Financial Integration and Crises

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Lecture 1a

Global Imbalances: the debate

- Global imbalances should close in the future. Timing of adjustment open to debate. . . but will happen at some point
- How does it happen?
- Implications for the US dollar?
  - Soft-landing scenario: (gradual reallocation in demand and production, smooth exch. rate adjustment)
  - Hard-landing scenario: rapid CA reversals; large movements in currencies and asset prices; possible recessionary impact;

Imbalances and Adjustment

- Intertemporal budget constraint:

$$-(1+r)B_t = \sum_{s=t}^{\infty} \left(\frac{1}{1+r}\right)^{s-t} (Y_s - G_s - C_s - I_s) = \sum_{s=t}^{\infty} \left(\frac{1}{1+r}\right)^{s-t} TB_s$$

  So countries with high net external debt (like the US) must run trade surpluses in the future = Trade adjustment

- Trade surpluses imply future exchange rate depreciations (Marshall-Lerner conditions satisfied).

Imbalances and Adjustment

International trade adjustment

- Obstfeld and Rogoff (2005) estimate associated change in Real Exchange Rate and Terms of Trade when US current account is eliminated.
- Look at the effect of an unexpected drought of capital flows on exchange rate (unexpected forced adjustment).
- Only look at trade adjustment (no valuation effect) in a model with fixed outputs and not intersectoral mobility (tradables/non tradables)

External Adjustment

- Obstfeld and Rogoff consider a two-country economy in which they examine a sudden reversal in the U.S. current account going from current position to long-term balance.
- What are the implications on the real exchange rate?

External Adjustment

- Two-good economy: traded and nontraded.

$$C = \left[\gamma^{\frac{1}{\theta}} C_T^{\frac{\theta-1}{\theta}} + (1-\gamma)^{\frac{1}{\theta}} C_N^{\frac{\theta-1}{\theta}} \right]^{\frac{\theta}{\theta-1}}$$

- Wages and prices are perfectly flexible.
- Endowment economy in which Y_T and Y_N are exogenous.
- From this preference specification we can derive the demand function for traded and nontraded goods (see Obstfeld and Rogoff chapter 4).

$$C_N = (1-\gamma)\left(\frac{P_N}{P}\right)^{-\theta} C$$

$$C_T = \gamma\left(\frac{P_T}{P}\right)^{-\theta} C$$

where

$$P = \left[\gamma P_T^{1-\theta} + (1-\gamma) P_N^{1-\theta}\right]^{\frac{1}{1-\theta}}$$

External Adjustment

- Current account equation measured in terms of the tradable good implies that

$$CA_t = B_{t+1} - B_t = Y_T + iB_t - C_T$$

  where B_t is the next external debt in units of tradable.

- We can rewrite this as:

$$\frac{CA}{Y} = \frac{Y_T + iB_t - C_T}{Y}$$

External Adjustment

- Simple calibration approach:

  $\frac{Y_T}{Y} = 25\%$
  $\frac{iB_t}{Y} = 1.2\%$ (6% nominal interest rate and 20% external debt to GDP ratio)
  $\theta = 1$ (might change depending on horizon on which to focus)

- Exercise: suppose current account reverse from deficit (4.4%) to balance.
- What is the impact on prices and the exchange rate?

$$\frac{P_N}{P_T} = \left(\frac{1-\gamma}{\gamma}\right)^{\frac{1}{\theta}} \left(\frac{C_T}{Y_N}\right)^{\frac{1}{\theta}}$$

Reversal would imply a decline in the relative price of nontradable of 16%

External Adjustment

- Effects on the exchange rate depends on monetary policy. If the FED stabilizes CPI inflation then, under $\theta = 1$, a decline of 16% in the relative price implies that to keep CPI stable you would need 12% rise in tradeable prices and a 4% decline in non-tradebale price as long as $\gamma = 0.25$.
- If prices of traded good is set in the world market that would require a depreciation of the nominal exchange rate by 12 % (under flexible prices)
- Other considerations might amplify this exchange rate adjustment:

  a) lower elasticity of substitution;
  b) imperfect pass-through of exchange rate into import prices;
  c) nominal rigidities (short run)
  d) in the long-run factor mobility across sectors;

- Limit to this exercise: partial equilibrium approach

International financial integration

Obstfeld (2012): *"International economic integration puts a country's fortunes partly into the hands of others. When integration takes the form of financial interdependence, the potential domestic impact of external events is magnified manyfold."* and..
"While the general scale and persistence of current account imbalances certainly has increased over the past two decades, even more striking – and potentially more threatening to financial and economic stability is the rapid expansion of gross international assets and liabilities positions"

International financial integration

- Scale of International Financial Integration:
- Since 1990s there has been a dramatic increase in international asset trade in developed and many developing countries.
- The main evidence is provided in a series of papers by Lane and Milesi-Ferretti ("The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities,1970–2004") who have collected data on the levels of gross assets and liabilities.
- Measure of international asset trade: (volume based measure)

$$\frac{A+L}{GDP}$$

$A =$ assets; $L =$ liabilities;

International Financial Integration

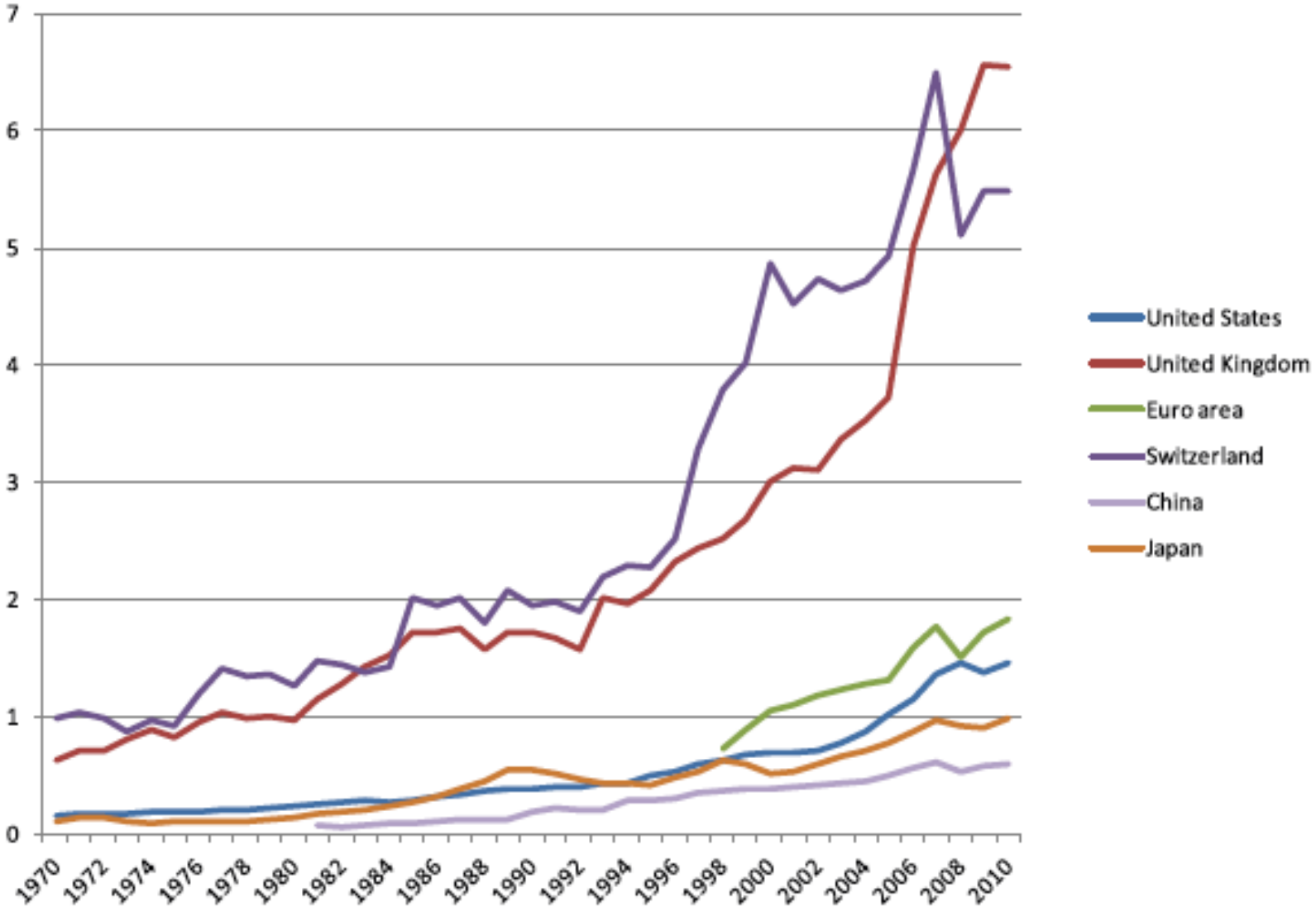


Fig. 2. Average of gross foreign assets and liabilities as a ratio to GDP: Selected countries.

International Financial Integration

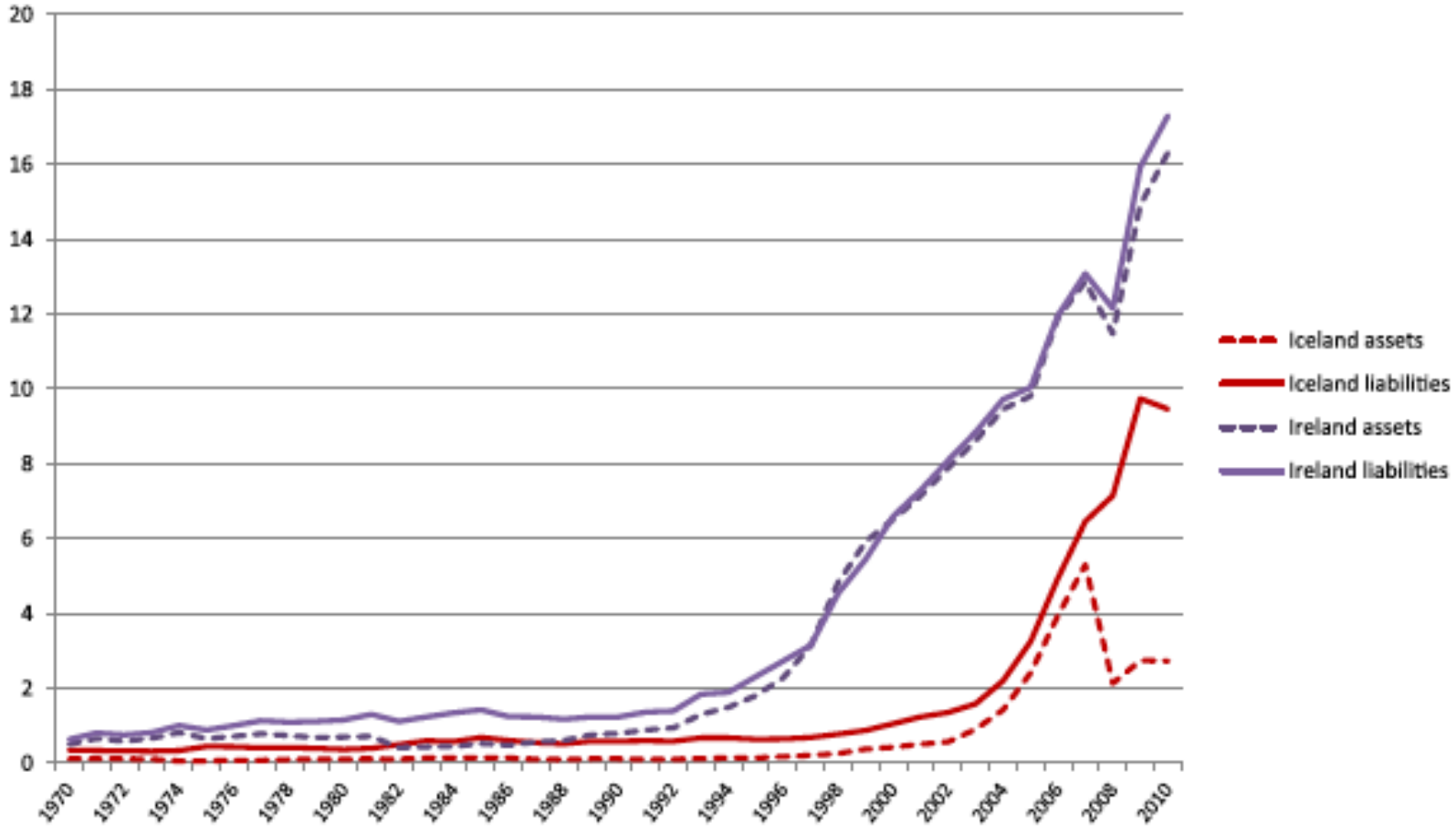


Fig. 3. Gross foreign assets and liabilities as a ratio to GDP: Iceland and Ireland.

International Financial Integration

- The nature of international trade in assets:
- So far we have focused on *intertemporal* trade in which today consumption is exchanged for an asset entitling the buyer a claim on future consumption
- Cross border asset trade is a form of *intratemporal* trade in which we exchange consumption across different states of nature on the same date

International Financial Integration

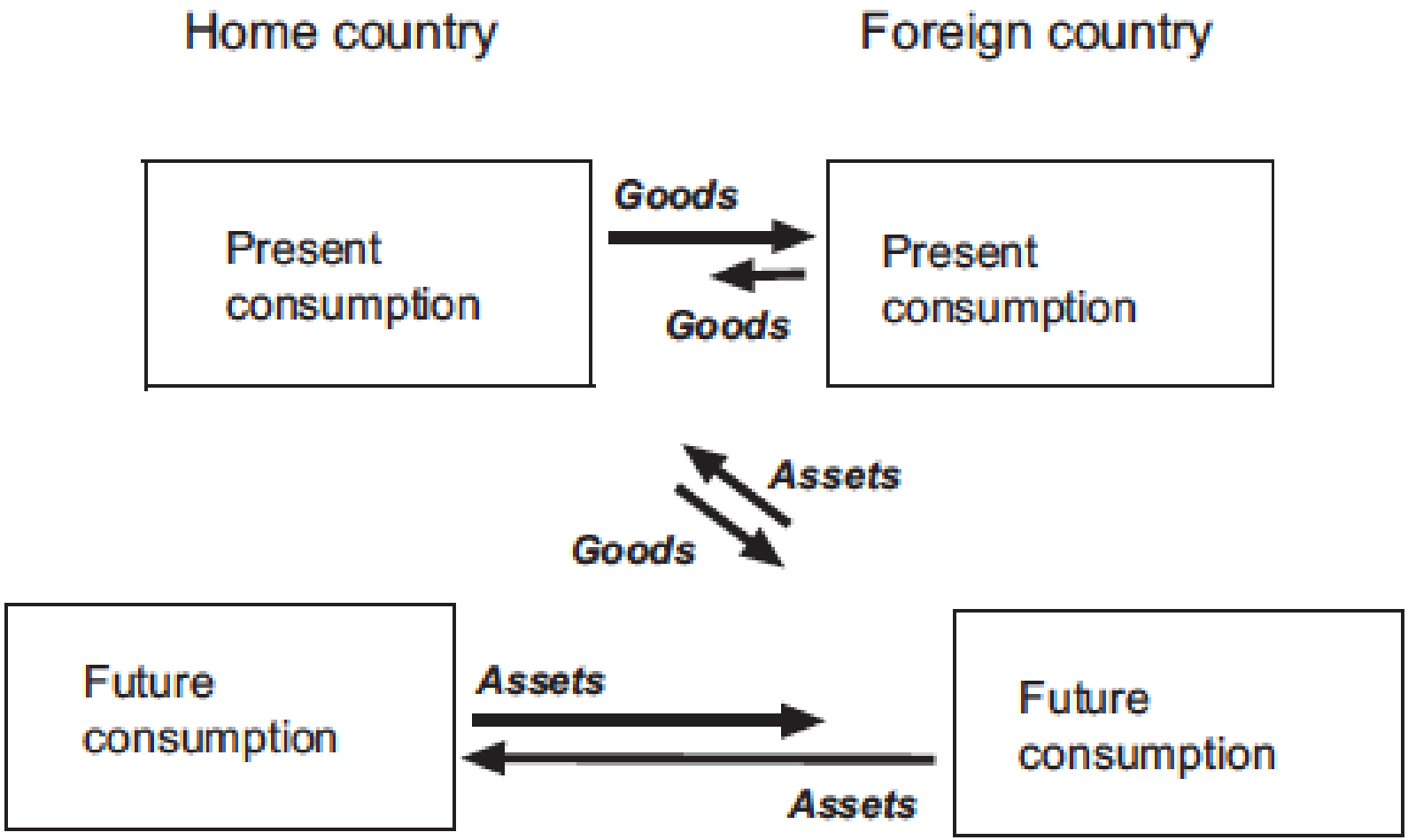


Fig. 1. Intertemporal and intratemporal trade patterns.

International Financial Integration

- Home buys more assets from Foreign than it sells – financing the difference through its current export surplus – (the difference in the two arrows' lengths is fixed by the size of the current account imbalance), the arrow lengths themselves can be arbitrarily big.
- At any point in time, the size of the current account imbalance is limited by output sizes and the sizes of predetermined international assets and liabilities – but there is no limit to the number of times funds can be recycled in different forms between Home and Foreign.
- In that process, the gross external assets and liabilities of the two countries can expand explosively.

Imbalances and adjustment

International financial adjustment and valuation effects

- Valuation effects: CA deficits is not the only factor in the dynamic of net foreign asset positions *NFA*

$$NFA_{t+1} - NFA_t = CA + \textbf{net capital gains on lagged NFA}$$

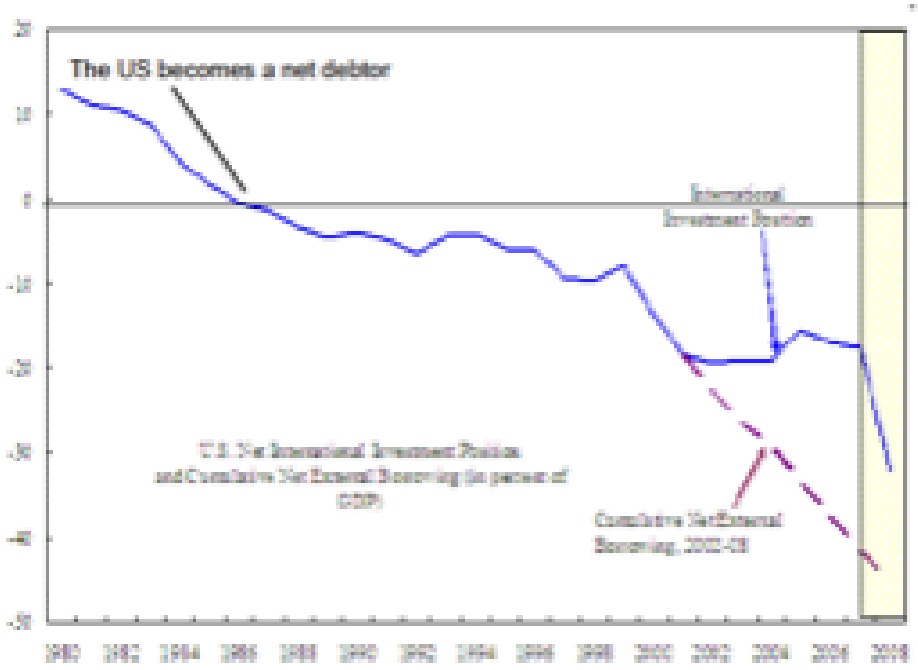
- Valuation channel increasing in importance, in line with scale of financial globalization. Due to exchange rate, stock market movements: implies large transfers
- Valuation effects absent from traditional theory and also from official statistics: BOP report current account only at historical cost (potentially misleading reflection of change in country net foreign asset position)

External Adjustment

International financial adjustment

- Growing divergence between the accumulation of CA deficits and the NFA (or NIIP, net international investment position) position in the US.
- On the period 2002-2006 with CA deficits (>5% of GDP) the US NFA position that measures the difference between the value of foreign assets held by US agents and US assets held by foreigners has barely changed: cumulative of CA deficits around \$3.4 trillion $\Rightarrow$ this should have raised US net external liabilities to some \$5.5 trillion (some 40% of GDP). The NFA deterioration was only \$400 billion, and as a ratio of GDP it actually improved.
- Where did those other \$3 trillions of US net borrowing go?

Imbalances and adjustment



Imbalances and adjustment

International financial adjustment

- How can that be?
- Foreign assets held by Americans (mostly denominated in foreign currency) increased in value much more than foreign-held assets in the US (mostly denominated in $): why?

  - $ depreciation 2002-2007
  - foreign stocks did better than US stocks

- Note in 2008 (financial crisis): dollar appreciation and foreign equity markets fared even worse than US equity markets: adverse valuation effects for the US

Imbalances and adjustment

International financial adjustment

- *A simple numerical example and the role of the $*
- NFA of US in 2002 $\approx$ 20% of GDP
- Foreign assets held in the US $\approx$ 125% GDP
- US assets held by foreigners $\approx$ 145% GDP
- Around 65% of foreign assets held by US are in foreign currency (euro, yen...)
- Around 95% of US assets held by foreigners are in $

Imbalances and adjustment

International financial adjustment

- *A simple numerical example and the role of the $*
- $ depreciates by 10% (other currencies appreciate by 10%) *unexpectedly*
- Foreign assets (in foreign currency) gain: $(0.1)(0.65)(1.25) = 8,1\%$ of US GDP
- US assets (in foreign currency) held by foreigners gain : $(0.1)(.05)(1.45) = 0.7\%$ of US GDP
- In net: the net value of US debt to ROW decreases by 7.4% of US GDP (a transfer of more than $ 1000 billions to U.S!)

Imbalances and adjustment

International financial adjustment

- Hence a depreciation of the dollar reduces the net external debt of the US for two reasons:
  - standard trade adjustment: US net exports ↑
  - financial adjustment: valuation effects generate a wealth transfer towards the US.
- Empirics: Gourinchas and Rey (2007) decompose the two: valuation channel accounts for 27% of cyclical external adjustment (majority remains trade channel)

  Note: Emerging markets borrow in foreign currency: financial channel hinders the adjustment