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FINANCIAL INTEGRATION AND CRISES
2021

Lecture 2

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- **International Financial Integration**
  - Measures and Evidence
  - The benefits of financial integration

References: SUW Chap. 2.3 and 8.1

- Lane and Milesi-Ferretti (2017, IMF WP 115)
- Borio, Claudio, and Piti Disyatat. 2011. "Global imbalances and the financial crisis: Link or no link?" BIS WP No 346.
- Coeurdacier, Rey, Winant "Financial Integration and Growth in a Risky World", JME 2019

Financial integration is the result of technology improvements and the removal of restrictions

- International financial integration has been the result of **technological improvements** and **financial liberalization**, in particular, **the removal of capital controls**; technically, capital account convertibility.
- In advanced economies the process started with the collapse of the Bretton Woods system –the dollar-exchange standard– in 1971and the move to **flexible exchange rates** in 1973 that do not require capital controls.
- Removal of financial restrictions is more recent for developing countries but also for many countries in the EU (ie at the end of the 1980s).
- Financial liberalization is generally a necessary condition for financial integration but may not be sufficient (and economies can be integrated even in the presence of restrictions).

Openness in Financial Markets

- '**Free capital mobility**' allows people to buy and sell financial assets, to borrow on foreign markets, to make foreign investments (FDI) etc. and thus to finance capital accumulation, to smooth consumption, to diversify risk, to speculate, etc.
- The volume of transactions is huge and can be inferred by looking at the foreign exchange market (the market for currencies) where the **world daily volume of transactions was $6.6 trillion** in 2019* (up from $5.1 trillions in 2016) greater than the total **yearly** value of US exports and imports.

*Source: "Triennial Central Bank Survey of Foreign Exchange and OTC Derivatives Markets" BIS at **https://www.bis.org/statistics/rpfx19.htm**

Indicators of International Financial Integration

STOCK Variables

- Sum of Foreign Assets and Liabilities as a percent of GDP $\equiv Y$

$$\frac{A+L}{Y} \quad \text{or} \quad \frac{A}{Y} \qquad \text{Gross}$$

- NIIP or Net Foreign Assets as a percent of GDP

$$\frac{NIIP}{Y} = \frac{A-L}{Y} \qquad \text{Net}$$

FLOW Variables

- Capital Inflows or Outflows (Net Sales or Purchase) as % of GDP

$$\frac{\Delta L^*}{Y}; \quad \frac{\Delta A^*}{Y}; \quad \frac{\Delta A^* + \Delta L^*}{Y} \qquad \textbf{Gross}$$

- Current Account Balance as a percent of GDP

$$\frac{CA}{Y} = \frac{\Delta A^* - \Delta L^*}{Y} \qquad \textbf{Net}$$

Most used indicators

- **The sum of Foreign Assets and Liabilities** as percent of GDP which measures the **cross-border holdings of foreign assets** and thus the **degree of interdependence** of a country's financial system with the world's system and **a country's external exposure**.

Alternatively, Foreign Assets, A/Y, can be used.

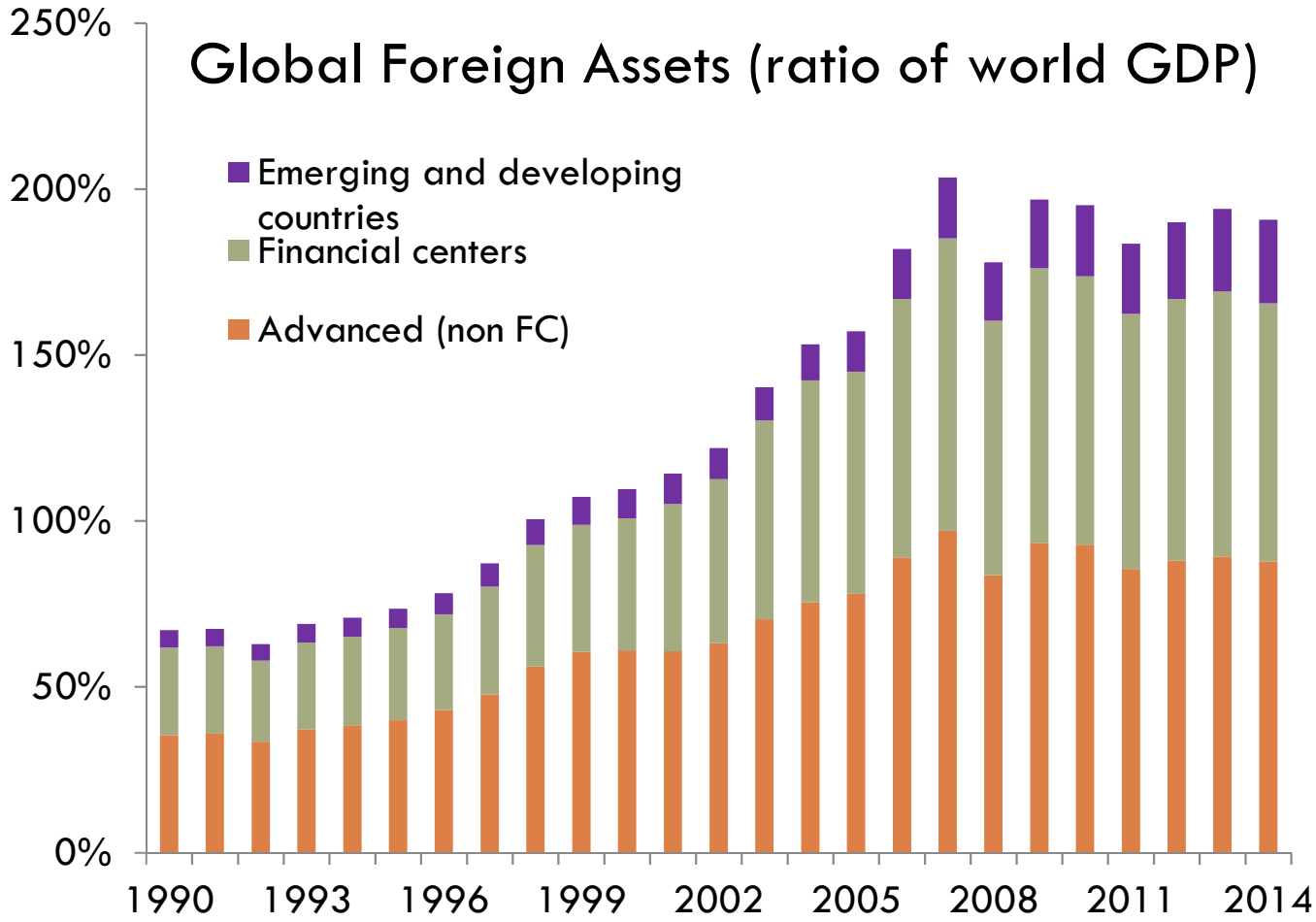
- **The Current Account Balance** as percent of GDP which measures the **transfers of funds** between an economy and the rest of the world.

BUT

- **Gross capital inflows**, $\Delta L^*/Y$ **and outflows**, $\Delta A^*/Y$ are increasingly being advocated as more relevant to measure **the impact of the global financial cycle on domestic markets**.

Growth in cross-border positions – 1990 - 2014

Advanced economies and financial centers dominate



Source: Milesi-Ferretti (2015) Seminar Presentation, with IMF BoP statistics

Foreign Assets and Liabilities

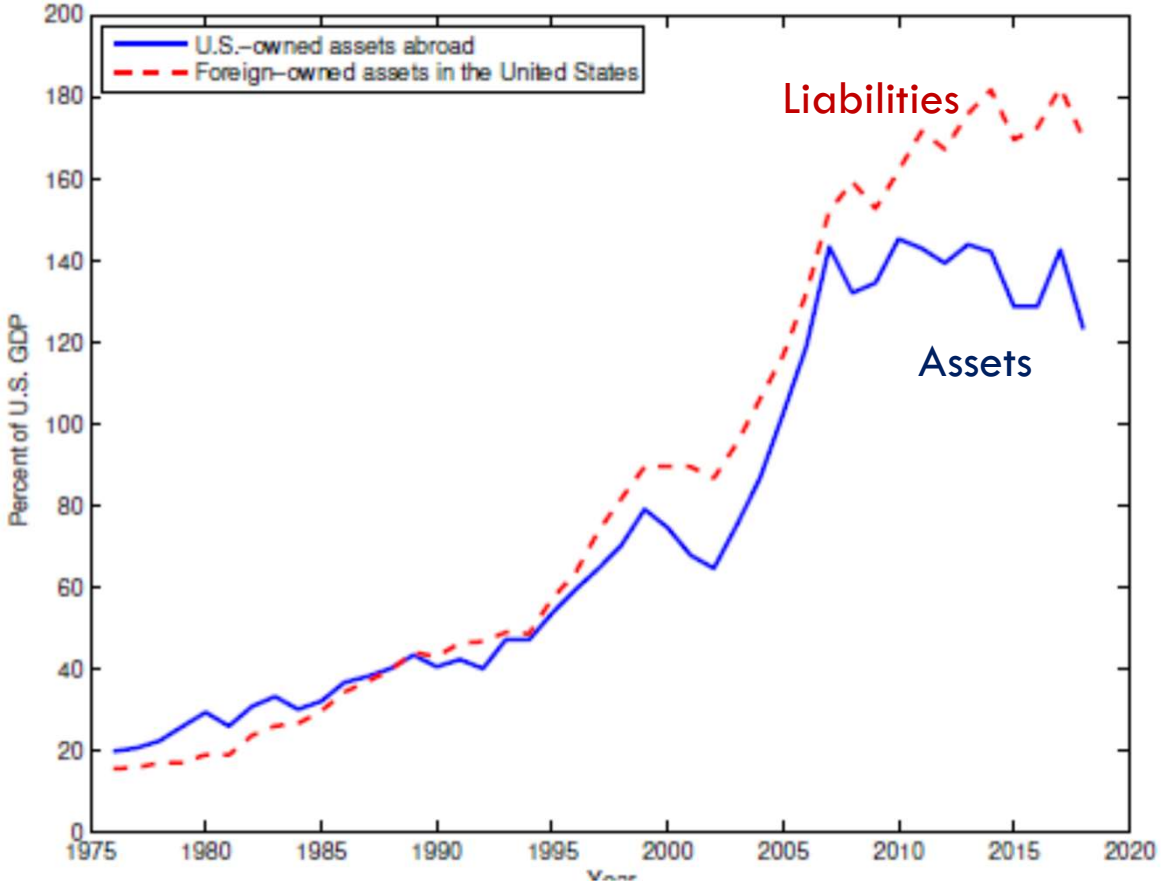
- Since 1990 World Foreign Assets as percent of world GDP have increased 3 times from 70% to almost 200% of GDP. (Lane and Milesi-Ferretti 2017)
- This increase took place before 2007, since then A/Y has stalled.
- The foreign assets held in advanced economies and financial centers still represents the largest part of world foreign assets.
- Over the past 15 years the foreign assets of Emerging economies have grown at a faster rate but still represent a minor component (they grew at the same rate until 2005 - see Appendix).
- Financial Integration in some countries is impressive

$(A + L)/2$ as percent of GDP in 2007 (Lane 2012)

Advanced	Emerging	Ireland	Switzerland	Belgium	UK
220%	70%	900%	500%	400%	500%

In 2019 in the US 160% - in Switzerland 695% ($A/Y = 753\%$; L/Y=637%)

US Foreign Assets and Liabilities 1975-2018

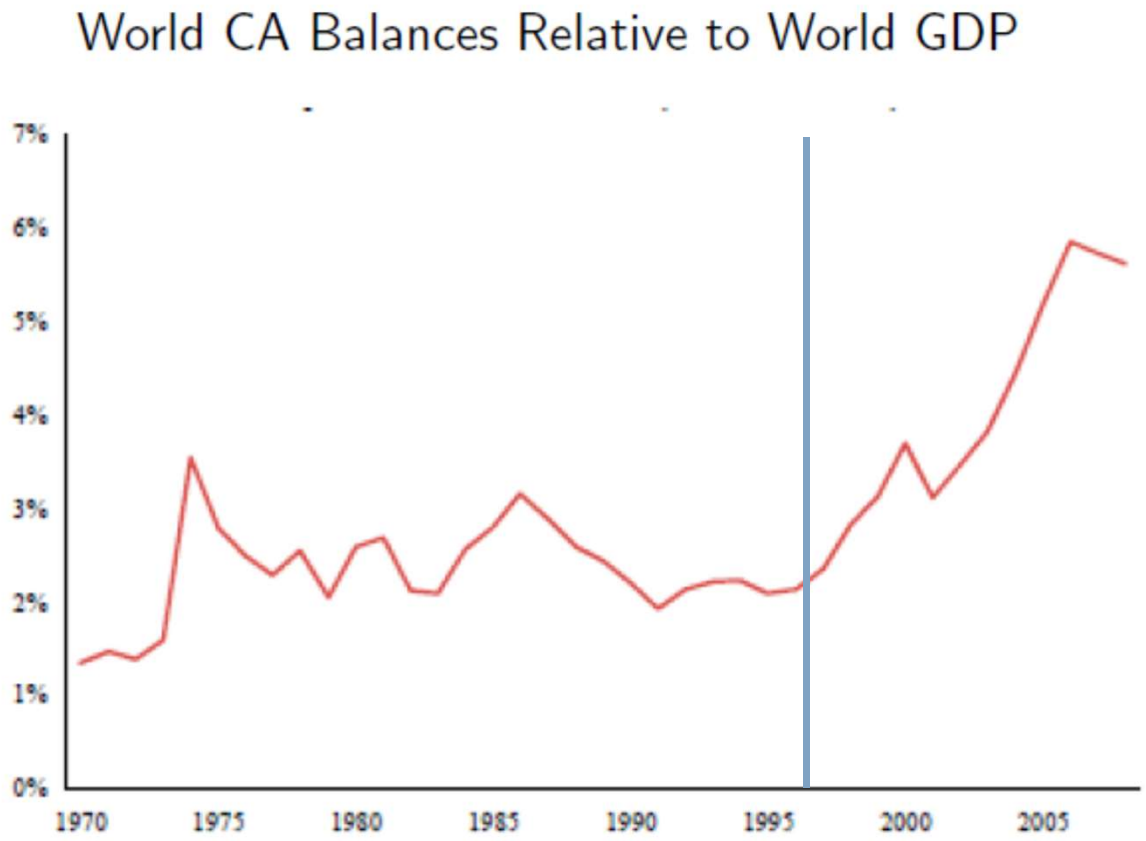


US foreign assets and liabilities increased from an average of 80% of GDP in 2000 to an average of 160% in 2019

(*A=136% L=187%*)

Source: SUW 2021 – Fig 1.7 page 27

CA deficits/surpluses increased only after 1996

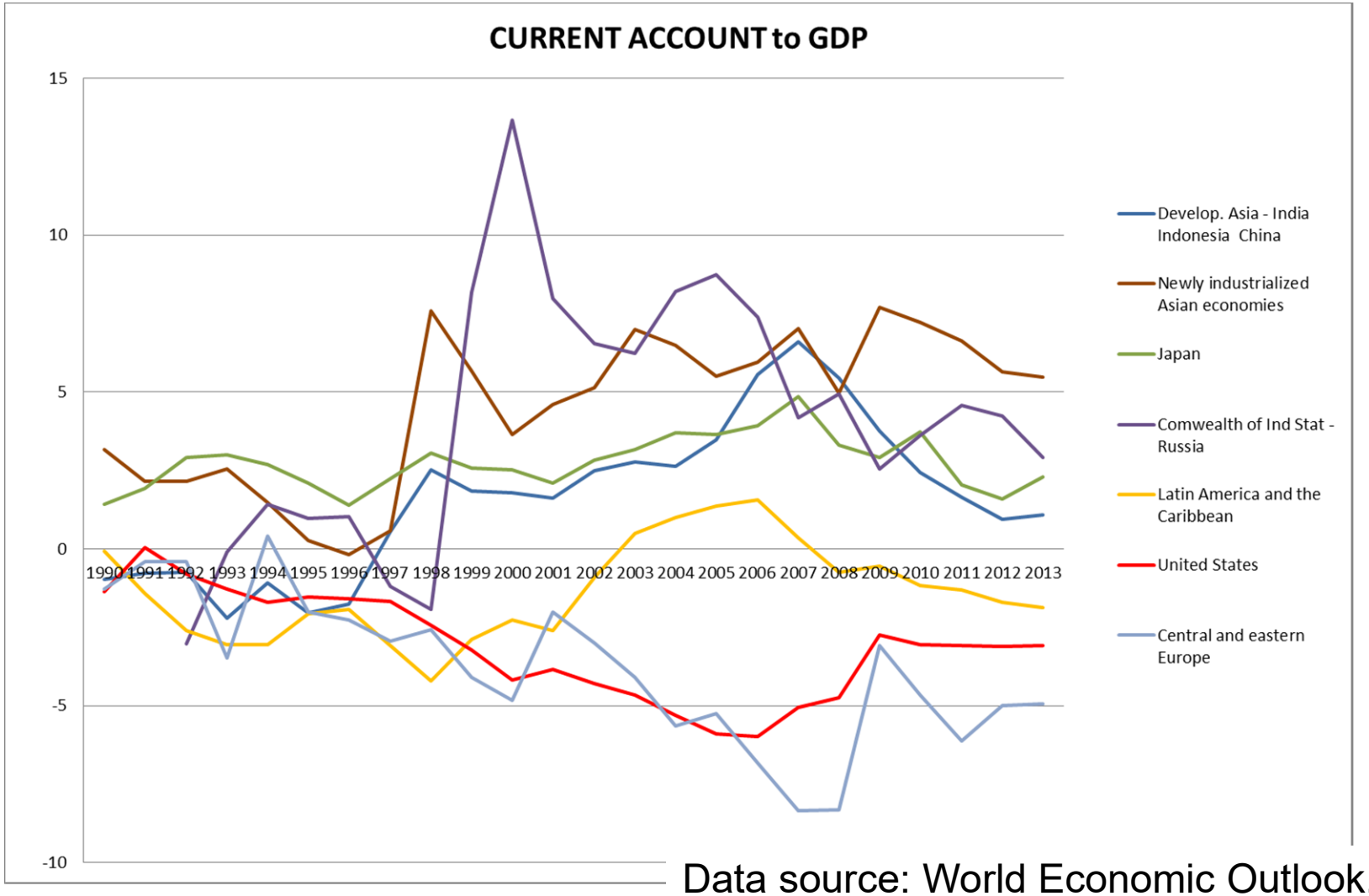


Since 1996 CA/Y increased sharply reaching 5% in the mid 2000s

Before 1996 the CAs were around 2%

Economists thought it was a puzzle:
Too low integration!

Following the Asian crisis in 1997-98 Capital started flowing 'uphill'; from Emerging to Advanced economies



Data source: World Economic Outlook, IMF

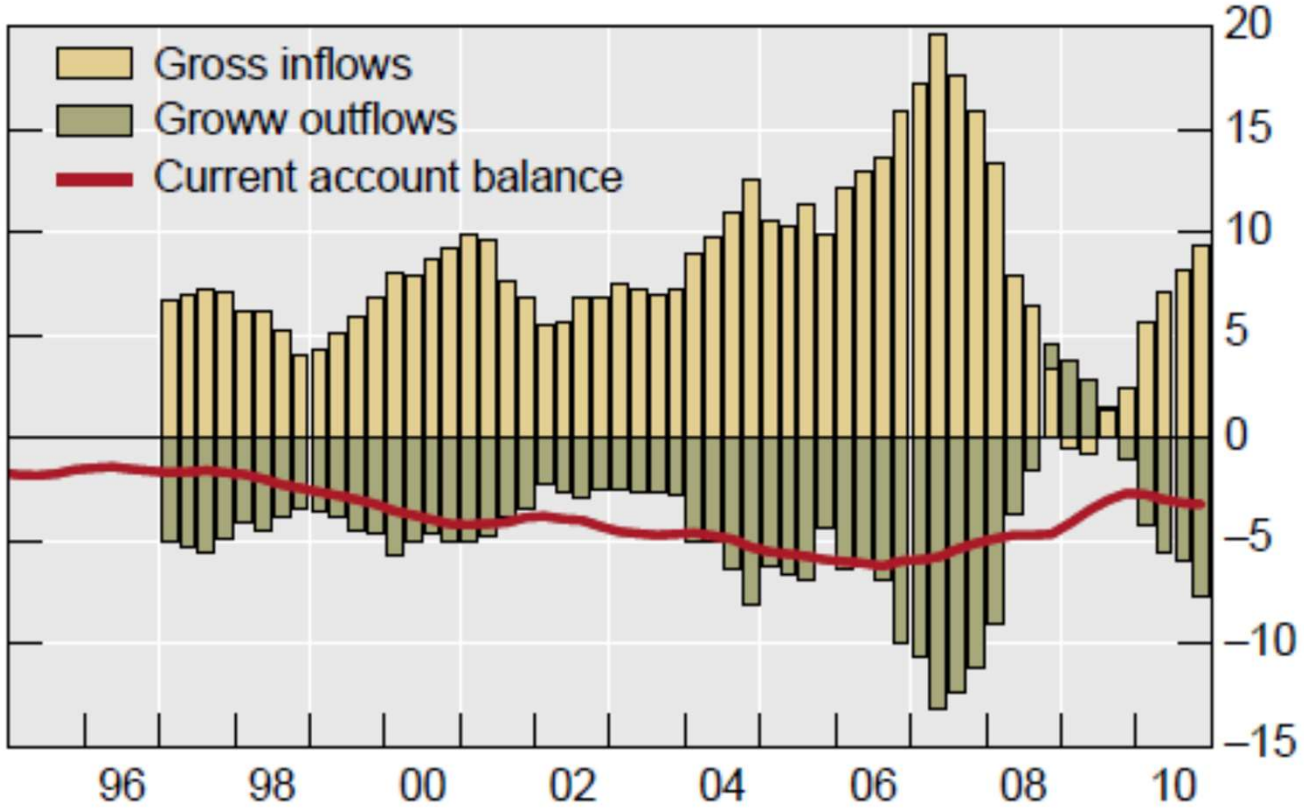
Net versus Gross Capital Flows

When we look at the CA we restrict attention to Net Capital Flows:

- $\boldsymbol{CA} = \Delta \boldsymbol{A}^* - \Delta \boldsymbol{L}^* =$ **Net capital outflows**
- Borio and Disyatat (2011), and many others, contend that looking at net flows is not enough.
- **Gross Capital Flows**, ΔA^* and ΔL^*, **separately** provide more information about financial market conditions, interest-rate determination, exposure to shocjks and financial crises
- "In the run up to the crisis, **the increase in net claims** on the country, which mirrors the current account deficit, **was about three times smaller than the change in gross claims**… Even if the US had no trade deficits in the 2000s, there would have been large foreign inflows into US financial markets."

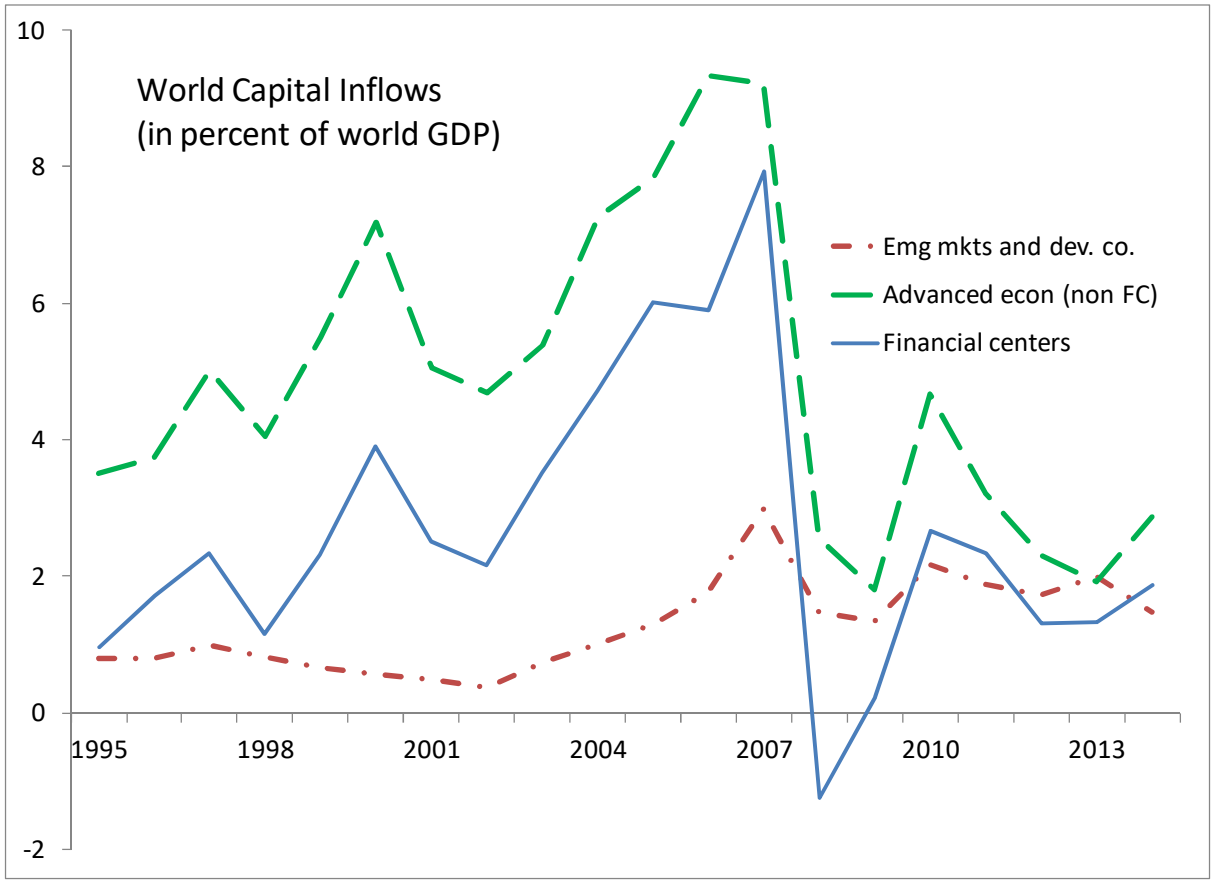
US Gross capital flows and CA in 2000s

Gross capital inflows, ΔL^*, and outflows, ΔA^*, as percent of GDP



Capital flows to (and from) **advanced economies** have fallen after crisis

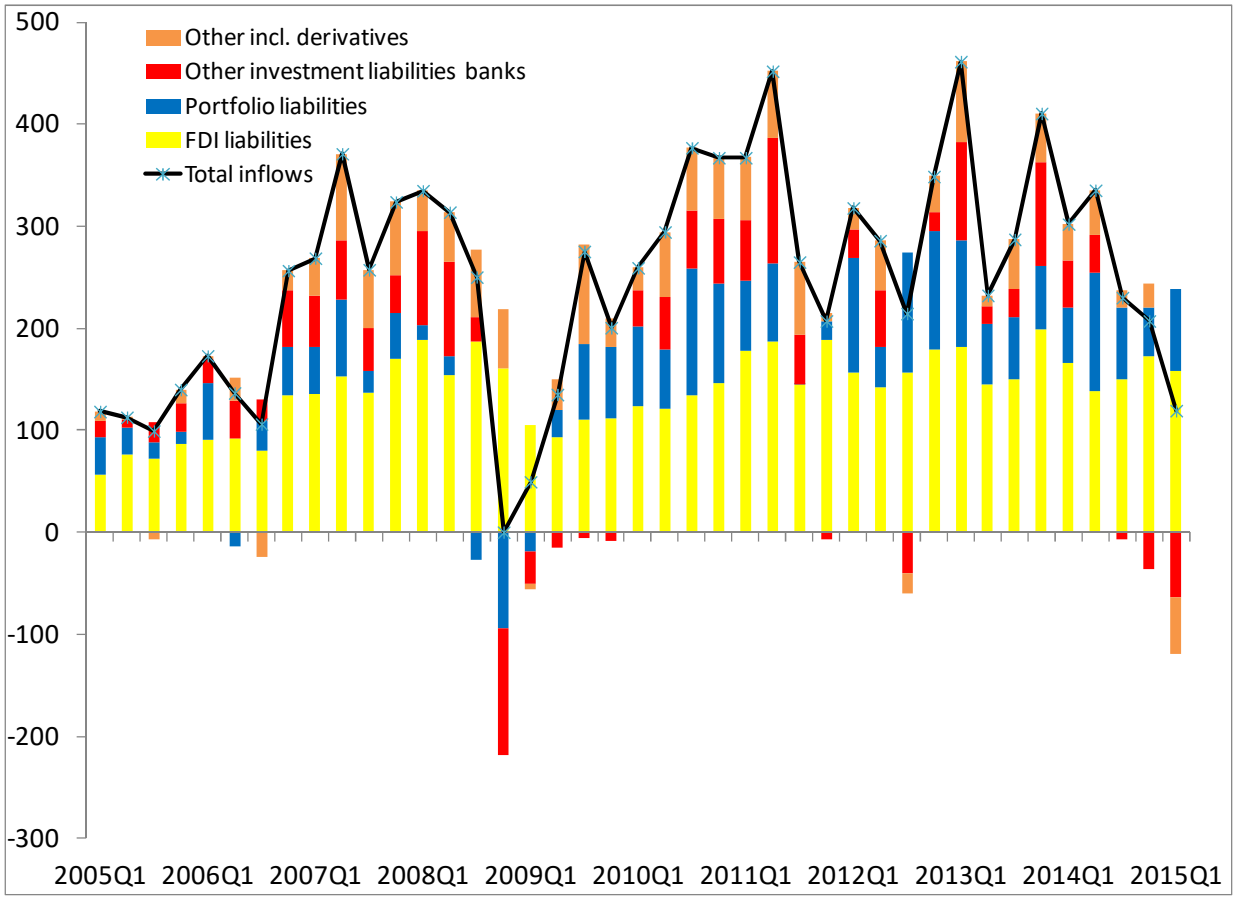
Capital flows had tripled between 1995 and 2005



Financial centers: UK, Belgium, Ireland, Luxembourg, Netherlands, Switzerland, Hong Kong, Singapore, and small offshore centers

Source: Milesi-Ferretti (2015) Seminar Presentation with IMF BoP statistics

Resilient capital flows to **emerging economies** (particularly FDI, portfolio)



Direct Investment is a main component: about $200 billions FDI increased more than 10 times since the 1980s.

Over time instruments have changed from loans to bonds to FDI.

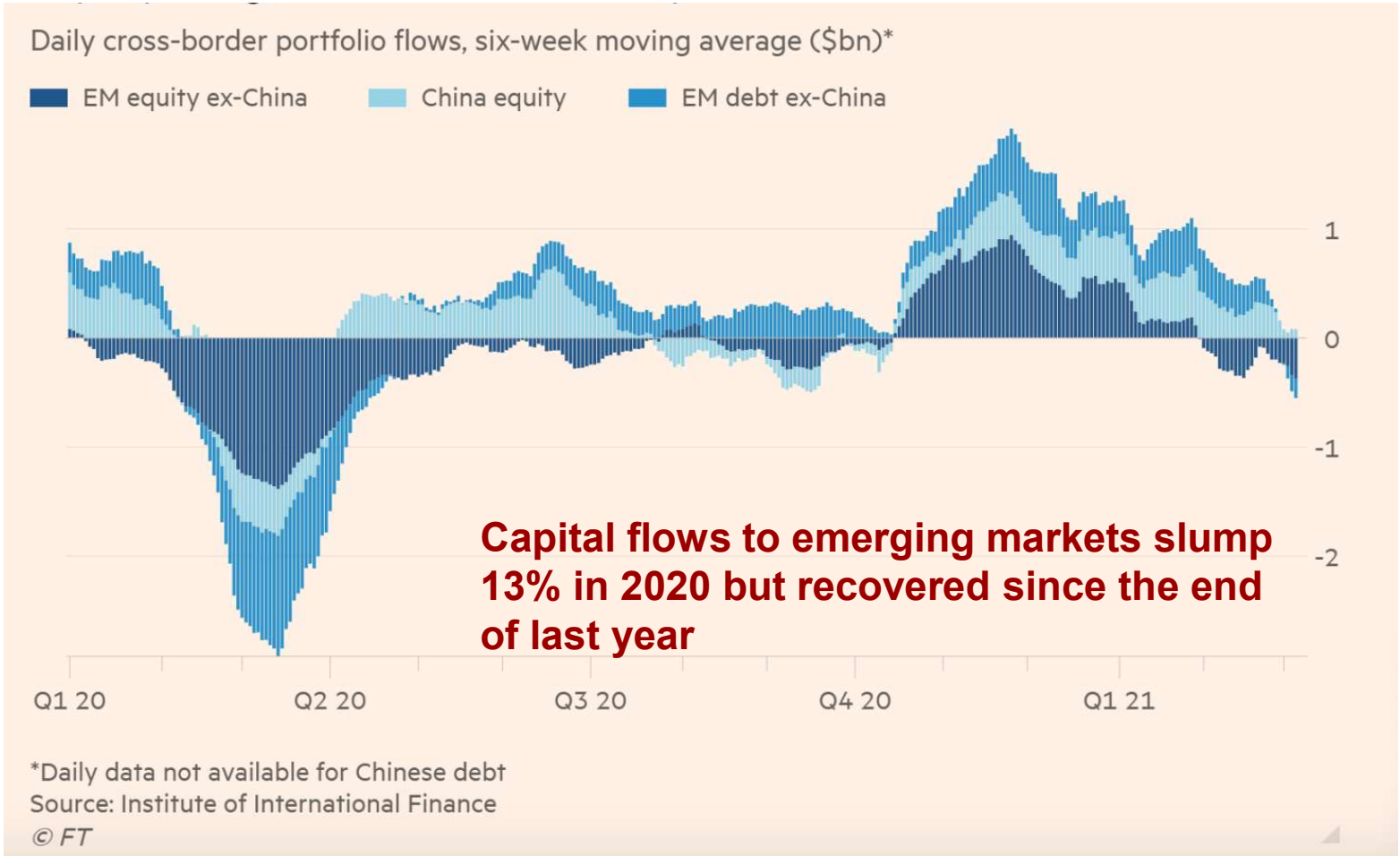
Source: Milesi-Ferretti (2015) Seminar Presentation with IMF BoP statistics

Summary of Evidence after the GF crisis

- Stop to the growth of external assets and liabilities relative to world GDP.
- Contraction in global capital flows:
  - Decline in flows to and from Advanced Economies;
  - Resilient flows to EMs, particularly in FDI.
- Compression in global current account imbalances…
- but **still expanding net asset and liability positions**.

Capital flows to EM in the Covid crisis

Portfolio flows to emerging economies Q1 2020 - Q12021



Is Financial Integration good or bad? Benefits and Costs of Integration

Benefits

- **Efficient allocation of capital**: Capital can flow to places with the highest marginal product. Investment can be financed with foreign capital and excess saving can be invested abroad;
- **Consumption smoothing** in spite of output fluctuations/shocks;
- **Risk sharing**: Portfolio diversification allows countries to share risk.

Costs

- Increased exposure to external monetary and financial shocks;
- Current account imbalances and debt accumulation;
- Excessive capital inflows destabilize the economy and produce lending booms; the quality of credit worsens;
- Sudden stops of capital inflows may lead to financial crises;
- Income redistribution in favor of capital income; inequality increases.

Financial integration allows Saving≠Investment

National saving and investment (in a small economy) are independent

Investment can exceed Saving → **a country can finance investment** by borrowing from the rest of the world:

$$I = S_N - CA = S_N + \underbrace{\Delta L^* - \Delta A^*}_{\text{foreign borrowing}}$$

- In developing countries, capital can be accumulated without reducing C
- Saving can be greater than investment → **a country can invest abroad**, it lends its excess saving to foreign residents:

$$S_N - I = CA = \underbrace{\Delta A^* - \Delta L^*}_{\text{foreign lending}}$$

Saving, Investment, CA in an Integrated Market

First benefits of integration:

Investment (capital accumulation) is not constrained by national saving

- **Investment** can be funded on the world capital market

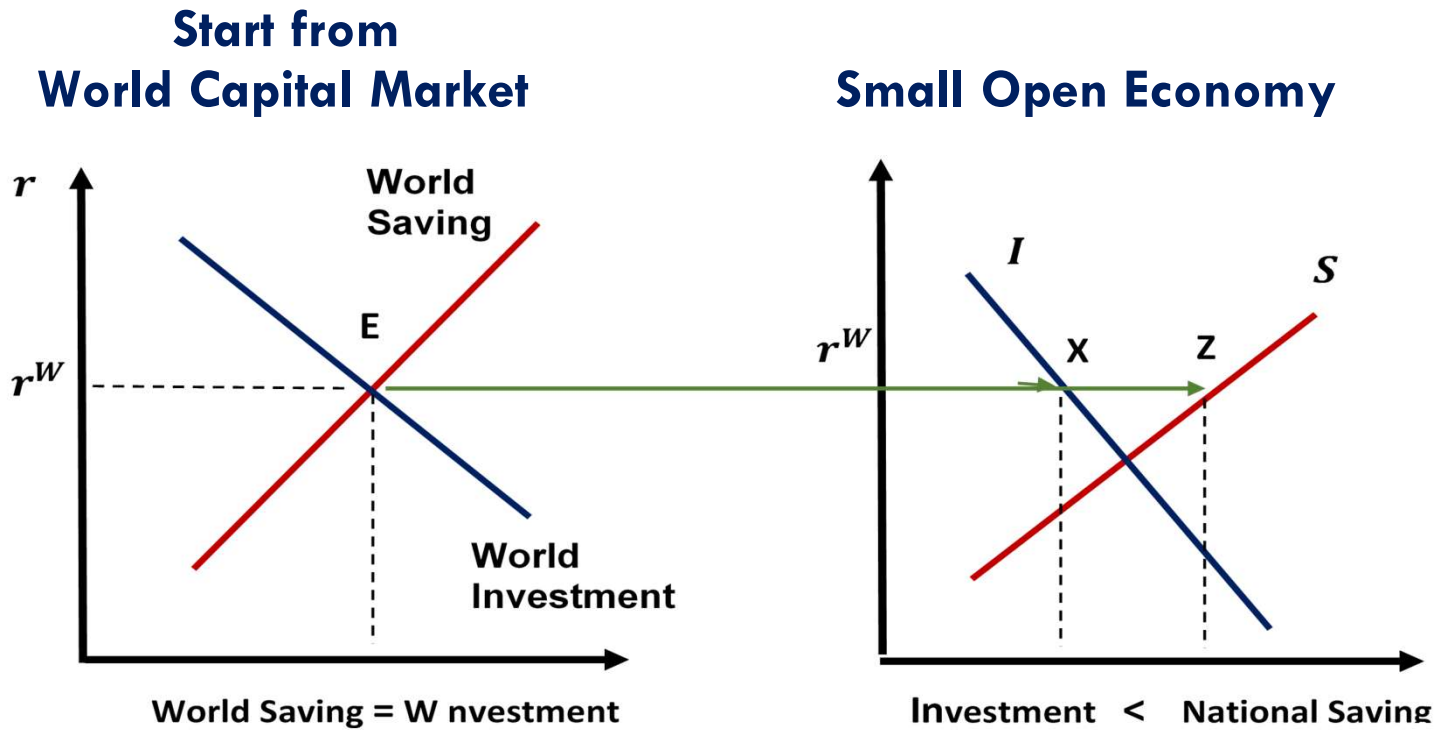
$$I = S_N \underbrace{- CA}$$

Foreign borrowing

- **Saving** can be invested in foreign assets.

- **Both Investmet and Saving depend on the world real interest rate r^W** that is determined by **world saving** and **world investment**.

Global markets for funds: Long run equilibrium with integration



The world capital market determines the equilibrium real rate, r^W, that then determines domestic investment and national saving separately at points X and Z

Borio and Disyatat (2011) warn us that this is an equilibrium long run real rate, not the one determined day-by-day on financial markets.

Gains from allocative efficiency

Gains from financial opening should mainly follow from

- **Better allocation of capital**
  - Capital should flow to countries where its return is higher; where it is more productive and should foster growth.

Emerging countries, being capital scarce, should benefit from integration as imported capital enables them to invest and consume at a faster pace than if they had remained in financial autarky.

- **Emerging countries should grow at a faster rate**

- Financial integration should also provide opportunities to individuals:
  - Invest in assets with higher expected return;
  - Borrow at the least expected cost.

Allocative efficiency in a neoclassical model

Coeurdacier, Rey, Winant, (2019)

- Use the neoclassical growth model to assess the **efficiency gains from financial openness.**

They find **small welfare gains**:

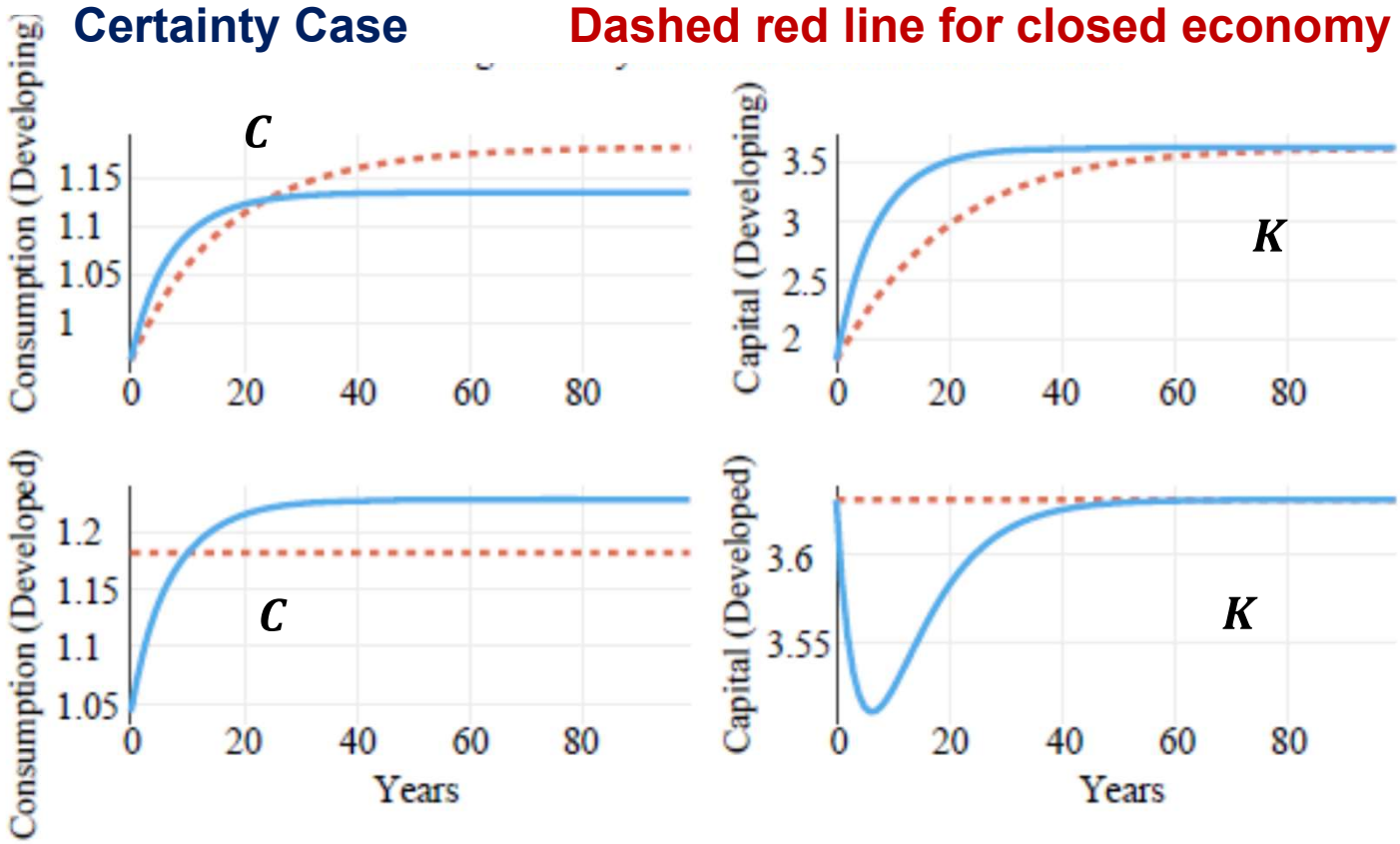
- In the deterministic case **gains are lower than 0.4% of permanent consumption**
- Reason: With foreign capital there is a faster transition towards the steady-state capital stock but the country would have reached its steady-state level of capital regardless of financial openness: the effect of **the distortion (no capital mobility) is transitory**.

Consumption and Capital from Financial Opening

Certainty Case **Dashed red line for closed economy**

Emerging

Developed



Note that the fall of capital in the developed economy raises the interest rate which reduces the welfare gains for the Emerging country

Source: Coeurdacier, Rey, Winant 2019

No evidence of a positive effect on growth

There is no empirical evidence that more financially integrated countries grow at a faster rate.

- Kose, Prasad, Rogoff, Wei (2009) survey 25 studies: Most find "no effect" of financial openness; **There is no systematic relationship between Financial Integration and growth** (seee next slide).
- Even FDI has no robust causal effect on growth despite presumptions.
- KPRW argue that: i) indirect effects (financial competition, better institutions and policies) could be more beneficial than investment financing; ii) a sufficiently developed financial market is needed to reap the benefit of financial openness (see Appendix).

Financial globalization has not generated more investment or higher growth in emerging markets.

Figure 5A. Level of Financial Openness and GDP Growth, 1985–2004

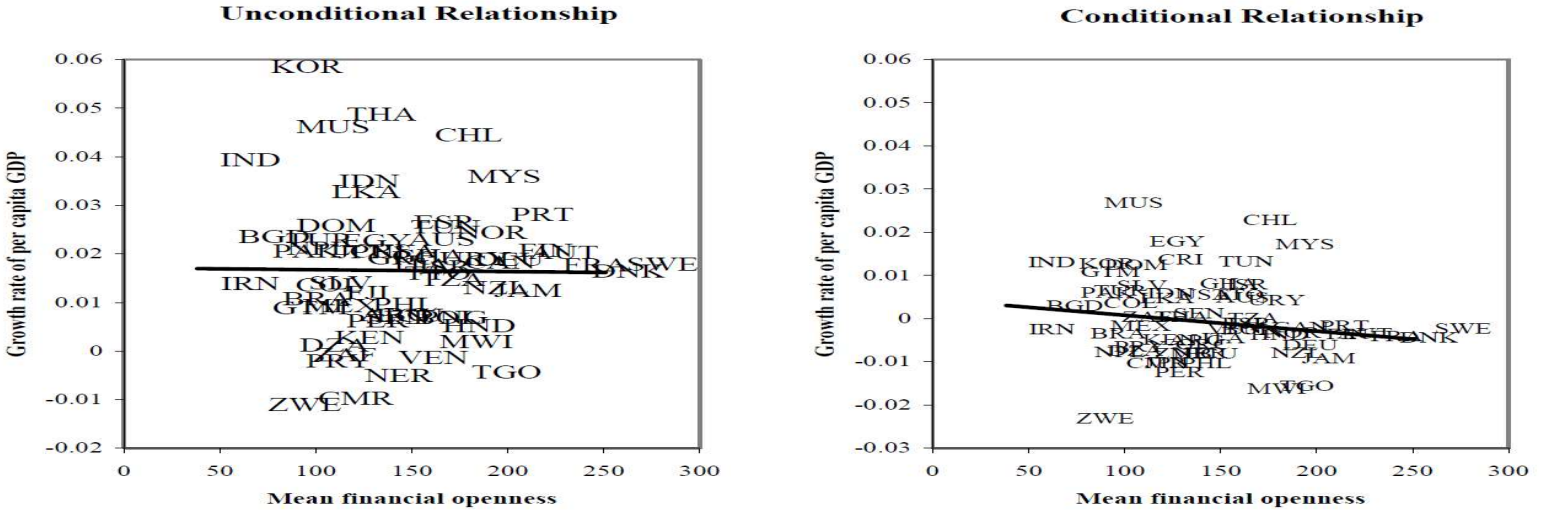
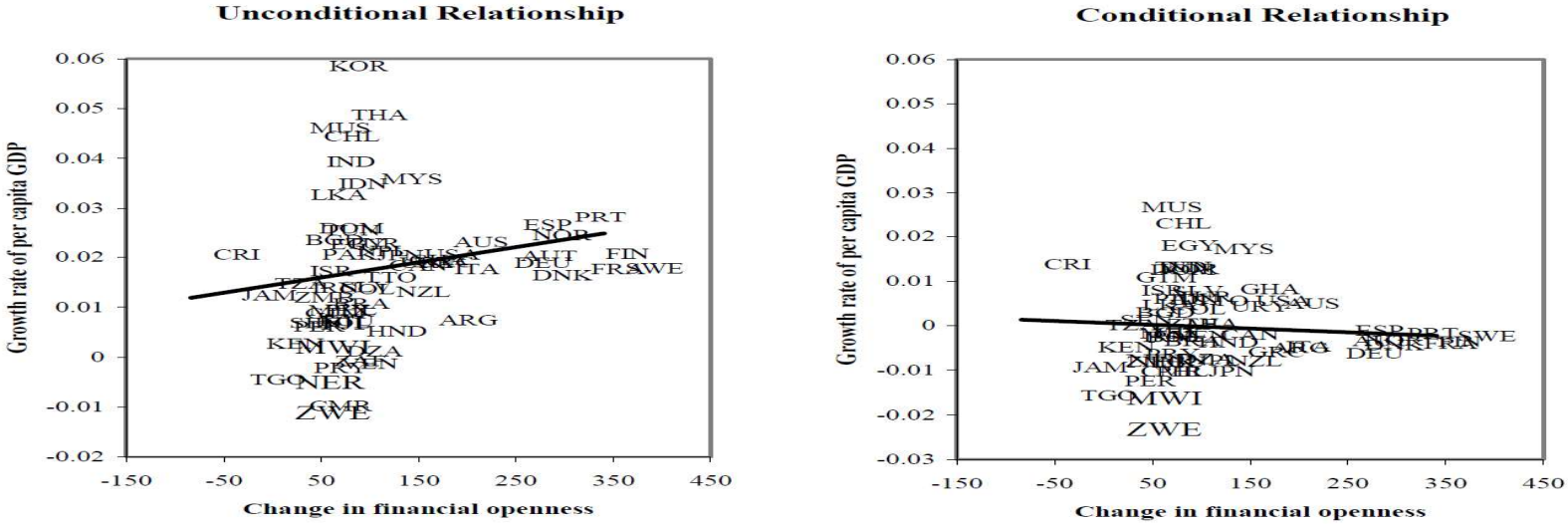


Figure 5B. Change in Financial Openness and GDP Growth, 1985–2004



Notes: Growth refers to the average real per capita GDP growth. Financial openness is defined as the ratio of gross stocks of foreign assets and liabilities to GDP and is based on a dataset constructed by Lane and Milesi-Ferretti (2006). The second panel uses residuals from a cross-section regression of growth on initial income, population growth, human capital and the investment rate. See Appendix II for abbreviated country names.

Kose, Prasad, Rogoff, Wei (2009)

Efficiency gains may not realize

Why there are no benefits?

- In principle, capital should go where its return is higher, i.e. where it is more productive.

BUT this is true only if there are no other distortions/restrictions:

- For instance, if there are trade restrictions capital flows into protected sectors;
- Differential taxation of capital income may distort capital flows;
- Financial markets may not function properly in pricing assets, because of informational asymmetries, market sentiment, herd behavior, etc.

Rodrik and Subramanian (2009) stress the lack of a relation between growth and financial openness ($(A + L)/Y$ or its change).

See Appendix

Rodrik and Subramanian (2009)

Consider the effect of opening the financial account for two economies:

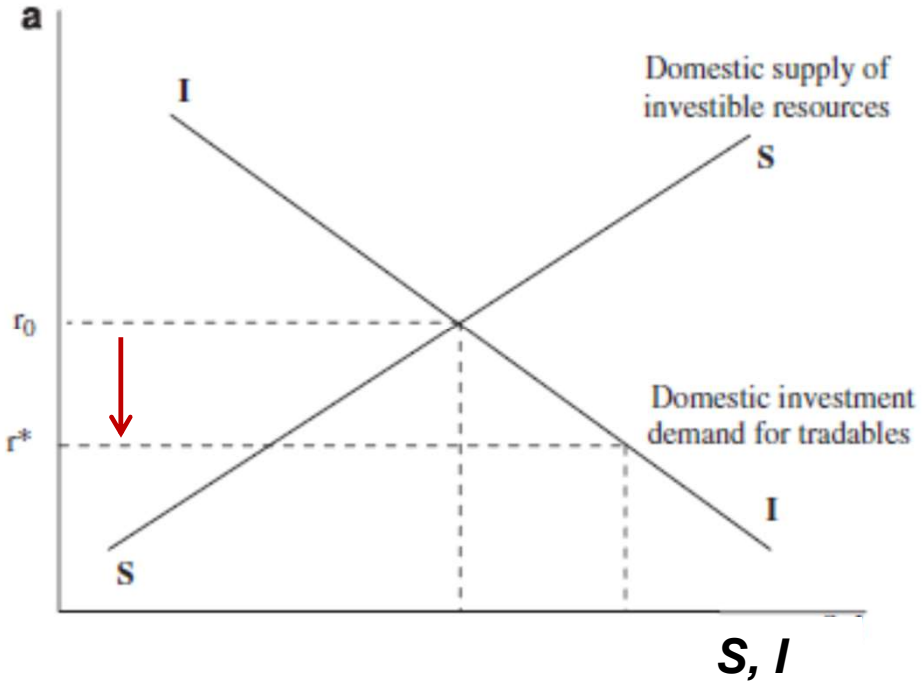
One is saving constrained; it needs funds to invest;

One is investment constrained; investment demand is low because of poor institutions that prevent investors from appropriating returns.

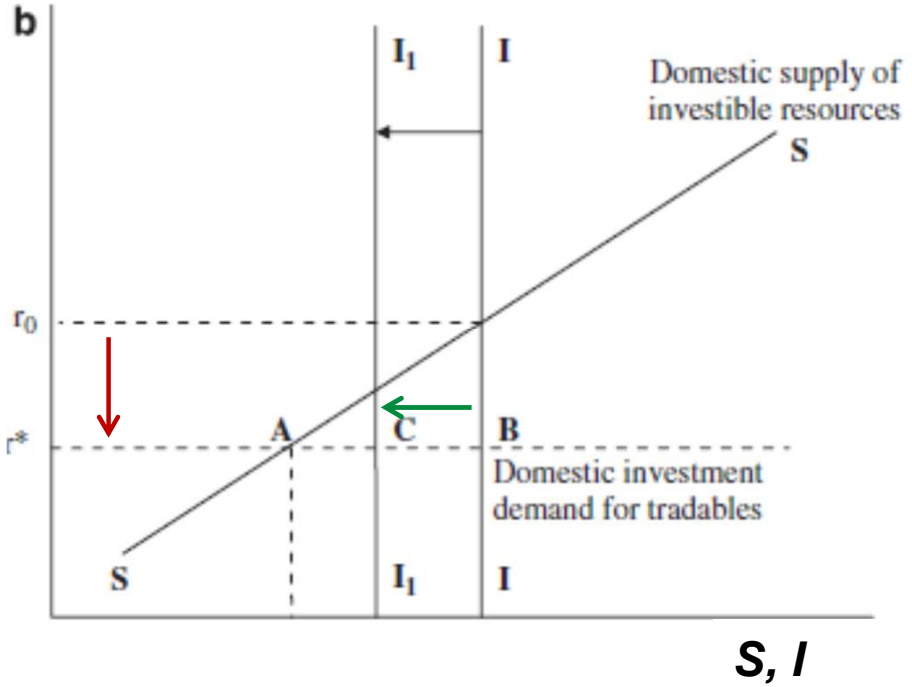
- In the saving constrained economy capital flows in, the interest rate goes down, investment increases, growth gets faster, and domestic agents consume more and save less.
- In the investment constrained economy, capital flows in, the interest rate goes down, investment doesn't change and the only thing that happens is a consumption boom.
  - If the real exchange rate is not affected, this would not be too bad (except that we may have a crisis later).
  - But if there is a real appreciation, competitiveness is reduced and this has a negative impact on investment and growth.

The effect of FG on investment

Saving-constrained economy



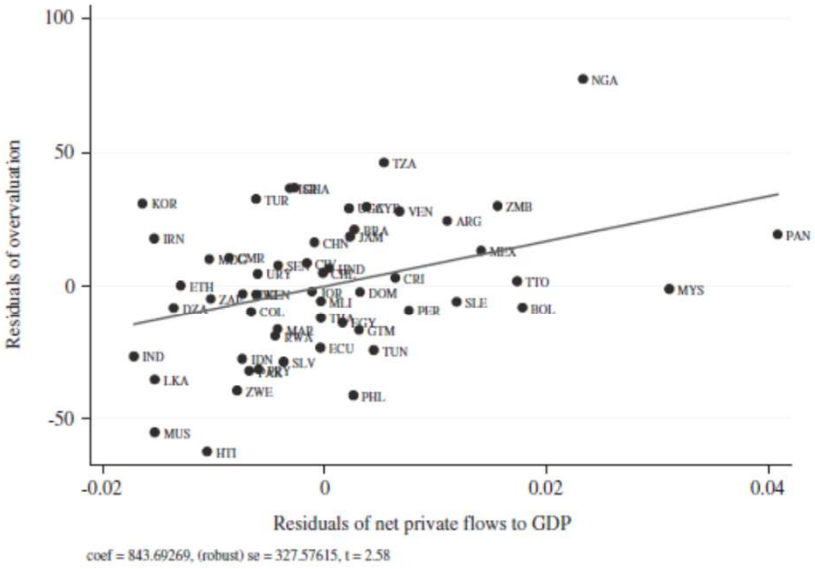
Investment constrained economy



Real exchange undervaluation and growth

Overvaluation and Inflows

Figure 4. Overvaluation and Capital Flows, 1970–2004

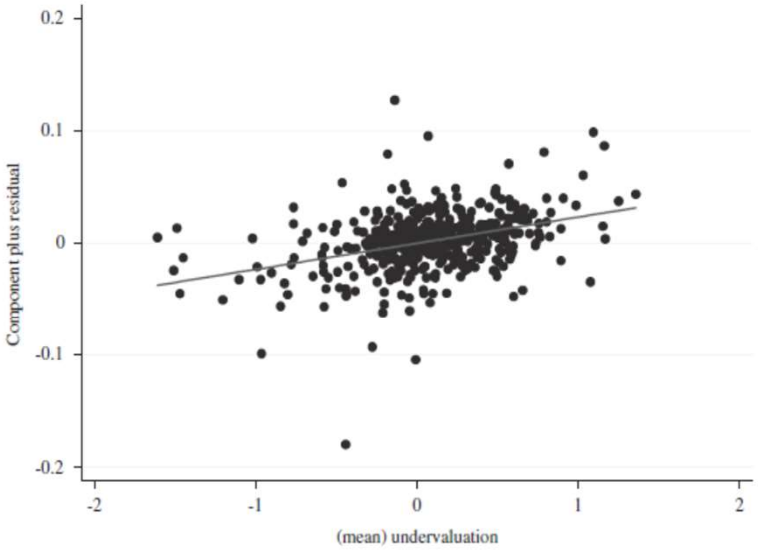


coef = 843.69269, (robust) se = 327.57615, t = 2.58

Source: Reproduced from Prasad, Rajan, and Subramanian (2007).
Note: Partial relationship between a measure of overvaluation of the real exchange rate and net private flows, comprising portfolio equity, debt, and foreign direct investment, controlling for demographics and a dummy for oil-exporting countries.

Undervaluation and growth

Figure 5. Economic Growth and Undervaluation of the Real Exchange Rate



Source: Based on Rodrik (2007).
Note: Partial relationship between a measure of undervaluation of the real exchange rate and growth rate of per capita GDP (controlling for initial income and country and period fixed effects). Data are for developing countries and cover a panel of 5-year averages from 1980–84 through 2000–04.

Other benefits from financial integration

Consumption smoothing - Intertemporally

- Through borrowing and lending financial integration makes it possible to maintain a stable consumption path in face of output fluctuations and other shocks.
- In good times, when output is relatively high, a country can save (run a CA surplus) and accumulate foreign assets to be used to finance consumption in bad times when output is low.
- For instance, commodity (oil) exporters, that are exposed to commodity-price shocks, can build up foreign assets when the price of their exports is high, while in bad times, when the price falls, they can decumulate such assets (or borrow) to finance consumption.
- Note that the Present Value of the future consumption stream does not change but abrupt reductions (that are costly) can be avoided.

Portfolio diversification

In a financially integrated world, investors cannot only buy assets with higher expected return but they can minimize specific non-systematic risk

- Unless the returns on domestic and foreign assets are perfectly correlated, combining domestic and foreign assets, i.e. **diversifying the portfolio, reduces risk for any given expected return**.
- Consider the return on a portfolio in which $\boldsymbol{w}$ is the share of wealth (normalized to 1) in domestic assets, and r_D and r_F are the gross returns on domestic and foreign assets $E(r_D) = E(r_F)$:
  - $R_P = r_D w + r_F(1 - w)$

Then, the variance of the portfolio return is

- $V(R_P) = V(r_D)w^2 + V(r_F)(1 - w)^2 + 2Cov(r_D; r_F)w(1 - w)$

- Unless $Cov(r_D; r_F) = \sigma(r_D)\sigma(r_F)$, the optimal share is $0 < w < 1$. For example, with $Cov = 0$ and $V(r_D) = V(r_F)$, then $w = 0.5$

Risk sharing – across countries

Portfolio diversification allows to share risk

If the return on foreign assets and, thus, investment income were not perfectly correlated with GDP (domestic income), then holdings of foreign assets would stabilize national income and thus consumption relative to GDP.

- **Risk averse consumers should buy foreign assets, to insure against domestic income risk** and smooth the effects of output shocks on consumption.

Testable prediction / Implication:

- **Financial integration should reduce consumption volatility relative to domestic output volatility** BUT

Evidence shows: **Consumption is still very strongly correlated with GDP**.

It also shows: **Portfolio diversification is limited** –Equity Home Bias Puzzle– but increasing share of foreign stocks: In US up to 30% from 6% in 1990

How important is risk sharing?

- In principle, **we should not expect large gains from risk sharing** as reducing consumption volatility has a second order effect on welfare. BUT much disputed: see Van Wincoop(1994, 1999) Lewis(1999, 2000) Lewis and Liu (2015). It depends on whether gains are measured in terms of consumption or market price for risk (asset risk premia).

Coeurdacier et al. (2019) show that gains from risk sharing and allocative efficiency cannot be studied separately, and find that:

- Overall gains from risk sharing and allocative efficiency do not exceed 0.5% of permanent consumption (in the baseline model)
- Intuition: capital inflows to more volatile Emerging Economies are dampened as their precautionary savings are reallocated towards safer (developed) countries. The steady state level of capital stock and output decreases compared to the deterministic case reducing the efficiency gains from integration.

Coeurdacier et al. (2019) cont.

- Even under favorable assumptions about utility function, uncertainty, risk aversion, etc. gains for riskier (emerging) countries remain below 1%.
- Gains from better risk sharing are relatively equally shared, even though the Emerging country faces more risk, because safer industrialized countries gains by providing insurance.