AcF305:
International Financial and Risk Management
Week 1

Dr. Mykola Babiak
Lancaster University Management School

Module Objectives

- Describe the structure of the international monetary system
- Analyse the relationships between interest rates, inflation rates and exchange rates
- Explain the main determinants of exchange rate movements and risk
- Deepen course participants understanding of derivatives by applying basic concepts to foreign exchange futures, options and other related instruments for risk management
- Explain the use of foreign exchange derivatives in the context of corporation risk management
- Provide guidelines for corporate financial decision making in an international context

Learning Outcomes

By the end of this module, students should:

- Be able to give reasoned analyses of developments in international financial markets
- Be familiar with the valuation of foreign exchange futures, options and other related financial instruments
- Understand the objectives of exchange-rate risk management
- Be familiar with the fundamentals of financing, investing, and risk management in international financial markets

Course Administration

- Textbook: Sercu (2009), *International Finance: Theory into Practice*, Princeton University Press, Cambridge, NJ.
- Lectures:
  - **Compulsory** 2 x 1-hour lecture each week
  - Attendance is **compulsory** and **checked**
  - In each we'll focus on 1 or 2 chapters from the course textbook
- Tutorials:
  - One 1-hour tutorial per week; first tutorial in week 2
  - Attendance is **compulsory** and **checked**
  - Exercises/readings based on the material from the previous lectures have to be answered before attending the tutorials
- The course is assessed with a combination of
  - Coursework assignment (25%)
    - Based on the groupwork distributed by week 7
    - Deadline is 15 December 2023 (noon) (Friday of week 10)
  - Summer exam (75%)

Course Administration

- You can find all the relevant information about the course at the Moodle page:

  https://modules.lancaster.ac.uk/course/view.php?id= 39849

- In all other matters, I can be contacted at:

  m.babiak@lancaster.ac.uk

- Office hours (Charles Carter C33):

  Mondays 10:00-11:00 and 13:00-14:00 during (weeks 2-10)

Emails and office hours

- Emails and office hours: Always, take a minute (or as long as you need) to think about how you want to articulate your question(s).

- Emails: when you send me an email, I am Mykola (Babiak, Dr Babiak, dude, man, mate, Hey there!, etc...)

- It may take me up to 2.0 days to answer your emails. If I haven't responded in 2.0 days (excluding weekends), please, send me a reminder.

- Office hours: bring the list of questions and NEVER wait to come up with your questions when you are in the office. Be aware that other students may be waiting for their turn.

Course Outline

- **Institutional aspects of international finance** (week 1):
  - Money, the international payment mechanism, the balance of payments, exchange rate regimes.
- **Currency markets: spot, forward, futures, swap & option markets** (weeks 2-6):
  - Institutional characteristics of these markets.
  - Definition of the instruments traded on these markets.
  - Arbitrage relations across markets → Pricing.
  - Usefulness of these markets for non-financial corporations.
- **Corporate risk management** (week 7):
  - Value-relevance of corporate hedging for shareholders.
  - Implementation of feasible hedging strategies.
- **International capital budgeting** (weeks 8-9):
  - Cost of capital of an international project → International CAPM.
  - Discounting of international cash flows.
- Course summary, exam info & solution to CWA (week 10)

Daily volume (2014)

Outline of Lecture 1

- Essential reading: Chapter 2 of Sercu (2009).
- Topics:
  - **Money**: What is it? Why do we have money? How has money evolved over time, and why in this particular way?
  - **Banking system**: How did banks create money? What is the difference between a central bank and a commercial bank? How do banks help to make international transactions? What is M_0? What is M_1?
  - **Balance of Payments**: What is it? How exactly does it work?
  - **Exchange rate regimes**: Gold parity, fixed exchange rates, multilaterally fixed exchange rates.

The Role and History of Money I

- Why does money exist? → Money is useful & convenient.
  - Assume no money exists (**barter economy**). A hungry blacksmith, who has specialized in the production of horse shoes, wants to buy some wheat.
  - He must wander around until he finds a farmer who is in desperate need of a horse shoe – not exactly an easy task.
  - Money disentangles the buy and sell sides.

The Role and History of Money I

- Conditions for **money** to be a good least-cost medium of exchange:
  1. It must be storable (imagine our money would be electricity).
  2. It must have a stable purchasing power (think about the hyperinflation in Germany in 1929).
  3. It must be easy to handle (imagine our money would be bricks).

- These conditions explain the evolution of money over the centuries:
  animals → metal coins → paper (fiat) money → electronic money

The Role and History of Money II

- Animals (used in prehistoric Europe):
  - **Pros** None, really (... well, better than no money).
  - **Cons** Bulky, hard to transport and handle, need feeding.

The Role and History of Money II

- Metal coins (used as early as in ancient Rome):

Pros (1) Precious metals are storable, i.e. do not rust.

(2) Production is costly → supply can only grow slowly → inflation will be kept low (stability is high).

(3) Less bulky and therefore easier to transport.

Cons (1) Metal coins can be *de-based* from their true value to enjoy seignorage (de-base = reduce true precious metal content by melting down coins, adding cheap metals and then reminting the alloy; seignorage = profit earned from this operation).

(2) Risky to transport (think about good old Westerns on TV).

The Role and History of Money II

- Paper (fiat) money:

  Pros Easier and less risky to transport.

  Cons Value of money based on trust.

The Development of the Banking System I

- The origins of privately-issued paper money:

1. Traders deposit their metal coins with international banks. They use the bank receipts (later: promissory notes = paper money) to pay each other.

2. Bank receipts can be converted into underlying coins *at sight*, i.e. when presented to the bank.

3. Clever bankers quickly realized that it is unlikely that all outstanding receipts would be converted into underlying coins at one point in time → As a result, they created more bank receipts than they had coins to cover them and thus created money.

The Development of the Banking System I

- An example of a newly-created bank with 120 crowns of initial capital on the first day:
  - **Merchant A** deposits 100 golden coins (→ bank vault, asset). In return, he obtains a bank receipt from the bank (liability).
  - **Merchant B** asks for a 200 coin loan. In exchange for a bank receipt over 200 coins (liability), he writes a promissory note over the same amount to the bank (asset).
  - The **Government G** asks for a 150 coin loan. In exchange for a 150 coin bank receipt (liability), it writes a promissory note to the bank (asset).
- In addition,
  - **Foreign trader F** asks for a 70 coin loan. In exchange for a 70 coin bank receipt (liability), he writes a promissory note to the bank (asset).
  - **Local exporter X** converts foreign notes into local notes, worth 100 crowns (liability). The bank uses the foreign notes to buy T-bills (asset).

The Development of the Banking System II

- Fiat money bears the risk of bank runs. Here's a recipe for disaster:
  - **B** goes to **casino C** and looses the 200 coin receipt. **G** gives the 150 coin receipt to **construction company D** to build a park.
  - On the liabilities side: the bank has issued receipts over a total of 620 coins, some of them are now in different hands.
  - On the assets side: the number of coins the bank holds is 120 +100 = 220 → both **B** and **G** cannot convert their promissory notes into coins
  - **A**, **C**, **D**, **F** and **X** panic: They want to convert their bank receipts into coins as quickly as somehow possible → **Bank run**.
- To minimize the risk of bank runs, most governments have monopolized the right to issue money through a central bank.

The Development of the Banking System III

- Monetary base $M_0 = D + G + \text{RFX}$, where

  D is credit to the domestic private sector, G is credit to the government, RFX is the reserves of foreign exchange

- Money supply (total among of money) $M_1 = m \times M_0 = m \times (D + G + \text{RFX})$

- Central banks influence M_0 or M_1 through RFX (intervention in FX markets), D or G (open-market policy), m (reserve requirements) or credit controls.

- Central banks use several different methods to increase (or decrease) the amount of money in the banking system.

- While the Fed could print paper currency at its discretion in an effort to increase the amount of money in the economy, this is not the measure used. Here are three methods the Fed uses in order to inject (or withdraw) money from the economy:

Injecting money in the economy

- The Fed can influence money supply by modifying **reserve requirement**, which is the amount of funds banks must hold against deposits in bank accounts.

- The Fed can also **alter the money supply by changing short-term interest rates**. Lowering (or raising) the discount rate that banks pay on short-term loans from the Fed increases (or decreases) the liquidity of money. Lower rates increase the money supply and boost economic activity; however, it creates risk of inflation.

- **Open market operations**, which affect the federal fund rates (i.e., lending rates for commercial banks). In open operations, **the Fed buys and sells government securities**. If the Fed wants to increase the money supply, it buys government bonds. Conversely, if the Fed wants to decrease the money supply, it sells bonds from its account, thus taking in cash and removing money from the economic system.

Balance of Payments (BOP)

- A record of all transactions between residents of one country and the rest of the world over a specified time-period, often a year.

- Transactions grouped into ***source*** and ***use*** tables.

  S '+' sign: Where did the money come from (earned, sold an asset, depleted bank account)?

  U '–' sign: What was the money used for (bought goods or services, paid workers, put money into bank account)?

- **Rule**: Every "source" must be "used" somewhere (every 5m spent must come from somewhere), similar to double-entry book-keeping.

BOP: Subcategories

Table 2.4. Classification of various international sources and uses of funds.

- **The current account** (or group of accounts, really):
  - "merchandise": goods sold (+) or bought (–) internationally
  - "services": services sold (+) or bought (–) internationally, including consulting, insurance, and so on
  - "income":
    - from labor: wages earned (+) or paid (–) internationally
    - from capital: interest or dividends earned (+) or paid (–) internationally
  - unilateral income transfers, inward (+) or outward (–): repatriated wages, etc.
- **The capital and financial account** (really, a group of accounts, again):
  - "capital account": unilateral transfers like aid received (+) or granted (–), assets brought in or taken out by immigrants
  - "financial account": tradable assets, or contractual assets or liabilities with similar effects as traded assets:
    - private transactions:
      - FDI: inward (+) or outward (–)
      - securities sold (+) or bought (–) internationally
      - derivatives sold (+) or bought (–) internationally
      - loans received (+) or granted (–) internationally
      - changes in liquidities
      - other
    - central-bank transactions (similar)
- **Statistical discrepancies**

BOP: Some Examples of Typical Transactions

Table 2.6. Six records in Canada's theoretical BOP.

	Transaction	Use (−) or source (+)	Credit	Debit
1.	StarDucks Canada, a Canadian firm, imports CAD 100m worth of coffee from Ghana AraCoff…			
	…and pays for it by transferring CAD 100m from its account at CIBC (a Canadian bank) to AraCoff's account with the Bank of Nova Scotia			
2.	StarDucks uses the services of Accra Stevedoring, worth 10m…			
	…and pays for it by transferring USD 7.5m (CAD 10m, after translation) from its account at CIBC to Stevedoring's account with CIBC			
3.	The University of Brunswick at Colomba (UBC) sells 15m worth of bonds to a London broker			
	…and receives CAD 15m into its account at Brunswick Bank, from the broker's account with Bank of Toronto			

BOP: Technical Details

- Accruals vs. cash accounting
- *cost*, *insurance*, *freight* (imports) vs. *free on board* (exports)
  - Imports include a service charge, exports do not.
  - Renders the merchandise balance (export−import of goods) less meaningful.
- FDI vs. portfolio investment
  - Underlying question: Has a controlling share been acquired in the company?
  - Impossible to determine for the central bank → cut-off rule, often 10%.
- Foreigners vs. non-residents?
- Statistical discrepancy: errors and omissions
  - In a perfect world: $CA + KFA = 0$, i.e. if you spend more than you have earned, you must have borrowed or sold assets.
  - In practice, impossible to observe all transactions (cash payments, small transactions, illegal transactions) → Include error term:

$$CA + KFA + E\&O = 0$$

Analyzing the Current Account (Surplus or Deficit)

- Balance of trade (e.g. goods and services) and net income.
- Availability of goods and their destination:

$$\underbrace{Y}_{\text{production}} + \underbrace{M}_{\text{imports}} = \underbrace{C_p + C_g}_{\text{consumption}} + \underbrace{I_p + I_g}_{\text{investment}} + \underbrace{X}_{\text{exports}}$$

- Value of produced or imported goods = Value of consumed or invested goods (by 'private' or 'government') plus value of exports.
- Income from goods and its uses:

$$\underbrace{Y}_{\text{income}} = \underbrace{C_p}_{\text{consumption}} + \underbrace{S_p}_{\text{savings}} + \underbrace{Tr}_{\text{transfers}} + \underbrace{Tx}_{\text{taxes}}$$

- Value of private income = Value of consumed or saved income plus transfers to foreigners (wages, dividends, etc.) plus taxes paid.
- Combining:

$$CA = \left(S_p - I_p\right) + \left(Tx - C_g - I_g\right)$$

$$= \underbrace{\left(Y - C_p - Tr - Tx - I_p\right)}_{\text{private surplus}} + \underbrace{\left(Tx - C_g - I_g\right)}_{\text{G's surplus}} = X - M - Tr$$

Exchange Rates – Definition and Principles

- Price of one currency in terms of another; convention: **HC/FC** (read: home currency required to buy one unit of foreign currency).
- Similar to other prices, if FC is interpreted as *just another commodity*.
  - **0.5 GBP/apple**, 15 GBP/Latest *Harry Potter* book, **0.67 GBP/EUR**.
  - Consistent with commodity prices, the FC will always be in the denominator (i.e. we do not write: 2 apples/GBP, so we also will not write: 1.5 EUR/GBP).
- The price of FC (the exchange rate) is governed by the forces of supply and demand.
  - An increase (decrease) in demand for the FC will increase (decrease) the price of the FC.
  - An increase (decrease) in supply of the FC will decrease (increase) the price of the FC.
- Governments intervene in foreign exchange markets by buying and selling currency to influence the value of the HC or the FC.
- The set of rules according to which governments intervene is called the '**exchange rate regime**' of a country.

A Short History of Exchange Rate Regimes I

- Before World War I: Most countries had an **official gold parity** (i.e. money could be freely converted into gold at a fixed exchange rate).

  Pros As gold is costly to produce, the money supply can only grow slowly → low inflation → economic stability.

  Cons Low money supply limits number of economic transactions → hampers economic growth, but if money supply is increased faster than gold supply, this could trigger credibility problems → bank runs (*Triffin dilemma*).

- When the U.S. increased money supply above gold supply, mostly to finance the Vietnam war and the Great Society Program, investors took advantage of this and the system collapsed.

  expansionary policy → CA deficit → monetizing the deficit → (USD supply/Gold supply) ↑ → real value of gold ↑ → investors buy gold at bargain price (fixed exchange rate)

A Short History of Exchange Rate Regimes II

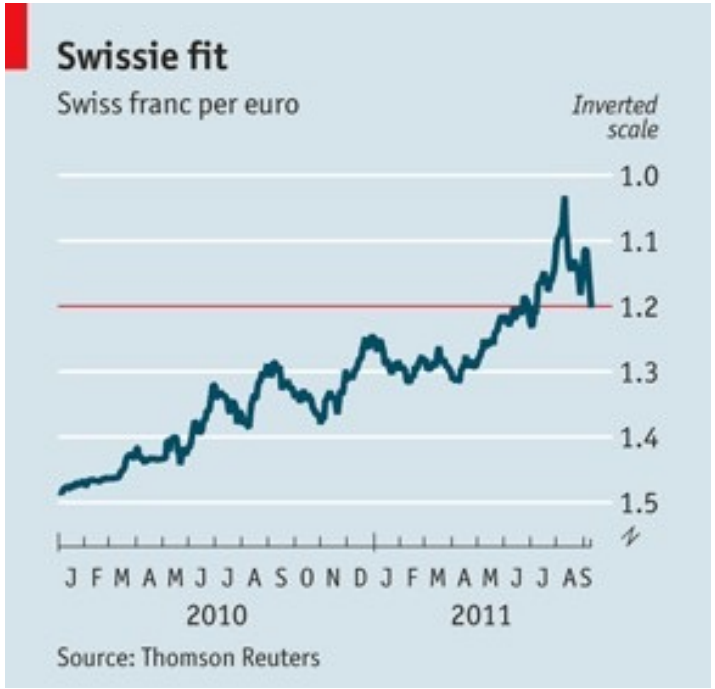
- After World War II: Most countries followed a **fixed exchange rate regime**, meaning they tried to keep the value of their currency fixed with respect to another currency.
- Done through central bank intervention (buying and selling of currency).

  Pros Economic stability.

  Cons Requires policy coordination = similar inflation rates (*i*).
  Example: Assume DEM fixed to GBP; i_{UK}=100% and i_{GER}=0%
  → British products become more and more expensive; British competitiveness declines. UK central bank must perpetually buy GBP, but will sooner or later run out of reserves.
- Also, possible to fix the exchange rate **relative to a basket**.
  - *Example*: Assume that 60% of Freedonia's trade is with Euroland and 40% with the United States; current exchange rates are: FDK/EUR 3 and FDK/USD 2.5
  - Now find n_E such that: $\frac{n_E * 3}{n_E * 3 + n_D * 2.5} = 0.6$

Current Issues: Gold Price and CHF/EUR FX Rate

http://www.goldprice.org/spot-gold.html
(accessed 21 November 2013)



http://www.economist.com/node/21528631
(accessed 21 November 2013)

→ additional reading

Summary, Homework and Additional Reading

- **In this lecture**, we dealt with:
  - Money: Reason for existence, necessary conditions for successful money.
  - Banking: Evolution of banking system.
  - International payments: BOP, reasons for CA deficits.
  - Exchange rate regimes: Gold standard, fixed exchange rate, multilaterally fixed exchange rate; central bank intervention.
- **At home**, you will need to cover:
  - Development of the European Monetary Union (EMU).
- **Additional reading**:
  - Wolf, M. (2010), "Could the world go back to the gold standard?", *Financial Times Blog*, 1 November 2010.
  - The Economist (2011), "Currency interventions: Francs for nothing", *The Economist*, 10 September 2011.

MARKET PULSE

Apple's drop highlights risk of exposure to China

Published: Aug 11, 2015 1:44 p.m. ET

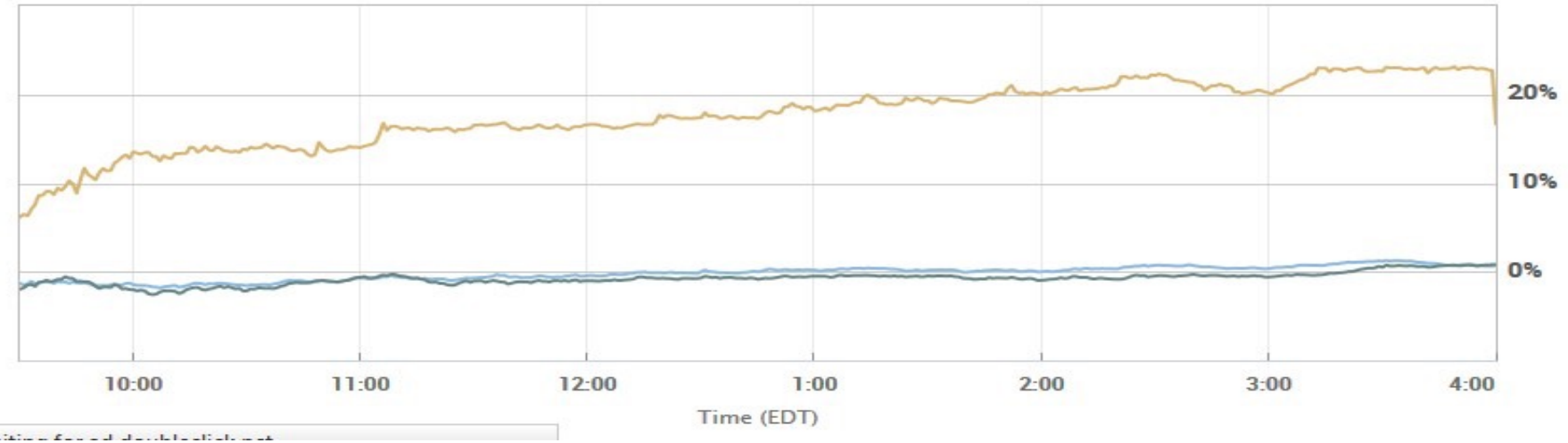
12

Aa

By
SUE
CHANG
MARKETS REPORTER

Apple Inc. **AAPL, +0.73%** shares fell almost 5% Tuesday after the Chinese government devalued the yuan which will make imports such as the iPhone more expensive. The stock's price target was also lowered at Jefferies from $135 to $130 on worries about how the devaluation would affect Apple's sales in China. Other companies with significant presence in China were also lower. Of the 20 stocks identified by Goldman Sachs as having big China exposure, 19 were trading in the red, including Skyworks Solutions Inc. **SWKS, +0.83%** Wynn Resorts Ltd. **WYNN, +22.84%** and Qualcomm Inc. **QCOM, +3.55%** The three companies derive more than 60% of their sales from China. [Updated to correct Apple's price target]

Read the full story: Google rallies on Alphabet; Apple slides on China worries



South Africa's current account deficit narrows, spending rises

REUTERS

Reuters – Tue, Jun 23, 2015 09:46 BST

Share Tweet Share +1 Print

RELATED CONTENT

A worker assembles a car at a Nissan's manufacturing plant in Rosslyn, outside Pretoria, September ...

PRETORIA (Reuters) - The deficit on South Africa's current account deficit narrowed in the first quarter of the year, a central bank report showed on Tuesday, although weak exports kept the trade balance under pressure.

In its June quarterly bulletin, the Reserve Bank also said spending growth in Africa's most advanced economy accelerated in the first three months of the year, helped mainly by a faster pace of consumption by households.

The current account shortfall was smaller at 4.8 percent of GDP in Q1 compared with 5.1 percent in the last three months of 2014, as a narrower deficit on the services, income and current transfer account offset a wider trade gap.

Economists surveyed by Reuters had expected a 5 percent gap for Q1 and the rand, which has long been vulnerable to South Africa's chronically wide budget and current account deficit, pared losses after release of the quarterly bulletin.

The South African Reserve Bank said the current account shortfall was financed by portfolio inflows and other investment capital, which neutralised a net outflow in direct investment over the first quarter.

Spending in the economy grew at a faster pace of 3.4 percent from 0.3 percent in the previous quarter, led by increased consumption by households.

PR NEWSWIRE EUROPE GET EMAIL ALERTS

Bloomberg And Traiana Develop Solution For FX Options Post-trade Processing

Published: Sept 8, 2015 4:30 a.m. ET

"As the FX market reaches greater levels of automation, FX options, with their complex instrument structures and numerous post-execution events, continue to involve manual processes which present operational risks and challenges to market participants," said Ben Macdonald, Bloomberg's Global Head of Product. "We believe that providing a decentralized solution to both buy and sell side participants offers them the flexibility needed for broad market coverage and a greater level of participation."

The messaging service will use existing infrastructure from both companies to include affirmation, allocation and trade lifecycle management for FX options. Bloomberg FXGO clients will be able to affirm trades received from any bank and then submit post trade allocations to any prime broker via the Traiana Harmony network.

Jill Sigelbaum, Global Head of FX at Traiana, said: "Using the connectivity and reach of Traiana's Harmony network and the power of Bloomberg's trade processing tools, data and analytics, market participants will be able to streamline their FX options post-trade management practices. This collaboration means that our existing community of banks, brokers and prime brokers can have ready access to Bloomberg clients with no infrastructure changes required."

PORTFOLIO

Bridging the Currency Hedging Gap

By **Joseph Lisanti**
October 1, 2015

Twitter LinkedIn Facebook Google + Email Comments Print Reprints

Last year was not very profitable for many clients in international stocks, and it wasn't because the stocks fell.

"Most of the overseas markets, in local terms, were positive," observes New York-based planner Bob Wander. Nonetheless, virtually all the gains turned to losses when translated back to dollars, he says.

Few advisors have the time or expertise to engage in direct hedging via currency swaps or forward contracts. For those who choose to hedge, a growing number of currency-hedged ETFs are available. Through July of this year, more than twice as many of these specialized funds had gone public as in all of 2014.