International Finance - A Preview

- Three kinds of international trade & gains from trade
  - Goods for Goods (contemporaneous trade)
  - Goods for Financial Assets (inter-temporal trade)
  - Financial Assets for other Financial Assets (risk sharing)
- Balance of Payments (Chap. 15)
- The Foreign Exchange Market (Chap. 16 and 17)
- Determinants of Exchange Rates (Chap. 18 and 19)
- Macroeconomic Policies Under Fixed Rates (21/22)
- Macroeconomic Policies Under Floating Rates (23)
- Policy Choices for the International Monetary System (20 and 24)

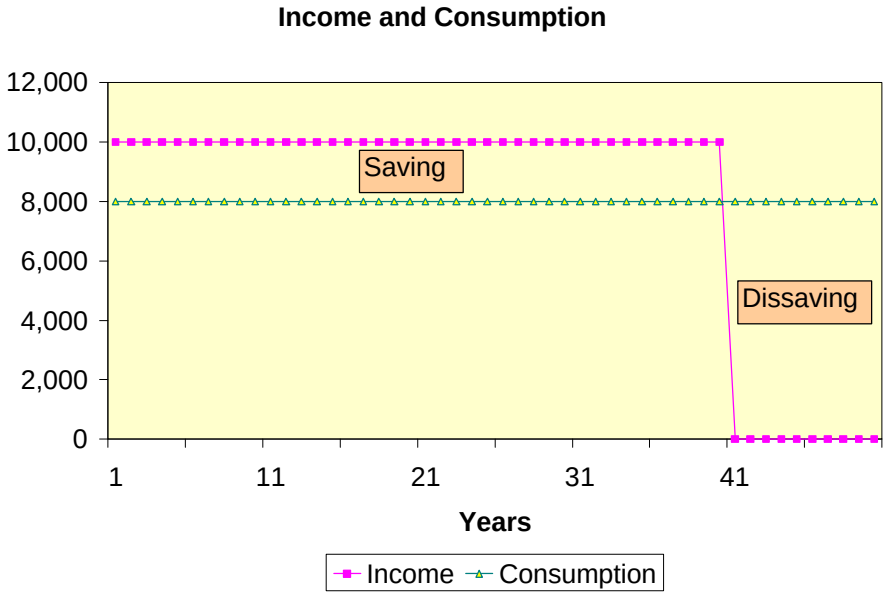
Financial Markets: Domestic and International

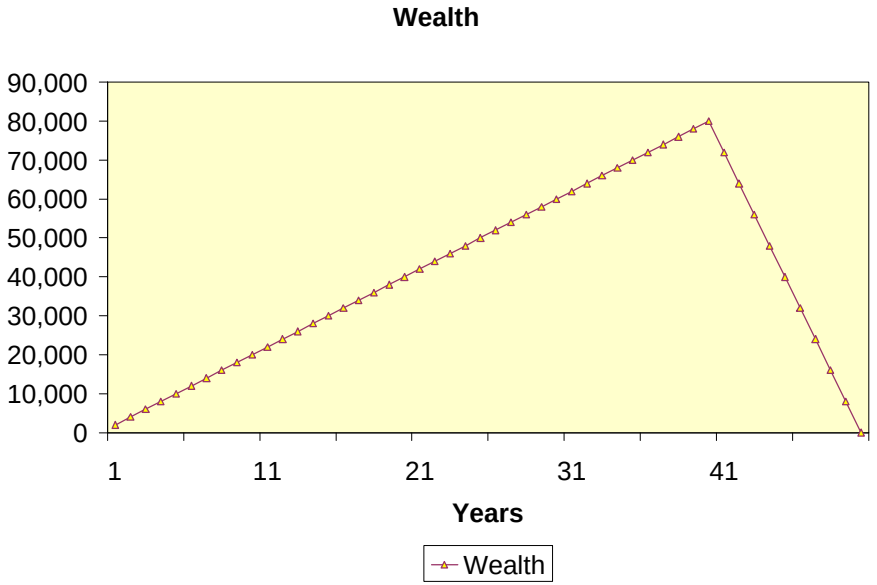
- Purpose of a financial market (or capital market)
  - Brings together two types of people
    - Those who are short of funds (borrowers, debtors)
    - Those who have surplus funds (lenders, investors)
  - Market helps these people “smooth consumption” over time
- Who are these two types of people?
  - Young people, old people
  - Impatient people, patient (conservative) people
  - Those with high return and low return investment opportunities
- Where is the market? (How do these examples differ?)
  - Local - Soho borrows from Gramercy Park
  - National - New York borrows from Arizona
  - International - USA borrows from Japan

The Life Cycle Hypothesis for Consumption, Savings and Wealth (1 of 2)

Consider an individual who expects to live for N years, and plans to work for W years. When interests are zero, the optimal consumption at any time is a function of average income over remaining working life.

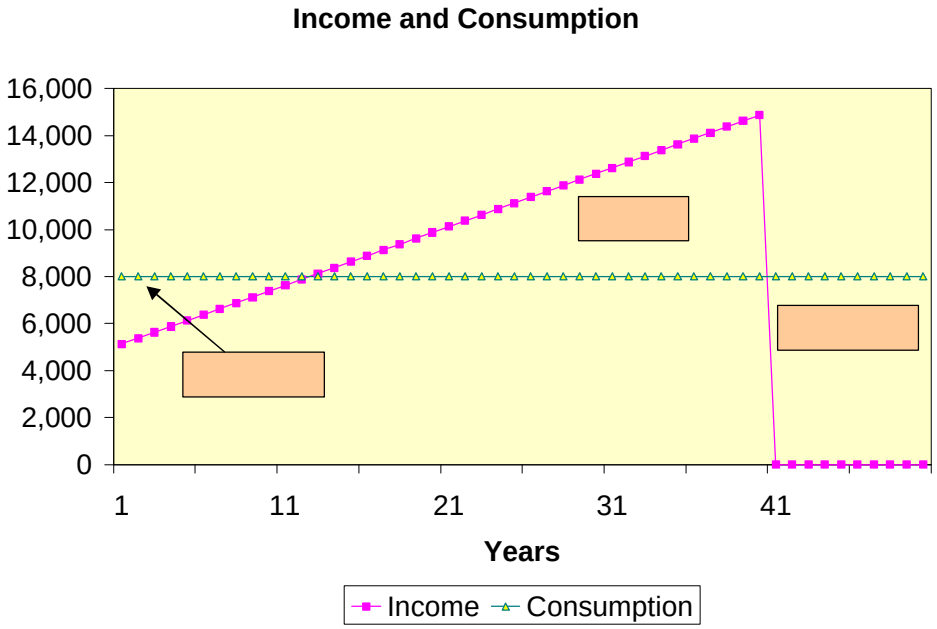
Let N=50, W=40, Y(t) = $10,000 for all *t*; then C(t) = $8,000 for all *t*.

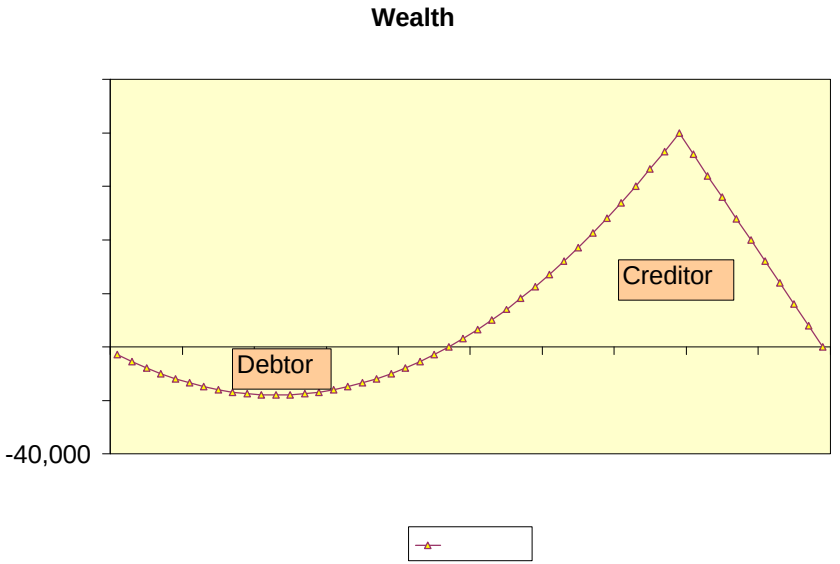




The Life Cycle Hypothesis for Consumption, Savings and Wealth (2 of 2)

Take a similar set-up, with N=50 and W=40. But now, let income start at Y(1) = $5,125 and grow by $250/year reaching Y(40) = $14, 875. Note that average income is $10,000, so again C(t) = $8,000 for all *t*.

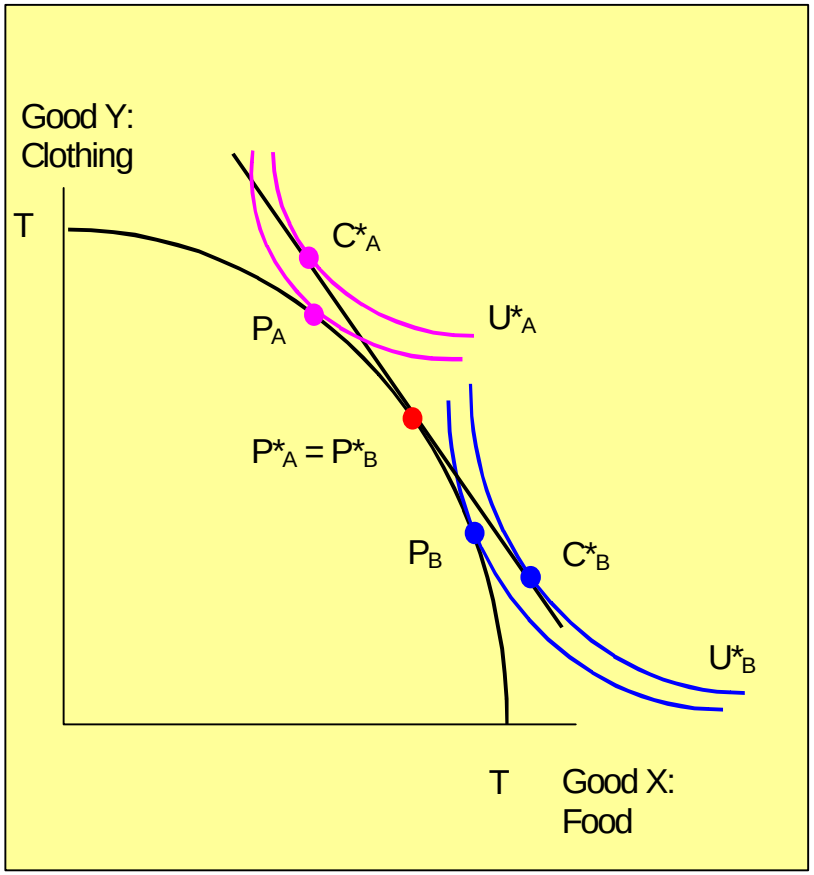




Lessons from the Life Cycle Hypothesis

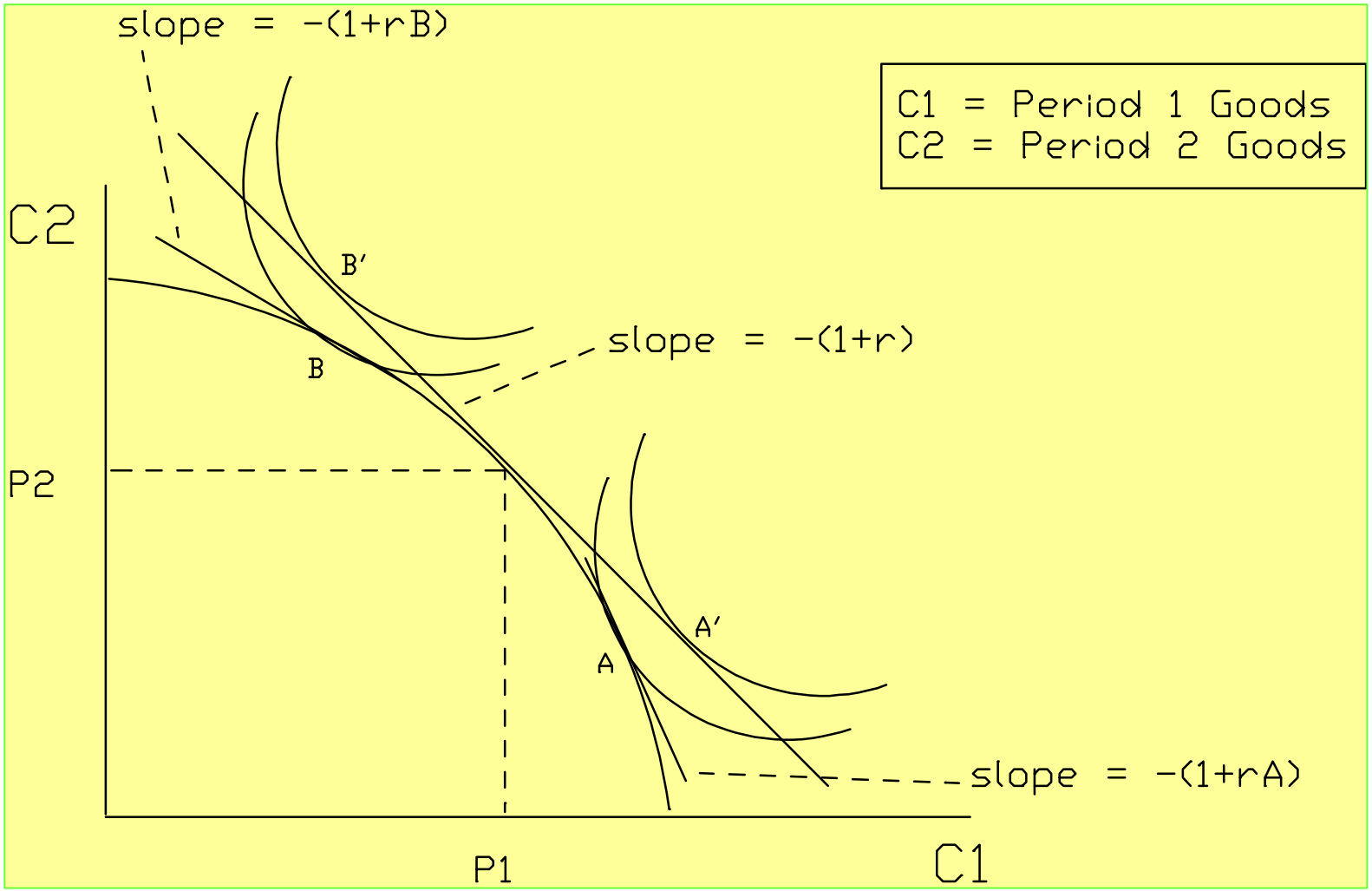
- Borrowing and lending are natural activities for individuals to engage in at difference stages of life
  - » Natural activities ⇒ no pejorative connotation
  - » A time to plant, a time to reap, ...
- Individuals (or countries) who are younger, with good growth prospects may tend toward borrowing
- Individuals (or countries) who are older, with lower growth prospects, or anticipating retirement may tend toward saving
- Individuals (or countries) with temporary short-fall in income may liquidate assets or borrow to meet current consumption.

Recall this diagram from Trade Theory:
(Chap. 1-2, p. 13)



- Production possibilities in countries A and B identical ($T_A = T_B = T$)
- Assume tastes in A & B differ ($U_A \neq U_B$)
- Pre-trade (P=C):
  - » Country A at P_A
  - » Country B at P_B
- After trade, A & B face common world prices (TOT)
  - » Production converges
  - » Consumption diverges
- After trade, utility ↑, U_A^*, U_B^*

The Same Diagram: Except ...
Trade Between Goods Now and Goods Later



Trade Between Goods Now and Goods Later:
Analyzing the impact of inter-temporal trade

Without trade: Individuals A and B must consume what they produce of the two "goods." Consumption is guided by the individual's preferences as illustrated by the utility curves.

With trade: There is a common price line with slope = $-(1+r)$.
Both A and B produce at (P_1, P_2)

Person A:
Borrows in Period 1 to increase C_1
Repays with interest in Period 2 which lowers C_2

Person A borrows because the market interest rate (r) is lower than r_A which is his internal rate of time preference.

Person B:
Lends in Period 1 which lowers C_1
Repaid with interest in Period 2 which allows greater C_2

Person B lends because the market interest rate (r) is higher than r_B which is his internal rate of time preference.

Trade Between Goods Now and Goods Later:
The two critical constraints

Summary of Trade Triangles

	Person A	Person B	A and B
Period 1	$C_1 > P_1$ deficit = $C_1 - P_1$	$C_1 < P_1$ surplus = $P_1 - C_1$	$C_1 = P_1$
Period 2	$C_2 < P_2$ Surplus = $P_2 - C_2$	$C_2 > P_2$ Deficit = $C_2 - P_2$	$C_2 = P_2$
Over Time Constraint	$C_1 - P_1 = (P_2 - C_2)/(1+r)$ deficit in period 1 = PV of surplus in period 2	$P_1 - C_1 = (C_2 - P_2)/(1+r)$ surplus in period 1 = PV of deficit in period 2	

(1) In any period, surpluses + deficits = 0

(2) Over time, size of deficit limited by ability to run surplus

The Main Lessons of Inter-temporal Trade

- Individual (or country) is better off with trade
- A country specializes in and exports the goods for which it has comparative advantage
- Comparative advantage now comes from timing of production and consumption
  - » Countries that are more willing to produce now and consume later will tend to export now and run surplus
- Over short time periods, trade is not balanced
  - » Countries that run trade deficits must obtain financing (i.e. obtain loans)
  - » Countries that run trade surpluses must supply financing (i.e. issue loans) [Question: At what rate? For how long?]

Trading Risk (1 of 3)

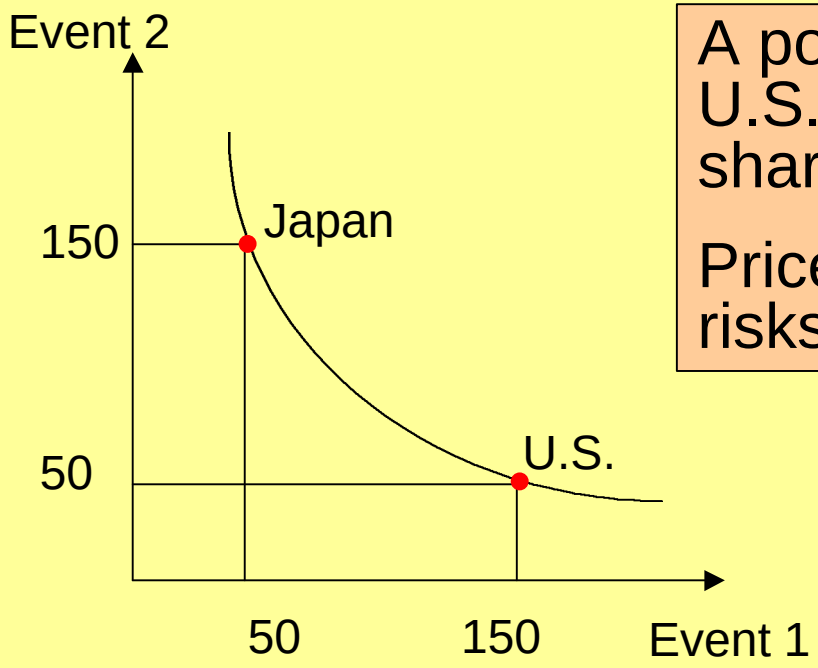
- Exchanging Financial Assets for Financial Assets
- Example: Assume an innovation in computer technology
  - » Event 1 - Discovery occurs in the U.S. ⇒ U.S. production ↑
  - » Event 2 - Discovery occurs in Japan ⇒ Japanese production ↑

Event	Probability	U.S. Prod.	Japanese Prod.
1	0.5	150	50
2	0.5	50	150

- Nature of risk: Discovery could be in U.S. or Japan

Trading Risk (2 of 3)

- International Diversification
  - Trade shares ("claims") on the output of U.S. and Japan

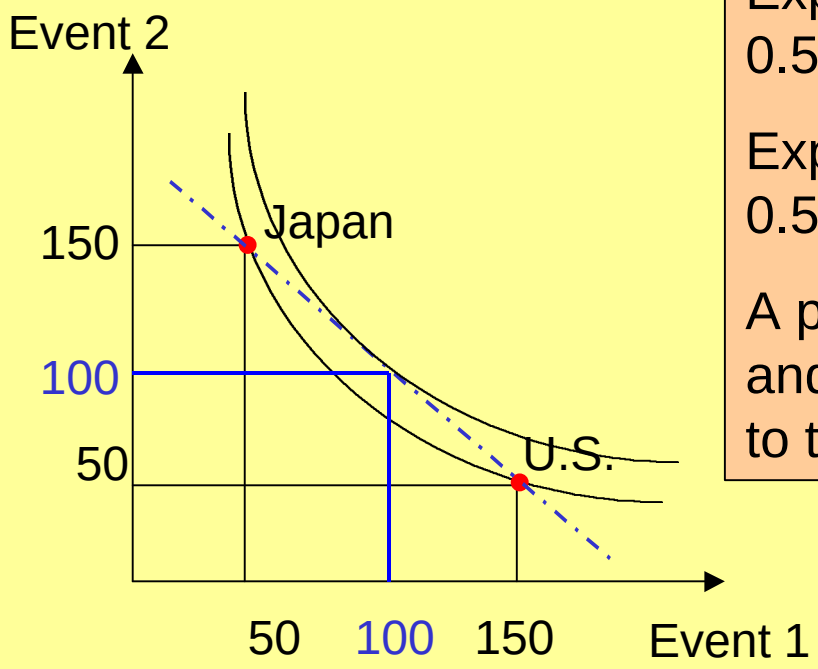


A portfolio that holds only U.S. or only Japanese shares has high risk

Prices of shares reflect the risks of these two events

Trading Risk (3 of 3)

- International Diversification
  - » Trade shares ("claims") on the output of U.S. and Japan



Expected payoff of Event 1:
0.5 x 50 + 0.5 x 150 = 100

Expected payoff of Event 2:
0.5 x 150 + 0.5 x 50 = 100

A portfolio that includes both U.S. and Japanese shares lowers risk to these two events.

P_1/P_2 (slope of dashed line) is relative probabilities of events 1 and 2

How Much Do Countries Engage in Commodity Trade?

Country (1998 data)	Exports / GDP	Imports / GDP
Canada	36.0%	33.8%
France	20.8%	19.0%
Germany	22.8%	19.5%
Italy	20.7%	17.6%
Japan	9.8%	6.6%
Mexico	28.2%	30.0%
Ireland (as of 1997)	75.5%	50.0%
Israel	23.0%	28.2%
United Kingdom	19.5%	22.0%
United States	7.9%	10.8%

How Much Do Countries Trade Over Time?

Country (1998 data)	Current Account / GDP
Canada	-1.9%
France	2.8%
Germany	-0.2%
Italy	1.7%
Japan	3.2%
Mexico	-3.8%
Ireland (as of 1997)	2.5%
Israel	-0.7%
United Kingdom	0.2%
United States	-2.6%

How Much Do Countries Trade to Reduce Risks?

Country	Percent Foreign Equity in Equity Portfolio	Percent Foreign Bond in Bond Portfolio
U.S.	10%	3%
Canada	12%	3%
Germany	18%	6%
Japan	4%	12%
U.K.	23%	38%

Summary of the Main Points

- Commodity trade is often substantial
  - » Gross flows of exports or imports: 10-80% of GDP
- Trade in financial assets for goods (inter-temporal trade) is conducted, however
  - » Net borrowing or lending from one country to others (as represented by the current account) is smaller than many economists would expect
  - » ⇒ Foreign financial flows appear to play a small role
- Trading in risks (as represented by % of foreign assets in a portfolio) is small in most countries, but rising over time
- However, gross international financial flows (volume of transactions) are far greater than the net flows