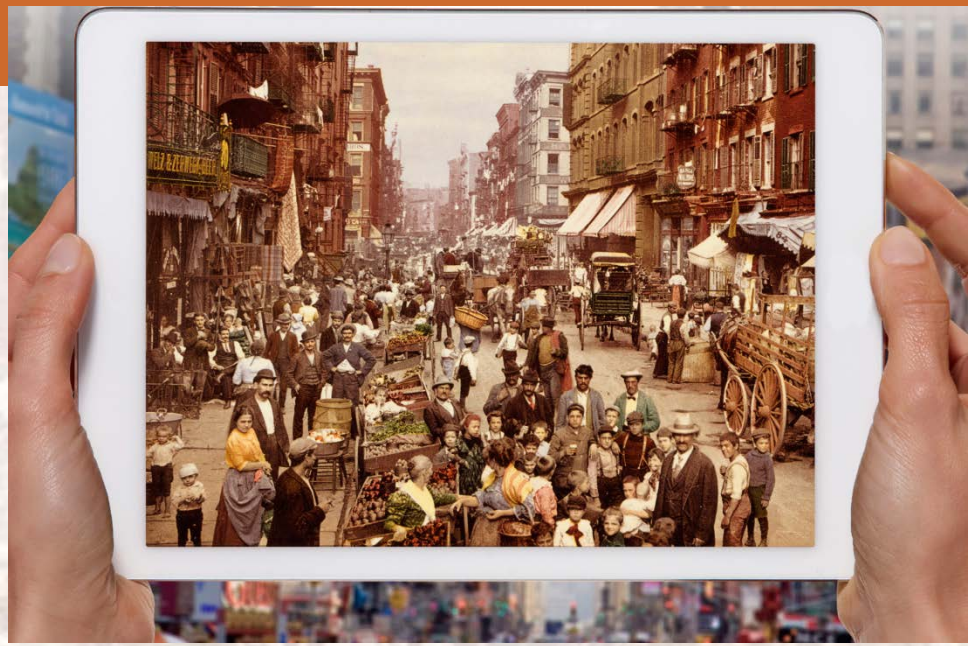
N. GREGORY MANKIW

PRINCIPLES OF

ECONOMICS

Eighth Edition



CHAPTER

31

Open-Economy Macroeconomics: Basic Concepts

Premium PowerPoint Slides by:
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Eastern Illinois University

Look for the answers to these questions:

- How are international flows of goods and assets related?
- What's the difference between the real and nominal exchange rate?
- What is "purchasing-power parity," and how does it explain nominal exchange rates?

Introduction

Trade can make everyone better off.

- This chapter introduces basic concepts of international macroeconomics:
  - The trade balance (trade deficits, surpluses)
  - International flows of assets
  - Exchange rates

Basic Concepts

- Closed economy
  - Economy that does not interact with other economies in the world
- Open economy
  - Economy that interacts freely with other economies around the world
    - It buys and sells goods and services in world product markets
    - It buys and sells capital assets such as stocks and bonds in world financial markets

The Flow of Goods

- Exports
  - Goods and services that are produced domestically and sold abroad
- Imports
  - Goods and services that are produced abroad and sold domestically
- Net exports (Trade balance)

  = Value of exports – value of imports

Active Learning 1 Variables that affect NX

What do you think would happen to U.S. net exports if:

A. Canada experiences a recession (falling incomes, rising unemployment)

B. U.S. consumers decide to be patriotic and buy more products “Made in the U.S.A.”

C. Prices of goods produced in Mexico rise faster than prices of goods produced in the U.S.

Active Learning 1 Answers

A. Canada experiences a recession (falling incomes, rising unemployment)

U.S. net exports would fall
due to a fall in Canadian consumers' purchases of U.S. exports

A. U.S. consumers decide to be patriotic and buy more products "Made in the U.S.A."

U.S. net exports would rise

due to a fall in imports

Active Learning 1 Answers

C. Prices of goods produced in Mexico rise faster than prices of goods produced in the U.S.

This makes U.S. goods more attractive relative to Mexico's goods.

Exports to Mexico increase,
imports from Mexico decrease,
so U.S. net exports increase.

Variables that Influence NX

- Factors that might influence a country's exports, imports, and net exports:
  - Consumers' preferences for foreign and domestic goods
  - Prices of goods at home and abroad
  - Exchange rates at which foreign currency trades for domestic currency
  - Incomes of consumers at home and abroad
  - Transportation costs
  - Government policies

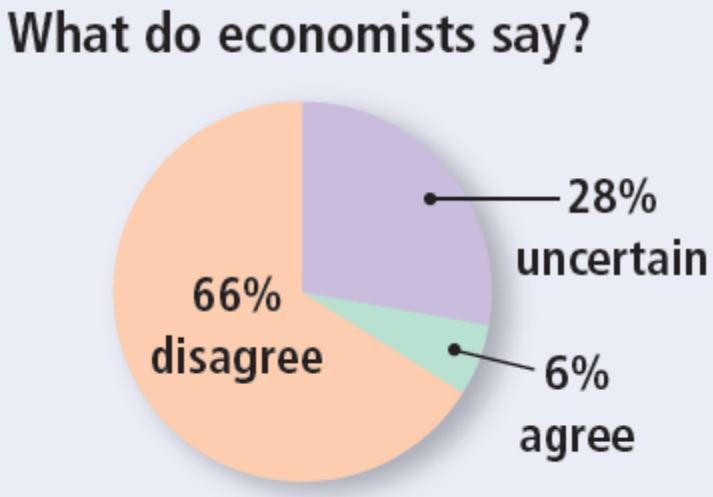
Trade Surpluses & Deficits

- Trade surplus (Positive net exports)
  - Exports are greater than imports
    - The country sells more goods and services abroad than it buys from other countries
- Trade deficit (Negative net exports)
  - Imports are greater than exports
    - The country sells fewer goods and services abroad than it buys from other countries
- Balanced trade: Exports equal imports

ASK THE EXPERTS

Trade Balances and Trade Negotiations

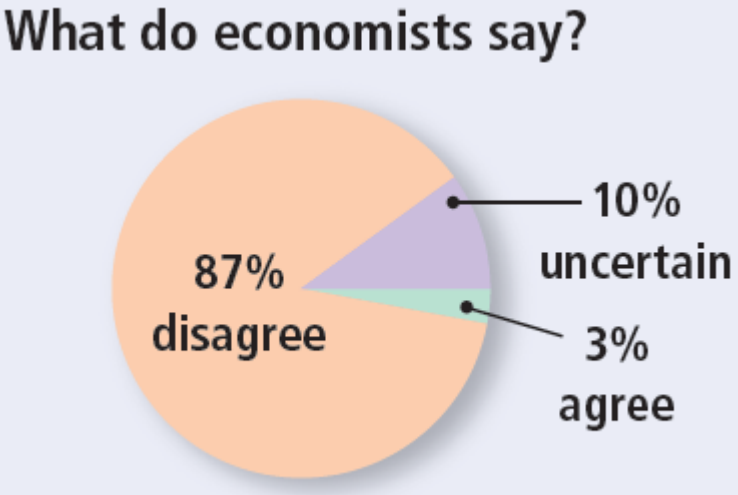
"A typical country can increase its citizens' welfare by enacting policies that would increase its trade surplus (or decrease its trade deficit)."



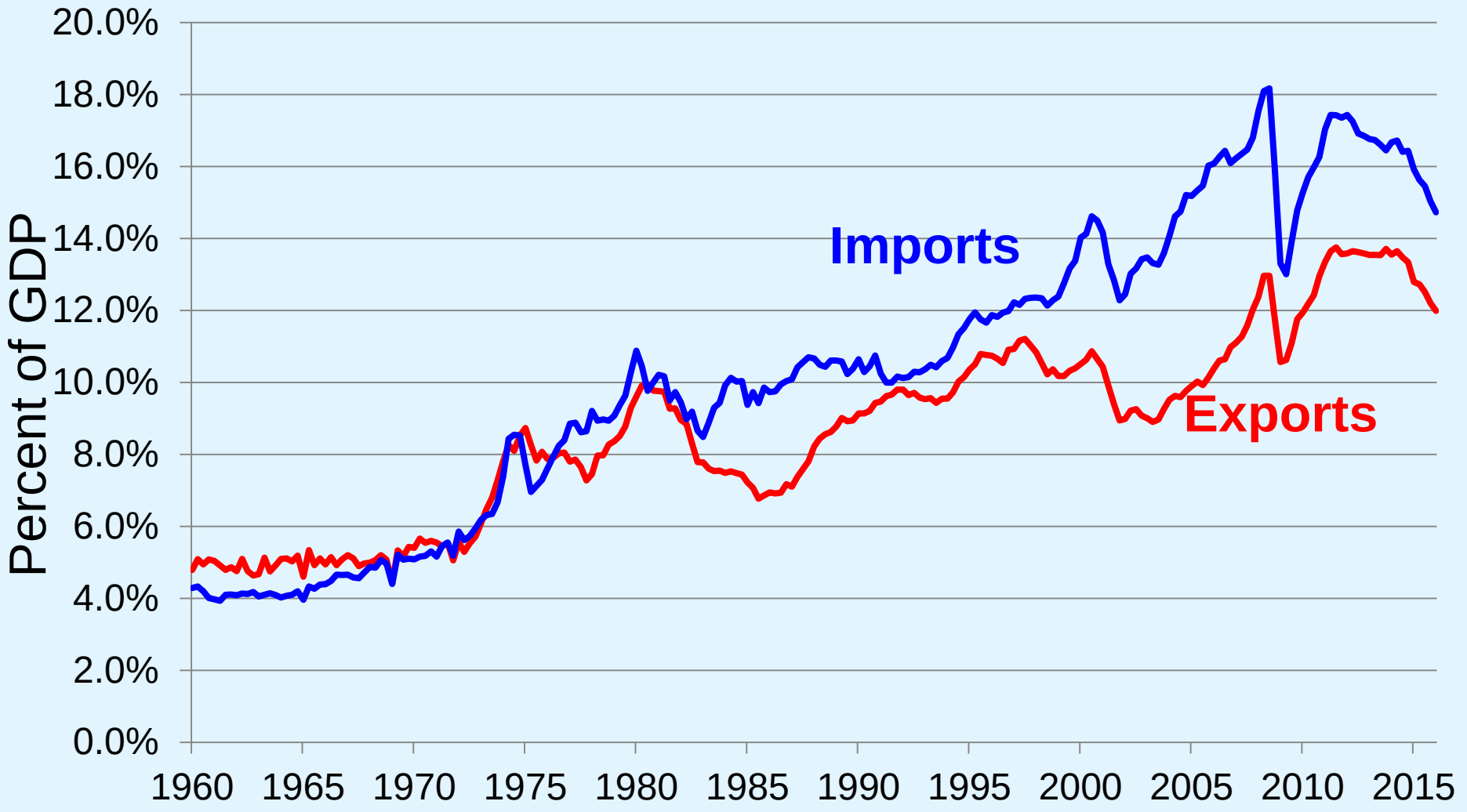
ASK THE EXPERTS

Trade Balances and Trade Negotiations

"An important reason why many workers in Michigan and Ohio have lost jobs in recent years is because US presidential administrations over the past 30 years have not been tough enough in trade negotiations."



The U.S. Economy's Increasing Openness



The Flow of Financial Resources

- Net capital outflow, NCO (net foreign investment)
  - Purchase of foreign assets by domestic residents
    - Foreign direct investment
    - Foreign portfolio investment
  - Minus the purchase of domestic assets by foreigners

The Flow of Capital

NCO measures the imbalance in a country's trade in assets:

- When NCO > 0, "capital outflow"
  - Domestic purchases of foreign assets exceed foreign purchases of domestic assets
- When NCO < 0, "capital inflow"
  - Foreign purchases of domestic assets exceed domestic purchases of foreign assets

Variables that Influence NCO

- Real interest rates paid on foreign assets
- Real interest rates paid on domestic assets
- Perceived risks of holding foreign assets
- Government policies affecting foreign ownership of domestic assets

The Equality of NX and NCO

- An accounting identity: NCO = NX
  - Every transaction that affects NX also affects NCO by the same amount (and vice versa)
- When a foreigner purchases a good from the U.S.,
  - U.S. exports and NX increase
    - The foreigner pays with currency or assets, so the U.S. acquires some foreign assets, causing NCO to rise.

The Equality of NX and NCO

- An accounting identity: NCO = NX
  - Every transaction that affects NX also affects NCO by the same amount (and vice versa)
- When a U.S. citizen buys foreign goods,
  - U.S. imports rise, NX falls
    - The U.S. buyer pays with U.S. dollars or assets, so the other country acquires U.S. assets, causing U.S. NCO to fall.

The Equality of NX and NCO

- An accounting identity: NCO = NX
  - Arises because every transaction that affects NX also affects NCO by the same amount (and vice versa)

Saving and Investment

- Open economy: Y = C + I + G + NX
- National saving: S = Y – C – G
  - Y – C – G = I + NX
  - S = I + NX
- NX = NCO
  - S = I + NCO
  - Saving = Domestic investment + Net capital outflow

International Flows

- Trade surplus: Exports > Imports
  - Net exports > 0
  - Y > Domestic spending (C+I+G)
  - S > I
  - NCO > 0
- Trade deficit: Exports < Imports
  - Net exports < 0
  - Y < Domestic spending (C+I+G)
  - S < I
  - NCO < 0

私部門金融資產變化與外匯準備

- 國際收支（Balance of Payment) 為統計一國一段期間對外商品、服務及資本等交易，經常帳是統計對外商品及服務等交易，商品及服務輸出大於輸入，表示經常帳有順差，因為國外收入大於支出，一國對外淨債權必然增加。

- 對外淨債權增加，如果由民間持有，就是金融帳淨流出，如果是由貨幣當局（如央行）持有，就會反映在央行準備資產增加上。

- 簡單國際收支平衡法則（Balance of Payment Identity):

經常帳餘額 + 金融帳餘額+央行準備增加=0.

資金流入記+, 流出記 –。央行外匯準備增加記 – (猶如買國外資產)。

- 一般所指的金融帳，指民間（私部門）的金融資產變化，並不包含央行的外匯準備，也不包含比重極低的資本帳。

- 民間資金淨流出在金融帳記<0, 在課本則指NCO (私部門)> 0。

- 課本的NCO並無區分公私部門。例如台灣有一美元的貿易順差--NX=1，應記(私部門）金融帳流出一美元, NCO（私部門）=1。這時如果央行用台幣買走私部門美金一美元, NCO(公部門）=1，造成NCO（私部門）=0. 總計台灣NCO=1。

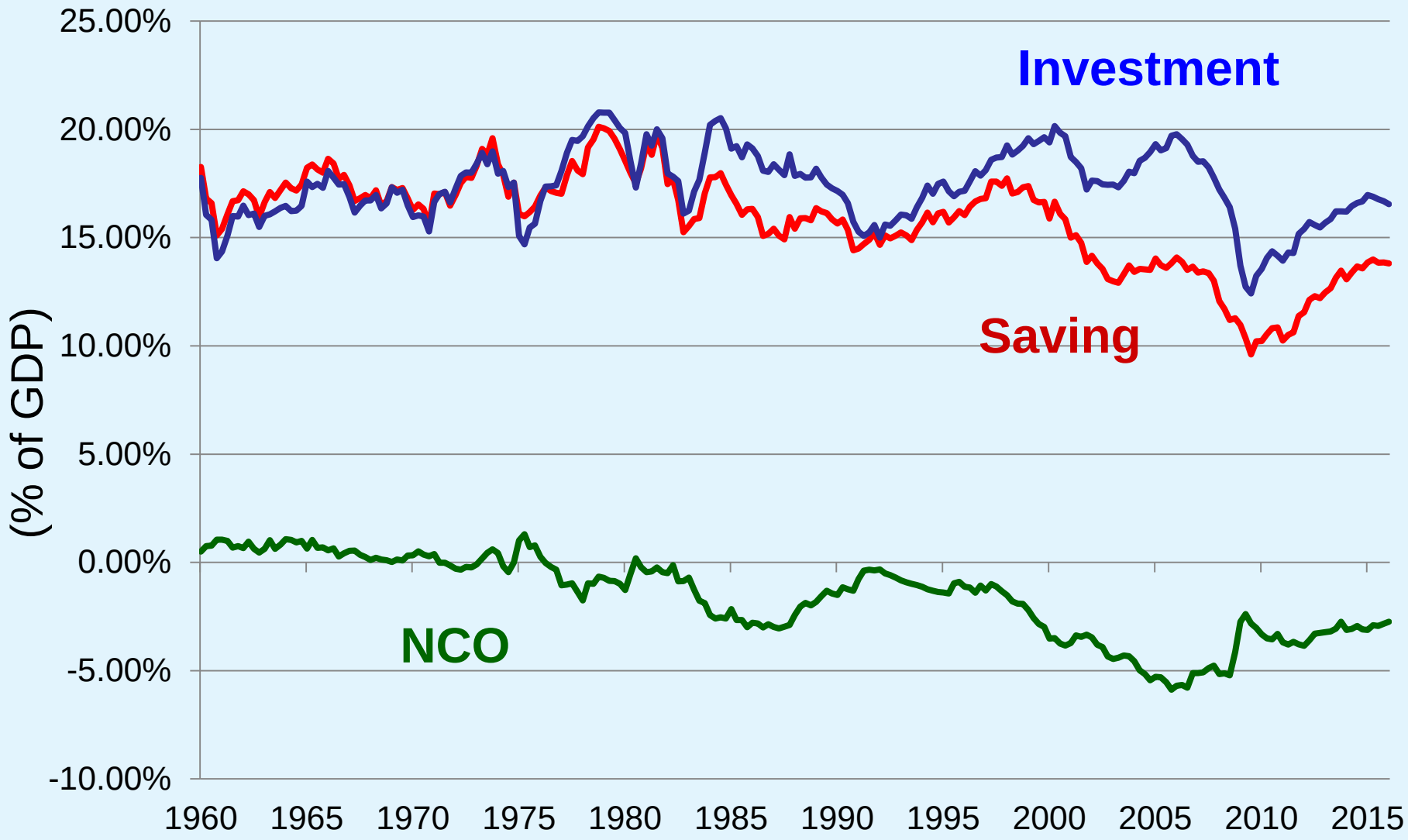
	2019			
	Q1	Q2	Q3	Q4
A. 經常帳 [1]	**17,005**	**17,400**	**12,929**	**17,016**
商品：收入（出口）	78,284	82,966	84,152	85,508
商品：支出（進口）	65,771	68,561	67,606	71,199
商品貿易淨額	*12,513*	*14,405*	*16,546*	*14,309*
服務：收入（出口）	12,554	12,930	12,887	13,440
服務：支出（進口）	13,544	14,152	14,745	14,554
商品與服務收支淨額	*11,523*	*13,183*	*14,688*	*13,195*
初次所得：收入	9,090	9,551	9,997	10,476
初次所得：支出	2,825	4,752	11,167	5,707
商品、服務與初次所得收支淨額	*17,788*	*17,982*	*13,518*	*17,964*
二次所得：收入	2,003	2,030	2,090	2,116
二次所得：支出	2,786	2,612	2,679	3,064
B. 資本帳 [1]	**4**	**7**	**-7**	**-7**
資本帳：收入	10	11	1	41
資本帳：支出	6	4	8	48
經常帳與資本帳合計	*17,009*	*17,407*	*12,922*	*17,009*
C. 金融帳 [1]	**17,233**	**13,788**	**11,888**	**9,948**
直接投資：資產	2,511	3,472	2,327	3,551
股權和投資基金	2,204	2,831	2,005	3,794
債務工具	307	641	322	-243
直接投資：負債	1,324	1,239	1,769	3,881
股權和投資基金	767	969	3,045	3,306
債務工具	557	270	-1,276	575
證券投資：資產	15,694	10,154	18,250	10,666
股權和投資基金	1,822	-8,807	2,546	1,855
債務證券	13,872	18,961	15,704	8,811
證券投資：負債	2,931	-286	-3,707	9,538
股權和投資基金	3,133	-650	-3,776	9,407
債務證券	-202	364	69	131
衍生性金融商品	-226	1,859	600	268
衍生金融商品：資產	-4,588	-3,714	-3,629	-3,559
衍生金融商品：負債	-4,362	-5,573	-4,229	-3,827
其他投資：資產	10,053	-5,924	-3,943	7,231
其他股本	--	--	5	--
債務工具	10,053	-5,924	-3,948	7,231
其他投資：負債	6,544	-5,180	7,284	-1,651
其他股本	--	--	--	--
債務工具	6,544	-5,180	7,284	-1,651
經常帳 + 資本帳 - 金融帳	*-224*	*3,619*	*1,034*	*7,061*
D. 誤差與遺漏淨額	**2,952**	**-1,173**	**2,969**	**420**
E. 準備與相關項目	**2,728**	**2,446**	**4,003**	**7,481**
準備資產 [2]	2,728	2,446	4,003	7,481
基金信用的使用及自基金的借款	--	--	--	--
特殊融資	--	--	--	--

CASE STUDY

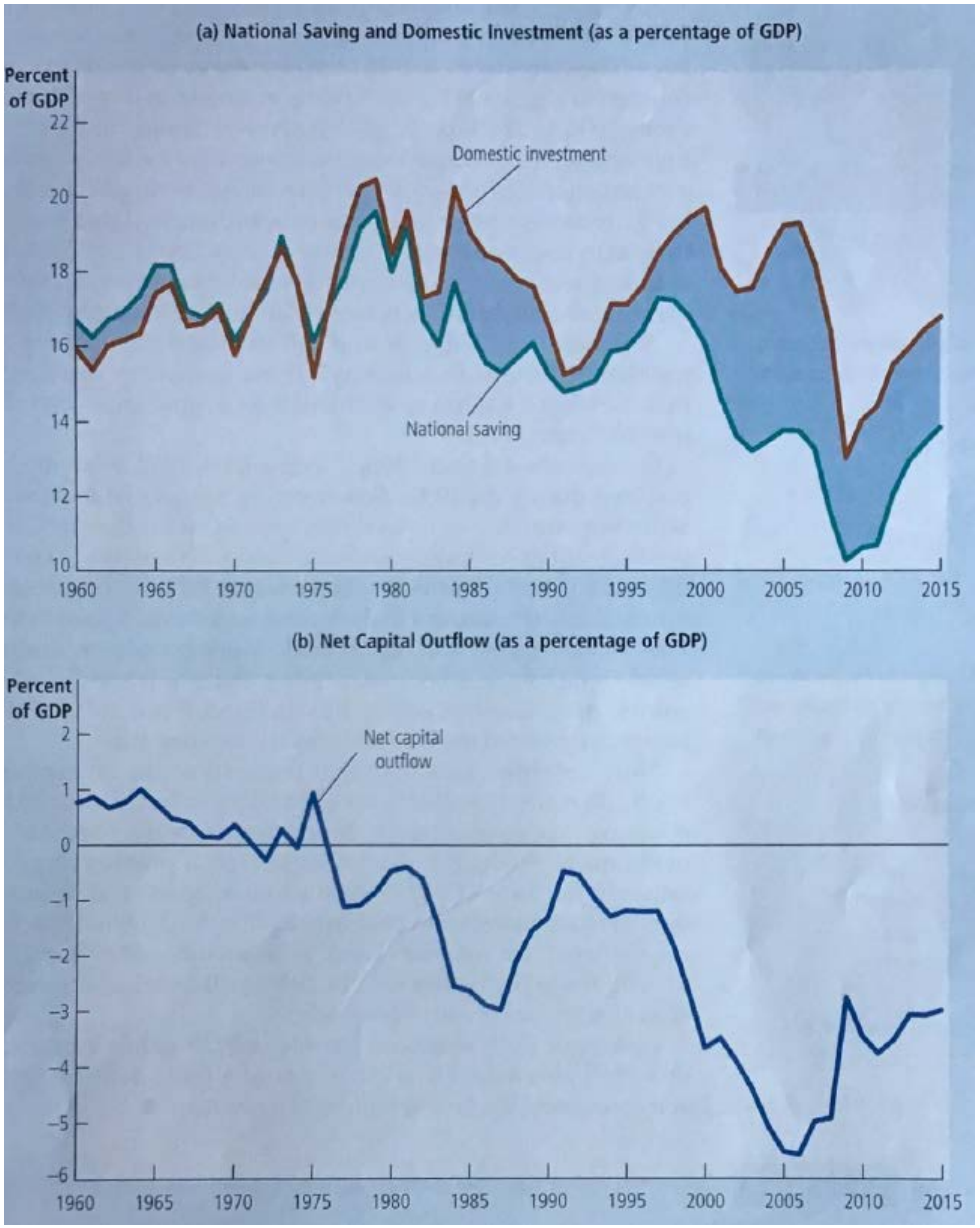
Is the U.S. trade deficit a national problem?

- Before 1980
  - National saving and domestic investment were close: small net capital outflow (between – 1 and 1 % of GDP)
- After 1980
  - National saving – often falling below domestic investment
  - Sizable trade deficits, substantial inflows of capital
  - Net capital outflow is often a large negative number

U.S. Saving, Investment, and NCO, 1950–2016



CASE STUDY



CASE STUDY

Is the U.S. trade deficit a national problem?

- *Unbalanced fiscal policy*: 1980 to 1987
  - Flow of capital into the U.S. declines due to a fall in national saving
- *An investment boom:* 1991 to 2000
  - Increase flow of capital
  - Saving increased
  - Government budget surplus
  - Investment increased

CASE STUDY

Is the U.S. trade deficit a national problem?

- *An economic downturn and recovery*: 2000 to 2015
  - 2000-2009, saving and investment fell by about 6 percentage points.
    - Investment: tough economic times made capital accumulation less profitable
    - Saving: government began running extraordinarily large budget deficits
  - 2009-2015, as the economy recovered, saving and investment increased by about 3 percentage points

CASE STUDY

Is the U.S. trade deficit a national problem?

- Trade deficit: by a fall in saving (1980s)
  - The nation is putting away less of its income to provide for its future
    - Better to have foreigners invest in the U.S. economy than no one at all
- Trade deficit: by an investment boom (1990s)
  - Economy is borrowing from abroad to finance the purchase of new capital goods
    - For lower return on investment - debts will look less desirable

CASE STUDY

Is the U.S. trade deficit a national problem?

- Is the U.S. trade deficit a problem?
  - The extra capital stock from the ’90s investment boom may well yield large returns.
  - The fall in saving of the ’80s and ’00s, while not desirable, at least did not depress domestic investment, since firms could borrow from abroad.
- A country, like a person, can go into debt for good reasons or bad ones.
  - A trade deficit is not necessarily a problem, but might be a symptom of a problem.

CASE STUDY

The U.S. Trade Deficit

as of 6-30-2016

- People abroad owned $31.6 trillion in U.S. assets.
- U.S. residents owned $24.1 trillion in foreign assets.
- U.S.' net indebtedness to other countries = $7.5 trillion.
  - Higher than every other country's
  - hence, U.S. is "world's biggest debtor nation."

台灣資金外流
2020-02-21 02:10 經濟日報

央行20日公布2019年第4季國際收支，金融帳連38季、九年半淨流出，累計達新台幣約14.02兆元，約七年的全國稅收。

去年第4季國際收支帳下金融帳淨流出99.5億美元(約新台幣3,010億元)，為五季新低水準，淨流出規模縮減主因有二，包括國內投信基金投資國外債券106.7億美元為兩季低點（流出減少），以及外資大舉加碼台股、非居民證券投資淨增加95.4億美元（流入增加），外資證券投資規模創2011年第1季以來、九年最高水準。

央行經研處副處長蔡炯明指出，去年第4季經常帳順差170.2億美元，金融帳淨流出99.5億美元，國際收支順差74.8億美元。

金融帳連39季淨流出 外資首季流出176.5億美元創紀錄

2020-05-20 自由時報

〔記者陳梅英 / 台北報導〕受武漢肺炎疫情影響，國際股市3月震盪加劇，根據中央銀行統計，外資首季淨流出176.5億美元創下歷史新高，首季金融帳流出達170.8億美元。金融帳已經連續39季淨流出，續創史上最長淨流出紀錄，總流出金額達4821.1億美元，換算約台幣14.44兆元，為近6年全國總歲收的總和。

中央銀行發布第一季國際收支，經常帳順差181.6億美元，較去年同期增加10.5億美元或6.1%。其中，商品貿易順差124.1億美元，主要是疫情蔓延，衝擊全球經濟供給面及需求面，加上國際原物料價格重挫，出口及進口分別較去年同期減少24.8億美元與22.9億美元。服務收支逆差6.1億美元，較去年同期減少3.8億美元，則是因為旅行收支逆差縮小所致。

央行官員表示，台灣人愛出國，長期以來旅行收支均呈現逆差，不過3月份因疫情緣故許多地區限制旅行活動，使台灣第一季旅遊收入14.35億美元，創下2008年第四季以來新低，旅遊支出22.53億美元，亦為2010年第二季以來低點，一來一往，整體收支逆差縮小。

在金融帳部分，則已經連續39季淨流出。其中，在直接投資部分，居民對外直接投資境增加23.8億美元，外資直接投資淨增加10.1億美元。比較特別的是，過去壽險業「錢」進海外投資，是造成證券投資淨流出主因，此次情況匹變，因為國際股市大跌，壽險、投信紛紛贖回海外基金，第一季居民證券對外證券淨流出金額從去年同期156億美元驟降至60.1億美元，為近7年最低；但是外資減持台股，非居民證券投資淨減少176.5億美元，創下歷史新高，整體證券投資淨流出仍達236.7億美元。

央行官員表示，國際收支是統計一段期間一國對外商品、服務及資本等交易，通常經常帳順差國家，如日本、新加坡、南韓等，金融帳多呈現資金淨流出。

國際收支

109年第1季暨108第1季

單位：億美元

	(1) 109年 第1季	(2) 108年 第1季	(1)-(2)
A. 經常帳	**181.6**	**171.1**	**10.5**
商品：收入（出口）	757.7	782.5	-24.8
商品：支出（進口）	633.6	656.4	-22.9
商品貿易淨額	*124.1*	*126.1*	*-1.9*
服務：收入（輸出）	110.6	125.5	-15.0
服務：支出（輸入）	116.7	135.5	-18.8
服務收支淨額	*-6.1*	*-9.9*	*3.8*
初次所得：收入	91.8	91.0	0.8
初次所得：支出	19.7	28.3	-8.6
初次所得收支淨額	*72.1*	*62.7*	*9.4*
二次所得：收入	21.0	20.0	1.0
二次所得：支出	29.6	27.8	1.8
二次所得收支淨額	*-8.5*	*-7.8*	*-0.8*
B. 資本帳	**0.1**	**0.0**	**0.0**
C. 金融帳	**170.8**	**172.5**	**-1.7**
直接投資：資產	23.8	25.1	-1.3
股權和投資基金	22.8	22.0	0.7
債務工具	1.0	3.1	-2.1
直接投資：負債	10.1	13.5	-3.4
股權和投資基金	16.9	7.7	9.2
債務工具	-6.7	5.9	-12.6
證券投資：資產	60.1	156.9	-96.8
股權和投資基金	-28.5	18.2	-46.7
債務證券	88.6	138.7	-50.1
證券投資：負債	-176.5	29.3	-205.9
股權和投資基金	-175.8	31.3	-207.2
債務證券	-0.7	-2.0	1.3
衍生金融商品：資產	-61.2	-45.9	-15.3
衍生金融商品：負債	-72.1	-43.6	-28.5
其他投資：資產	119.0	100.7	18.3
其他投資：負債	209.4	65.2	144.3
經常帳 + 資本帳 - 金融帳	*10.9*	*-1.3*	*12.2*
D. 誤差與遺漏淨額	**30.4**	**28.6**	**1.8**
E. 準備與相關項目	**41.3**	**27.3**	**14.0**

註：正號表示經常帳及資本帳的收入、支出，以及金融資產或負債的增加；負號表示相關項目的減少。在經常帳及資本帳餘額，正號表示順差，負號表示逆差；在金融帳及準備資產餘額，正號表示淨資產的增加；負號表示淨資產的減少。

The Nominal Exchange Rate

- Nominal exchange rate:
  - Rate at which one country's currency trades for another
  - We express all exchange rates as foreign currency per unit of domestic currency.
- Some exchange rates,12 July 2016, per US$
  - Canadian dollar: 1.31
  - Euro: 0.90
  - Japanese yen: 104.13
  - Mexican peso: 18.39

Prices for International Transactions

- Appreciation (or “strengthening”)
  - Increase in the value of a currency as measured by the amount of foreign currency it can buy
- Example: dollar appreciation
  - Exchange rate (old) = 80 yen per dollar
  - Exchange rate (new) = 90 yen per dollar
  - (Yen depreciation)

Prices for International Transactions

- Depreciation (or “weakening”)
  - Decrease in the value of a currency
  - As measured by the amount of foreign currency it can buy
- Example: dollar depreciation
  - Exchange rate (old) = 80 yen per dollar
  - Exchange rate (new) = 70 yen per dollar
  - (Yen appreciation)

The Real Exchange Rate

- Real exchange rate:
  - Rate at which the goods and services of one country trade for the goods and services of another
- Real exchange rate = e x P / P*
  - Where
    - P = domestic price
    - P* = foreign price (in foreign currency)
    - e = nominal exchange rate (foreign currency per unit of domestic currency)

Example With One Good

- A Big Mac costs $2.50 in U.S., 400 yen in Japan
  - e = 120 yen per $
  - e x P = price in yen of a U.S. Big Mac

    = (120 yen per $) x ($2.50 per Big Mac)

    = 300 yen per U.S. Big Mac
- Compute the real exchange rate:

  e x P / P^* = 300 yen per U.S. Big Mac / 400 yen per Japanese Big Mac =

  = 0.75 Japanese Big Macs per U.S. Big Mac

Interpreting the Real Exchange Rate

- "The real exchange rate = 0.75 Japanese Big Macs per U.S. Big Mac"
- Correct interpretation:
  To buy a Big Mac in the U.S., a Japanese citizen must sacrifice an amount that could purchase 0.75 Big Macs in Japan.

Active Learning 2 — Compute a real exchange rate

e = 10 pesos per $

price of a tall Starbucks Latte:

- P = $3 in U.S.,
- P* = 24 pesos in Mexico

A. What is the price of a U.S. latte measured in pesos?

B. Calculate the real exchange rate, measured as Mexican lattes per U.S. latte.

Active Learning 2 Answers

e = 10 pesos per $

price of a tall Starbucks Latte:

- P = $3 in U.S., P* = 24 pesos in Mexico

A. What is the price of a U.S. latte measured in pesos?

e x P = (10 pesos per $) x (3 $ per U.S. latte)

= 30 pesos per U.S. latte

B. Calculate the real exchange rate, measured as Mexican lattes per U.S. latte.

e x P / P^* = 30 pesos per U.S. latte / 24 pesos per Mexican latte = 1.25 Mexican lattes per U.S. latte

The Real Exchange Rate With Many Goods

- Real exchange rate = (e x P)/P*

  = price of a domestic basket of goods relative to price of a foreign basket of goods

  - P = U.S. price level, e.g., Consumer Price Index, measures the price of a basket of goods
  - P* = foreign price level

  – If U.S. real exchange rate appreciates, U.S. goods become more expensive relative to foreign goods.

The Law of One Price

- Law of one price:
  - A good should sell for the same price in all markets
- Arbitrage
  - Take advantage of price differences for the same item in different markets

Example: The Law of One Price

- Coffee sells for $4/pound in Seattle and $5/pound in Boston; can be costlessly transported.
  - Opportunity for arbitrage: making a quick profit by buying coffee in Seattle and selling it in Boston.
  - Drives up the price in Seattle and drives down the price in Boston, until the two prices are equal.

Purchasing-Power Parity, PPP

- Purchasing-power parity
  - Theory of exchange rates
  - A unit of any given currency should be able to buy the same quantity of goods in all countries
- Basic logic of purchasing-power parity
  - Based on the law of one price
  - A good must sell for the same price in all locations

Example: Purchasing-Power Parity (PPP)

- Example: The "basket" contains a Big Mac.

  P = price of U.S. Big Mac (in dollars)

  P* = price of Japanese Big Mac (in yen)

  e = exchange rate, yen per dollar

- According to PPP, $e \times P = P^*$

  $e \times P$: price of U.S. Big Mac, in yen

  P^*: price of Japanese Big Mac, in yen

- Solve for e we get: $e = P^* / P$

Implications of PPP

- If purchasing power of the dollar is always the same at home and abroad
  - Then the real exchange rate cannot change
- Theory of purchasing-power parity
  - Nominal exchange rate between the currencies of two countries
  - Must reflect the price levels in those countries

Implications of PPP

- Implications:
  - Nominal exchange rates change when price levels change
  - When a central bank in any country increases the money supply
    - And causes the price level to rise
    - It also causes that country's currency to depreciate relative to other currencies in the world

Limitations of PPP

- Theory of purchasing-power parity does not always hold in practice

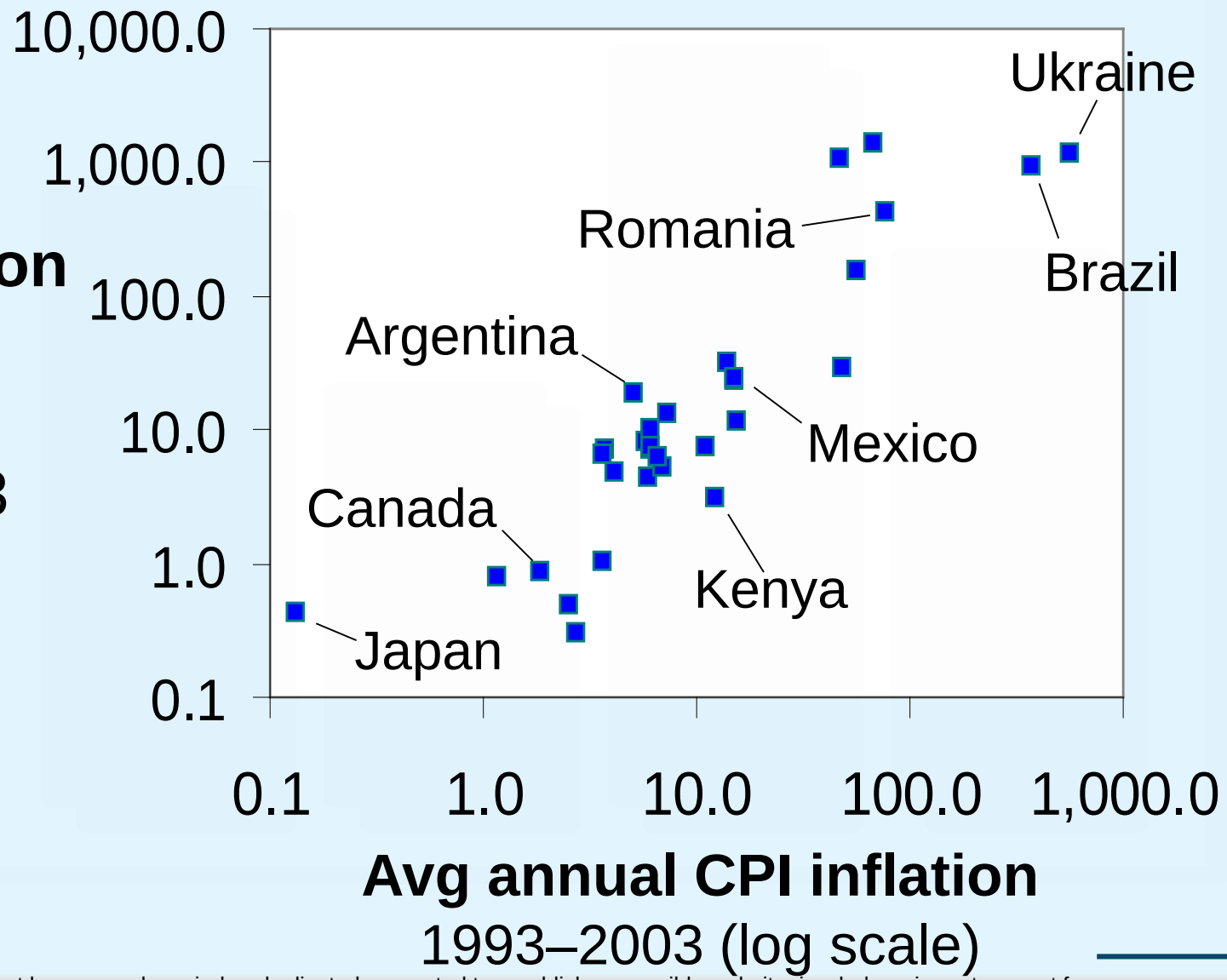
1. Many goods are not easily traded
   - Price differences on such goods cannot be arbitraged away
2. Even tradable goods are not always perfect substitutes
   - Price differences reflect taste differences

Limitations of PPP

- Purchasing-power parity
  - Not a perfect theory of exchange-rate determination
  - Real exchange rates fluctuate over time
- Large and persistent movements in nominal exchange rates
  - Typically reflect changes in price levels at home and abroad

Inflation & Depreciation in a Cross-Section of 31 Countries

Average annual depreciation relative to US dollar 1993–2003 (log scale)



Active Learning 3 Chapter review questions

1. Which of the following statements about a country with a trade deficit is not true?

A. Exports < imports

B. Net capital outflow < 0

C. Investment < saving

D. $Y < C + I + G$

2. A Ford Escape SUV sells for $24,000 in the U.S. and 720,000 rubles in Russia. If purchasing-power parity holds, what is the nominal exchange rate (rubles per dollar)?

Active Learning 3 Answers

1. Which of the following statements about a country with a trade deficit is not true?

A. Exports < imports

B. Net capital outflow < 0

C. Investment < saving

D. $Y < C + I + G$

A trade deficit means $NX < 0$.

Since $NX = S - I$, a trade deficit implies $I > S$.

Active Learning 3 Answers

2. A Ford Escape SUV sells for $24,000 in the U.S. and 720,000 rubles in Russia. If purchasing-power parity holds, what is the nominal exchange rate (rubles per dollar)?

- P* = 720,000 rubles
- P = $24,000
- e = P*/P = 720000/24000 = 30 rubles per dollar

Summary

- Net exports are the value of domestic goods and services sold abroad (exports) minus the value of foreign goods and services sold domestically (imports).
- Net capital outflow is the acquisition of foreign assets by domestic residents (capital outflow) minus the acquisition of domestic assets by foreigners (capital inflow).
- An economy's net capital outflow = its net exports
  - Because every international transaction involves an exchange of an asset for a good or service.

Summary

- An economy's saving can be used either to finance investment at home or to buy assets abroad.
  - National saving equals domestic investment plus net capital outflow.
- The nominal exchange rate is the relative price of the currency of two countries, and the real exchange rate is the relative price of the goods and services of two countries.
- When the nominal exchange rate changes so that each dollar buys more foreign currency, the dollar is said to appreciate or strengthen.

Summary

- When the nominal exchange rate changes so that each dollar buys less foreign currency, the dollar is said to depreciate or weaken.
- According to the theory of PPP, a dollar (or a unit of any other currency) should be able to buy the same quantity of goods in all countries.

  - Implies that the nominal exchange rate between the currencies of two countries should reflect the price levels in those countries.

  - Countries with relatively high inflation should have depreciating currencies, and countries with relatively low inflation should have appreciating currencies.