

*International Macroeconomics - Session I*  
*Introduction*

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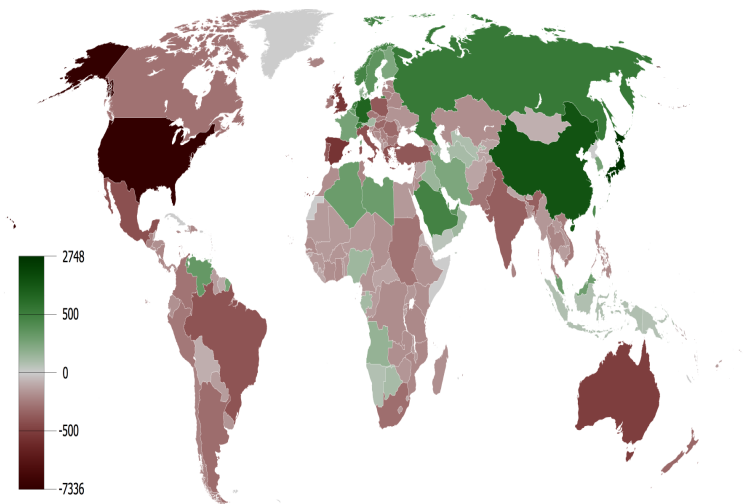
## *Last weeks' headlines*

- “IMF requests 500bn for bail-out loans”, FT 18 January
- “Greece clinches deal on bond debt”, Guardian.co.uk 20 Jan
- “Chinese foreign exchange reserves shrink”, FT 11 January
- “France to push ahead with Tobin tax proposal”, FT.com 4 January

## *Current Issues in international macro*

- “The Euro Crisis”
- Global Current Account Imbalances

## *Cumulative current account balance 1980-2008*



Source: Wikipedia

## *Current Issues in international macro*

- “The Euro Crisis”
- Global Imbalances
- China’s (alleged) exchange rate manipulation
- The emergence of “BRICs”
- Reform of the international financial architecture
  - Increasing IMF resources
  - Tobin tax on financial transactions

## *Roadmap for this session*

1. Recap Quiz Macro
2. "International" Macro - An Introduction
  - Definitions
  - Stylised facts
3. Obstfeld and Rogoff (2000): The Six Major Puzzles in International Macro

## *I. Recap Quiz*

1. Economic environments and models
2. Equilibrium concepts and properties

## *What is Macroeconomics?*

- Macroeconomics studies the behaviour of the economy as a whole, including the impact of government policy, using formal mathematical models
- Modern dynamic Macro sees the (co)movement of economic time series as the outcome of purposeful actions by agents facing constraints
- Macro models are used to derive testable predictions about (co-) movement of empirical time series



## *What are the main elements of a model economy / an economic "environment"?*

- An "economy" consists of
  1. A list of agents, plus their behavioural rules, (technological) constraints, endowments and information
  2. A list of goods / services
  3. The structure of markets where goods and services are exchanged (competition vs. monopoly / oligopoly)
  4. A definition of "time" (discrete/ continuous, number of periods, within-period timing)
  5. The structure of uncertainty

- Note:

Old-style: Behavioural rule ad hoc

Today: Behavioural rule as optimisation based on constraints

## What is an “equilibrium”?

- An equilibrium is an **allocation** (set of quantities through time), and a **price system** (set of prices through time), such that agents act according to their behavioural rules and aggregate supply equals aggregate demand, i.e.

$$X^D \doteq \sum_i x_i^D = X^S \doteq \sum_j x_j^S, \quad \forall x$$

*What equilibrium properties are we interested in when analysing model economies?*

- Existence and uniqueness
- Efficiency of the equilibrium allocation
- Existence, uniqueness and stability of "steady state equilibrium" plus transition towards it.
- Dynamics: Volatility, comovement and reaction to shocks
- *Define the term "Pareto Efficiency".*
- *Name 3 equilibrium "concepts" you have seen before.*

## *II. Closed-economy vs. international macro*

- What differences does openness make?
- Important Concepts and Definitions
- Stylised Facts

## *Closed-economy vs. international macro I: Gross Trade*

1. Openness allows trade in individual goods and assets (Gross trade)
  - Closed economy: Demand and supply of all goods balances individually
  - Open Economy: Countries can trade goods and services, and assets

## *Definition 1: Gains from Trade in goods and services*

### *- Theorem*

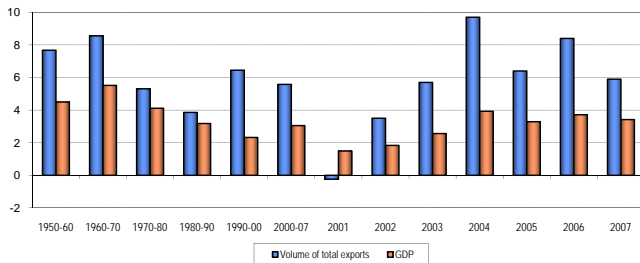
- "Moving from autarky to free trade induces a welfare gain for all countries."
- The ability of a country to trade at any price ratio other than its autarky prices must make the country better off.
- Gains from exchange vs. gains from specialisation in production
- GTT only holds under certain conditions (Convexity of production set, etc.), so might not hold with economies of scale, etc.

## *Definition II: The terms of trade*

- Terms of trade is an index of the price of a country's exports in terms of its imports.
- The terms of trade are said to improve if that index rises.

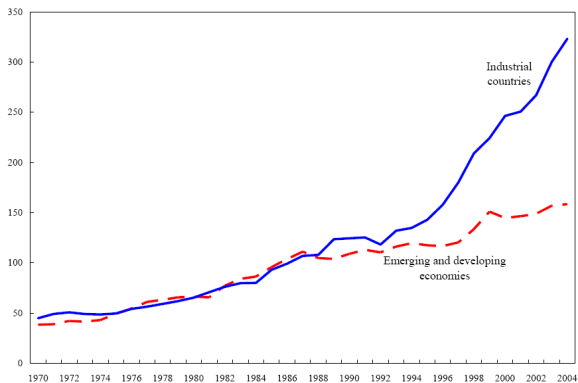
(OR, p. 25)

*Stylised Fact I: Volume of world merchandise exports and gross domestic product, growth 1950-2007*



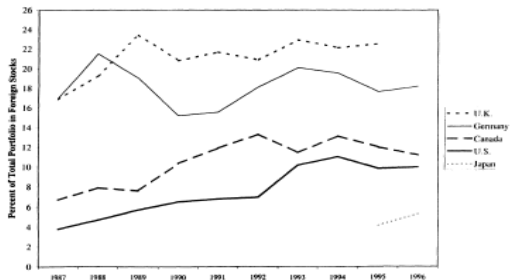


## *Stylised Fact II: Gross Foreign Asset Position 1980-2004*



Note: Ratio of sum of foreign assets and liabilities to GDP, 1970-2004.

## *Stylised Fact III: Home bias in equities*



From Tesar and Werner (1998)

**SF III** International diversification of Equities still very limited

## *Closed-economy vs. international macro II: Net trade*

### 1. Gross Trade

### 2. Openness relaxes period-resource constraint (Net trade)

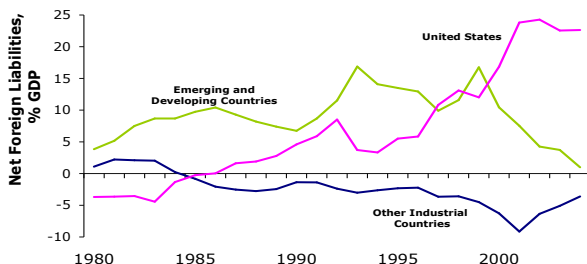
- Closed economy:  $C^i + G^i + I^i = F^i, \forall i$
- Open Economy:  $C^i + G^i + I^i + X^i - M^i = F^i, \forall i$  and  
 $\sum_i C^i + G^i + I^i = \sum_i F^i$
- Countries can invest more or less than they save, by acquiring assets and / or liabilities vis-a-vis other countries

## *Definition III: Current account and BoP (IMF)*

- The "balance of payments" summarises economic transactions between residents and non-residents, in 2 parts that sum to 0:
  1. "current account": trade in goods, factor incomes, transfers
  2. "capital and financial account": changes in asset holdings
- Double-entry system: all transactions (conceptually) involve both credit and debit entries in the BoP. [E.g. export of coconuts (credit) paid by dollars (debit).]
- $CAB = X - M + NY + NCT$   
NY - Net income f. abroad, NCT - Net current transfers
- $GNDY = C + G + I + CAB$
- $CAB = S - I$
- CAB disregards changing valuation of existing claims on non-residents, included in "international investment position".

# *Stylised Fact IV: International Investment Positions*

## *1980-2004*



Source: Lane et al (2006)

**SF IV** Some countries have accumulated very large net assets

## *Stylised Fact IV: International Investment Positions 1980-2004*

- The US have increased liabilities by 30 percent of GDP since early 1980s. Emerging economies have accumulated 15-20 percent of GDP in savings.
- NB: Cumulated CA vs.  $\Delta$ NFA 1972-2004, % of GDP
  - US - 38.4 vs. - 23.1 percent.
  - NL 57.2 vs. -8.0 percent.

# *Closed-economy vs. international macro III: Heterogeneity*

1. Gross trade
2. Net trade
3. **Heterogeneity** of countries: Countries differ in endowments, technology and preferences
  - Produce goods according to comparative advantage, not domestic demand

## *Definition VI: Law of comparative advantage*

- "There is a positive correlation between a country's net import of goods and the country's autarky prices relative to world prices (or relative to autarky prices in the rest of the world), such that on average a country is a net importer of goods for which autarky prices are relatively high." (Svensson 1988, p. 375)



## *Closed-economy vs. international macro III cont.*

1. Gross trade
2. Net trade
3. Heterogeneity of countries
  - Comparative advantage in production
  - Consumption baskets, and costs differ across countries

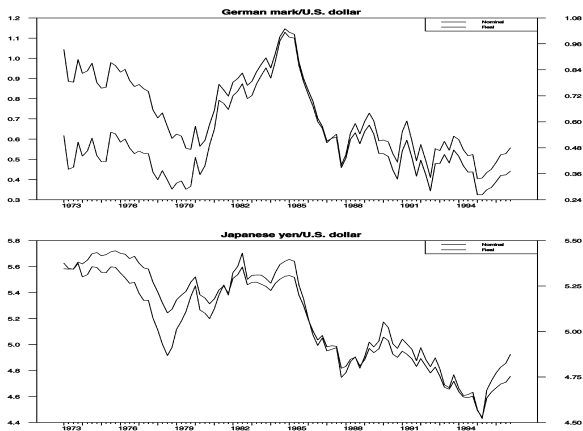
## *Definition IV: Real Exchange Rate $e$*

- The real exchange rate between two countries is the relative cost of the common reference basket of goods, [...] after conversion into a common numeraire. (OR, p.200)
- Country 1 experiences a real appreciation, and 2 a depreciation, if  $e = \frac{P_1}{\epsilon P_2}$  rises.
- Vs. nominal exchange rate  $\epsilon$ : price of foreign currency in home currency.

## *Definition V: Purchasing Power Parity*

- PPP predicts  $e = 1$  (*Absolute PPP*).
- *Relative PPP*:  $e$  is constant, so price fluctuations are the same across countries.

## *Stylised Fact V: Real Exchange Rates in the long run*



Source: Papell 2002

- **SF V** Large Long-run movements, and trends, in RER

## *Closed-economy vs. international macro III cont.*

1. Gross trade
2. Net trade
3. Heterogeneity of countries
  - Comparative advantage in production
  - Different consumption baskets
  - Different factor endowments
  - Different levels of development

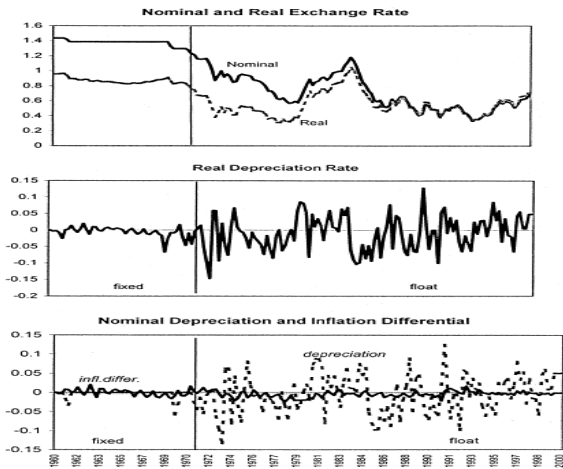
## *Closed-economy vs. international macro IV*

1. Gross trade
2. Net trade
3. Heterogeneity of countries
4. Particular frictions in international trade of goods and assets
  - Transaction costs (tariffs, national standards and norms, transport costs, language)
  - Currency frictions (prices sticky in national currency)

## *Definition VI: Nominal Exchange Rate $\varepsilon$*

- Relative price of two currencies.
- Direct quotation: Price of 1 unit of foreign currency in terms of home currency. Rise=Depreciation!
- So for  $\varepsilon$  the price of 1 unit of foreign currency in terms of home currency RER becomes:  $e = \frac{P_1}{\varepsilon P_2}$  (OR notation)

# *Stylised Fact VI: Nominal and real exchange rates (US\$-DM)*





## *Stylised Fact VI: Nominal and real exchange rates (US\$-DM)*

- Nominal exchange rate volatility is an order of magnitude higher than that of other macro-variables
- RER as volatile as NER
- Volatility of both greatly reduced in fixed ER regime

## *Closed-economy vs. international macro IV cont.*

1. Gross trade
2. Net trade
3. Heterogeneity of countries
4. Particular frictions in international trade of goods and assets
  - Transaction costs (tariffs, national standards and norms, transport costs, language)
  - Currency frictions (prices sticky in national currency)
  - Informational frictions
  - Contractual frictions (enforcement of contracts)

## *Closed-economy vs. international macro IV cont.*

1. Gross trade
2. Net trade
3. Heterogeneity of countries
4. Particular frictions in international trade of goods and assets
  - Transaction costs (tariffs, national standards and norms, transport costs, language)
  - Currency frictions (prices sticky in national currency)
  - Informational frictions
  - Contractual frictions (enforcement of contracts)

→ Departures from Law of 1 Price and induced real exchange rate differences

## *Definition VII: Law of one price*

- Absent natural or government imposed trade barriers, a commodity should sell for the same price everywhere. (OR, p. 202)

## *Closed-economy vs. international macro V*

1. Gross trade
2. Net trade
3. Heterogeneity of countries
4. Particular frictions in international trade of goods and assets
5. Policy
  - Fiscal and monetary policy, regulation, etc. largely national
  - Policy externalities call for coordination
  - Additional policy instrument: exchange rate

## *Summing up*

- Openness allows current and intra-temporal trade, and risk-sharing across countries
- Heterogeneity of countries opens room for gains from trade in goods and assets
- National borders introduce particular frictions, first of all currencies
- National policies open room for coordination

## *Key concepts*

- Current account and balance of payment
- ToT, Real and Nominal exchange rate
- Gains from Trade and Law of comparative advantage
- Law of one price, PPP

## *Stylised Facts*

- Trade in goods and services has grown faster than GDP since WWII, accelerating in 1990s
- Strong increase in gross asset positions of industrial countries since 1990s but still strong "home bias" in country portfolios.
- Strong imbalances in net investment positions since 1980s, with important valuation effects.
- Evidence of persistent real exchange rate movements, or even trends.
- Nominal ER volatility seemingly disconnected from Macro fundamentals.



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