Week 3: Financial Account, Foreign Direct Investment, and Global Financial Cycles

FINA3020 at CUHK Business School

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Review of Financial Account

The financial account is defined as the difference between sales and purchases of financial assets, where the counterparty is a foreigner. It includes but is not limited to:

- Foreign direct investment: investment with ownership stake in physical assets abroad
- Portfolio investment, e.g. foreigners' net purchases of US equities and Treasuries far exceed Americans' net purchase of foreign assets

The **balance of payments** identity equates the sum of the current account (CA), capital account (KA), and financial account (FA) to zero

- Similarly to CA: export = sale of good/service, think of FA: borrowing as a sale of debt (a promise to repay)

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Foreign Direct Investment (FDI)

The **parent** firm is the multinational company (sometimes referring to the headquarter entity), and the **affiliate** is the recipient of investment, where the parent owns at least 10% of the equity

- FDI is one of the affiliate's sources of financing for investment, not the firm's assets

Horizontal = affiliate is in the same sector as the parent, using the affiliate to sell in its local market, substituting from international trade

Vertical = affiliate provides inputs to the parent, complementary to international trade

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Big Picture on FDI and Finance

FDI affects financial markets

- Directly: increased investment and financial account
- Through crowd-out: domestic lending goes to affiliates, reducing the residual supply of credit for locally owned firms
- Through production and intellectual property (IP) spillovers: increased demand for local goods and services = economic growth, higher credit demand and supply in equilibrium
- Through institutions: structural reforms that make it easier for banks to offer credit and firms to apply for credit

In the Alfaro & Charlton (2017) literature review, several papers show that the macro impact of FDI on growth depends on pre-existing financial development. Foreign ownership improves affiliates' financial outcomes and financial management, with higher export intensity.

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Production Choice: Foreign Direct Investment (FDI) vs Export

When a firm wishes to sell to a foreign market, it must choose where to produce

- Home: export, incur trade costs (including tariffs)
- Foreign: incur fixed costs to set up production (including adherence to local regulation)

A firm is more likely to use FDI when

- Foreign has attractive subsidies or tax benefits for new investment
- The foreign market is large and/or its consumers have different preferences than home
  - Trade costs are variable costs (scaling with production)
- Total trade costs for the final good are higher than total trade costs for inputs that cannot be locally sourced in foreign
- Production function is relatively easy to replicate in foreign

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Organizational Choice: FDI vs Outsourcing

Sectors where specifications are standardized, and quality is easy to verify, often have complete outsourcing rather than FDI

- FDI requires managerial oversight costs and legal liability for regulatory compliance

Example of outsourcing: Textiles = supply chain for clothing and other fabrics

- Textile production is relatively labor-intensive; intensity is measured by expenditure share
- Typical textile wage in 1990 in today's USD: \$19/hour in US vs \$0.35/hour in China
- By the late 1990s, most US clothing companies outsourced production to factories in China, Vietnam, Bangladesh, etc
  - The same shirt could be simultaneously produced by several factories with different suppliers in different countries

Cost and Other Production Motivations for FDI

Economies of scale = the average unit cost decreases as the production rate increases

- Sectors with high fixed costs and low variable costs naturally have economies of scale; the largest variable costs tend to be labor / energy / materials
- Vertical FDI seeks to harness *comparative advantage* to source cheaper inputs for downstream production in the home country

Horizontal FDI seeks to reduce trade costs to sell to market, often with parallel production elsewhere

Local firms may have technology or other *intangible assets* that the parent firm wants to use throughout its factories

- Chinese firm Lenovo acquired US firm IBM's PC group, learning IBM's assembly methods, supply chain management, and quality control
- Lenovo replaced IBM branding (next slide) with Lenovo, although kept the popular ThinkPad model

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Revenue and Market Access Motivations for FDI

FDI includes more than factories; in retail settings, FDI is necessary to sell to a new market. Examples of customized products:

- KFC (Yum Brands) entered China in 1987 with local input on site choice and menu adjustments to appeal to Chinese preferences
- Nestlé offers herbal beverages and N3 milk only in China

In both cases, retaining control (FDI vs outsourcing) was important for brand reputation

In addition to increasing revenue, reducing the volatility of revenue (*demand diversification*) is another motivation of outbound FDI

- Economic shocks are not perfectly correlated across countries, nor are preference shocks.
  - Example: alcohol consumption in US has sharply decreased in recent years, but is still increasing in India and Southeast Asia, so US companies that targeted diversified demand with diversified production (e.g. AB InBev has a large brewery in Vietnam) have maintained earnings

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Greenfield FDI and the Financial Account

Greenfield refers to investment in new operations and facilities. It enters balance of payments and GDP accounting via

- Inflow: if Toyota spends $1B building a new factory in the US, that directly increases US financial account surplus and the investment component of GDP by $1B
- Reinvested earnings: if the foreign affiliate keeps its profits locally and invests the profits, then the profits appear in the financial account as ongoing FDI inflows for the affiliate's "host" country, FDI outflows for the parent's "home" country
  - Upon the initial earnings, there is an offsetting BoP transaction in the current account (factor income), but no further change in the current account based on the multinational's decision
- Repatriated profits: if the foreign affiliate transfers the profits to the parent company, then the profits appear similarly in the financial account, but now as an increase in the home country's foreign reserves (decrease in home country's financial account), and a decrease in the host country's deposits (increase in host country's financial account)

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M&A FDI and the Financial Account

We already saw Lenovo acquiring IBM PC as an example of Mergers & Acquisitions (M&A) FDI. Enters the financial account similarly:

- Acquisition payment for ownership stake, recorded similarly to purchasing stocks on an exchange: inflow for acquiree's country, outflow for acquirer's country. No change in GDP
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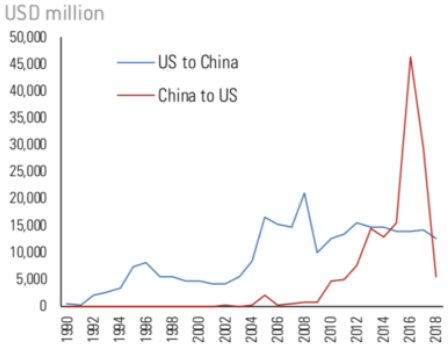
FDI Policy Case Study: Joint Ventures (JV) in China

- Equity Joint Venture Law (1979): First step of China's reform & opening, required most foreign firms to open a joint venture with a Chinese partner with roughly 50-50 equity share. Purpose:
  1. Attract foreign capital, technology, and management expertise.
  2. Ensure local participation, oversight, and technology transfer.
  3. Protect national control in strategic sectors (autos, telecom, energy).
- Required FDI with direct transfers to Chinese firms to access China's nascent market potential
- The Foreign Investment Law (2020) unified rules, phasing out mandatory JV structures in most industries.

Figure ES-1: Annual Value of FDI Transactions between the US and China, 1990-2018*



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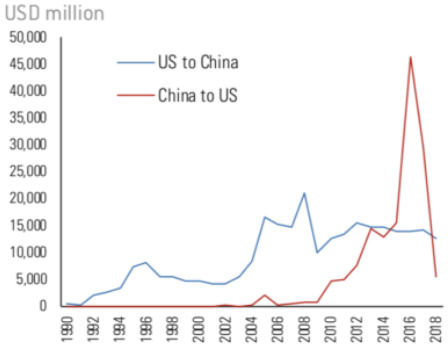

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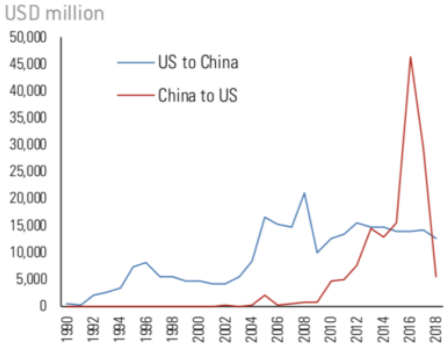

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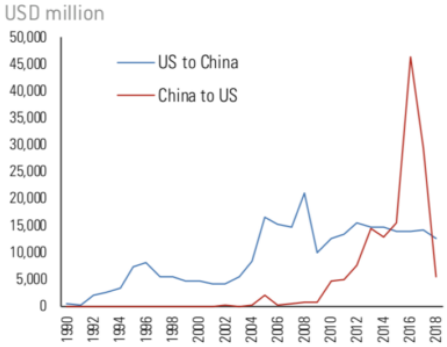

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Policy environment: In 2018, China imposed a retaliatory 25% tariff in response to Trump's initial tariffs. China also exempted the JV requirement for EVs

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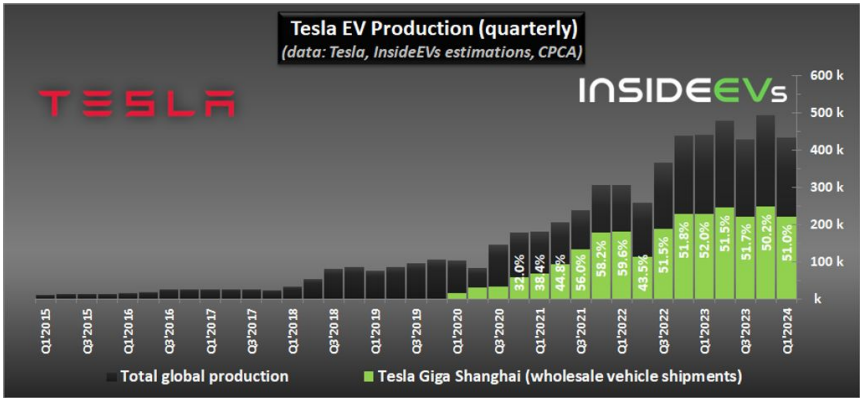
Tesla built Gigafactory Shanghai, opening in 2019, to 1) bypass tariff uncertainty, 2) shorten the supply chain with local parts suppliers, 3) take advantage of industrial policy subsidizing EV production



Hypothetical Case Study: US Surgical Robots in India

Suppose you manage a US surgical robot producer looking to expand in India's fast-growing market

- Production cost per unit: \$1M currently in US vs \$0.6M if in India
- Taxes: India imposes 10% tariff, you pay \$50k/unit for shipping and customs compliance
- Target sales: \$1.5M price for 500 units per year with annual growth of 10% until the tenth year when your patent expires

If you build the factory (FDI), upfront capex is \$800M after government subsidies and regulatory fees, requires 1 year to build the factory, during which you continue to export.

If you outsource to an Indian factory already making a similar robot, capex is just \$100M of upgrades that you can do immediately, but you pay the outsourcer \$0.7M per unit, and with IP leakage you expect only 5 years of sales before a generic competitor undercuts you at marginal cost.

How do you choose between FDI vs outsourcing vs status quo?

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Crucial assumption: **discount rate** β. How much more do you value current profits vs future profits?

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FDI: After first year when factory is being built and you continue to export, unit cost is \$0.6M for production, so marginal profit is \$0.9M per sale. Discounted profits:

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Financial Account (FA): Inflows and Outflows

Inflows and outflows are NOT opposites (negatives) of each other in a given country's FA, unlike in most settings. Just as an example, take the perspective of the US.

- Inflow = increase in non-US investors/banks/etc holdings of US assets
- Outflow = increase in US investors/banks/etc holdings of non-US assets

Only at a global level, gross inflows (sum of all countries' perspective of foreigners buying domestic assets) must equal gross outflows (sum of all countries' perspective of domestic entities buying foreign assets)

- For any type of flow, global gross flows could be negative if everyone wants to repatriate their assets (sell foreign assets, transfer home)

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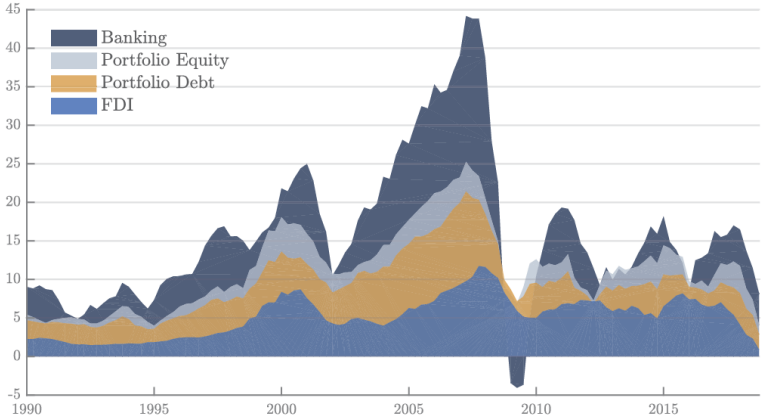


FIGURE 12 International financial flows.

Note: International Flows by asset class as a percentage of world GDP. Annual moving averages. Source IFS. Sample 1990-2018.

Source: Miranda-Agrippino & Rey (2022)

FDI Trend: China vs Other Emerging Markets (EM)

Figure 4. EM ex-China: Non-Resident Flows
(4Q, % of GDP)

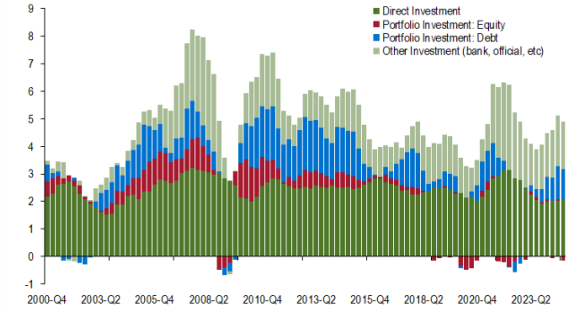
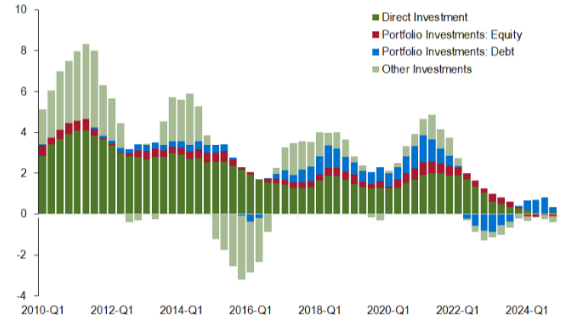


Figure 6. China Non-Resident BOP Flows
(4Q % to GDP)



Source: IMF. These graphs show *inbound* investment. It can be negative if foreigners sell more assets than they buy. 4Q = sum over previous 4 quarters.

FDI Trend: China vs Other Emerging Markets (EM)

Figure 9. EM BOP Resident Outflows
(4Q % to GDP)

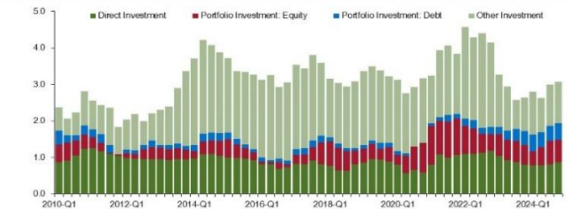
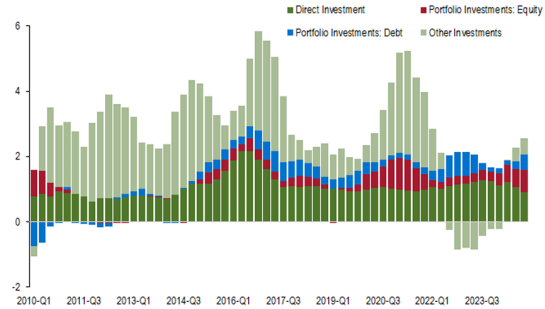


Figure 11: China Resident Flows
(4Q % to GDP)



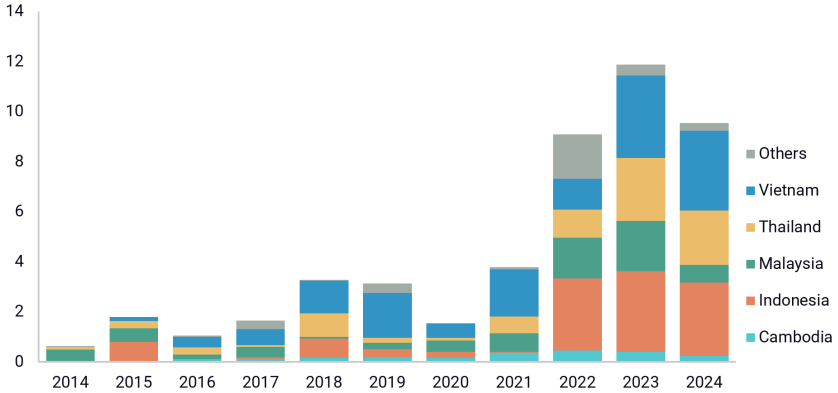
Source: IMF. These graphs show *outbound* investment. It can be negative if residents sell more foreign assets than they buy.

FDI Trend: Chinese Greenfield FDI in ASEAN

As salaries have risen rapidly in China, with increased trade tensions (first Trump tariffs in 2018, kept in place by Biden), Chinese firms have heavily invested in Association of Southeast Asian Nations (ASEAN)

Value of major announced greenfield Chinese manufacturing FDI in ASEAN by economy (excluding extractive industries)

USD billion



Source: Rhodium Group China Cross-Border Monitor. Note: Major transactions include investments above $5 million only. Extractive industries include investments in the energy and minerals sectors.

FDI Trend: Chinese Greenfield FDI in ASEAN

The initial wave was in consumer goods (especially textiles and furniture) with a more recent increase in higher-tech manufacturing like electronics, batteries, and vehicles

Value of major announced greenfield Chinese manufacturing FDI in ASEAN, by sector (excluding extractive industries)
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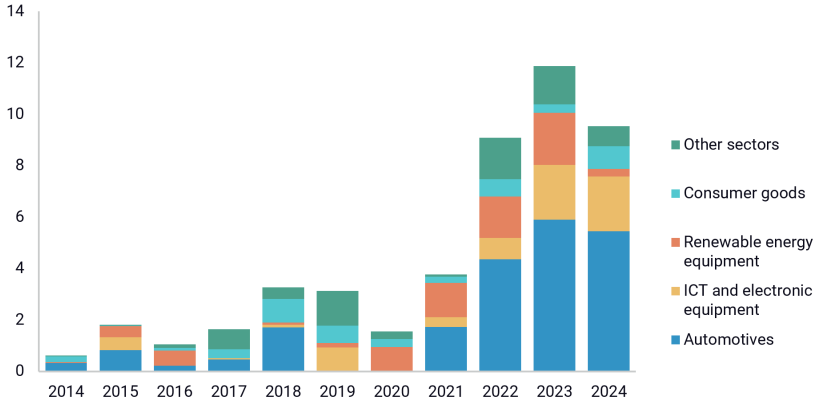

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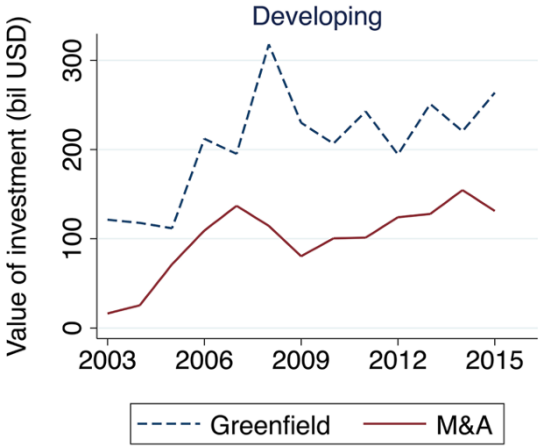
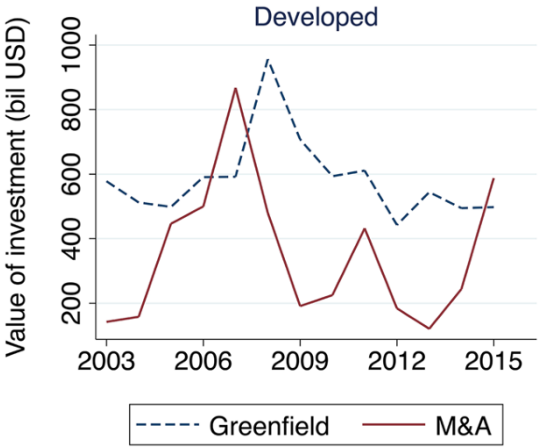
FDI Trend: Greenfield vs M&A FDI





Source: Chan & Zheng (2022) using data from UNCTAD

Lucas Paradox: Does Capital Flow from Rich to Poor Countries?

Lucas (1990): famous paper arguing that if marginal returns to capital (MPK) in poor countries are higher than in rich countries, as evidenced by high interest rate net of default, then why does capital not flow more rapidly to poor countries?

- Lower human capital, weaker institutions (e.g. contract enforcement), political risk
- Mismeasurement due to poor infrastructure (electricity as well as roads)
- Inefficient and under-developed capital markets

Source: Alfaro, Kalemli Özcan, Volosovych (2008)

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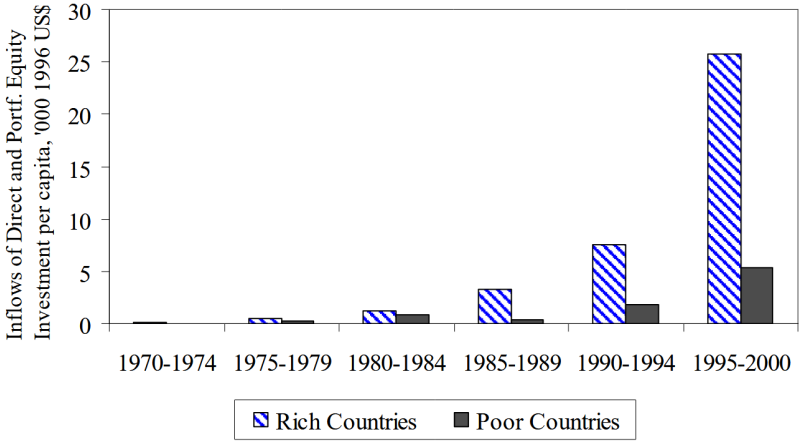

Source: Alfaro, Kalemli-Özcan, Volosovych (2008)

Global Financial Cycle (GFC): What Is It?

Factor: In asset pricing, a systematic source of risk that explains cross-section of returns across assets

$$R_i - R_f = \alpha_i + \sum_j \beta_{ij} F_j$$

for assets i, risk-free asset f, factors F_j, and loadings β_{ij}

GFC refers to a single global factor, negatively related to the volatility index VIX, that explains 1/4 of the variance in credit growth and financial flows to emerging markets

- Financial crises emerge when asset price bubbles pop, borrowers must deleverage, and cross-border flows transmit monetary policy

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Global Financial Cycle (GFC) and Global Trade and Commodity Cycle (GTCC)

Two factors that explain a large share of synchronized movements of capital flows, currencies, asset prices, and borrowing (credit) across countries

- GFC: global risk appetite and price of risk; financial flows (Week 3)
- GTCC: quantity demand shock for goods; trade flows (Week 2)

Financial amplification and transmission of shocks and US monetary policy responses

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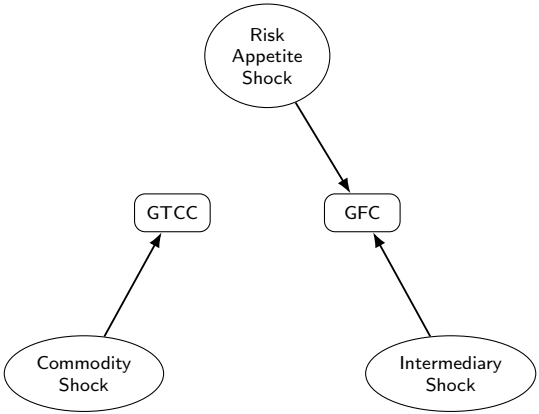

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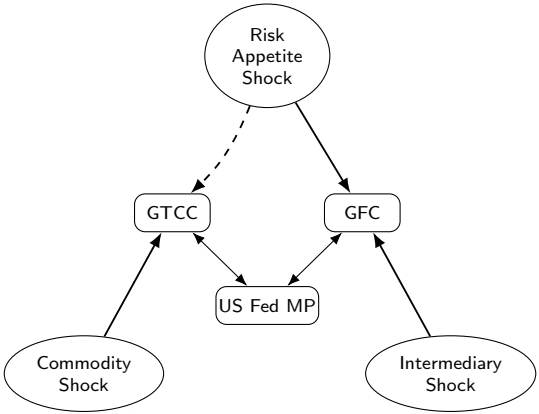

Financial amplification and transmission of shocks and US monetary policy responses

Global Financial Cycle (GFC): Why Is It Important?

1. A shock reduces global risk appetite and leads to correlated **rush to safety** among investors
   - Capital outflows from emerging markets, high-yield "junk" bonds, and "growth" stocks
   - Risky asset prices fall, so does the real interest rate on safe assets (e.g. US Treasury bonds)
2. **Sudden stop** in emerging markets: rapid capital outflows trigger sharp depreciation in real exchange rate and large decrease in credit and output, spills over to broader economy through lower employment and consumption
3. Risk of bank runs because banks' illiquid assets (local loans) are worth less while banks' liquid liabilities (deposits) become more flighty

In the following slides, we will see two examples of financial crises, one regional and one global, to illustrate the GFC

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Global Financial Cycle (GFC): Why Is It Important?

1. A shock reduces global risk appetite and leads to correlated **rush to safety** among investors
   - Capital outflows from emerging markets, high-yield "junk" bonds, and "growth" stocks
   - Risky asset prices fall, so does the real interest rate on safe assets (e.g. US Treasury bonds)
2. **Sudden stop** in emerging markets: rapid capital outflows trigger sharp depreciation in real exchange rate and large decrease in credit and output, spills over to broader economy through lower employment and consumption
3. Risk of bank runs because banks' illiquid assets (local loans) are worth less while banks' liquid liabilities (deposits) become more flighty

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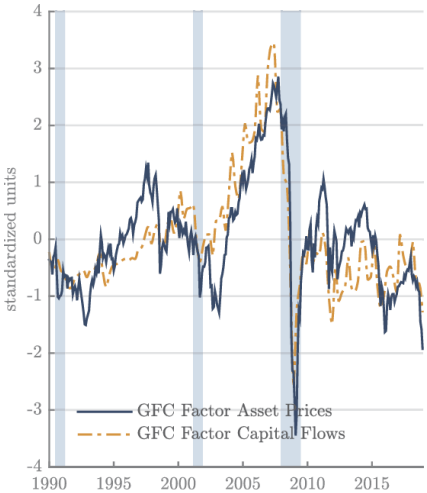
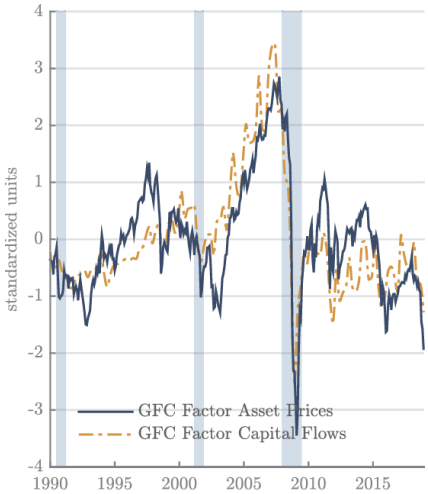
GFC, Asset Prices, and Volatility



This graph shows the GFC factor, the leading factor f_t from the model $x_{it} = \lambda_i f_t + \xi_{it}$ from separate datasets x_{it} of asset prices and capital flows

Source: Miranda-Agrippino & Rey (2022)

GFC, Asset Prices, and Volatility



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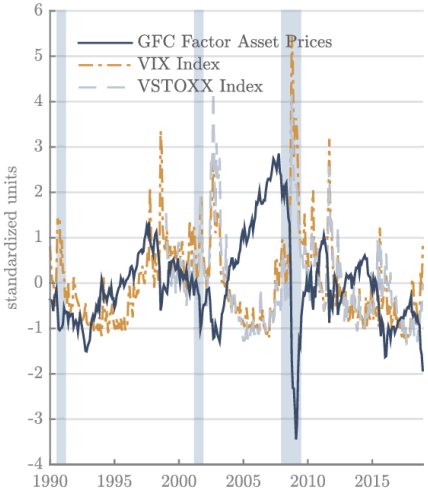
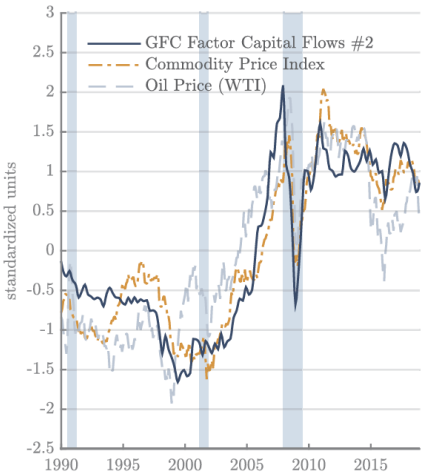


This graph compares the GFC factor to two measures of volatility (VIX is US, VSTOXX is Europe) based on derivatives

Source: Miranda-Agrippino & Rey (2022)

GTCC, GFC, and Financial Inflows



This graph compares the GTCC factor, the second factor f_t from the model $x_{it} = \lambda_i f_t + \xi_{it}$, to the crude oil price and commodity price index

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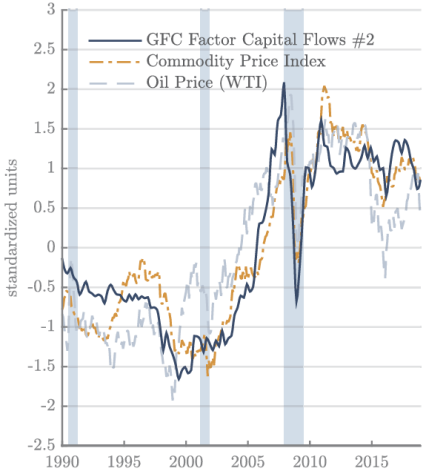

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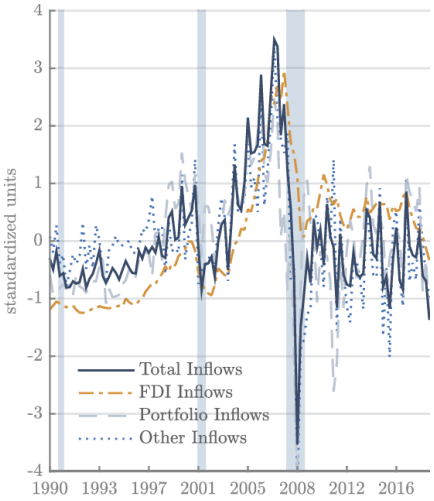
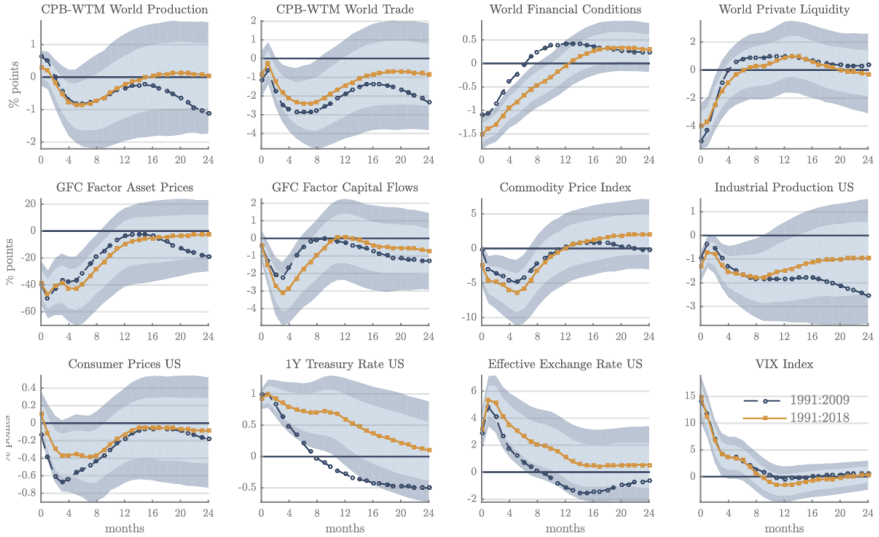


This graph shows the global factor for financial inflows

Source: Miranda-Agrippino & Rey (2022)

GFC and US Monetary Policy

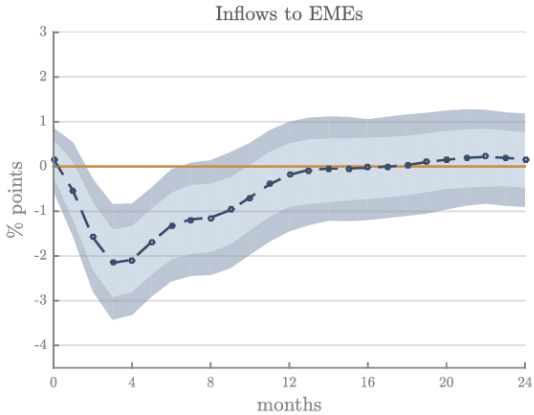


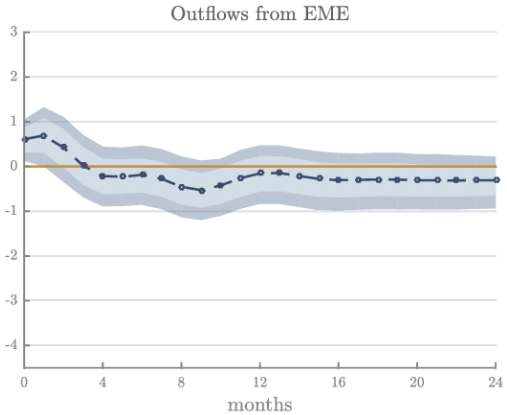
These **impulse response** graphs from **vector auto-regressions (VAR)** show that an increase (or decrease) in US interest rates has a large impact on GFC and global financial indicators through the dominant role of the USD and large foreign holdings of US assets

Source: Miranda-Agrippino & Rey (2022)

GFC and Emerging Markets

These **impulse response** graphs show that an increase in US interest rates leads advanced economies to reduce financial inflows to emerging markets, and emerging market investors slightly increase their outflows to the US

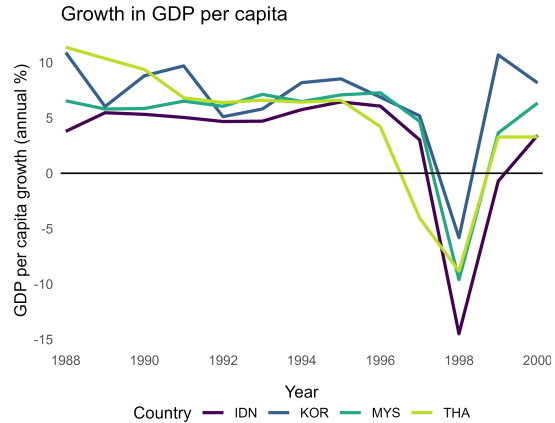


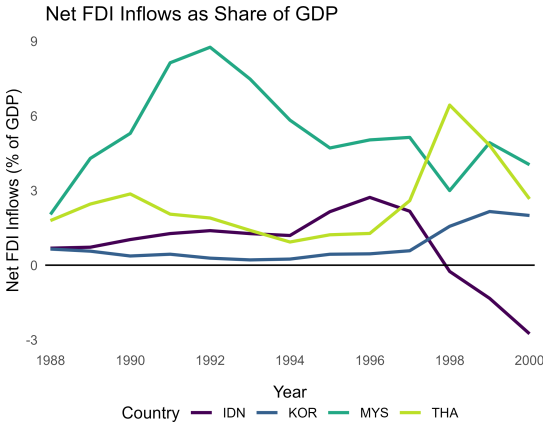


Source: Miranda-Agrippino & Rey (2022)

Asian Financial Crisis in 1997: Overview

In the 1990s, several Asian countries experienced rapid economic growth with capital inflows and financial deepening

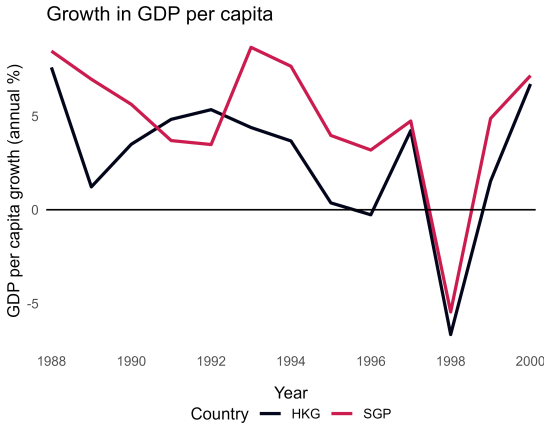




Source: My figures, using data from the World Bank

Asian Financial Crisis in 1997: Overview

with spillover effects to the burgeoning regional financial hubs



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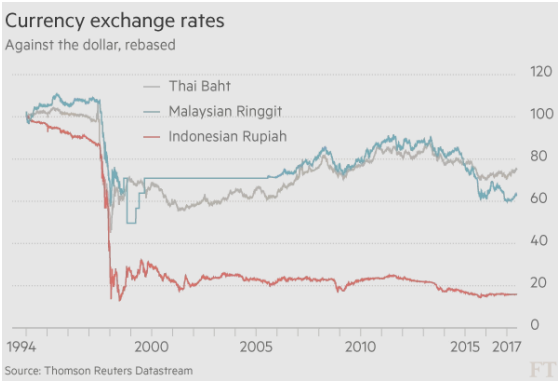
Asian Financial Crises in 1997: Exchange Rates and Capital Flows



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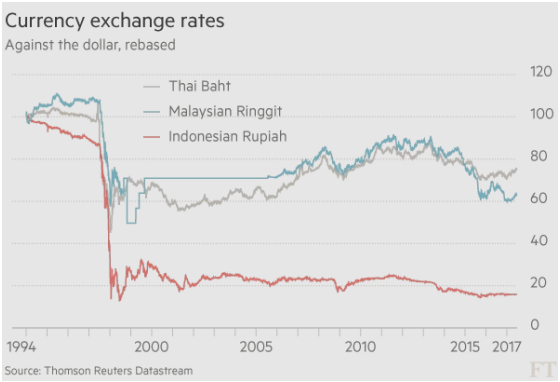

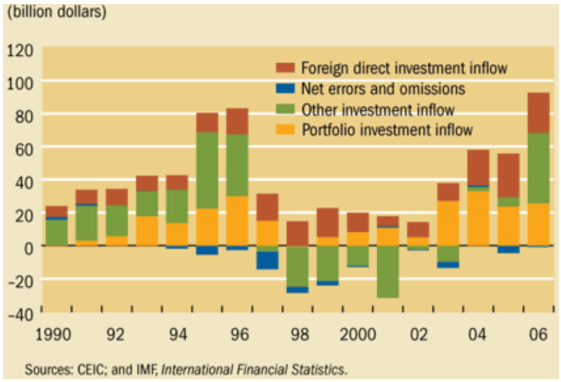

Asian Financial Crisis in 1997: Thailand

Thailand experienced rapid economic growth through 1996

- Persistent capital inflows (with a large current account deficit), fueling a real estate bubble as well as investments in factories and infrastructure
- Led to trouble in the banking system in early 1997
- Thai baht was pegged to the USD, and the Bank of Thailand had over $30B USD in foreign exchange reserves entering 1997
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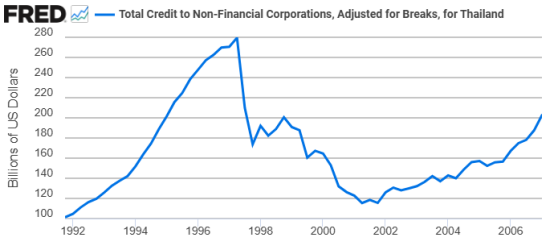
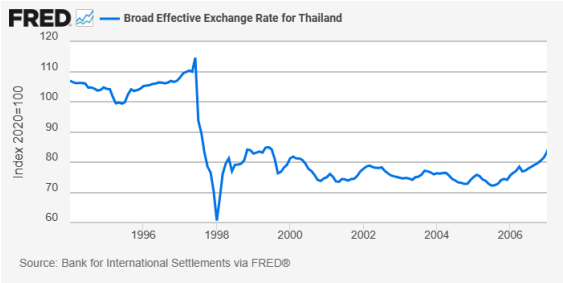
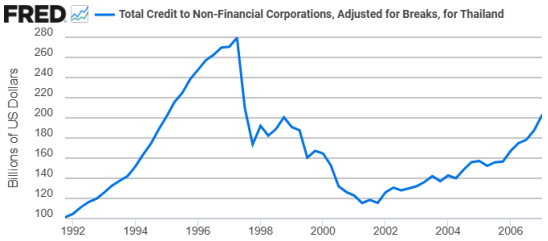
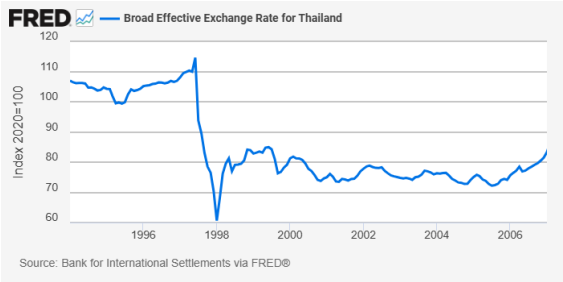
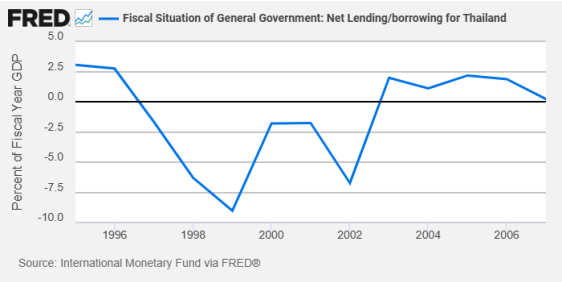




Source: US Federal Reserve, Bank for International Settlements, International Monetary Fund







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Asian Financial Crisis in 1997: Thailand's Bank Balance Sheets

- End of 1996: 13% of total loans were "non-performing" (90+ days past due)
  - Credit crunch: sharp drop in supply of credit to firms
- 1997 Feb 5: Somprasong was the first Thai firm to miss a payment on foreign debt
- 1997 Mar 10: Thai gov't announced 4B USD purchase of bad property debt, unfulfilled
- 1997 May 14: First large speculative attack on the Thai baht
- 1997 Jun 27: Thailand's Ministry of Finance ordered 16 financial institutions to shut down
  - due to non-performing real estate loans
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- 1997 July 2: Bank of Thailand (central bank) abandoned the peg after using most of its foreign reserves, from over $30B to below $3B

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Asian Financial Crisis in 1997: Elsewhere

- The currencies of several nearby countries sharply depreciated from 1997 Aug to Dec
- Sharp drop in stock indices as foreign investors fled
- **Sudden stop**: net private capital inflow from $93B USD in 1996 to -$12B in 1997 (IDN + KOR + MYS + PHL + THA)
- Credit rating downgrades of government debt, in particular in South Korea from A1 (upper-medium grade) to B2 ("junk")
- Several countries took large IMF bailouts, and restructured their financial systems and fiscal policies
- HKD peg faced speculative pressure, but HK's ample foreign reserves (7× M1 money supply) and HKMA rate hikes allowed it to defend the peg
- China mostly escaped the crisis; RMB was pegged but non-convertible, and capital inflows were primarily FDI in factories vs purchases of securities

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Asian Financial Crises in 1997: IMF's View of the Causes

- "Prolonged maintenance of pegged exchange rates, in some cases at unsustainable levels"
  - Prevented monetary policy from responding to asset bubble, encouraging excessive borrowing and risk
- "Lack of enforcement of prudential rules and inadequate supervision of financial systems"
- "International investors had underestimated the risks as they searched for higher yields"

Asian Financial Crises in 1997: IMF's Recommendations

- Monetary policy should "resist excessive currency depreciation" due to effects on domestic inflation and domestic balance sheets with foreign currency [liability] exposure
- Restructure financial institutions by shutting those that are insolvent [could be politically challenging]
- Governance should improve, through reducing political patronage and enforcing accounting rules
- Fiscal policy should reduce reliance on external borrowing (Week 10)

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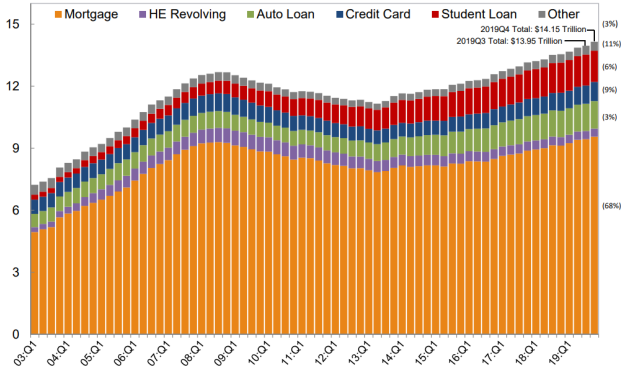
Great Recession in 2007-2009

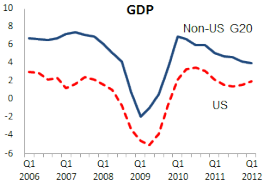
Background: Large increase in bank-related gross capital flows during 2000s

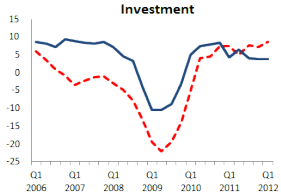
- Real estate bubble in the US fueled by packaging mortgage-backed securities (MBS) into collateralized debt obligations (CDO) whose credit ratings did not reflect true risk
- Shadow banking system grew 4x from 2000 to 2006, proxied by securitization activity

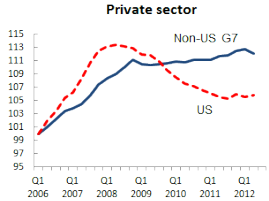


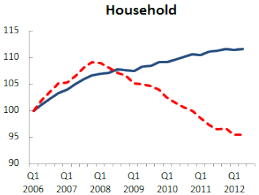
Source: US Federal Reserve, via NY Fed Consumer Credit Panel/Equifax; y-axis in trillions of nominal USD

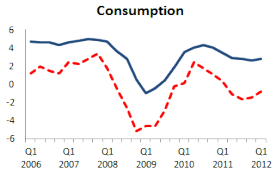
Left: Year-on-year changes in aggregate variables for the US vs the rest of the G20
Right: Year-on-year changes in aggregate variables for the US vs the rest of the G7

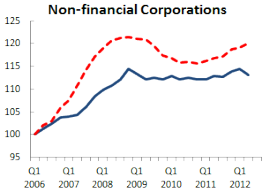












Source: van Wincoop and Bacchetta (2013)

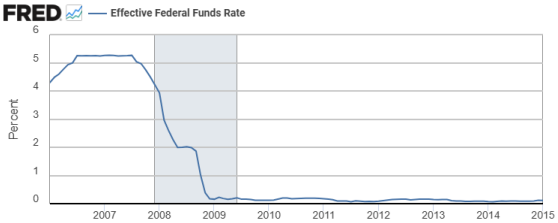
Great Recession in 2007-2009: US Response

Monetary policy:

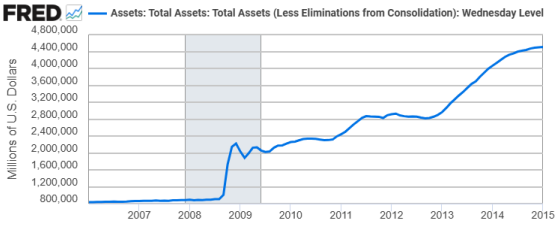
- Interest rates to zero lower bound
- **Quantitative easing** injected liquidity
- FX swap lines (Week 8)

Fiscal policy:

- $787B stimulus package in 2009
- Troubled Asset Relief Program (TARP)



Source: Federal Reserve Bank of New York via FRED®



Source: Board of Governors of the Federal Reserve System (US) via FRED®

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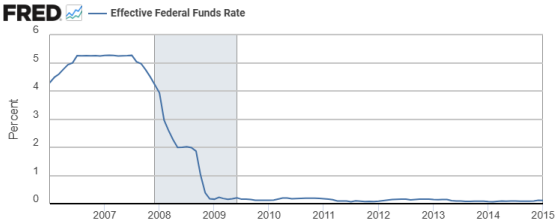

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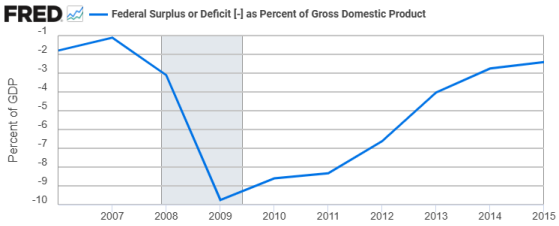
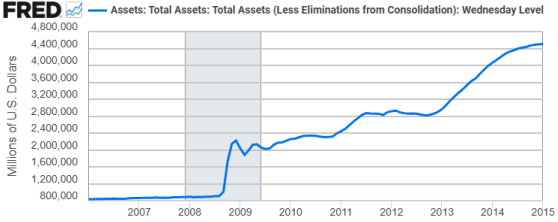


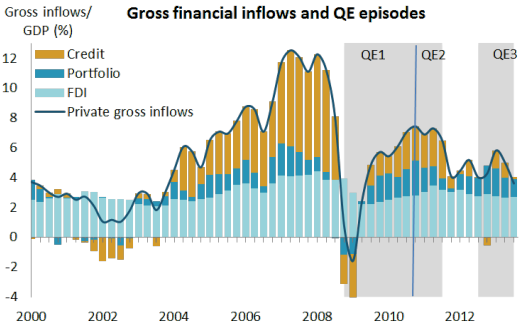
Sources: Federal Reserve Bank of St. Louis; U.S. Office of Management and Budget via FRED®



Source: Board of Governors of the Federal Reserve System (US) via FRED®

Great Recession in 2007-2009: Global Transmission

- Flight to safety from emerging market bonds & stocks to US Treasuries; yield curve shift
- Interbank lending rates (e.g. LIBOR) shot up; several bank runs in Europe
- Lower imports directly hurt export-oriented economies (Germany -6.6%, Japan -5.5%, slower growth in China)



Source: Stocker et al (2014) gross financial inflows to emerging markets

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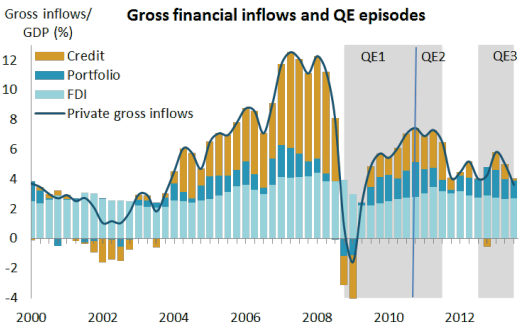

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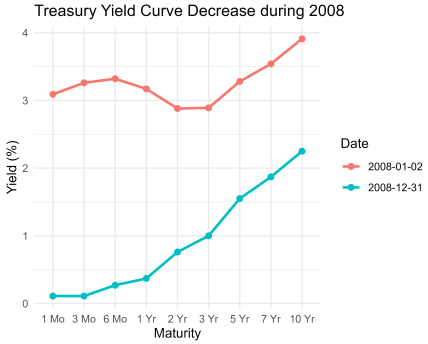

Source: My figure using US Treasury data

Conclusion

- Greenfield FDI is an important type of financial flow for emerging markets
- Multinational firms choose a combination of horizontal FDI, vertical FDI, exporting, and outsourcing depending on discount rates and prices
- GFC links capital flows, asset prices, and risk premia across countries.
- Lessons from the Asian Financial Crisis and Great Recession

Looking ahead to weeks 4 and 5 on FX:

- Spot vs forward markets
- Exchange rate regimes
- Uncovered interest parity (UIP)
- Covered interest parity (CIP)
- Limits to arbitrage
- Exchange rate forecasting and exposure

Conclusion

- Greenfield FDI is an important type of financial flow for emerging markets
- Multinational firms choose a combination of horizontal FDI, vertical FDI, exporting, and outsourcing depending on discount rates and prices
- GFC links capital flows, asset prices, and risk premia across countries.
- Lessons from the Asian Financial Crisis and Great Recession

Looking ahead to weeks 4 and 5 on FX:

- Spot vs forward markets
- Exchange rate regimes
- Uncovered interest parity (UIP)
- Covered interest parity (CIP)
- Limits to arbitrage
- Exchange rate forecasting and exposure