認識匯率與外匯市場
－資產分析法

授課老師：林宗耀

[主要取材自Krugman, et al. (2018) ch. 3/ (2023) ch. 14]

0 前言

- 資產分析法是指專注於某一時刻金融資產的持有價或報酬(returns)，以便分析資產供需與匯率關係的理論
- 匯率? The price of one currency in terms of another is called an exchange rate
- 匯率為資產價格之一
- 學習重點
  - 匯率在國際貿易中的腳色
  - 匯率的決定

1 匯率與國際交易活動

- Exchange rates play a central role in international trade because they allow us **to compare the prices** of goods and services produced in different countries (note: 貨幣的計價單位功能)
- Once the money prices of domestic goods and imports have been expressed in terms of the same currency, households and firms can compute the relative prices that affect international trade flows

1

- 兩種匯率表示方法
- 以美國作為本國的角度
- The first of these exchange rate quotations (dollars per foreign currency unit) is said to be in direct (or "American") terms (直接報價);
  - 以本幣為計價單位，表示一單位外幣值(要價)多少錢(即本幣數量)；或稱**價格法**
- the second (foreign currency units per dollar) is in indirect (or "European") terms (間接報價)
  - 或稱**數量法**，表示一單位本幣能購買多少**數量**的外幣

1-1 國內物價與外國物價

- For example, how many dollars would it cost to buy an 英國毛衣 costing 50 British pounds (£50)?
- At an exchange rate of **$1.50** per pound (expressed in American terms), the dollar price of the sweater is (1.50$/£) * (£50) = $75
- At an exchange rate of **$1.25** per pound(美元升值、英鎊貶值), the sweater would cost only (1.25$/£) * (£50) = $ 62.50 (< $75)
  - (英國)物價維持不變(AEE)
  - 美國進口(英國毛衣)變便宜

1-1

- 反之，若美元對英鎊貶值…
- all else equal (AEE), a **depreciation** of a country's currency makes its goods cheaper for foreigners
- All else equal, an **appreciation** of a country's currency makes its goods more expensive for foreigners

1-2 匯率與相對價格

- 進、出口相對價格會影響進、出口需求
- 以出口數量(jeans)來衡量進口品(sweaters)價格
- (名目)匯率：an exchange rate of $1.50 per pound means that an American pays $75 for **a sweater** priced at £50 in Britain
- 相對價格：Because the price of a pair of American jeans is $45, the price of a sweater in terms of a pair of jeans is ($75 per sweater)/($45 per pair of jeans) = 1.67 pairs of jeans per sweater
  - **英國人的實質匯率亦同(若商品以英鎊£計價)**

1-2

匯率與相對價格變化

TABLE 3-2 $/£ Exchange Rates and the Relative Price of American Designer Jeans and British Sweaters

Exchange rate $/£	1.25	1.50	1.75
Relative price (pairs of jeans/sweater)	1.39	1.67	1.94

Note: The above calculations assume unchanged money prices of $40 per pair of jeans and £50 per sweater.

- *All else equal, an appreciation of a country's currency raises the relative price of its exports and lowers the relative price of its imports. Conversely, a depreciation lowers the relative price of a country's exports and raises the relative price of its imports* [要用更多的jeans來交換Sweater]

2 外匯市場

- 外匯市場(foreign exchange market)係提供外匯交易並決定匯率水準的金融市場
- 外匯(foreign exchange)通常涵蓋外國通貨(foreign currency，或稱外幣)、外幣存款(如外幣支票)、與外幣有價證券(如外幣匯票)
  - 除少數在零售市場，外匯大部分是以存款的形式持有或交易(例如美元存款，deposits denominated in dollars)
  - 以台灣而言，**大眾持有**諸如美元、英鎊、歐元與日圓等現鈔與存款皆屬本國的外匯

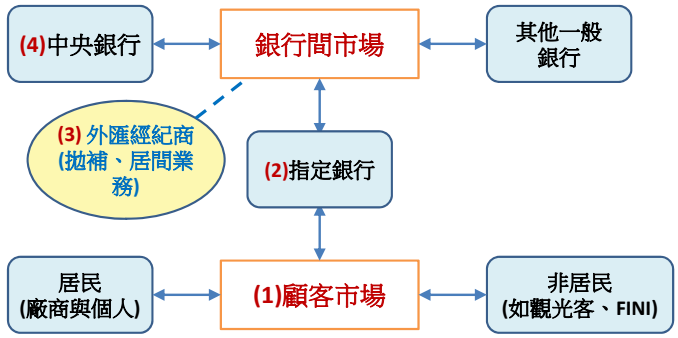
2-1 台灣外匯市場參與者

- (1)第一層：廠商企業與個人：進出口商、旅客、移民、投資者(消費者)
  - 涵蓋Krug.所指*Corporations + Nonbank financial institutions* (如保險公司等等)
- (2)第二層：外匯指定銀行(零售仲介)
  - 相當於Krug.所指*Commercial banks*
  - 對廠商與個人的外匯買賣可能產生差額，則透過外匯經紀商來拋補此一差額

2-1

- (3)第三層：外匯經紀商(批發仲介)
  - 依據「外匯經紀商管理辦法」取得許可(即執照)辦理…
    - 主要居間業務：外匯買賣、外幣拆款、換匯交易
    - 外匯經紀商辦理居間業務之對象主要為國內外銀行(同業外匯交易， **interbank trading**)
  - 也是外匯指定銀行與中央銀行的仲介機構
  - 充當中央銀行調度外匯與干預外匯市場的橋樑
  - 台灣本地外匯經紀商：台北*、元太外匯經紀公司
- (4)第四層：中央銀行(外匯市場管理當局)
- 四者在外匯市場上的腳色…

外匯市場的基本結構¶



¶參見貨銀講義(051820)「金融體系簡介」

2-2 外匯市場特色

- 國際市場規模
  - … in April 2013, the daily global value of foreign exchange trading had jumped to around $5.3 trillion. A total of $2.72 trillion was traded daily in Britain, $1.26 trillion in the United States, and $374 billion in Japan.
- 交易不中斷
- 匯價無差異
  - 通訊技術與市場整合
  - 迅速的套利套匯(arbitrage)結果
- 美元為最主要交易工具(其次是歐元與日圓)
  - … most transactions (87 percent in April 2013) are exchanges of foreign currencies for U.S. dollars
  - the U.S. dollar is sometimes called a vehicle currency (媒介通貨、工具通貨)

$7.5 tri. (2022, BIS)

88%/31/17/13/7 (US$/Euro/Yen/B.Pnd/RMB)

2-3 即期匯率與遠期匯率

- Exchange rates governing such “on-the-spot” (現場(貨)) trading are called **spot exchange rates**, and the deal is called a **spot transaction**
- **遠期契約**交易是指買賣雙方同意於未來某一特定時點，以約定價格買賣一定數量的標的物
  - a future transaction date—one that maybe 30 days, 90 days, 180 days, or even several years away.
- 遠期契約的基本型態是在到期履約時需**實際交割標的**，但諸多是僅就約定與**現貨價差作支付**，該類型是為無本金交割遠期契約NDF(Non-deliverable Forwards)
  - NDF多用於**外匯**與資本市場工具

2-3

- The exchange rates quoted in such transactions are called **forward exchange rates**
- When you agree to sell pounds for dollars on a **future** date at a forward rate agreed on **today**, you have “sold pounds forward” and “bought dollars forward.”
- The future date on which the currencies are actually exchanged is called the *value date* (交割日)
- **Forward and spot exchange rates, while not necessarily equal, do move closely together** (Fig.3-1)

2-3.1 遠匯交易－An Example

An example shows why parties may wish to engage in forward exchange transactions. Suppose Radio Shack knows that in 30 days it must pay yen to a Japanese supplier for a shipment of radios arriving then. Radio Shack can sell each radio for $100 and must pay its supplier ¥9,000 per radio; its profit depends on the dollar/yen exchange rate. At a spot exchange rate of $0.0105 per yen, Radio Shack would pay ($0.0105 per yen) × (¥9,000 per radio) = $94.50 per radio and would therefore make $5.50 on each radio imported. But Radio Shack will not have the funds to pay the supplier until the radios arrive and are sold. If over the next 30 days the dollar unexpectedly depreciates to $0.0115 per yen, Radio Shack will have to pay ($0.0115 per yen) × (¥9,000 per radio) = $103.50 per radio and so will take a $3.50 *loss* on each.

2-3.1

To avoid this risk, Radio Shack can make a 30-day forward exchange deal with Bank of America. If Bank of America agrees to sell yen to Radio Shack in 30 days at a rate of $0.0107, Radio Shack is assured of paying exactly ($0.0107 per yen) × (¥9,000 per radio) = $96.30 per radio to the supplier. By buying yen and selling dollars forward, Radio Shack is guaranteed a profit of $3.70 per radio and is insured against the possibility that a sudden exchange rate change will turn a profitable importing deal into a loss. In the jargon of the foreign exchange market, we would say that Radio Shack has *hedged* its foreign currency risk.

[避險] (vs. 投機(speculation))

[遠匯契約 ≈ 保證固定價格的期約交易]

2-4 換匯交易(Foreign Exchange Swaps)*

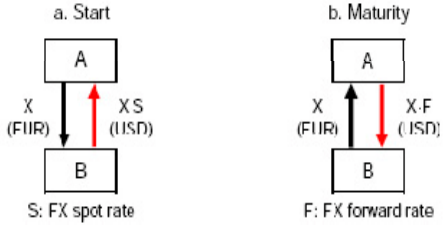
- 換匯交易(或稱通貨交換、外匯交換、FX swaps)係指交易雙方於約定期間內約定以兩種貨幣作為交換(並換回)的交易
  - 交易雙方約定期限，以不同貨幣同時貸出與借入同一特定金額(相同價值但不同貨幣的存款或貸款)
  - 換匯交易也可視為一種**十足擔保的借款**
  - 易言之，換匯交易是以一種貨幣，訂定於不同交割日，依約定的匯率(期始即期匯率與約定的固定匯率)，作先買並後賣，或先賣並後買等值的另一貨幣，以達到此二貨幣於兩不同交割日(期始與到期日)，互為轉換的交易

2-4

- 換匯交易牽涉兩種貨幣，兩個交割日、兩個匯率、買賣或借貸方向相反的兩筆外匯交易
  - 換匯交易相當於一筆遠期附買回(forward repurchase)的外匯交易
  - 亦即跟對方約定，於未來一定日期，將原先賣出之幣別予以買回，或將原先買入之幣別予以賣出
  - (參見Krug. p.69)
- 換匯交易的目的與功能
  - 規避匯率風險、降低融資成本、提高資金運用與調度效益、輔助銀行間資金借貸
- 央行經常以換匯交易方式來調節外匯市場資金

2-4.1 典型簡單(plain vanilla)的FX swap (CS)

- 歐洲的A需要美金(金額X·S)(或是未來需要歐元)，美國的B需要歐元(數量X)，故A與B做一筆FX swap (他們各自不跟當地銀行借入外幣，*why*？)
- 該swap到期時，雙方各以當時借貸本金與約定匯率F(期初議定的遠期匯率)換算，以原幣償還或回收當初各自的借貸



2-4.1

- 典型簡單(plain vanilla)的CS [*cont.*]
  - 期限較短(通常為1年以下)
  - 多數CS係以金融機構為仲介進行(IRS亦復如此)
    - 例如進出口商跟往來銀行
    - 容易配對
  - 由於CS是以事先約定的(固定)匯率進行，可降低期間的匯率變動風險
  - A three-month swap of dollars into euros may result in lower brokers' fees than the two separate transactions, possibly with different parties, of selling dollars for spot euros and selling the euros for dollars on the forward market.
  - Swaps make up a significant proportion of all foreign exchange trading.

2-5 外匯期貨與選擇權(Futures and Options)

- 2-5.1 期貨契約
- 標的金融工具需按約定於未來執行日期進行交割
- **期貨**的概念起源於早期的農產品交易市場，為了規避價格大幅波動的風險，買賣雙方事先簽訂契約，約定好數量、價格與日期以便進行貨物的交易
- 之後，**契約**的標的也以金融商品與工具為對象，例如股價指數與外匯
- 期貨本身並非真實貨物，只是一張允諾買進或賣出貨物的契約

2-5.1

- Futures的優點(相較FA (forward agreement))
  - Futures較具標準化，契約交易雙方容易配對，流動性較高
  - Futures在到期交割前都可再次持續交易(如同次級市場)，更助Futures的流動性
  - (But while you have no choice about fulfilling your end of a forward deal, you can sell your futures contract on an organized futures exchange, realizing a profit or loss right away. (p.69))
  - Futures需在交易所(clearinghouse*)進行交易，**違約風險(default risk)相對較低**

2-5.2 匯率選擇權(Forex options)

- 若以匯率為標的物者是為匯率選擇權
- 契約議定雙方於特定到期日之前，買方有權利(而無義務)以事先議定之匯率履約價(striking price)，向賣方買入或賣出特定名目本金之交易(該本金暨外匯無需實際交割)
  - 無需建立實際部位
- 以匯率**差價**來衡量獲利

2-5.2

- Imagine you are uncertain about when in the next month a foreign currency payment will arrive.
- To avoid the risk of a loss, you may wish to buy a put option (賣權) giving you the right to sell the foreign currency at a known exchange rate at any time during the month.
- If instead you expect to make a payment abroad sometime in the month, a call option (買權), which gives you the right to buy foreign currency to make the payment at a known price, might be attractive.

2-6 台北外匯市場交易規模

- Forwards, swaps, futures, and options are all examples of financial derivatives (金融衍生品)
- 其他外匯衍生性工具
  - 外匯保證金交易(FX margin trading)
  - 換匯換利交易(cross currency swaps)(1995)
  - 無本金交割遠期外匯交易(NDF)(1995、1998(-))
  - (參見貨銀講義「金融市場工具」)
- 台北外匯市場交易規模(見下表)
  - 換匯交易金額佔比達50%以上，規模最大
  - 即期交易的規模次之，佔比達40%左右

台北外匯市場全體外匯交易－2013-19

單位：美金百萬元

	即期	遠期	換匯	保證金交易	匯率選擇權	換匯換利	Total
2013	2,681,624 (37.4%)	372,992 (5.2%)	2,992,120 (41.7%)	21,824 (0.3%)	1,072,848 (15.0%)	32,984 (0.5%)	7,174,392
2014	2,869,250 (36.7%)	408,750 (5.2%)	3,352,500 (42.9%)	20,500 (0.3%)	1,134,000 (14.5%)	37,500 (0.5%)	7,822,500 [9.0%]
2015	3,405,132 (41.5%)	475,518 (5.8%)	3,292,710 (40.1%)	25,092 (0.3%)	972,930 (11.9%)	33,210 (0.4%)	8,204,592 [4.9%]
2016	2,791,347 (39.1%)	478,933 (6.7%)	3,444,415 (48.2%)	17,537 (0.2%)	360,126 (5.0%)	50,388 (0.7%)	7,142,746 [-12.9%]
2017	2,826,208 (39.8%)	423,088 (6.0%)	3,550,368 (50.0%)	12,400 (0.2%)	242,544 (3.4%)	44,144 (0.6%)	7,098,752 [-0.6%]
2018	3,111,006 (38.9%)	567,969 (7.1%)	3,992,964 (50.0%)	7,968 (0.1%)	249,249 (3.1%)	58,515 (0.7%)	7,987,671 [12.5%]
2019	3,079,349 **(38.4%)**	661,960 (8.3%)	4,007,081 **(50.0%)**	6,422 (0.1%)	213,655 (2.7%)	45,201 (0.6%)	8,014,162 [0.3%]

3 外幣資產需求

- The demand for a foreign currency bank deposit is influenced by the same considerations that influence the demand for any other asset
- A foreign currency deposit's future value depends in turn on two factors:

  (1) the **interest rate** it offers and

  (2) the **expected change in the currency's exchange rate** against other currencies

3-1 資產報酬

- Because the object of saving is to provide for future consumption, we judge the desirability of an asset largely on the basis of its **rate of return**
- **預期**報酬率包括
  - 利率與**預期**資本利得
  - 類似股利(dividends)與**預期**股價變動率
  - 外匯存款的預期資本利得即相關外幣的**預期**升貶幅度%
- 以相同幣別表示，比較不通資產的報酬率
  - 本幣或外幣(dollar or NT$ rate of return)

3-1.1 實質報酬率

- The expected rate …is the expected real rate of return, that is, the rate of return computed by measuring asset values in terms of some broad representative basket of products that savers regularly purchase
- 實質報酬率 = 名目報酬率 – 通貨膨脹率

3-2 風險與流動性

- *All else equal, individuals prefer to hold those assets offering the highest expected real rate of return* 但是…
- 除報酬率之外，儲蓄者(即投資人、消費者)尚且在意資產的風險與流動性
  - its **risk,** the variability it contributes to savers' wealth
  - its **liquidity,** the ease with which the asset can be sold or exchanged for goods
  - Savers dislike uncertainty and are reluctant to hold assets that make their wealth highly variable
  - Savers prefer to hold some liquid assets as a precaution against unexpected pressing expenses

3-3 利率

- The first piece of information needed to compute the rate of return on a deposit of a particular currency is the currency's **interest rate**
- The second … (is) to know **how exchange rates will change**
- 其他條件給定或不變，利率10%的**新台幣存款**與相同利率的**美元存款**， 兩者的報酬率有無不同?

3-4 匯率與資產報酬

- If I use dollars(本幣) to buy a euro deposit, how many dollars will I get back after a year? When you answer this question, you are calculating the *dollar* rate of return on a euro deposit
  - 其間先用**(1)**美金買歐元，然後用歐元買歐元存款
  - 1年之後， 提現歐元存款， 再用**(2)**歐元買回美元
- *The **dollar rate of return on euro deposits** is approximately the euro interest rate plus the rate of depreciation of the dollar against the euro*

$$R_{€} + (E^{e}_{\$/€} - E_{\$/€})/E_{\$/€}.$$

3-4

- 美元存款與歐元存款之間的相對報酬

$$R_{\$} - [R_{€} + (E^{e}_{\$/€} - E_{\$/€})/E_{\$/€}] = R_{\$} - R_{€} - (E^{e}_{\$/€} - E_{\$/€})/E_{\$/€}. \quad (3\text{-}1)$$

- *When the difference above is positive, dollar deposits yield the higher expected rate of return; when it is negative, euro deposits yield the higher expected rate of return*

TABLE 3-3 Comparing Dollar Rates of Return on Dollar and Euro Deposits

Case	Dollar Interest Rate $R_{\$}$	Euro Interest Rate $R_{€}$	Expected Rate of Dollar Depreciation against Euro $\frac{E^{e}_{\$/€} - E_{\$/€}}{E_{\$/€}}$	Rate of Return Difference between Dollar and Euro Deposits $R_{\$} - R_{€} - \frac{(E^{e}_{\$/€} - E_{\$/€})}{E_{\$/€}}$
1	0.10	0.06	0.00	0.04
2	0.10	0.06	0.04	0.00
3	0.10	0.06	0.08	−0.04
4	0.10	0.12	−0.04	0.02

3-4

- the rate of return differentials (報酬差) we calculated would have been the same had we chosen to express returns in terms of euros or in terms of some third currency
  - the expected **rate of appreciation** of the dollar against the euro = -- (the expected rate of depreciation of the dollar against the euro)
  - in terms of euros, the return on a dollar deposit is $R_{\$} - (E^{e}_{\$/€} - E_{\$/€})/E_{\$/€}.$
  - ⇒ 用歐元表示的相對報酬等同(3-1)

3-5 外匯市場的報酬、風險與流動性

- 當然除了報酬…
- 但…暫時assuming that risk differences do not influence the demand for foreign currency assets
- 而且we ignore the liquidity motive for holding foreign currencies
- 亦即為簡化分析起見，We are therefore assuming for now that participants in the foreign exchange market base their demands for foreign currency assets exclusively on a comparison of those assets' expected rates of return

4 外匯市場均衡

- 4-1 利率平價－基本均衡條件
  - *The foreign exchange market is in **equilibrium** when deposits of all currencies offer the same expected rate of return*
  - **interest parity condition.** It implies that potential holders of foreign currency deposits view them all as equally desirable assets, provided their expected rates of return are the same
  - 例如：Suppose dollar deposits again offer a 10% interest rate but euro deposits offer a 12% rate and the dollar is expected to *appreciate* against the euro by 4% over the coming year⇒ Now the return on dollar deposits is 2% percent higher
  - ⇒ euro deposits… would be in excess supply and dollar deposits would be in excess demand

4

若報酬愈高 其相對供給↓、 相對需求↑

- **貨幣資產超額供給與其報酬呈負相關**
- **同理，貨幣資產超額需求與其報酬呈正相關**
- The expected rates of return are equal when 報酬差=0

$$R_\$ = R_€ + (E^e_{\$/€} - E_{\$/€})/E_{\$/€}. \quad (3\text{-}2)$$

- **the foreign exchange market is in equilibrium when, and only when, the interest parity condition holds**
  - the dollar should depreciate against the euro when it is euro deposits that initially offer the higher return… 反之
  - **How exchange rate changes like these help to maintain equilibrium in the foreign exchange market**

4-2 現行匯率變動對預期報酬的影響

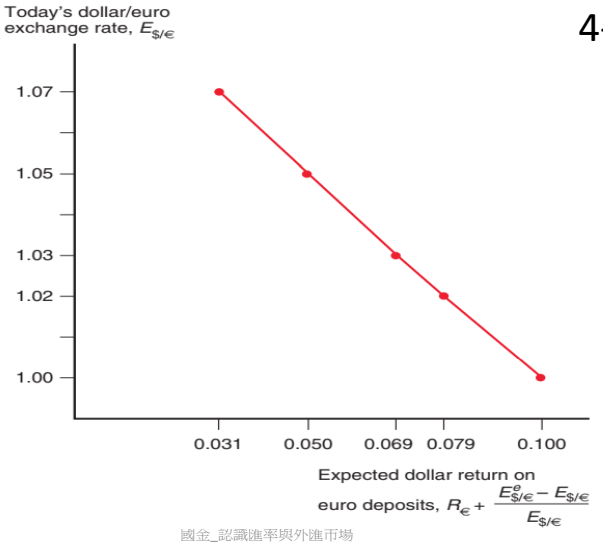
- Dollar RoR on Euro Deposits

$$R_€ + (E^e_{\$/€} - E_{\$/€})/E_{\$/€}.$$

  - 當下若美元(對歐元)貶值， Dollar RoR on Euro Deposits↓ (即E$/euro↑，given Ee$/euro)
  - 易言之，other things equal, depreciation of a country's currency today ***lowers*** the expected domestic currency return on foreign currency deposits
    - 當下要用**更多的本幣**數量來買一定數額的外幣(存款) … (類似成本↑、報酬↓之意)
  - 本幣(美元)現行(即期)匯率與外幣(歐元)存款的報酬(以本幣表示)呈反相關(見次圖)

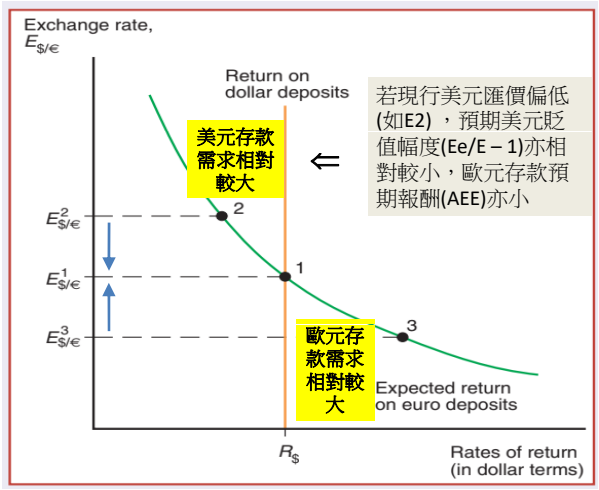
4-2

FIGURE 3-3



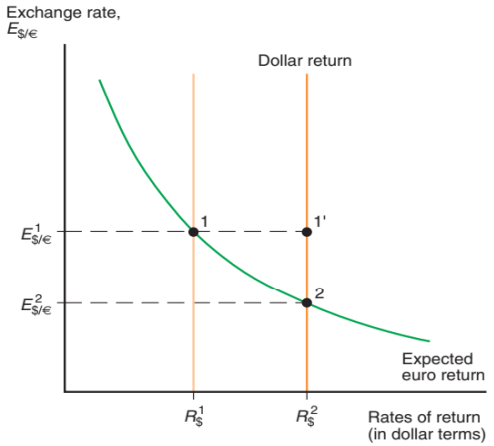
4-3

- 均衡匯率(位1)
- 調整機制



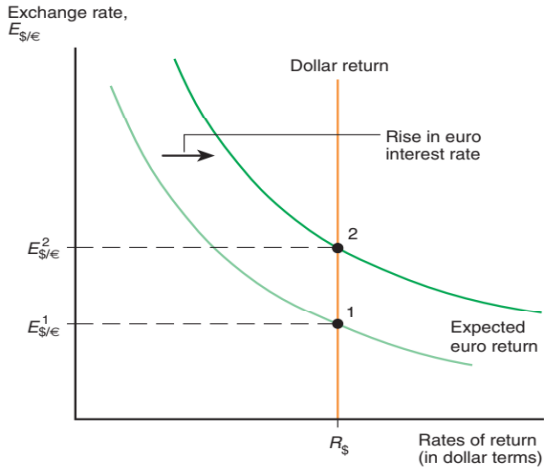
4-4

- 利率變動對**現行匯率**的影響效果(1)
  - 美元存款利率↑(報酬較高，AEE)
  - 歐元貶值
  - 美元升值
  - 直至均衡位2



4-4

- 利率變動對現行匯率的影響效果(2)
  - 歐元存款利率↑
  - 歐元升值
  - 美元貶值



4-4

- 利率變動對現行匯率的影響效果
- all else equal (AEE), *an increase in the interest paid on deposits of a currency causes that currency to appreciate against foreign currencies*

4-5 預期變化對現行匯率的影響效果

- 若 $E^e_{\$/€}$↑
- 分析同前圖所示(即Krugman et.al. Fig. 3-6)
- all else equal, *a rise in the expected future exchange rate causes a rise in the current exchange rate. Similarly, a fall in the expected future exchange rate causes a fall in the current exchange rate*
- 日圓、澳幣的利差交易(carry trade)與利率平價說
  - 利率平價vs群聚效應?何者主導匯率變動?

4-6 利率平價(理論)的應用

- 4-6.1 即期(現行)匯率
  - 利率平價條件如(3-2)可寫成
  - $\Rightarrow E_{\$/EU} = E_{\$/EU}^e / (R_\$ - R_{EU} + 1)$
  - 預期外幣幣值較高(即預期本幣貶值)、本幣利率相對較低⇒本幣的現行幣值↓(亦即$E_{\$/EU}$↑) (同前)
- 4-6.2 預期匯率變動
  - $\Rightarrow (E_{\$/EU}^e - E_{\$/EU})/E_{\$/EU} = R_\$ - R_{EU}$
  - 本幣資產利率相對較高時(或外幣…相對較低) ⇒預期本幣貶值幅度愈大(即預期外幣升值幅度愈大) (why?)
  - 利差愈大，預期匯率變動幅度愈大

5 利差交易(Carry Trade)

- 5-1 背景
  - … generally, international investors frequently **borrow** low-interest currencies (called “funding” currencies，融資貨幣) and buy high-interest currencies (called “investment” currencies
  - This activity is called the ***carry trade*** **(借幣買幣)**
  - Over much of the 2000s, Japanese yen interest rates were close to zero while Australia’s interest rates were … climbing to over 7 percent per year by thespring of 2008

5-1

- On average, shouldn’t the interest advantage of Australian dollars be wiped out by relative appreciation of the yen? (根據利率平價說)
  - 市場大眾借日圓，日圓需求↑，日圓(本應)升值
  - 相對的，澳幣資產(如bonds)需求↑ ，澳幣需求↓，澳圓則(本應)相對貶值
- 但事實上，借幣買幣行為卻使標的貨幣即澳幣的幣值↑而非↓

5-2 Is the prevalence of the carry trade evidence that interest parity is wrong?

- while interest parity does not hold exactly in practice—in part because of the risk and liquidity factors mentioned above—economists are still working hard to understand if the carry trade requires additional explanation
- One important hazard of the carry trade is that investment currencies (the high-interest currencies that carry traders target) may experience abrupt crashes (例如in 2008 between July and December) (貨幣泡沫破滅)
- 但是… this crash did not wipe out the gains to the carry trade strategy entirely—*if* the strategy had been initiated early enough!

5-2

- 關鍵在於…崩盤(crash)(如全球金融危機)發生的概率多高、幅度多大、時點多早?
- 政策意義：

  When big carry trade positions emerge, the government officials … often lose sleep (寢食難安)
  - In their early phase, carry trade dynamics will drive investment currencies higher as investors pile in and build up ever-larger exposures to a sudden depreciation of the investment currency
  - This makes the crash bigger when it occurs, as wrong-footed investors all scramble to repay their funding loans. (爭相斷頭)
  - The result is greater exchange rate volatility in general, as well as the possibility of big trader losses with negative repercussions in stock markets, bond markets, and markets for interbank loans

6 遠期匯率(FER)與拋補利率平價(CIP)

- 簡而言之，FER 係預期匯率行為在市場上的體現
- CIP與UIP的差異在於，前者係用遠匯價格(FER)取代後者用的預期未來匯價(即expected future ER)來表示利率平價條件(即FX市場均衡)
- 風險拋補(避險) －如何規避未來的匯率變動風險?
  - 使用遠匯契約來固定未來匯價
  - 利用遠匯套利促成外匯市場均衡

6-1 CIP與外匯市場均衡

- LetF($/€)stand for the one-year forward price of euros in terms of dollars, and suppose F($/€) = $1.113 per euro；另假設，
- E($/€) = 1.05 per euro, *R$* = 0.10, and *R*€ = 0.04
- The ($) rate of return on a dollar deposit is clearly 0.10
- What is the rate of return on **a covered euro deposit**?
  - 1塊歐元當下要價$1.05，一年後的價值則為€1.04
  - 該資產在遠匯市場價值為$1.158=1.04*$1.113
  - 亦即The rate of return on a covered purchase of a euro deposit is therefore (1.158 - 1.05)/1.05 = 0.103

6-1

- 因此$1投資購買拋補後的歐元資產的報酬率為10.3% > 美元利率10%，致CIP不成立，有套利空間
  - ⇒歐元(美元)資產需求↑(↓)，歐元(美元)資產報酬↓(↑)，終致市場均衡為止
- 以公式表示歐元存款的拋補報酬

$$\frac{F_{\$/€}(1 + R_€) - E_{\$/€}}{E_{\$/€}} \approx R_€ + \frac{F_{\$/€} - E_{\$/€}}{E_{\$/€}}$$

- ⇒ CIP條件: $R_\$ = R_€ + (F_{\$/€} - E_{\$/€})/E_{\$/€}$.
- 其中RHS第2項稱為歐元對美元的遠期貼水(forward premium,遠期升水、遠期匯水(溢價))

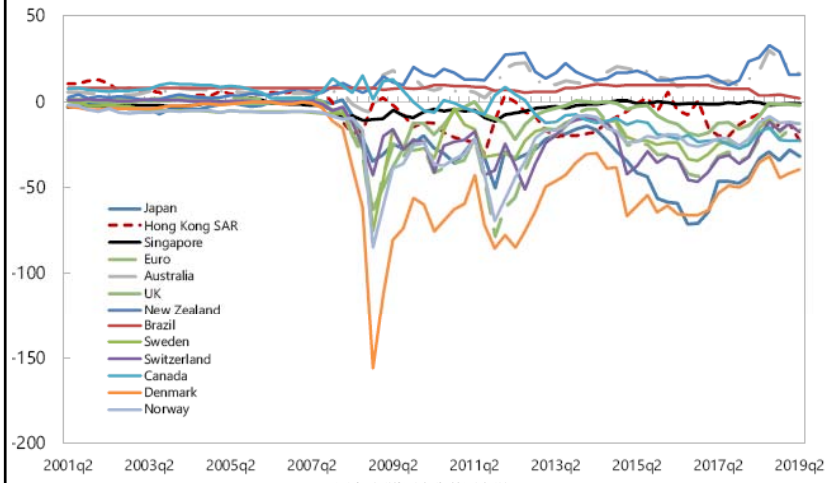
補充說明－跨國利差與CIP

- 若CIP成立，則平均而言，兩國利差大致反映其間的遠期匯水
- 實務上不難發現(如前所述)，遠期與現行匯率走勢緊密靠近，因此根據CIP ，國際間利率應不致發生明顯且系統性(或持續性)的差距
- 惟若存在其他重要因素(或風險)持續影響市場正常運作(如套利)，則國際利差或會呈現跟CIP理論全然不同的面貌

6-2 背離CIP的影響因素

- 地緣與市場區隔
  - 政治與金融管制(如資本管制)風險
- 體系運作風險
  - 違約風險(如banks fail, 遠匯交易違約等)
  - 2007-08全球金融危機之後，美元資產報酬(成本)仍持續低於國際其他主要幣別(歐元、英鎊或日幣)資產的拋補後報酬
  - 表示市場普遍認為，借$買入其他貨幣並做貨幣市場投資，再將收入作遠期拋售的操作，持續能獲利

GFC前後國際間利差背離CIP的情形*



6-2

- 未解謎團(puzzle)－國際間匯兌交易極為迅速，為何套利空間一直存在?
  - 2007-08年全球金融風暴的陰影依然揮之不去?(即使事件過後已久，市場仍十分在意違約風險)…但該因素幾乎已被學者的研究結果排除
  - 為何套利者會持續無視或未能充分利用既存的套利機會與空間來獲利?
  - 除了違約風險的疑慮外，還受其他重要因素支配?(如借貸能力限制…)

6-3 CIP與UIP之異同

- 若FER完全是市場對未來匯率預期的體現:

$$F_{\$/€} = E^e_{\$/€}$$

- 則均衡下，CIP與UIP一致
- 但其間仍存在主要差異: 拋補交易去除了匯率風險，而無拋補的套利交易則涉及該風險
- 因此，即使在理論上，上式也未必成立
- 此外，CIP跟UIP同樣在實務上也並不成立

6-4 CIP與即期匯率行為

- CIP理論有助解釋即期與遠期匯率走勢呈現密切相關(亦步亦趨)的行為
- 不確定(非預期)因素對國際間短期存款利差的影響微乎其微，故在CIP成立下，SER與對應到期的FER走勢應大致一致
- Note: $E(R(\$) - R(€))=0 \Rightarrow E(F(\$/€) - E(\$/€))=0$
- 或是 $\Delta E(R(\$) - R(€))=0 \Rightarrow E(\Delta F(\$/€) - \Delta E(\$/€))=0$

6-5 拋補交易與自然避險策略

- 不用遠期外匯交易而只用即期交易能否獲致較佳結果(即較高的獲利)?
- 較一氣呵成的遠匯契約相對複雜的交易方式
  - (1) 進口商(US)向銀行貸款($)
  - (2) 立即在即期市場拋售該$買入日幣，並將其買一個30天期的日幣定期存款
  - (3) 30天後日幣存款到期解約，並將其支付日本廠商
  - (4) 經由銷售進口品的收入($)，扣除利潤後償還原先的貸款
- 對進口商而言，哪個策略較有利？

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