Public Affairs 856
Trade, Competition, and Governance in a Global Economy

Guest Lecture: Currency Manipulation and Currency Misalignment

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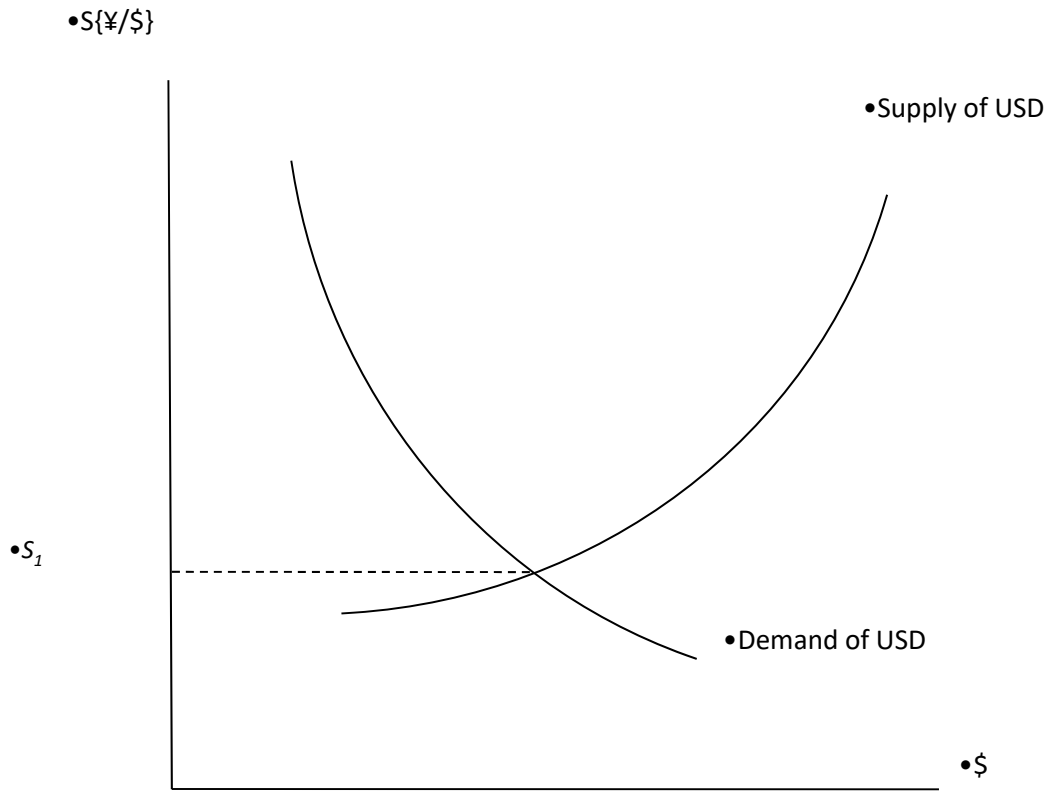
Questions

- What is currency manipulation?
- Subjective

- What is misalignment?
- subjective but can be evaluated

Exchange Rate determination: supply-demand framework



USD supply

- **Foreign central banks** that have assets denominated in U.S. dollars. e.g. U.S. government bonds
- Private investors
- Exporter/Importer

USD demand

- **Foreign central banks**
- Private investors
- Exporter/Importer

Currency Manipulation

- Wikipedia: **currency manipulation** is a monetary policy operation. It occurs when a government or central bank **buys** or sells foreign currency in exchange for their own domestic currency, generally with the intention of influencing the exchange rate.
- In short, open market operation

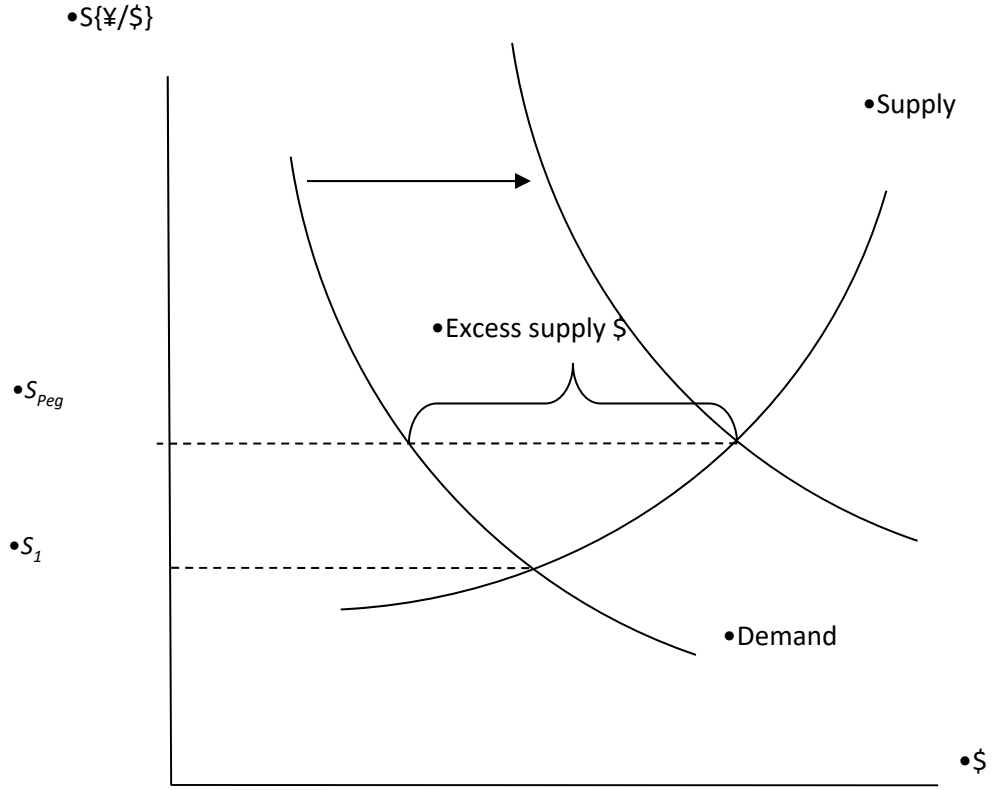
Currency Manipulation

objective:

- controlling inflation
- maintaining competitiveness
- maintaining financial stability

Currency Manipulation vs. Currency Intervention

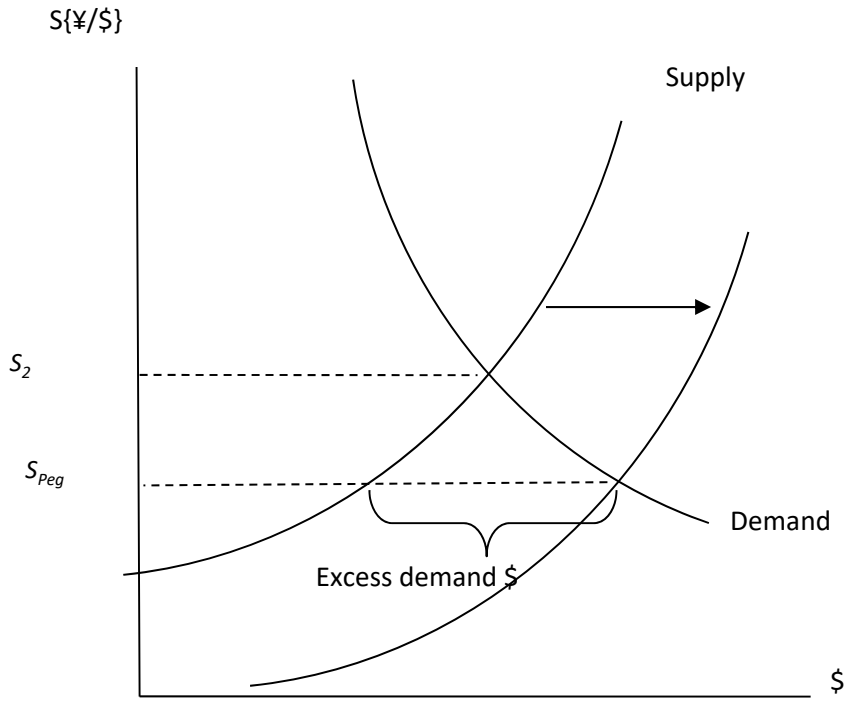
- Intervention to keep currency weak (e.g., China up to 2012 or so)
- PBoC buys $ equal to excess supply of $



One-sided Intervention Shows Up as Rising FX Reserves

Currency Manipulation vs. Currency Intervention

- Right now China is intervening to keep its currency weak



Currency Manipulation:

U.S. Treasury Definition

This Section describes the factors Treasury used to assess, under Section 701(a) (2)(A)(ii) of the Trade Facilitation and Trade Enforcement Act of 2015, whether an economy that is a major trading partner of the United States has: (1) a significant bilateral trade **surplus** with the United States, (2) a material current account **surplus**, and (3) engaged in persistent one-sided intervention in the foreign exchange market.

https://www.treasury.gov/resource-center/international/exchange-rate-policies/Documents/2016-10-14%20(Fall%202016%20FX%20Report)%20FINAL.PDF

Currency Manipulation:

U.S. Treasury – Operational Definitions

- Bilateral trade: $20 billion
- Current account: 3% of GDP
- One-sided intervention: net **purchases** of foreign currency equal to or over 2% of GDP
- First two points ad hoc (related to misalignment)

Example: 1985 Plaza Accord

- to reduce the U.S. current account deficit (3.5% of GDP)
- to help the U.S. economy to emerge from recession
- The exchange rate value of the dollar versus the yen declined by 51% from 1985 to 1987

Trade Balance

- Labor is hard to move.
- Capital movement is much easier.
- Outsourcing (FDI from U.S. to emerging markets) is an efficient way of resource allocation, and a reflection of comparative advantage.
- CA=TB+R: Trade balance is not everything

Current Account: an alternative perspective

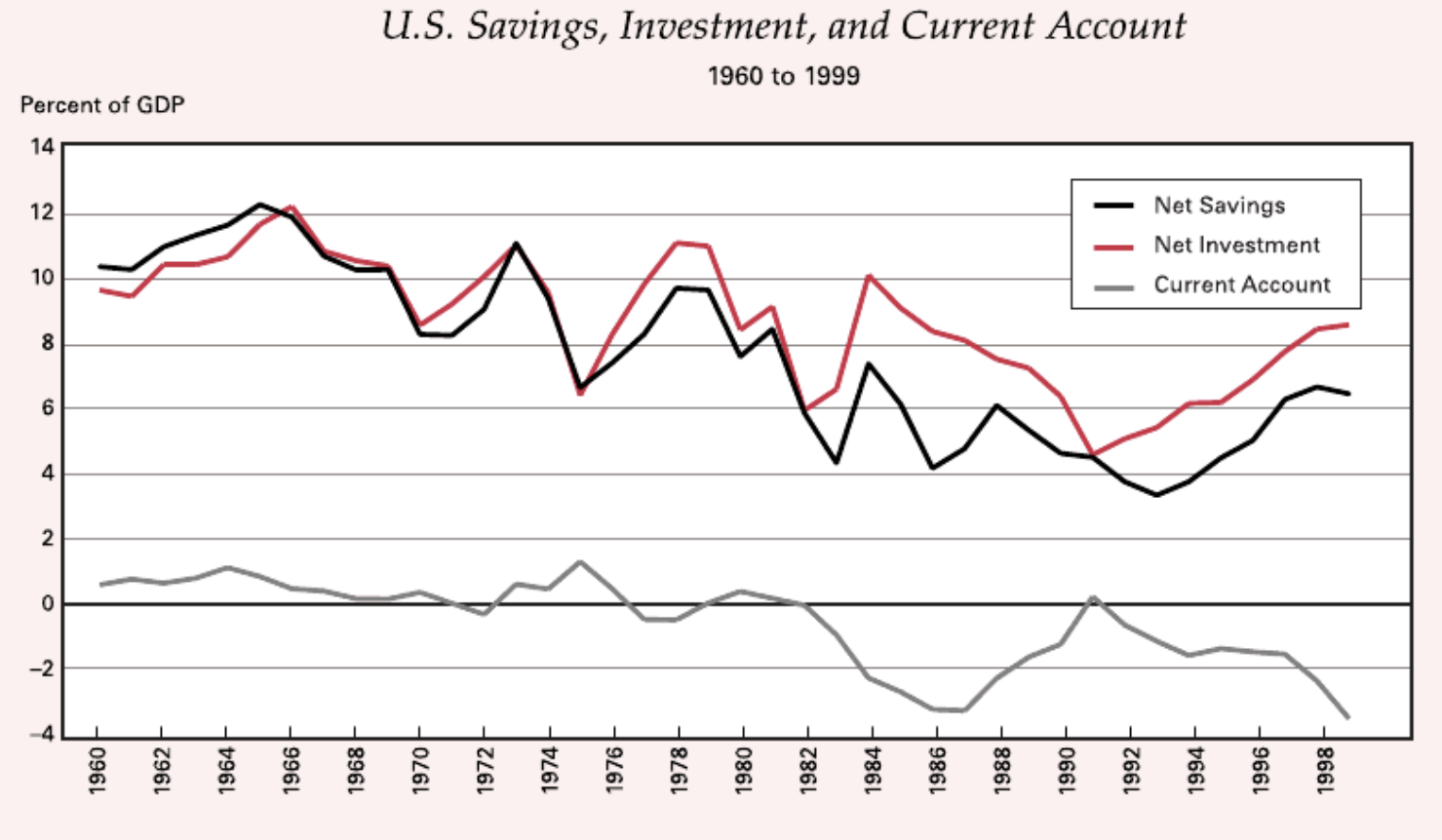
- GNP ≡ GDP+R (net income from abroad)
- GDP ≡ C+I+G+TB
- CA ≡ TB+R

  = (GDP-C-I-G)+GNP-GDP

  = GNP-C-G-I

  ≡ S-I

Example: CA=S-I



Source: New England Economic Review, 2000

Current Account: an alternative perspective

- CA = S-I
- A current account deficit simply means U.S. saving is less than investment.
- Asia's saving rate is much higher than U.S.
- China: precautionary saving for retirement and medical care

Currency Misalignment

- Easy definition: Deviation from equilibrium
- Question: which equilibrium?
- Market equilibrium? Then always at equilibrium if central bank does nothing (not usual interpretation)
- Then have to decide on appropriate models
- Short vs. long horizons

Methodologies

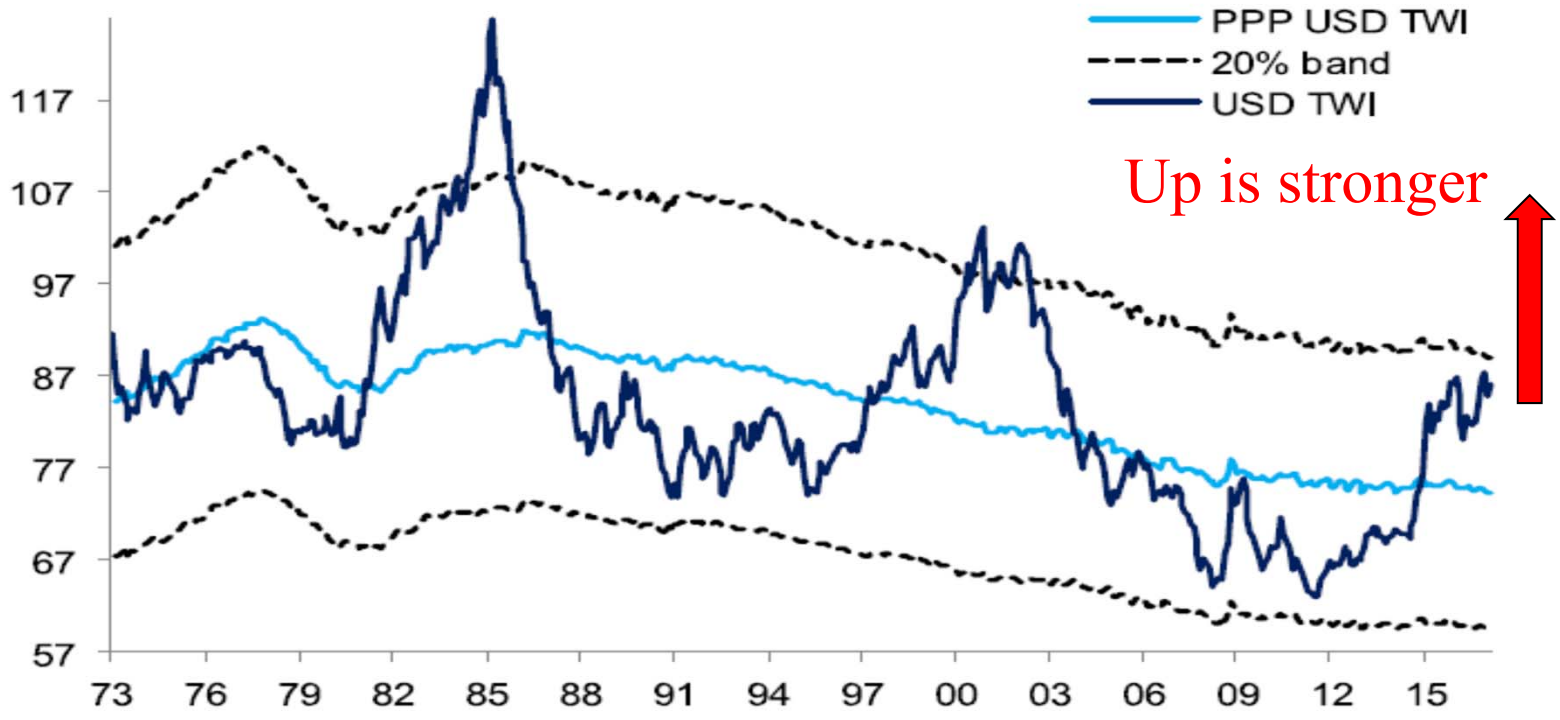
- Price comparisons: Relative Purchasing Power Parity (PPP)
- Absolute PPP
- Productivity based models
- Macroeconomic Balance/FEERs/External or Basic Balance
- BEERs/Fair Value Models

Relative PPP

- Assumes that relative price levels (measured by deflators, CPIs, or PPIs) adjusted by nominal exchange rates must be revert to some average level.
- A long run – goods arbitrage perspective

Example: US Dollar (nominal)

Figure 13: The dollar is now well above fair value



Source: DB FX Research, Datastream

Source: DB, *FX Forecasts and Valuations*, 6 March 2017.

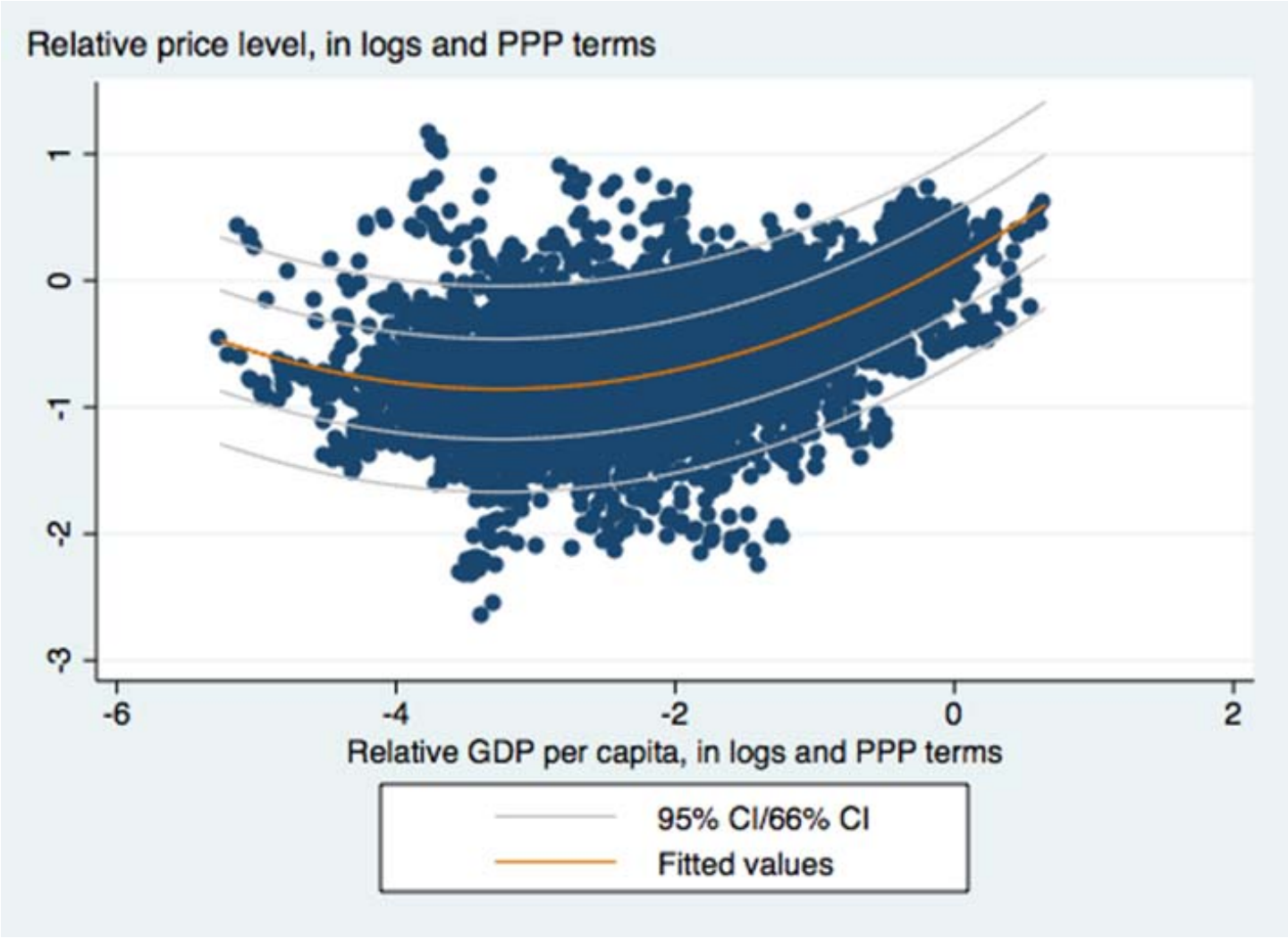
Problems

- The appropriate (equilibrium) relative PPP level must occur in the sample period.

Absolute PPP

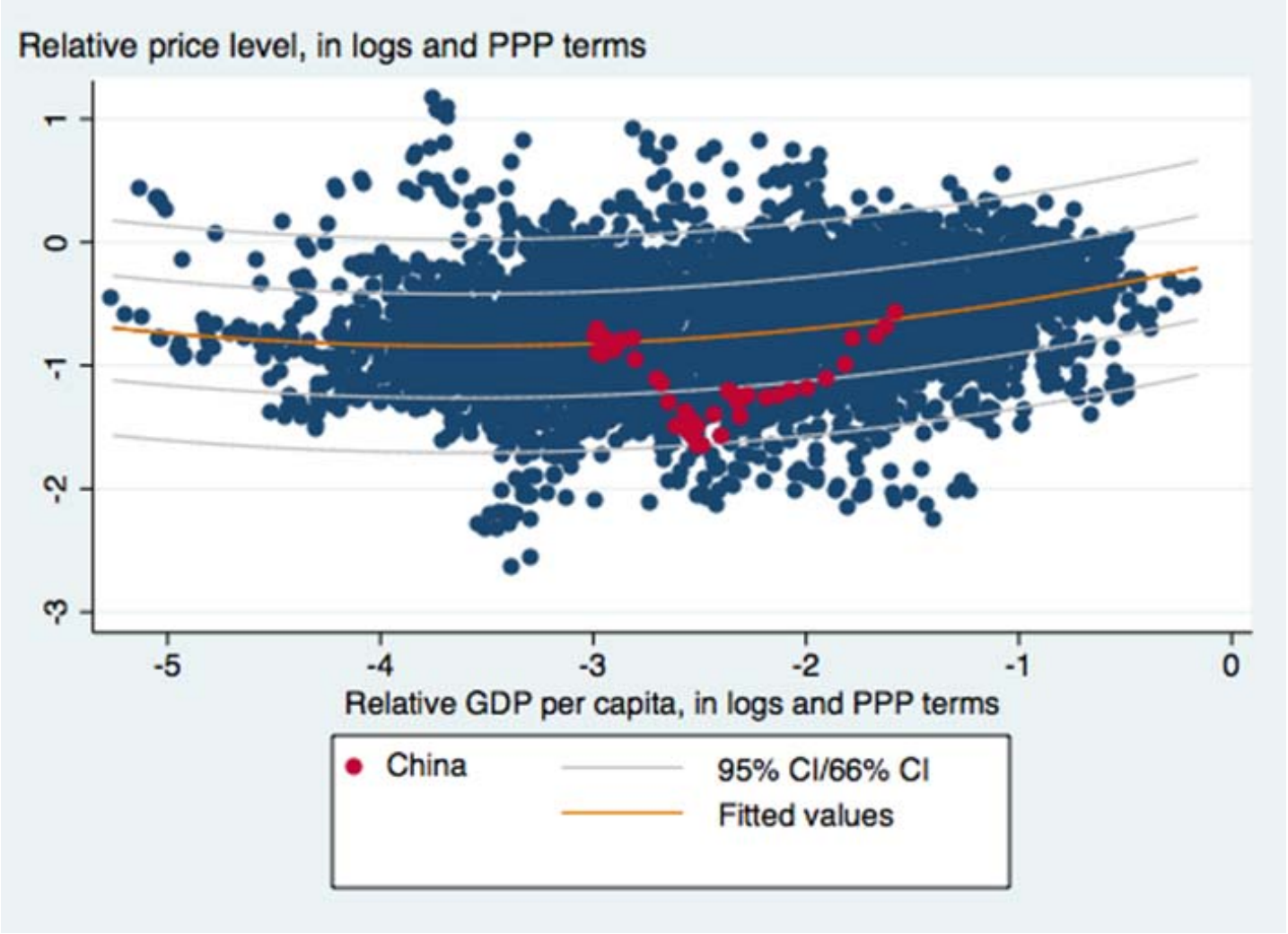
- Absolute PPP requires the *prices of bundles of goods* are equalized in common currency terms. E.g. MacParity
- But Absolute PPP doesn't hold across countries of dissimilar incomes
- Non-tradable goods
- Penn Effect (Balassa–Samuelson effect): Higher incomes associated with stronger currencies
- $P/(EP^*) \equiv \varepsilon$ rises with per capita income

The Failure of Absolute PPP



Note: Full sample. Log "relative price level" & log relative income/capita. Source: Cheung, et al. (2016); *PWT*, *WDI*.

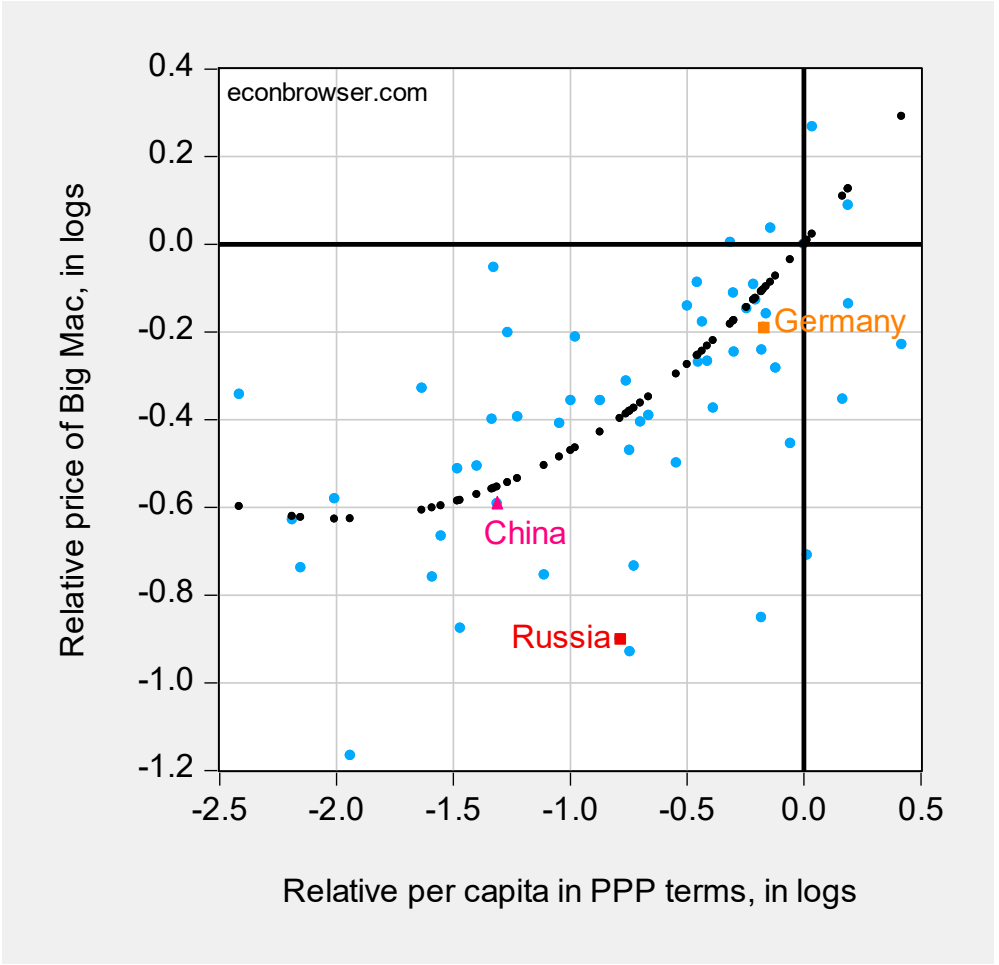
The Failure of Absolute PPP



Note: Developing country sample. Log "relative price level" & log relative income/capita.
Source: Cheung, et al. (2016); *PWT*, *WDI*.

"Penn Effect" and MacParity

- Latest estimate for 2011 (from Penn World Tables), 2014 (from World Development Indicators).
- Big Mac data is up to date (latest is Jan. 2017)



Source: *Economist* (2016), calculations by Chinn.

Macro Balance Approach (aka FEER Approach)

- Determine a "normal" level of current account balance or "basic balance", at full employment
- Using price elasticities, back out the equilibrium exchange rate.
- E.g, FEERs from Peterson Institute for International Economics
- If an econometric approach is used to determine "normal" level of CA, then IMF's "Macroeconomic Balance" approach.

Actual, Target Current Acct Balances

(Peterson Institute for Int'l Econs)

Table 1 Target current accounts for 2021

Country	IMF projection of 2016 current account (percent of GDP)	IMF 2021 GDP forecast (billions of US dollars)	IMF 2021 current account forecast (percent of GDP)	Adjusted 2021 current account (percent of GDP)	Target current account (percent of GDP)
Pacific					
Australia	–3.6	1,536	–3.2	–3.5	–3.0
New Zealand	–3.7	216	–2.9	–2.9	–2.9
Asia					
China	2.6	17,762	0.5	0.8	0.8
Hong Kong	3.1	410	3.6	4.6	3.0
India	–1.5	3,660	–2.6	–2.5	–2.5
Indonesia	–2.6	1,428	–3.0	–3.0	–3.0
Japan	3.8	4,895	3.7	3.6	3.0
Korea	8.2	1,629	5.6	5.1	3.0
Malaysia	2.3	531	1.6	0.5	0.5
Philippines	2.6	528	1.6	1.7	1.7
Singapore	21.2	347	18.0	18.0	3.0
Taiwan	15.0	610	14.0	14.1	3.0
Thailand	8.0	510	1.4	1.7	1.7

Cline, Estimates of Fundamental Equilibrium Exchange Rates, Peterson Institute for International Economics, May 2016
https://piie.com/system/files/documents/pb16-6.pdf

Implied FEERs

(Peterson Institute for Int'l Econs)

Table 2 Results of the simulation: FEERs estimates

Country	Changes in current account as percent of GDP		Change in REER (percent)		Dollar exchange rate		FEER-consistent dollar rate
	Target change	Change in simulation	Target change	Change in simulation	April 2016	Percent change	
Pacific							
Australia*	0.5	0.7	–2.8	–3.5	0.77	6.9	0.82
New Zealand*	0.0	0.2	0.0	–0.6	0.69	8.4	0.75
Asia							
China	0.0	0.2	0.0	–0.8	6.48	8.8	5.95
Hong Kong	–1.6	–1.4	3.1	2.7	7.76	13.5	6.83
India	0.0	0.2	0.0	–0.7	66.5	7.6	61.8
Indonesia	0.0	0.1	0.0	–0.7	13173	12.3	11728
Japan	–0.6	–0.5	3.6	2.9	110	12.2	98
Korea	–2.1	–1.8	5.2	4.6	1147	13.9	1007
Malaysia	0.0	0.3	0.0	–0.7	3.90	12.9	3.45
Philippines	0.0	0.2	0.0	–0.6	46.3	11.7	41.5
Singapore	–15.0	–14.6	29.9	29.1	1.35	39.7	0.97
Taiwan	–11.1	–10.8	25.6	25.0	32.3	34.5	24.0
Thailand	0.0	0.3	0.0	–0.7	35.1	9.7	32.0

Cline, Estimates of Fundamental Equilibrium Exchange Rates, Peterson Institute for International Economics, May 2016
https://piie.com/system/files/documents/pb16-6.pdf

BEER or "Kitchen Sink" Approach

- Combination of Balassa-Samuelson, real interest differential, productivity, and debt motivations
- Is more general than any of the models outlined above
- Can be thought of the real exchange rate that one gets when GDP equals potential GDP.
- Equate the regression residual with the degree of misalignment
- Requires that the sample encompass a period when the exchange rate is at the equilibrium level

No Simple Answer: E.g. China

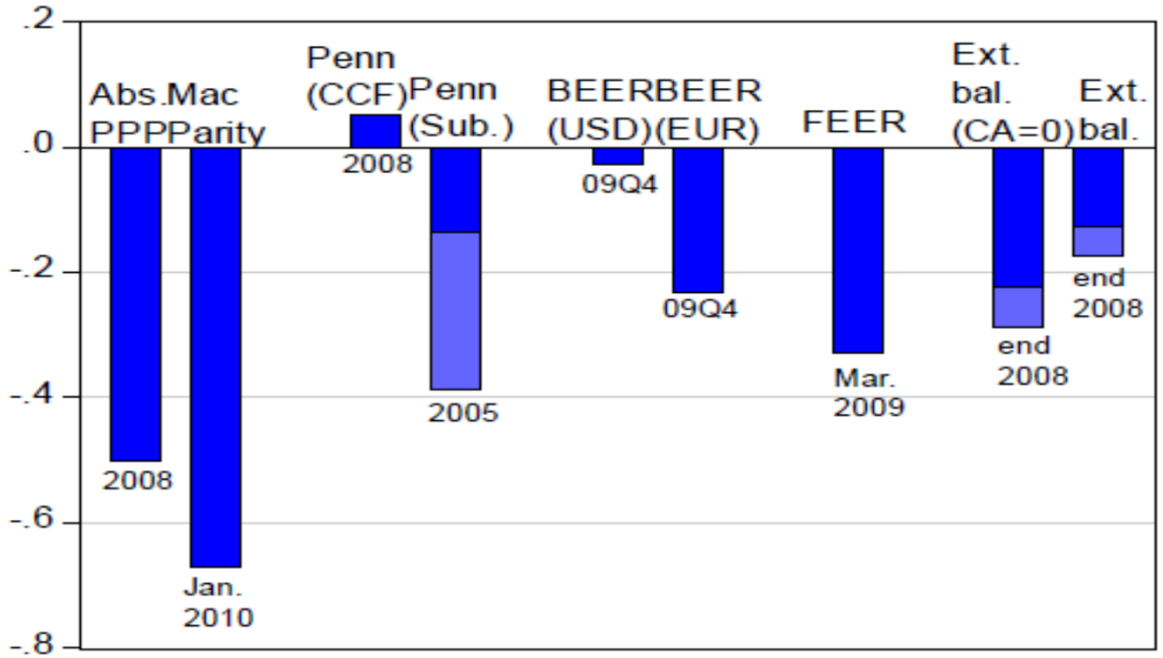


Figure 3: Estimates of Chinese yuan undervaluation. Absolute PPP is deviation from PPP according to *World Development Indicators* data; MacParity calculated using the *Economist*'s Big Mac index. Penn (CCF) and Penn (Sub.) are Penn effect estimates from Cheung, Chinn and Fujii, and Subramanian, respectively. BEER are Behavioral Equilibrium Exchange Rate model estimates, against dollar and against euro, from Goldman Sachs GSDEER. FEER is Fundamental Equilibrium Exchange Rate estimate from Cline and Williamson; CA=0 indicates target of zero current account balance, otherwise halving of current account. External balance is undervaluation from basic balance approach in Goldstein and Lardy. Light colored shading indicates range of estimates. Sources: *Economist* (2010), Subramanian (2010), Stupnytska *et al*. (2009), Cline and Williamson (2010), Goldstein and Lardy (2009), and authors' calculations.

Cheung, Chinn, Fujii, "Measuring Misalignment: Latest Estimates for the Chinese Yuan," The US-Sino Currency Dispute: New Insights from Economics, Politics and Law , edited by Simon Evenett (April 2010).

Concluding Remarks

- Currency manipulation is very subjective
- Treasury definition does not make economic sense
- Exchange rate misalignment is a more concrete concept
- But is hard to implement tests