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
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 $t$.

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 different 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

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 (P₁, P₂).

Person A: Borrows in Period 1 to increase C₁
Repays with interest in Period 2 which lowers C₂
Person A Borrows because the market interest rate (r) is lower than rₐ which is his internal rate of time preference.

Person B: Lends in Period 1 which lowers C₁
Repaid with interest in Period 2 which allows greater C₂
Person B lends because the market interest rate (r) is higher than rₐ which is his internal rate of time preference.
## 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?]

### Summary of Trade Triangles

<table>
<thead>
<tr>
<th>Period 1</th>
<th>Person A</th>
<th>Person B</th>
<th>A and B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$C_1 &gt; P_1$</td>
<td>$C_1 &lt; P_1$</td>
<td>$C_1 = P_1$</td>
</tr>
<tr>
<td></td>
<td>deficit = $C_1 - P_1$</td>
<td>surplus = $P_1 - C_1$</td>
<td></td>
</tr>
<tr>
<td>Period 2</td>
<td>$C_2 &lt; P_2$</td>
<td>$C_2 &gt; P_2$</td>
<td>$C_2 = P_2$</td>
</tr>
<tr>
<td></td>
<td>surplus = $P_2 - C_2$</td>
<td>deficit = $C_2 - P_2$</td>
<td></td>
</tr>
</tbody>
</table>

### Over Time Constraint

- Deficit in period 1 = PV of surplus in period 2
- 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
**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 ↑

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>150</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>0.5</td>
<td>50</td>
<td>150</td>
</tr>
</tbody>
</table>

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

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**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

![Diagram showing expected payoffs and diversification benefits]

Expected payoff of Event 1:
\[ 0.5 \times 50 + 0.5 \times 150 = 100 \]

Expected payoff of Event 2:
\[ 0.5 \times 150 + 0.5 \times 50 = 100 \]

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

\[ \frac{P_1}{P_2} \] (slope of dashed line) is relative probabilities of events 1 and 2.

How Much Do Countries Engage in Commodity Trade?

<table>
<thead>
<tr>
<th>Country (1998 data)</th>
<th>Exports / GDP</th>
<th>Imports / GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>36.0%</td>
<td>33.8%</td>
</tr>
<tr>
<td>France</td>
<td>20.8%</td>
<td>19.0%</td>
</tr>
<tr>
<td>Germany</td>
<td>22.8%</td>
<td>19.5%</td>
</tr>
<tr>
<td>Italy</td>
<td>20.7%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Japan</td>
<td>9.8%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Mexico</td>
<td>28.2%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Ireland (as of 1997)</td>
<td>75.5%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Israel</td>
<td>23.0%</td>
<td>28.2%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>19.5%</td>
<td>22.0%</td>
</tr>
<tr>
<td>United States</td>
<td>7.9%</td>
<td>10.8%</td>
</tr>
</tbody>
</table>
### How Much Do Countries Trade Over Time?

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

### How Much Do Countries Trade to Reduce Risks?

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent Foreign Equity in Equity Portfolio</th>
<th>Percent Foreign Bond in Bond Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>10%</td>
<td>3%</td>
</tr>
<tr>
<td>Canada</td>
<td>12%</td>
<td>3%</td>
</tr>
<tr>
<td>Germany</td>
<td>18%</td>
<td>6%</td>
</tr>
<tr>
<td>Japan</td>
<td>4%</td>
<td>12%</td>
</tr>
<tr>
<td>U.K.</td>
<td>23%</td>
<td>38%</td>
</tr>
</tbody>
</table>
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