(0.023)**Relative dependency ratio (young)-0.004-0.061-0.001-0.016(0.011)(0.028)**(0.003)(0.013)(0.013)Relative dependency ratio (old)0.0040.0460.005-0.024(0.011)(0.028)**(0.009)(0.012)*Net official flows0.3320.3450.3360.210(0.072)**(0.013)(0.078)**(0.069)*(0.069)*Fin Dev PCGDP-0.0060.012(0.014)(0.013)(0.03)(0.012)(0.012)*(0.013)(0.011)(0.012)*prade_bendency ratio (old)0.0030.012(0.011)(0.012)*(0.04)(0.012)(0.012)*(0.013)(0.011)*(0.011)*(0.05)*(0.013)(0.012)*(0.011)*(0.012)*(0.012)*(1002)(0.003)*(0.012)*(0.011)*(0.012)*(0.012)*(1011)(0.003)*(0.013)*(0.012)*(0.011)*(0.003)*(1011)(0.004)**(0.002)**(0.005)**(0.005)**(0.005)**(1011)(0.001)**(0.001)**(0.002)**(0.00		(1)	(2)	(3)	(4)
NFA (initial cond.)(0059)***(0.006)***(0.006)***(0.006)***NFA (initial cond.)0.0310.0030.031(0.006)***(0.004)***(0.015)(0.03)***(0.066)***Relative income0.0300.031(0.018)**(0.023)***Relative income squared-0.009(0.031)(0.019)**(0.025)**Relative dependency ratio (yourg)-0.004-0.061-0.010-0.016(0.001)(0.028)**(0.009)(0.013)(0.013)Relative dependency ratio (old)(0.004)(0.022)**(0.009)(0.012)*Relative dependency ratio (old)0.004(0.022)**(0.009)(0.012)*Net official flows0.3320.3450.3360.210(0.007)(0.013)*(0.078)***(0.069)***(0.069)**Fin Dev PCGDP-0.0060.0040.0180.009(0.007)(0.012)(0.014)(0.011)(0.011)pcgdp × legal-0.001-0.0170.0070.015(0.003)(0.007)(0.014)(0.002)(0.007)*Financial Openness (KAOPEN)-0.001-0.0130.002(0.007)*(0.004)(0.002)-0.001-0.001-0.0160.001(0.004)(0.002)(0.003)**(0.004)(0.002)*(0.007)*(0.004)(0.002)**(0.004)(0.005)**(0.007)*(0.007)*(0.005)**(0.004)(0.005)**(0.007)*(0.007)*(0.007)*(0.004) <t< td=""><td>Gov't budget balance</td><td>0.415</td><td>0.328</td><td>0.445</td><td>0.282</td></t<>	Gov't budget balance	0.415	0.328	0.445	0.282
NFA (initial cond.)0.0310.0080.0290.031Relative income0.0390.0310.0440.088(0.016)**0.0310.011(0.018)**0.024Relative income squared-0.0900.003-0.0100.024(0.008)(0.088)(0.086)(0.009)(0.025)Relative dependency ratio (young)-0.044-0.061-0.010-0.016(0.011)(0.028)**(0.013)(0.013)(0.012)*Relative dependency ratio (old)0.0440.0460.055-0.024(0.008)(0.022)**(0.009)(0.012)*(0.013)(0.012)*Net official flows0.3320.3450.3360.210(0.072)*(0.018)(0.069)**(0.069)**(0.069)**Fin Dev PCGDP-0.0660.0040.0180.017(0.007)(0.012)(0.014)(0.013)(0.011)(0.011)pcgdp × legal-0.001-0.0110.0070.0120.011(0.003)(0.014)(0.004)(0.006)**(0.006)**(0.006)**KAOPEN × legal0.0020.0130.0020.011(0.007)**(0.001)(0.011)(0.003)**(0.004)(0.007)**(0.001)*(0.001)*(0.001)*TOT volatility0.098-0.234(0.007)***(0.007)**(0.007)**0.016(0.004)0.0079***(0.014)(0.007)***(0.007)***(0.007)**0.006Tot volatility0.098***(0.147)<		(0.059)***	(0.096)***	(0.069)***	(0.068)***
net(0.004)***(0.015)(0.003)***(0.006)***Relative income(0.016)**(0.031)(0.018)**(0.023)**Relative income squared-0.0090.033-0.010(0.025)Relative dependency ratio (young)-0.004-0.061-0.001-0.016(0.011)(0.023)**(0.013)(0.013)(0.013)Relative dependency ratio (old)0.0040.0460.005-0.024(0.008)(0.022)**(0.009)***(0.002)**(0.009)***Relative dependency ratio (old)0.033(0.022)**(0.007)***(0.007)***(0.007)***Net official flows0.3320.3450.3360.210(0.007)***(0.013)*(0.078)**(0.009)***(0.009)***Fin Dev PCGDP-0.0060.0040.0180.009(0.007)***(0.012)(0.014)(0.011)0.007(0.015)(pcgdp × legal0.003(0.017)(0.005)**(0.012)(0.001)(0.003)(0.004)(0.005)***(0.006)**(0.006)**(0.006)**Financial Openness (KAOPEN)-0.003(0.004)(0.002)(0.002)KAOPEN × legal(0.003)(0.004)(0.002)(0.007)**(0.006)**(0.004)(0.005)***(0.004)(0.007)**(0.007)**(0.007)**(0.004)(0.005)***(0.004)(0.007)**(0.007)**(0.007)**(0.004)(0.005)***(0.004)(0.007)**(0.008)***(0.008)***(0.	NFA (initial cond.)	0.031	0.008	0.029	0.031
Relative income0.0390.0310.0440.088(0.016)**(0.031)(0.018)**(0.023)**Relative income squared0.0080.003-0.0100.024(0.008)(0.086)(0.009)(0.025)Relative dependency ratio (young)-0.004-0.061-0.013(0.013)(0.011)(0.028)**(0.013)(0.013)(0.013)Relative dependency ratio (old)0.0040.0460.005-0.024(0.008)(0.022)**(0.009)(0.012)*(0.013)(0.012)*Net official flows0.3320.3450.3360.210(0.072)**(0.13)(0.078)***(0.069)**(0.069)**Fin Dev PCGDP(0.077)(0.014)(0.011)(0.007)(0.012)*(0.014)(0.011)(0.011)pcgdp × legal-0.001-0.017(0.005)**(0.012)*Financial Openness (KAOPEN)-0.001-0.013(0.002)(0.011)(0.003)(0.004)(0.005)***(0.002)(0.007)**KAOPEN × legal0.0020.0130.0020.011(0.011)(0.001)(0.005)***(0.002)(0.007)**TOT volatility0.098-0.2340.1030.021(0.014)(0.015)**(0.014)(0.005)***(0.005)***(0.005)***ToT volatility0.098-0.2340.0020.016(0.005)***(0.014)(0.005)***(0.005)***(0.005)***(0.005)***(0.005)***		(0.004)***	(0.015)	(0.003)***	(0.006)***
(0.016)**(0.013)(0.018)**(0.023)**Relative income squared-0.0090.003-0.0100.024(0.008)(0.088)(0.009)(0.025)Relative dependency ratio (young)-0.04-0.061-0.001-0.016(0.011)(0.028)**(0.002)**(0.009)(0.012)*Relative dependency ratio (old)0.0040.0460.005-0.024(0.008)(0.022)**(0.009)(0.012)*Net official flows0.3320.3450.3360.210(0.072)***(0.193)**(0.078)***(0.069)***Fin Dev, - PCGDP-0.0060.0040.0180.007(0.007)(0.012)(0.014)(0.013)(0.014)(0.011)pcgdp × legal-0.000-0.0170.005)**(0.012)financial Openness (KAOPEN)-0.001-0.0010.004(0.002)(0.001)(0.002)0.004(0.002)(0.007)**(0.001)KAOPEN × legal0.0020.0130.0020.016(0.001)(0.004)(0.005)***(0.004)(0.002)***TOT volatility0.008-0.2340.1030.253output growth, 5-yr avg-0.204(0.230)(0.007)***(0.007)***(0.005)***(0.005)***(0.005)***(0.007)***(0.007)***output growth, 5-yr avg-0.015(0.014)-0.218-0.016(0.007)***(0.230)(0.007)***(0.007)***(0.007)***output growth, 5-yr avg	Relative income	0.039	0.031	0.044	0.088
Relative income squared-0.0090.003-0.0100.024Relative dependency ratio (young)-0.001-0.016-0.001-0.016Relative dependency ratio (old)0.0040.028)**(0.013)0.013Relative dependency ratio (old)0.0040.028)**(0.003)-0.024Relative dependency ratio (old)0.0040.022)**(0.009)(0.012)*Net official flows0.3320.3450.3360.210Fin Dev PCGDP-0.0060.0040.0180.069)***(0.007)(0.012)(0.014)0.017(0.017)(pagla0.0030.012(0.014)0.017(pagla-0.0060.0040.0180.012prodp × legal-0.001-0.0170.007(0.012)(0.003)(0.004)(0.005)*(0.011)prodp × legal-0.001-0.0110.000-0.013(0.003)(0.004)(0.002)0.011-0.016KAOPEN × legal-0.0030.020-0.016-0.017(0.004)(0.005)***(0.004)(0.007)**(0.007)**TOT volatility0.098-0.2340.1030.253output growth, 5-yr avg-0.2040.152-0.218-0.016(0.007)***(0.007)***(0.005)***(0.007)***(0.005)***(0.005)***ot pagla-0.015(0.011)(0.005)***(0.007)***(0.005)**(0.005)***(0.005)***financial Openness(AOPEN × legal0.003 <td></td> <td>(0.016)**</td> <td>(0.031)</td> <td>(0.018)**</td> <td>(0.023)***</td>		(0.016)**	(0.031)	(0.018)**	(0.023)***
Relative dependency ratio (young)(0.008)(0.086)(0.009)(0.025)Relative dependency ratio (old)(0.011)(0.028)**(0.013)(0.013)Relative dependency ratio (old)0.0040.0460.005-0.024(0.008)(0.022)**(0.009)(0.012)*Net official flows0.3320.3450.3360.210(0.072)***(0.193)*(0.078)***(0.069)Fin Dev PCGDP-0.0060.0040.0180.009(0.007)(0.012)(0.011)(0.011)(0.011)pcgdp × legal-0.000-0.017(0.007)0.015(0.003)(0.007)(0.004)(0.011)(0.011)pcgdp × legal-0.001-0.0110.000-0.013Fin Devs × pcgdp-0.001-0.0110.000-0.013fin Devs × pcgdp-0.001-0.0110.000-0.015(0.003)(0.004)(0.002)(0.006)**(0.006)**Fin Devs × pcgdp-0.001-0.016(0.002)(0.001)(0.011)(0.005)***(0.002)(0.001)-0.016(0.071)(0.009)**(0.002)(0.001)-0.016(0.076)***0.020-0.0130.0020.001TOr volatility0.098-0.2340.1030.253output growth, 5-yr avg-0.2040.152-0.218-0.106(0.076)***(0.039)(0.014)(0.007)***(0.007)Trade Openness0.015(0.011)(0.008)*** <td< td=""><td>Relative income squared</td><td>-0.009</td><td>0.003</td><td>-0.010</td><td>0.024</td></td<>	Relative income squared	-0.009	0.003	-0.010	0.024
Relative dependency ratio (young)-0.004-0.061-0.001-0.016Relative dependency ratio (old)(0.011)(0.028)**(0.003)(0.013)Relative dependency ratio (old)0.0040.0460.009(0.012)*Net official flows(0.008)(0.022)**(0.009)(0.018)(0.072)**(0.133)*(0.078)**(0.069)***(0.072)**(0.133)*(0.078)**(0.069)***Fin Dev PCGDP-0.0060.0040.018(0.011)Legal(0.007)(0.012)(0.010)(0.017)pcdp > legal-0.000-0.0170.007(0.012)Financial Openness (KAOPEN)-0.001-0.001(0.004)(0.005)*(0.003)(0.014)(0.0004)(0.007)*(0.007)*KAOPEN × legal0.0020.0130.002(0.007)*(0.011)(0.001)(0.005)**(0.002)(0.007)*TOT volatility0.098-0.2340.1030.0270utput growth, 5-yr avg-0.2040.152-0.218-0.1061Tade Openness(0.015)**(0.014)(0.005)**(0.005)**0ile exporting countries0.015(0.011)(0.023)(0.008)***(0.009)**010.015)*(0.011)(0.011)(0.011)(0.011)NAdj, R20.550.500.570.550.50		(0.008)	(0.086)	(0.009)	(0.025)
Relative dependency ratio (old) (0.011) $(0.028)^{**}$ (0.013) (0.013) Relative dependency ratio (old) 0.004 0.046 0.005 -0.024 Net official flows $(0.020)^{**}$ (0.009) $(0.012)^{*}$ Net official flows $(0.332$ 0.345 0.336 0.210 $(0.072)^{***}$ $(0.193)^{*}$ $(0.078)^{***}$ $(0.069)^{***}$ Fin Dev PCGDP -0.006 0.004 0.018 0.009 (0.007) (0.012) (0.014) (0.013) Legal 0.003 0.007 $(0.005)^{**}$ (0.011) pcgdp × legal -0.000 -0.017 0.007 $(0.012)^{*}$ Financial Openness (KAOPEN) -0.001 -0.001 0.000 -0.013 (0.003) (0.004) $(0.005)^{**}$ $(0.006)^{**}$ KAOPEN × legal 0.002 0.013 0.002 0.001 (0.001) (0.003) 0.020 -0.011 -0.016 (0.004) $(0.004)^{**}$ $(0.004)^{**}$ $(0.002)^{**}$ (0.004) $(0.009)^{**}$ (0.004) $(0.007)^{**}$ $(0.004)^{**}$ (0.004) $(0.003)^{**}$ $(0.004)^{**}$ $(0.004)^{**}$ $(0.003)^{**}$ (0.004) $(0.007)^{**}$ $(0.003)^{**}$ $(0.003)^{**}$ $(0.003)^{**}$ $(0.003)^{**}$ $(0.001)^{**}$ $(0.001)^{**}$ $(0.003)^{**}$ $(0.002)^{**}$ $(0.003)^{**}$ $(0.003)^{**}$ $(0.001)^{**}$ $(0.001)^{**}$ $(0.003)^{**}$ $(0.003)^{**}$ $(0$	Relative dependency ratio (young)	-0.004	-0.061	-0.001	-0.016
Relative dependency ratio (old)0.0040.0460.005-0.024(0.008)(0.022)**(0.009)(0.012)*Net official flows0.3320.3450.33660.069)***(0.072)***(0.193)*(0.078)***(0.069)***Fin Dev PCGDP-0.0060.0040.0180.09(0.007)(0.012)(0.014)(0.018)0.017Legal0.0030.0120.007(0.011)proghe × legal-0.001-0.017(0.004)(0.012)financial Openness (KAOPEN)-0.001-0.0010.000-0.013fundamental (0.003)(0.004)(0.005)***(0.006)***KAOPEN × legal-0.0020.0130.0020.001(0.001)(0.005)***(0.002)(0.002)(0.002)KAOPEN × pcgdp-0.0030.020-0.016-0.016(0.001)(0.005)***(0.002)(0.002)(0.002)ToT volatility0.098-0.234(1.03)0.253output growth, 5-yr avg-0.2040.152-0.218-0.106(0.005)***(0.007)***(0.007)****(0.009)***(0.009)***otlput growth, 5-yr avg-0.0090.014-0.024-0.007otlput growth, 5-yr avg-0.004(0.023)(0.079)****(0.09)***otlput growth, 5-yr avg-0.005(0.011)(0.005)***(0.009)***otlput growth, 5-yr avg-0.005(0.014)(0.007)****(0.009)***otlput growth, 5-yr avg <td< td=""><td></td><td>(0.011)</td><td>(0.028)**</td><td>(0.013)</td><td>(0.013)</td></td<>		(0.011)	(0.028)**	(0.013)	(0.013)
Net official flows (0.008) $(0.022)^{**}$ (0.009) $(0.012)^{*}$ Net official flows 0.332 0.345 0.336 0.210 $(0.072)^{***}$ $(0.193)^{*}$ $(0.078)^{***}$ $(0.069)^{***}$ Fin Dev PCGDP -0.006 0.004 0.018 0.009 Legal (0.007) (0.012) (0.014) (0.018) Legal (0.003) (0.007) $(0.005)^{**}$ (0.011) pcgdp × legal -0.000 -0.017 0.007 (0.012) Financial Openness (KAOPEN) -0.001 -0.001 0.000 -0.013 (0.003) (0.004) $(0.005)^{**}$ $(0.002)^{**}$ KAOPEN × legal -0.001 -0.001 0.002 $(0.002)^{**}$ (0.001) $(0.005)^{***}$ (0.002) $(0.002)^{**}$ KAOPEN × pcgdp -0.003 0.020 -0.001 -0.016 $(0.004)^{***}$ $(0.004)^{***}$ $(0.004)^{***}$ $(0.002)^{***}$ TOT volatility 0.098 -0.234 0.103 0.253 $0.01pt$ $(0.076)^{***}$ $(0.230)^{***}$ $(0.085)^{***}$ $(0.081)^{***}$ $0.01pt$ 0.005^{***} $(0.003)^{***}$ $(0.003)^{***}$ $(0.004)^{***}$ $(0.095)^{***}$ $0.01pt$ 0.098^{***} $(0.014)^{**}$ $(0.004)^{***}$ $(0.004)^{***}$ $(0.004)^{***}$ 0.001^{***} $(0.005)^{***}$ $(0.003)^{***}$ $(0.003)^{***}$ $(0.003)^{****}$ $(0.004)^{****}$ $0.01pt$ $(0.008)^{****}$ $(0.008)^{*$	Relative dependency ratio (old)	0.004	0.046	0.005	-0.024
Net official flows0.3320.3450.3360.210(0.072)***0(0.193)*0(0.078)***0(0.069)**Fin Dev PCGDP-0.0060.0040.0180.009Legal(0.007)(0.012)(0.014)(0.018)Legal0.003(0.007)(0.005)*(0.011)pcdp × legal-0.000-0.017(0.005)*(0.012)Fin ancial Openness (KAOPEN)-0.0010.000-0.013(0.005)*(0.003)(0.004)(0.005)*(0.006)**KAOPEN × legal0.0020.0130.0020.01(0.001)(0.005)***(0.004)(0.007)**(0.007)**TOT volatility0.098-0.2340.1030.253output growth, 5-yr avg-0.204(0.147)(0.050)***(0.091)***output growth, 5-yr avg-0.0090.014-0.024-0.016(0.005)**(0.007)***(0.076)***(0.076)***(0.099)***(0.099)***output growth, 5-yr avg-0.2040.152-0.218-0.106(0.005)**(0.011)(0.005)***(0.099)***(0.099)***(0.099)***output growth, 5-yr avg-0.0090.014-0.024-0.007output growth, 5-yr avg-0.005(0.011)(0.001)**(0.001)**output growth, 5-yr avg-0.005(0.015)**(0.011)(0.015)**output growth, 5-yr avg-0.005(0.015)**(0.011)(0.015)**output growth, 5-yr avg-0.015(0.015)**((0.008)	(0.022)**	(0.009)	(0.012)*
Fin Dev PCGDP(0.072)***(0.019)*(0.078)***(0.069)***Fin Dev PCGDP-0.0060.0040.0180.009(0.007)(0.012)(0.014)(0.018)Legal0.003(0.007)(0.005)**(0.011)pcgdp × legal-0.000-0.0170.007(0.004)(0.012)Financial Openness (KAOPEN)-0.001-0.011(0.004)(0.005)**(0.007)KAOPEN × legal0.0020.0130.0020.011(0.006)**KAOPEN × legal0.0020.0130.0020.001(0.002)KAOPEN × legal0.0020.0130.0020.001(0.002)KAOPEN × pcgdp-0.0030.020-0.001-0.016(0.004)(0.009)**(0.009)**(0.004)(0.007)**TOT volatility0.098-0.2340.1030.253output growth, 5-yr avg-0.2040.152-0.218-0.106(0.076)***(0.030)(0.011)(0.095)**(0.095)**(0.095)**Trade Openness-0.0090.014-0.024-0.007output growth, 5-yr avg-0.009(0.014)(0.009)**(0.095)**(0.095)**output growth, 5-yr avg0.015(0.009)(0.011)(0.095)**(0.095)**(0.095)**output growth, 5-yr avg0.015(0.009)(0.011)(0.015)*(0.095)**(0.005)**(0.015)*output growth, 5-yr avg0.015(0.009)(0.010)(0.001)**(0.095)**(0.011)	Net official flows	0.332	0.345	0.336	0.210
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		$(0.072)^{***}$	(0.193)*	(0.078)***	(0.069)***
Legal(0.007)(0.012)(0.014)(0.018)Legal0.0030.0120.0100.017(0.003)(0.007)(0.005)*(0.011)pcgdp × legal-0.000-0.0170.0070.015(0.003)(0.014)(0.004)(0.012)Financial Openness (KAOPEN)-0.001-0.0010.000-0.013(0.003)(0.004)(0.005)***(0.005)***(0.006)**KAOPEN × legal0.0020.0130.002(0.002)(0.001)(0.005)***(0.002)(0.002)(0.002)KAOPEN × pcgdp-0.0030.020-0.011-0.016(0.004)(0.009)**(0.005)***(0.004)(0.007)**TOT volatility0.098-0.2340.1030.253output growth, 5-yr avg-0.2040.152-0.18-0.061(0.076)***(0.011)(0.005)***(0.005)***(0.095)***otig teporting countries0.015(0.011)(0.001)(0.001)*ol exporting countries0.015(0.011)(0.011)(0.015)*NAdj. R20.550.500.570.58	Fin Dev. – PCGDP	-0.006	0.004	0.018	0.009
Legal 0.003 0.012 0.010 0.017 (0.003) (0.007) $(0.005)^*$ (0.011) pcgdp × legal -0.000 -0.017 0.007 (0.012) Financial Openness (KAOPEN) -0.001 0.000 -0.013 (0.003) (0.004) $(0.005)^*$ $(0.006)^*$ KAOPEN × legal 0.002 0.013 0.002 0.001 (0.002) (0.002) KAOPEN × legal 0.002 0.013 0.002 0.001 $(0.002)^*$ $(0.002)^*$ KAOPEN × pcgdp -0.003 0.020 -0.001 -0.016 $(0.004)^*$ $(0.004)^*$ $(0.004)^*$ $(0.007)^*$ TOT volatility 0.098 -0.234 0.103 0.253 0.014 0.050^** 0.007 $(0.099)^*$ $(0.099)^*$ 0.014 0.024 0.050^* $(0.099)^*$ $(0.099)^*$ 0.015^* 0.009 0.014 -0.024 -0.007 0.005^* $(0.001)^*$ </td <td></td> <td>(0.007)</td> <td>(0.012)</td> <td>(0.014)</td> <td>(0.018)</td>		(0.007)	(0.012)	(0.014)	(0.018)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Legal	0.003	0.012	0.010	0.017
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		(0.003)	(0.007)	(0.005)*	(0.011)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$pcgdp \times legal$	-0.000	-0.017	0.007	0.015
Financial Openness (KAOPEN) -0.001 -0.001 0.000 -0.013 (0.003) (0.004) (0.005)** (0.006)** (0.002) (0.001) KAOPEN × legal (0.001) (0.005)*** (0.002) (0.002) (0.002) KAOPEN × pcgdp -0.003 0.020 -0.001 -0.016 (0.007)*** TOT volatility 0.098 -0.234 0.103 0.253 output growth, 5-yr avg -0.204 0.147 (0.050)*** (0.095)*** output growth, 5-yr avg -0.204 0.152 -0.218 -0.106 (0.076)**** (0.010) (0.008)*** (0.099)** (0.099)** (0.099)** oil exporting countries -0.015 -0.016 (0.099)** (0.099)** (0.099)** oil exporting countries 0.015 (0.011) (0.011)** (0.015)* (0.011)* N 817 167 650 287 Adj, R2 0.55 0.50 0.57 0.58		(0.003)	(0.014)	(0.004)	(0.012)
KAOPEN × legal (0.003) (0.004) (0.005) $(0.006)^{**}$ KAOPEN × legal 0.002 0.013 0.002 0.001 (0.001) $(0.005)^{***}$ (0.002) (0.002) KAOPEN × pcgdp -0.003 0.020 -0.001 -0.016 (0.004) $(0.009)^{**}$ (0.004) $(0.007)^{**}$ TOT volatility 0.98 -0.234 0.103 0.253 $(0.048)^{**}$ (0.147) $(0.050)^{**}$ $(0.081)^{***}$ output growth, 5-yr avg -0.204 0.152 -0.218 -0.106 $(0.076)^{***}$ (0.230) $(0.079)^{***}$ (0.095) Trade Openness -0.009 0.014 -0.024 -0.007 $(0.005)^{*}$ (0.010) $(0.008)^{***}$ $(0.015)^{*}$ oil exporting countries 0.015 $(0.015)^{*}$ (0.011) $(0.015)^{*}$ N817167650287Adj. R2 0.55 0.50 0.57 0.58	Financial Openness (KAOPEN)	-0.001	-0.001	0.000	-0.013
KAOPEN × legal 0.002 0.013 0.002 0.001 (0.001) (0.005)*** (0.002) (0.002) KAOPEN × pcgdp -0.003 0.020 -0.001 -0.016 (0.004) (0.009)** (0.004) (0.007)** TOT volatility 0.098 -0.234 0.103 0.253 (0.048)** (0.147) (0.050)** (0.081)*** output growth, 5-yr avg -0.204 0.152 -0.218 -0.106 (0.076)*** (0.230) (0.079)*** (0.095) (0.095) Trade Openness -0.009 0.014 -0.024 -0.007 (0.005)* (0.011) (0.005)** (0.009)** (0.009) oil exporting countries 0.015 -0.016 0.028 (0.011) (0.011) (0.015)* (0.011) (0.015)* N 817 167 650 287 Adj. R2 0.55 0.50 0.50 0.57 0.58		(0.003)	(0.004)	(0.005)	(0.006)**
(0.001) (0.005)*** (0.002) (0.002) KAOPEN × pcgdp -0.003 0.020 -0.001 -0.016 (0.004) (0.009)** (0.004) (0.007)** TOT volatility 0.098 -0.234 0.103 0.253 (0.048)** (0.147) (0.050)*** (0.081)*** output growth, 5-yr avg -0.204 0.152 -0.218 -0.106 (0.076)*** (0.230) (0.079)*** (0.095) Trade Openness -0.009 0.014 -0.024 -0.007 (0.005)* (0.005)* (0.010) (0.008)*** (0.009) oil exporting countries 0.015 (0.011) (0.015)* N 817 167 650 287 Adj. R2 0.55 0.50 0.57 0.58	KAOPEN \times legal	0.002	0.013	0.002	0.001
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		(0.001)	(0.005)***	(0.002)	(0.002)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	KAOPEN \times pcgdp	-0.003	0.020	-0.001	-0.016
TOT volatility0.098 -0.234 0.1030.253output growth, 5-yr avg -0.204 (0.147) $(0.050)^{**}$ $(0.081)^{***}$ output growth, 5-yr avg -0.204 0.152 -0.218 -0.106 $(0.076)^{***}$ (0.230) $(0.079)^{***}$ (0.095) Trade Openness -0.009 0.014 -0.024 -0.007 $(0.005)^*$ (0.010) $(0.008)^{***}$ (0.009) oil exporting countries 0.015 $(0.015)^*$ (0.011) $(0.015)^*$ N817167650287Adj. R2 0.55 0.50 0.57 0.58		(0.004)	$(0.009)^{**}$	(0.004)	(0.007)**
(0.048)** (0.147) (0.050)** (0.081)*** output growth, 5-yr avg -0.204 0.152 -0.218 -0.106 (0.076)*** (0.230) (0.079)*** (0.095) Trade Openness -0.009 0.014 -0.024 -0.007 (0.005)* (0.010) (0.008)*** (0.009) oil exporting countries 0.015 (0.011) (0.015)* N 817 167 650 287 Adj. R2 0.55 0.50 0.57 0.58	TOT volatility	0.098	-0.234	0.103	0.253
output growth, 5-yr avg -0.204 0.152 -0.218 -0.106 (0.076)*** (0.230) (0.079)*** (0.095) Trade Openness -0.009 0.014 -0.024 -0.007 (0.005)* (0.010) (0.008)*** (0.009) oil exporting countries 0.015 0.016 0.028 (0.011) (0.011) (0.015)* N 817 167 650 287 Adj. R2 0.55 0.50 0.57 0.58	and a second production of the second s	(0.048)**	(0.147)	(0.050)**	$(0.081)^{***}$
(0.076)*** (0.230) (0.079)*** (0.095) Trade Openness -0.009 0.014 -0.024 -0.007 (0.005)* (0.010) (0.008)*** (0.009) oil exporting countries 0.015 0.016 0.028 (0.011) (0.011) (0.015)* N 817 167 650 287 Adj. R2 0.55 0.50 0.57 0.58	output growth, 5-yr avg	-0.204	0.152	-0.218	-0.106
Trade Openness -0.009 0.014 -0.024 -0.007 (0.005)* (0.010) (0.008)*** (0.009) oil exporting countries 0.015 0.016 0.028 (0.011) (0.011) (0.015)* (0.015)* N 817 167 650 287 Adj. R2 0.55 0.50 0.57 0.58		(0.076)***	(0.230)	(0.079)***	(0.095)
(0.005)* (0.010) (0.008)*** (0.009) oil exporting countries 0.015 0.016 0.028 (0.011) (0.011) (0.015)* N 817 167 650 287 Adj. R2 0.55 0.50 0.57 0.58	Trade Openness	-0.009	0.014	-0.024	-0.007
oil exporting countries0.0150.0160.028(0.011)(0.011)(0.015)*N817167650287Adj. R20.550.500.570.58	•	(0.005)*	(0.010)	(0.008)***	(0.009)
(0.011)(0.011)(0.015)*N817167650287Adj. R20.550.500.570.58	oil exporting countries	0.015		0.016	0.028
N 817 167 650 287 Adj. R2 0.55 0.50 0.57 0.58		(0.011)		(0.011)	(0.015)*
Adj. R2 0.55 0.50 0.57 0.58	Ν	817	167	650	287
	Adj. R2	0.55	0.50	0.57	0.58

With Forex Intervention

Table 3

Basic OLS Model Augmented with Net Official Flows.

	FULL	IDC	LDC	EMG
	(1)	(2)	(3)	(4)
Gov't budget balance	0.415	0.328	0.445	0.282
	(0.059)***	$(0.096)^{***}$	(0.069)***	(0.068)***
NFA (initial cond.)	0.031	0.008	0.029	0.031
	$(0.004)^{***}$	(0.015)	(0.003)***	(0.006)***
Relative income	0.039	0.031	0.044	0.088
	(0.016)**	(0.031)	(0.018)**	(0.023)***
Relative income squared	-0.009	0.003	-0.010	0.024
	(0.008)	(0.086)	(0.009)	(0.025)
Relative dependency ratio (young)	-0.004	-0.061	-0.001	-0.016
	(0.011)	(0.028)**	(0.013)	(0.013)
Relative dependency ratio (old)	0.004	0.046	0.005	-0.024
	(0.008)	(0.022)**	(0.000)	(0.012)*
Net official flows	0.332	0.345	0.336	0.210
	(0072)***	(0.193)*	(0078)***	(0.069)***
Fin Dev. – PCGDP	-0.006	0.004	0.018	0.009
	(0.007)	(0.012)	(0.014)	(0.018)
Legal	0.003	0.012	0.010	0.017
	(0.003)	(0.007)	(0.005)*	(0.011)
$pcgdp \times legal$	-0.000	-0.017	0.007	0.015
	(0.003)	(0.014)	(0.004)	(0.012)
Financial Openness (KAOPEN)	-0.001	-0.001	0.000	-0.013
	(0.003)	(0.004)	(0.005)	(0.006)**
$KAOPEN \times legal$	0.002	0.013	0.002	0.001
	(0.001)	(0.005)***	(0.002)	(0.002)
$KAOPEN \times pcgdp$	-0.003	0.020	-0.001	-0.016
	(0.004)	(0.009)**	(0.004)	$(0.007)^{**}$
TOT volatility	0.098	-0.234	0.103	0.253
	(0.048)**	(0.147)	(0.050)**	$(0.081)^{***}$
output growth, 5-yr avg	-0.204	0.152	-0.218	-0.106
	(0.076)***	(0.230)	(0.079)***	(0.095)
Trade Openness	-0.009	0.014	-0.024	-0.007
	(0.005)*	(0.010)	(0.008)***	(0.009)
oil exporting countries	0.015		0.016	0.028
			(0.011)	(0.015)*
	(0.011)		(0.011)	(0.015)
N	(0.011) 817	167	650	287

Forex Intervention

- Is statistically significant
- However, FX intervention is a policy that is not random
- Hence, interpretation of the coefficient is difficult
- Hard to instrument FX intervention

With Forex Intervention, IV'd

Table 4 Basic Model Augmented with Net Official Flows, Instrumented.

	FULL	IDC	LDC	EMG
Net official flows	(1)	(2)	(3)	(4)
	1.642	-1.534	1.228	1.509
	(0.535)***	(1.052)	(0.367)***	(0.653)**
N	687	146	541	250
Adj. R2	0.10	0.31	-0.02	0.43
F-statistics (p-value)	0.015	0.089	0.002	0.071
Overidentification test (p-value)	0.276	0.004	0.203	0.327

Notes: * p < 0.1; ** p < 0.05; *** p < 0.01. Point estimates from OLS, heteroskedasticity robust standard errors in parentheses. The net official flow variable is instrumented with the exchange rate stability index (from Aizenman, et al.; 2013), the share of manufactured goods in total exports, and the standard deviations of the annual growth rate of international reserves holding in each five-year panel as the measure of reserve volatility. The estimates other than that of net official flows are omitted from presentation to conserve space. The F-statistics are for testing whether the instruments are jointly significant. When the null hypothesis is rejected, that means the instruments are not weak ones. The overidentification test is conducted against the null hypothesis that the instrumental variables are uncorrelated with the residuals. The rejection of the null hypothesis indicates that the specification of concern is overidentified.

Crises, Disasters & Pandemics

Uncertainty and Crises

Table 6: The Impacts of Uncertainties on CAB, NS, and INV

	Max WUI	Currency	Banking	Debt	All
	(1)	(2)	(3)	(4)	
Max. World Uncert.	-0.018				-0.018
Index (Indiv.)	(0.031)				(0.031)
D for currency crisis		0.005			0.007
		(0.006)			(0.006)
D for banking crisis			-0.005		-0.005
-			(0.007)		(0.007)
D for debt crisis				-0.004	-0.006
				(0.009)	(0.009)
N	625	656	656	656	625
Adj. R2	0.47	0.45	0.45	0.45	0.47

(a) Current Account

Chinn and Ito (2023)

Disasters

Table 5: The Impacts of Disasters on CAB, NS, INV

	War	Climato- logical	Biological	Geophysical	ALL ex, bio.	ALL
	(1)	(2)	(3)	(4)	(5)	(6)
# of war	0.004				0.003	0.003
	(0.001)***				(0.001)**	(0.001)**
# of climatological		0.001			0.001	0.001
disasters		(0.000)***			(0.000)***	(0.000)***
# of biological disasters			0.002			0.001
2			(0.001)**			(0.001)
# of geophysical				0.001	0.000	0.000
disasters				(0.000)***	(0.000)	(0.000)
N	656	656	656	656	656	656
Adj. R2	0.45	0.46	0.45	0.45	0.46	0.46

(a) Current Account

Chinn and Ito (2023)

Event Studies: Climatalogical



Event Studies: Wars



Event Studies: Geophysical



Event Studies: Banking Crises



Event Studies: Biological

