



Topics in International Business & Finance

(Warwick Summer School 2023)

Week 3

Globalisation &
Principle of International Trade,
International Competition & Corporation,
Economic & Political Risks

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International Business

Learning Objectives:

- Identify the types of companies active in international business.
- Explain globalisation and how it affects markets and production.
- Detail the forces that drive globalisation.
- Outline the debate about globalisation's impact on jobs and wages.
- Globalisation & Capitalism

SAMSUNG Group: A Multinational Corporation

❑ One way to understand globalisation is to understand the concept of multinational corporations.

• Let's start with **SAMSUNG**: it was founded by **Lee Byung-Chul** in **1938** as a trading company.

• Until the **1970s**, the group diversified into areas including **food processing, textiles, insurance, securities, and retail.**

• By the **1990s**, the company entered the **electronics industry** among

Other industries such as construction, finance, etc.

• By the end of the **2000s**, the company had established its headquarters

• in many countries. Its market cap is around **\$366 trillion** in **2023 (July)**.



Samsung Designs Globally and Adapts Locally for Worldwide Success

on September 10, 2013

Share

Samsung ships millions of products every day to customers around the world. With a worldwide customer base, Samsung does not subscribe to a one size fits all philosophy. Its employees pride themselves on finding inspirati

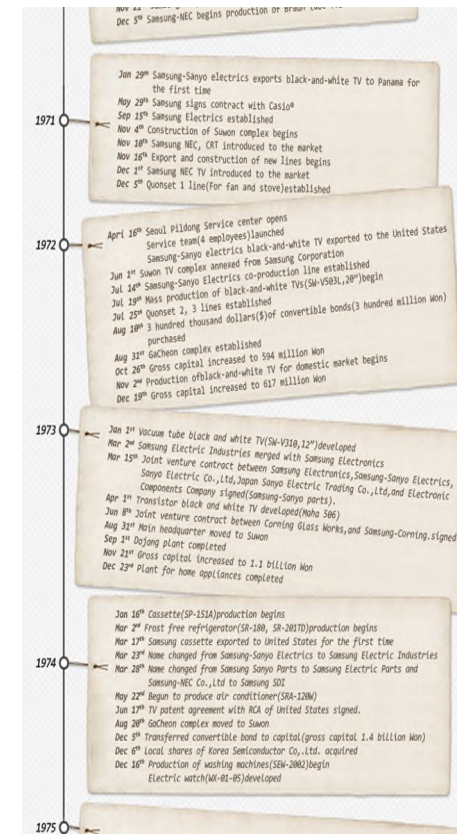
~serving people's lives and giving them options that meet their varying cultural and regional needs.

~sumer electronics show, Samsung outlined its strategy to becoming

~ting its year-on-year 14% growth in digital appliances.

~ into understanding how people appr

~ Samsung



International Business

How many companies like Samsung are in the international business?

- International Business:** Refers to the commercial transaction that crosses the borders of two or more nations. Key players are:

Top 100 Ranking

01 Apple +3% 184,154 \$m	02 Google +6% 141,703 \$m	03 Microsoft +10% 79,999 \$m	04 Coca-Cola -5% 89,733 \$m	05 amazon +29% 84,796 \$m	06 SAMSUNG +9% 86,249 \$m	07 TOYOTA -6% 50,291 \$m	08 f +48% 48,186 \$m	09 Mercedes-Benz +10% 47,829 \$m	10 IBM -11% 46,829 \$m	11 GE +3% 44,208 \$m	12 McDonald's +5% 41,533 \$m	13 B&W 0% 41,321 \$m
14 Disney +5% 40,772 \$m	15 intel +7% 38,458 \$m	16 cisco +3% 31,930 \$m	17 ORACLE +3% 27,466 \$m	18 Nike +8% 27,021 \$m	19 LOUIS VUITTON -4% 22,919 \$m	20 HONDA +3% 22,696 \$m	21 SAP +6% 22,635 \$m	22 Pepsi +1% 20,491 \$m	23 H&M -10% 20,488 \$m	24 ZARA +11% 18,573 \$m	25 IKEA +4% 18,472 \$m	26 Gillette -9% 18,200 \$m
27 Walmart -3% 17,787 \$m	28 Pampers +2% 16,416 \$m	29 ups +7% 16,387 \$m	30 J.P.Morgan +11% 15,749 \$m	31 Domino's +2% 15,378 \$m	32 HERKEN'S +11% 14,210 \$m	33 Ford +5% 13,643 \$m	34 ebay +1% 13,224 \$m	35 HYUNDAI +5% 13,193 \$m	36 NESCAFÉ +1% 12,661 \$m	37 accenture +4% 12,471 \$m	38 Audi +2% 12,023 \$m	39 Bentley +4% 11,534 \$m
40 VW +1% 11,522 \$m	41 Bluebird +2% 11,619 \$m	42 AIA +5% 11,073 \$m	43 Kellogg's -6% 10,972 \$m	44 L'OREAL +16% 10,864 \$m	45 L'OREAL -2% 10,674 \$m	46 citi +3% 10,699 \$m	47 HSBC +1% 10,534 \$m	48 Allianz +6% 10,129 \$m	49 Allianz +6% 10,059 \$m	50 SIEMENS +6% 9,982 \$m	51 GUCCI +6% 9,969 \$m	52 Canon -12% 9,788 \$m
53 hp -8% 9,541 \$m	54 DANONE +1% 9,322 \$m	55 adidas +17% 9,219 \$m	56 Alfa +19% 9,060 \$m	57 Newell Packard -19% 8,951 \$m	58 3M +9% 8,947 \$m	59 Nestle 0% 8,728 \$m	60 Starbucks +16% 8,704 \$m	61 SONY +2% 8,474 \$m	62 Colgate -1% 8,325 \$m	63 Morgan Stanley +14% 8,205 \$m	64 VISA +1% 7,815 \$m	65 Cartier -2% 7,547 \$m
66 American Express +4% 7,100 \$m	67 LEGO +5% 7,024 \$m	68 Kia +8% 6,702 \$m	69 KIA +6% 6,681 \$m	70 HUAWEI +14% 6,676 \$m	71 FedEx +11% 6,350 \$m	72 FedEx +12% 6,255 \$m	73 Land Rover +7% 6,095 \$m	74 John Deere +4% 6,041 \$m	75 Panasonic -8% 5,983 \$m	76 Dell 0% 5,715 \$m	77 New York Times +3% 5,671 \$m	78 NETFLIX New 5,592 \$m
79 Netflix -9% 5,411 \$m	80 PayPal +12% 5,408 \$m	81 TIFFANY & CO -6% 5,394 \$m	82 Walmart +3% 5,332 \$m	83 Walmart -7% 5,313 \$m	84 Amazon New 5,224 \$m	85 Amazon +1% 5,181 \$m	86 Burberry -4% 5,135 \$m	87 MINI +3% 5,114 \$m	88 Ferrari New 4,876 \$m	89 CATERPILLAR -10% 4,868 \$m	90 Caterpillar -6% 4,842 \$m	91 Shell +5% 4,823 \$m
92 John Deere -1% 4,783 \$m	93 John Deere +6% 4,776 \$m	94 PRADA -14% 4,716 \$m	95 Dior -7% 4,587 \$m	96 Dior +2% 4,405 \$m	97 Samsung +1% 4,288 \$m	98 TESLA 0% 4,009 \$m	99 MOT & CRANDON -3% 4,006 \$m	100 Lenovo -1% 4,004 \$m				

- Large companies from the wealthiest nations (**Amazon, Apple, Intel, ...**)
- Firms from emerging markets (**Huawei, Aramco, ...**)
- Small and medium-sized companies (**Splunk Inc, SAP AG**)
- Multinational corporations (MNCs) (**Coca-Cola, TOTAL, Samsung**) Some MNCs have more employees than small nations have citizens (e.g., Walmart has 2.2 million employees globally).
- Born global firm (**BP, Shell**) adopts a global perspective and engages in international business from or near its inception.

From International Business to Globalisation

The transformation from **international business** to **globalisation**:

- **Difference:** While **international business** refers to the commercial transaction that crosses the borders of two or more nations, **globalisation** refers to a multifaceted and ongoing process of deepening interconnection and integration on a global scale.
- The concept of globalisation encompasses the increasing flow of goods, services, capital, technology, ideas, and cultural influences across national boundaries, impacting economies, societies, institutions and individuals worldwide. (5G networks, Cloud Platform, Standards in production, FDI,)
- Globalisation also increases and intensifies **job and investment opportunities** for people and businesses, and at the same time, **demands new rules and governance** to facilitate the diverse interconnection between different agents.

From International Business to Globalisation

- The **transformation from international business to globalisation** can be understood as a **progression** in the **scale, scope, and interconnectedness** of economic activities and interactions between countries. While both concepts involve cross-border economic activities, they differ in their depth and impact on a global scale. Here's how this transformation occurred:

- Early International Business:** In the earlier stages of modern history, international business involved simple trade relationships between nations, typically centred around the exchange of goods and services. Merchants and traders engaged in cross-border transactions **to access resources not available domestically** or to **sell their products in foreign markets**. This kind of international trade was relatively limited in scope and scale. (**Silk from China** traded with **carpet from Iran** and **spices from India**)



- Industrial Revolution and Technological Advancements:** The Industrial Revolution, starting in the late **18th** century, brought significant **advancements in technology, transportation, and communication**. **Steamships, railways, and telegraphs** facilitated faster and more efficient movement of goods, capital, and information across borders. This enabled businesses to expand their reach and operations beyond their home countries, establishing larger international networks.



From International Business to Globalisation

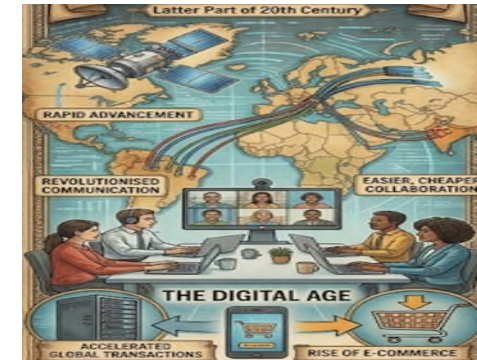
3. **Rise of Multinational Corporations:** By the late 19th and early 20th centuries, industrialisation and the growth of global transportation systems led to the emergence of multinational corporations (MNCs). These large enterprises had production, distribution, and marketing operations across multiple countries, allowing them to leverage resources, labour, and markets worldwide. This marked a significant shift from traditional international business, as MNCs became increasingly integrated into the global economy.

4. **Trade Liberalisation and Economic Blocs:** After World War II, there was a growing recognition of the benefits of international economic cooperation. Countries began to **lower trade barriers** and **enter into agreements** to facilitate trade and investment. Regional economic blocs like the **European Union** and **NAFTA** (**North American Free Trade Agreement**) were established to foster economic integration among member nations. These developments further promoted economic interdependence and globalisation.



From International Business to Globalisation

5. **Advancements in Information Technology and Communication:** The latter part of the 20th century saw a rapid advancement in information technology and the widespread adoption of the internet. This revolutionised communication, making it easier and cheaper for businesses to connect and collaborate across borders. The digital age accelerated global transactions and information flow and spurred the rise of e-commerce.
6. **Global Supply Chains and Outsourcing:** Globalisation facilitated the development of complicated global supply chains. Companies began to source components and services from various countries to optimise efficiency and reduce costs. This process of outsourcing and offshoring allowed businesses to access specialised skills and resources from different parts of the world.
7. **Cultural Globalisation:** As globalisation expanded, cultural exchange and interconnectedness also intensified. The spread of media, entertainment, and communication technologies allowed for the dissemination of cultural products and ideas on a global scale. This cultural interconnectedness complemented and reinforced economic globalisation.



Globalisation (1 of 4)

- **After all these introductions, what is Globalisation (or Globalization)?**
- **Globalisation:** Trend toward greater economic, cultural, political, and technological interdependence among international institutions and economies.
- Globalisation is characterised by **denationalisation** (national boundaries becoming less relevant)
- Globalisation is different from **internationalisation** (entities cooperating across national boundaries but globalisation is beyond cooperation. It is more about interdependence)
- Globalisation
 - ❑ **Market Globalisation:** the convergence in buyer preferences in markets around the world (same smartphone, same coffee, same films & music... around the world)
 - ❑ **Production Globalisation:** the dispersal of production activities to locations that help a company achieve its **cost-minimisation** or **profit-maximisation** objectives for a good or service. This includes the sourcing of key production inputs (such as raw materials or products for assembly) as well as the international outsourcing of services. (Boeing from Japan, Landing gear from Canada, etc., or IT services for a bank around the world)

Globalisation of Markets

Globalisation of Markets:

- **Benefits of Globalisation of Markets**

- **Reduces marketing costs:** By standardising certain marketing activities (**McDonald's, HP advertisements**)
- **Creates new market opportunities** (more foreign demand, **selling palm oil worldwide**)
- **Levels uneven income streams** (products can be sold permanently instead of seasonally, **watermelon or banana in the middle of winter/ selling heating systems in summer**)
- **Considers the local buyers' needs** (Making sure that the products are based on the taste of the local buyers, **veggie Big-Mac or Maharaja Mac in India**)
- **Considers global sustainability** (An increase in transparency, due to the extensive use of social media by people, pushes firms to think about the sustainability of their products. If the production of a company causes harm to the environment, there will be global awareness about that, which might change the policy of the firm, **using decomposable materials instead of plastic**)

Globalisation of Markets

Globalisation of Production:

- **Benefits of Globalisation of Production**

- **Access to lower-cost workers** (Lower-cost labour, **Boeing pieces**)
- **Access to technical expertise** (Getting knowledge from those who know how things are going to be done, **cocoa bean production in South America, Boeing pieces**)
- **Access to production inputs** (lower cost of materials, **petrochemical products in the Middle East**)

International Trade

- **Fact:** The expansion of international trade is an inseparable part of globalisation.
- **Benefits of International Trade:**
 - Greater choice of goods and services
 - Important engine for job creation in many countries (The U.S. Department of Commerce (www.commerce.gov) calculates that for every \$1 billion increase in exports, 22,800 jobs are created in the US)
- In 1991, Walmart first became an international company.
- Ambitious global expansion:
 - Walmart has around 5,300 stores in the United States and more than 6,200 stores in 27 other countries.
 - Nearly \$486 billion in sales globally.
 - Walmart is one of the world's largest companies.
 - Walmart sources inexpensive merchandise from low-cost production locations such as China.
- Helping boost international trade.



For and Against Globalisation

For Globalisation

- Increases **wealth** and **efficiency** in all nations
- Generates **labour & capital market flexibility** in developed nations
- Advances the **economies & technology** of developing nations
- Allows **poor countries** to profit from their differing circumstances and skills
- It creates **some institutions** in developing economies that promote the same values/same rules
- It **creates tax income** for the governments in poor countries

For and Against Globalisation

Against Globalisation

- Eliminates jobs in developed nations
- Lowers wages in developed nations
- Exploits workers in developing nations
- Creates a wage gap between white-collar and blue-collar occupations in developed nations
- Homogenises our world and destroys our rich diversity of cultures
- Empowers supranational institutions at the expense of national governments
- It increases the environmental damage/pollution in countries without strong protection laws or strong monitoring institutions



Child labour 'is helping to power our mobile phones'



South Africa has failed to protect locals from gold mine pollution

International Trade & Globalisation: The Essence of Capitalism

- **Is It Possible To Stop The Process Of Globalisation? (or deglobalisation)**

Answer this question for the anti-globalist politicians!!

The short answer is NO. **The process of globalisation is an integral part of capitalism.**

To chase profit and survive in a constantly increasing competition:

- 1- All big companies should expand their markets beyond their national territories.
- 2- They should continuously change their strategy in order to reduce their costs and increase their income. Investing in other countries is part of this strategy.
- 3- They must invest massively in new technologies (in some cases without getting any help from governments or national banks), but sometimes they can benefit in terms of tax and subsidies when they move to other countries.

President Trump: 'We Have Rejected Globalism and Embraced Patriotism'

August 7, 2020 4 minute read



<https://trumpwhitehouse.archives.gov/articles/president-trump-we-have-rejected-globalism-and-embraced-patriotism/>



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US President Trump rejects globalism in speech to UN General Assembly's annual debate



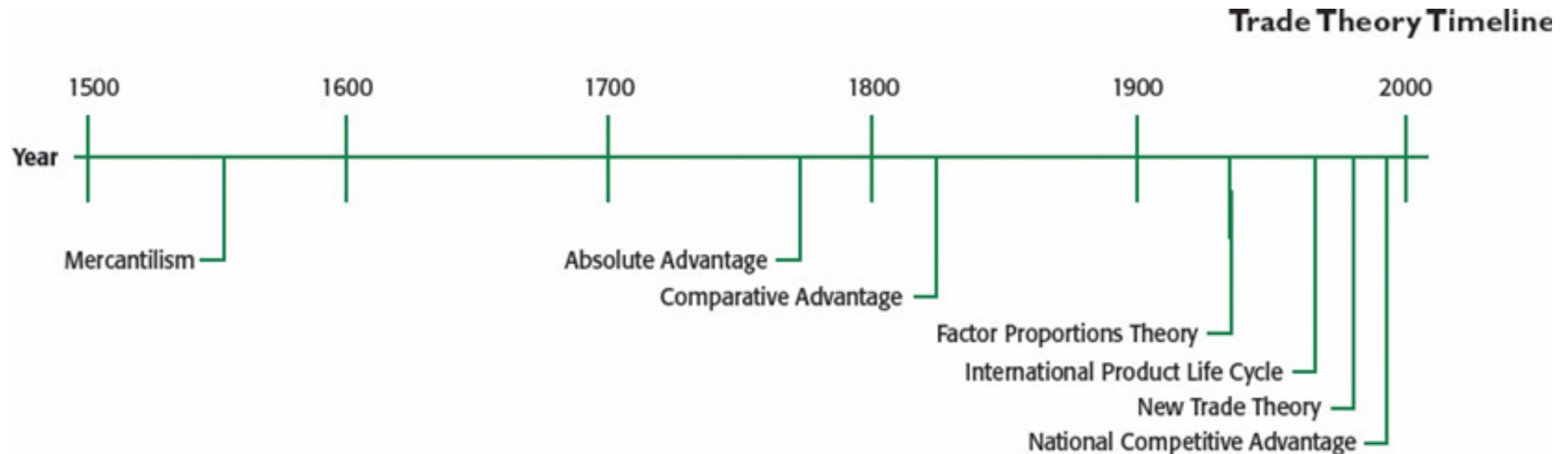
UN Photo/Cia Pak | President Donald Trump of the United States addresses the seventy-third session of the United Nations General Assembly.

Some Theories on International Trade



Timeline of Trade Theories

- Trade between different groups of people has existed for many thousands of years. But it was not until the 15th century that scholars tried to conceive this concept in the form of a theory.
- The following figure shows a timeline of when the main theories of international trade were proposed.



Mercantilism As An Extreme Trade Theory

How Mercantilism Worked

- **Mercantilism:** An economic doctrine in which **permanent economic growth** can be achieved by the accumulation of **financial wealth**, usually in the form of gold/silver, by **maintaining a trade surplus strategy** (i.e., encouraging exports and discouraging imports).
- The doctrine was based on extensive, dominant, and predatory business & trade behaviour.

Three Pillars:

- **Maintain Trade Surplus** (To make sure that the inflow of bullion > the outflow of bullion)
- **Government Intervention** (to provide all legal & military support to protect domestic merchants/products against all rival foreign merchants/products)
- **Colonialism** (Having colonies around the world to serve as **sources of inexpensive raw materials** and as **markets for higher-priced finished goods**. These colonies were the source of essential raw materials, including tea, sugar, tobacco, rubber, and cotton. These resources would be shipped to the mercantilist nation, where they were incorporated into finished goods such as clothing, cigars, and other products. These finished goods would then be sold to the colonies. **Trade between mercantilist countries and their colonies was a huge source of profits for the mercantilist powers. The colonies received low prices for basic raw materials but paid high prices for finished goods**).

Mercantilism As An Extreme Trade Theory

Flaws of Mercantilism

- **World trade is a zero-sum game.** A nation benefits from trade only at the expense of other nations. According to LaHaye (2008), “During the mercantilist period, military conflict between nation-states was both more frequent and more extensive than at any other time in history”.
- **Restricts international trade.** If all nations do that, there will be no trade. This is an intrinsic flaw.
- **Limits colonies' market potential.** Lack of effective demand from the colonies as they are not paid fairly for their resources.
- **Accumulation of precious metals was wrongly conceptualised as the accumulation of wealth.**

(+)BT → More gold & silver → more inflation → cheaper to import → (-)BT → Losing gold & silver

Theories of Absolute and Comparative Advantage

- **Adam Smith** helped to instigate the concept of absolute advantage, and then **Ricardo** explained how countries can benefit from trading even if one of them has an absolute advantage in producing everything, with countries that have a comparative advantage:
1. **Absolute advantage**: When an entity (business or country) can produce a good/goods more efficiently using one unit of resources (here: labour)
 2. **Comparative advantage**: When an entity (business or country) is less efficient in the production of all goods, but it is less inefficient in the production of one good.

Theories of Absolute and Comparative Advantage

- ❑ **Smith's argument:** Countries should specialise in the goods they can produce most efficiently and trade for those goods they can't produce as well. If England can produce more good-quality textiles per labour and Spain can produce more good-quality wine per labour, then both countries will benefit from trading goods in which they have an absolute advantage in their production.
- ❑ **Ricardo's argument:** Even without having an absolute advantage in the production of any good, free trade would be beneficial to both nations with or without absolute advantage.
- According to both absolute and comparative advantage theories, there is no need to start a war to get a surplus in trade. All countries can benefit if they choose trade instead of war.

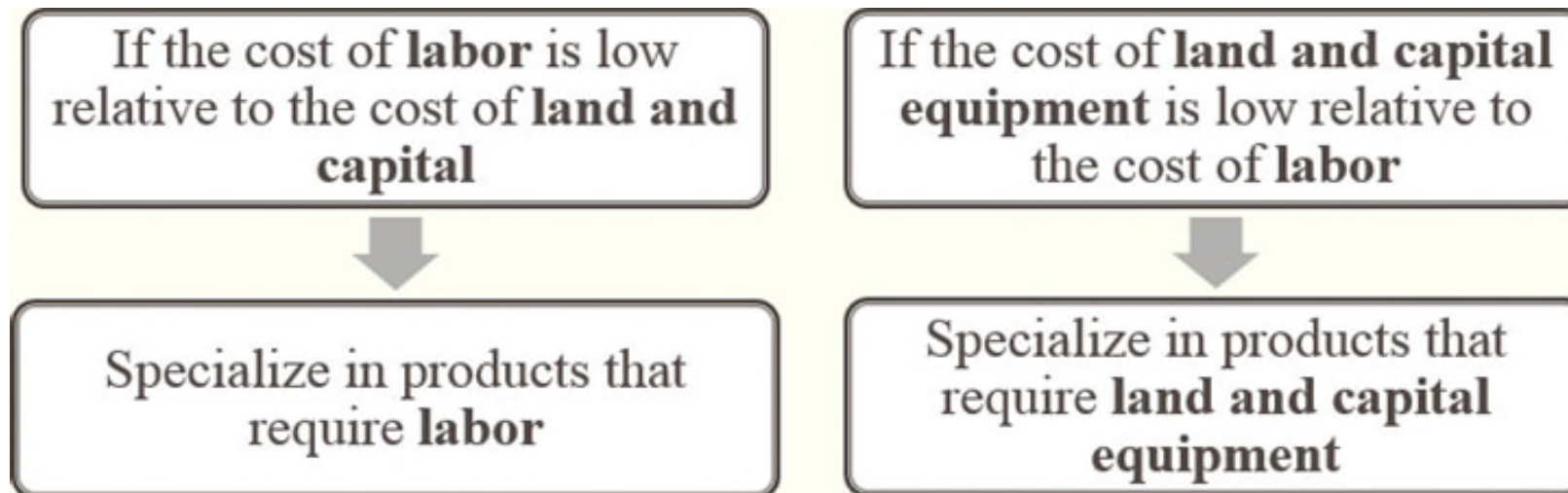
Theories of Absolute and Comparative Advantage

Assumptions and Limitations: These theories are based on some assumptions that may not be applicable in the real world.

1. **All entities/countries are driven only by the maximisation of production and hence, consumption.** There are many other goals/industrial policies followed by the public sector (government) in supporting some specific productions/sectors either to boost economic activities or to maintain the economic, financial, and technological security of the economy.
2. The theories assume there are **only two countries with two goods**, but in reality, we have many countries that produce many goods partially and globally.
3. **Other costs in trade, such as transport, insurance**, etc., are not considered in these theories.
4. The theories are based on **labour as the only source of production**, which is **not transferable** between nations. Technology and capital, and even labour are transferable, and the advantages of countries are changing over time.
5. These theories assume that “**specialisation in the production of one particular good does not result in gains in efficiency**”, but we need fewer resources by specialising in the field of production.

Factor Proportions Theory of Trade

- **Factor Proportions Theory:** resulted from the research of two economists, **Eli Heckscher** and **Bertil Ohlin**, and is therefore sometimes called the **Heckscher–Ohlin theory**.
- According to this theory, countries produce and export goods that require resources (factors) that are abundant and import goods that require resources in short supply.
- While in this theory the focus is on the factors of production, in comparative advantage theory the emphasis is on productivity using resources.



Factor Proportions Theory of Trade

The Leontief Paradox

- **The Apparent Paradox**
 - Leontief found evidence opposite to that predicted by the factor proportions theory.
 - U.S. exports are more labour-intensive than U.S. imports, while the US is the most capital-abundant country.
 - Leontief's findings are supported by more recent research.
- **What might account for the paradox?**
 - Factor proportions theory assumes a nation's production factors to be **homogeneous** (particularly labour).
 - Factor proportions theory seems to be supported when expenditures on labour are considered.

Note: Here we are not going to talk about other theories. Those who are interested can see Chapter 5 of the book “International Business: The Challenges of Globalisation”, Ninth Edition, Global Edition, by John Wild and Kenneth Wild, 2019, Pearson Education Ltd.

Valuing Foreign Projects

International Trade for Corporations

- **Big corporations do not just target the national markets.** In order to survive in intense competition, they should permanently grow, constantly reduce risk and continuously search for new markets to get benefited from these new markets, either through selling goods and services or through finding cheaper labour, cheaper or subsidised capital, cheaper access to raw materials, etc. **So, simply, they need to produce and invest in foreign countries.**
- **Integrated capital markets** with **free capital movement** through different currencies are the necessary parts of this goal. **Globalisation** facilitates this integration and free capital movement.
- **Questions: Now, two questions:**
 - I. What methods can be applied to **value foreign currency cash flows**?
 - II. How **should investment projects be evaluated** (in terms of domestic/foreign currency, tax system, inflation and interest rate) and **what currencies should be used when inputs and outputs are valued at different currencies**?
- **Before answering these questions, we need to know **how to deal with the risk of exchange rate fluctuations**.**

Exchange Rate Risk

❑ Risk of Exchange Rate Fluctuations:

- Fluctuating exchange rates cause a problem known as the **importer-exporter dilemma**:
- **US importer:** if $\$ \downarrow \Rightarrow$ more expensive for the US importer to import
- **Foreign exporter to the US market:** if $\$ \downarrow \Rightarrow$ assuming no change in the sale, they can get less return when they convert $\$$ to their own currency.
- **Question:** You have ordered a new machine from Germany that costs **€1 million**. On the day of the order, the $\$/\epsilon$ exchange rate was **1.13 $\$/\epsilon$** . The machine will ship in six months, and you expect the exchange rate to change to **1.23 $\$/\epsilon$** . What is the cost of the machine if you pay for it on the day of the order? What is the cost of the machine if you pay for it in six months?
- **Answer:** If you pay for the machine on the day it is ordered, the cost is

$$\text{€1 million} \times 1.13 \text{ \$/€} = \$1,130,000$$
- If you pay for the machine in six months when it ships, the cost is

$$\text{€1 million} \times 1.23 \text{ \$/€} = \$1,230,000$$
- Because of the change in exchange rates, the cost of the machine rises **\$100,000** or about **8.8%** higher.

Hedging with Forward Contracts

- ❑ **First way to reduce risk:** One way to reduce the risk of exchange rate fluctuations is to have an **exchange rate forward contract**:

- **What is a forward contract?**

Forward Contract: An agreement to trade an asset on some future date, at a price that is locked in today.

Futures contracts (contrary to **long-term contracts**) are traded anonymously on an exchange at a publicly observed market price and are generally very liquid. Both the buyer and the seller can get out of the contract at any time by selling it to a third party at the current market price. These contracts are designed to reduce risk.

- **Forward Exchange Rate:**

- A **currency forward contract** is a contract that sets the exchange rate in advance. By entering into a currency forward contract, a firm can **lock in an exchange rate in advance** and reduce or eliminate its exposure to fluctuations in a currency's value. The exchange rate set in the contract is referred to as the **forward exchange rate**.
- **A currency forward contract specifies:**
 - i. An exchange rate
 - ii. An amount of currency to exchange
 - iii. A delivery date on which the exchange will take place

Cash-and-Carry and the Pricing of Currency Forwards

❑ **Second way to reduce risk:** The **Cash-and-Carry strategy**, besides the **currency forward contract**, is another way that firms or banks can use to eliminate exchange rate risk.

➤ **Cash-and-Carry Strategy:**

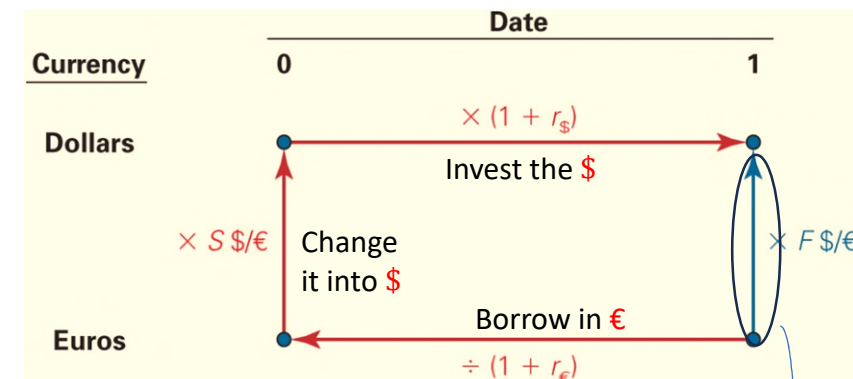
- A strategy used to lock in the future cost of an asset by **buying the asset for cash** today and “**carrying**” it until a future date. For the exchange currency, we **borrow** cash, and we then invest (carry) in the future.

▪ **The Law of One Price and the Forward Exchange Rate:**

- Currency forward contracts allow investors to exchange a foreign currency (say €) in the future for dollars in the future at the forward exchange rate (F), but the cash-and-carry strategy does the same job in three steps, and according to the **Law of One Price**, they should give the same result.

• **Three steps of cash-and-carry strategy:**

1. Borrow € today using a one-year loan at the interest rate $r_€$.
 2. Exchange the € for \$ today at the spot (current) exchange rate $S(\frac{\$}{€})$.
 3. Invest the \$ today for one year at the interest rate $r_\$$.
- These transactions in red replicate the forward contract in blue.



In the forward contract, every part of the transaction happens in future, apart from the price which is fixed in advance

Valuing Foreign Projects

□ Let's return to the topic of evaluation of investment projects in foreign countries:

- We learned how to **hedge our business against the risk of exchange rate fluctuations**. Now, it is time to think about the complexities of **investment in foreign countries with different currencies**.
- We can think of investment in either the **production sector** or the **financial sector**. The rules are the same. For simplicity, we go through a scenario in which you have a one-year investment in the foreign financial sector.
- For example, we buy a financial asset in a foreign financial market. We introduce a **basic benchmark model** in the next slide. **The assumptions:**
 1. **There is free capital movement.**
 2. **All financial assets with the same return and the same risk are perfect substitutes, and for that reason, we have no preference between them.**

Valuing Foreign Projects

□ A Benchmark Model Based On The Integration Of Capital Markets Across Currencies & Borders:

- Consider a risky **foreign asset** that is expected to pay the cash flow, C_{FC} , in one period. In a normal market, the **theoretical price of this asset in a foreign market** is the present value of this cash flow using the cost of capital of a local investor, i.e.:

$$\text{Price of the security in foreign currency} \quad P_{FC} = \frac{C_{FC}}{(1 + r_{FC}^*)} \quad FC = \text{foreign currency e.g. Euro (€)}$$

- A U.S. investor who wants to purchase this asset in dollars **will have to pay**

$$\text{Price of the security in domestic currency} \quad P_{\$} = S \times \frac{C_{FC}}{(1 + r_{FC}^*)}$$

- Where S is the **current spot exchange rate** in dollars per foreign currency, $\left(\frac{\$}{€}\right)$.
- A U.S. investor who has purchased this security would have to convert the future cash flow into dollars, so the payoff is the dollar cash flow it produces.**
- If F is the forward exchange rate (e.g. after one year), the value of the foreign cash flow C_{FC} in U.S. Dollar will be $F \times C_{FC}$ and its present value based on the U.S. currency would be $\frac{F \times C_{FC}}{(1 + r_{\$}^*)}$, where $r_{\* is the discount rate (cost of capital) in the U.S.

Valuing Foreign Projects & Covered Interest Rate Parity

- By the **Law of One Price**, there should be no arbitrage opportunity; therefore, two present values should be equal, that is, the PV of the security's expected cash flow in dollars should be equal to the price of the security in dollars:

$$\frac{F \times C_{FC}}{(1 + r_{\$}^*)} = S \times \underbrace{\frac{C_{FC}}{(1 + r_{FC}^*)}}_{P_{\$}}$$

Or by rearranging terms, we have:

$$F = S \times \frac{(1 + r_{\$}^*)}{(1 + r_{FC}^*)}$$

$\frac{\text{\$ in one year}}{FC \text{ in one year}}$ $\frac{\text{\$ today}}{FC \text{ today}}$

- This is called **covered interest rate parity**, which can be obtained using the **cash-and-carry** three steps strategy. **Covered interest rate parity** refers to a theoretical condition in which the relationship between interest rates and the spot and forward currency values of two countries are in equilibrium. The covered interest rate parity situation means there is no opportunity for arbitrage using forward contracts, which often exists between countries with different interest rates.

Covered Interest Rate Parity For More Than A Year

- In its re-arranged form as $(1 + r_{\$}^*) = \frac{F}{S} (1 + r_{FC}^*)$ it shows if there is **interest rate differential** between two currencies $r_{\$}^* \neq r_{FC}^*$, no one can get extra benefit by moving the capital from the low-interest rate country to the high-interest rate country, as the differential will be offset by the relevant change in the spot and future exchange rates.
- **Covered Interest Rate Parity For More Than A Year**: If F_T represents a forward contract for the exchange rate after T years, the covered interest rate parity can be generalised as:

$$F_T = S \times \frac{(1 + r_{DC})^T}{(1 + r_{FC})^T}$$

Where r_{DC} and r_{FC} represents domestic and foreign risk-free T – *year* interest rates, respectively.

Advantages of Forward Contracts:

Cash-and-carry strategy are often used by large banks as they can **easily borrow** at a very **low transaction cost**, but companies find the **forward contracts** much **easier** and, in some cases, **more economical**.

Uncovered Interest Rate Parity

- **Covered V.S. Uncovered Interest Rate Parity:**

- In covered interest rate parity, we impose F as the future (forward) exchange rate. F is guaranteed in future or forward contracts and protects us against the risk of exchange rate fluctuation.
- Without having a forward contract, the interest rate parity is said to be uncovered and F is replaced by our expectation about the future exchange rate, i.e.

$$(1 + r_{\$}^*) = \frac{E(S_{t+k})}{S_t} (1 + r_{FC}^*)$$

Expected exchange rate k –period ahead of current time

- **Three Vital Assumptions Behind the Theory Of Interest Rate Parity:**

- I. Internationally **integrated capital markets**
 - II. **Free capital mobility** between markets
 - III. **Perfect substitution** between domestic and foreign financial assets (bonds, shares, currencies, etc.)
- **Meaning of internationally integrated capital markets:** When any investor can exchange currencies in any amount at the spot or forward rates and is free to purchase or sell any security in any amount in any country at its current market prices, it is said that the capital markets are internationally (globally) integrated. **When capital markets around the world are integrated the value of an investment does not depend on the currency used.**

Example

- **Question:** You are an American who is trying to calculate the present value of a **£25 million** cash flow that will occur one year in the future. You know that the spot exchange rate is $S = 1.9397 \left(\frac{\$}{\pounds} \right)$ and the one-year forward rate is $F = 1.9581 \left(\frac{\$}{\pounds} \right)$. You also know that the appropriate dollar cost of capital for this cash flow is **6.25%** and that the appropriate pound cost of capital for this cash flow is **5.25%**.
- a) What is the present value of the **£25 million** cash flow from the standpoint of a British investor, and what is the dollar equivalent of this amount?
- b) What is the present value of the **£25 million** cash flow from the standpoint of a U.S. investor who first converts the **£25 million** into dollars and then applies the dollar discount rate?
- **Answer:**
- **For the British investor**, the PV of the pound cash flow is $\pounds 25 \text{ million} \div 1.0525 = \pounds 23,752,969$. The dollar equivalent is $\pounds 23,752,969 \times \$1.9397 \left(\frac{\$}{\pounds} \right) = \$46,073,634$.
- **For the U.S. investor**, the PV of converting **£25 million** to dollars using the forward rate and then applying the dollar cost of capital is $(\pounds 25 \text{ million} \times 1.9581 \left(\frac{\$}{\pounds} \right)) \div 1.0625 = \$46,072,941$.
- Note: The **\$693** difference is a rounding error: $\$46,073,634 - \$46,072,941 = \$693$

PV of Cash Flow in Foreign Currency vs Domestic Currency

Valuation of Foreign Currency Cash Flows & WACC Valuation

- **Valuation of Foreign Currency Cash Flows:** In an internationally integrated capital market, two equivalent methods are available for calculating the NPV of a foreign project.
 - A. Calculate the NPV in the foreign country and convert it to the local currency at the spot rate.
 - B. Convert the cash flows of the foreign project into the local currency and then calculate the NPV of these cash flows.

We talk about the second method here. To do that, we need to know the rate of return at which the converted cash flow (into our domestic currency) must be discounted.

- We need to answer the question about the rate of return again, but in a different context:
 - **Question:** What rate of return must be used to calculate the PV of an investment project when the cash flow is in another currency?
 - A quick answer: It depends on the capital structure of the company.

Capital Structure & WACC Valuation

Large corporations are typically the ones exploring investment opportunities abroad. They allocate capital across a range of assets, each with its own risk and return profile. Two key scenarios can be considered:

1. The corporation operates **without any debt**, which means the source of funds is from shareholders.
2. The corporation finances its projects using a **mix of equity (from shareholders) and debt (from bondholders or lenders)**.

The cost of capital in the above scenarios is different; therefore, the PV of the investment project is different.

The terminology that helps us to understand this difference is WACC.

•What is **WACC**? It is the abbreviation for the **weighted average cost of capital**. To understand WACC better, let's talk about the **cost of capital** for a company with and without debt.

The Capital Asset Pricing Model (CAPM)

❑ The cost of capital for a company without debt:

▪ The Capital Asset Pricing Model (CAPM):

- The **capital asset pricing model (CAPM)** is a linear relationship between the expected rate of return of an individual asset (which is going to be added to an already well-diversified portfolio) and its contribution to the portfolio's risk.
- CAPM is a model for pricing an individual asset i by connecting its expected rate of return ($E(r_i)$) to the risk-free rate of interest (r_f), expected return on market portfolio ($E(r_m)$), the variance of the return on the market portfolio (σ_m^2) and the risk contributed to the portfolio by the risky assets ($cov(r_i, r_m) = \sigma_{im} = \rho\sigma_i\sigma_m$).

The Capital Asset Pricing Model (CAPM)

- The idea behind the pricing is that no individual security should be **over-valued** or **under-valued** when it is compared to the market values. So, the **reward-to-risk ratio for an individual risky asset** should be equal to the **reward-to-risk ratio of the overall market**; i.e.

$$\frac{E(r_i) - r_f}{\sigma_{im}} = \frac{E(r_m) - r_f}{\sigma_m^2} \quad \text{Q}$$

Where risk here is expressed in terms of the variance and not the standard deviation.

- By re-writing equation **Q** and making $E(r_i)$ as the subject, we have:

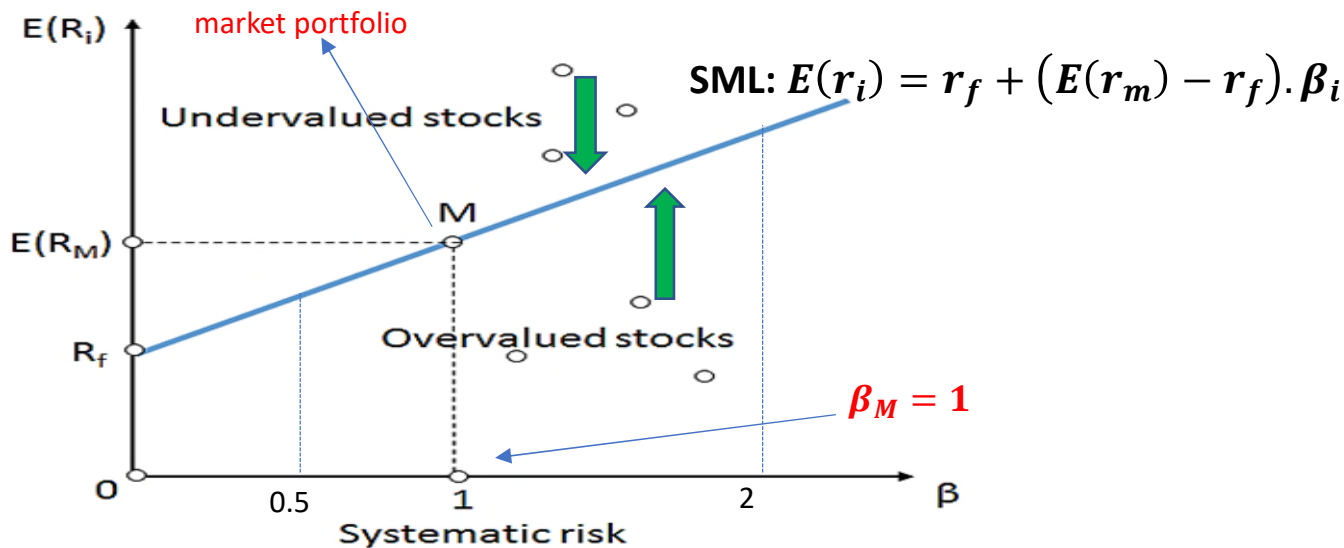
$$\begin{aligned} E(r_i) &= r_f + (E(r_m) - r_f) \times \frac{\sigma_{im}}{\sigma_m^2} \\ &= r_f + (E(r_m) - r_f) \times \beta_i \end{aligned}$$

$\sigma_i \sigma_m \rho$
 Risk premium for security i
 Which is also equal to $E(r_i) - r_f$

Where β measures the sensitivity of the asset to the market movements and it is representative of the systematic (market) risk. [Note that: $\beta_i = \frac{E(r_i) - r_f}{E(r_m) - r_f} = \frac{\text{Excess return from the asset}}{\text{Excess return from the market portfolio}}$]

Security Market Line (SML)

- The re-written form of the equation Q is called **Security Market Line (SML)**, which shows the relation between the expected return of an asset and its systematic risk β_i . The SML is the graphical depiction of the capital asset pricing model (CAPM). The SML states that an **individual asset's excess return** ($E(r_i) - r_f$) should be equal to the **market excess return** ($E(r_m) - r_f$) times the systematic risk β_i . It is a useful tool in determining whether an individual asset offers a rationally expected return for the risk contributed to the whole portfolio.
- The SML shows the expected return for each security positively related to its beta. According to the CAPM, the market portfolio (point **M**) is efficient, so all stocks and portfolios should lie on the SML. If, at any given β , they don't lie on the SML, they are either over-valued or under-valued.



Adopted from <http://en.wikipedia.org/wiki/File:SML-chart.png>

- Securities with $\beta > 1$ amplify the overall movements of the market. They lie on the SML but after point **M**. Their expected returns are bigger than the expected return on the market.
- Securities with $0 < \beta < 1$ they move in the same direction as the market but slower than the market. They lie on the SML but before point **M**. Their expected returns are lesser than the expected return on the market.
- Finally securities with $\beta = 1$ or close to that represent the market portfolio **M**. Their expected returns is similar to the expected return on the market.

Security Market Line (SML)

- Individual assets are plotted on the SML graph. If they are **plotted above the SML**, they are **undervalued** because the investor can expect greater returns compared to their risks. Assets **plotted below the SML** are **overvalued** as the investor would think their prices are too high compared to alternative assets with a higher return at the same level of risk.
- In a competitive market where all investors have the same information and knowledge about the risk and returns of all assets, the price of overvalued or undervalued assets moves to the equilibrium level on the SML line.
- CAPM provides a method of pricing an asset (security) based on our knowledge about the systematic risk β and the expected rate of return in the market. So, we can simply find the PV of security through:

$$PV = \sum_{i=1}^n \frac{C_i}{\left[1 + \underbrace{\left(r_f + \beta_i \cdot (E(r_m) - r_f)\right)}_{E(r_i)}\right]^i}$$

Company Cost of Capital (With No Debt)

- If a company has no outstanding debt and the risk of a project is not much deviated from the firm's existing projects, then the company's **cost of equity** (or **equity cost of capital**), which is obtained from the security market line (SML), is equal to the company's cost of capital:

$$E(r_i) \leftarrow r_E = r_f + \beta_E \cdot (r_m - r_f)$$

This means that the cost of equity for a company (i.e. the rate of return to the shareholders for each share) is linearly dependent on the risk-free rate in the market r_f and the difference between the rate in the market r_m and r_f . In this formula, β_E measures the **sensitivity of the asset to the market movements**, and it is representative of the systematic (market) risk. Securities with $\beta > 1$ amplify the overall movements of the market. Securities with $0 < \beta < 1$ move in the same direction as the market but slower than the market. securities with $\beta = 1$ or close to that represent the market

For example, if $r_f = 1.5\%$ and the market risk premium $r_m - r_f$ is about 8% and if equity beta for a company is $\beta_E = 0.8$, then the expected return on equities for the company will be:

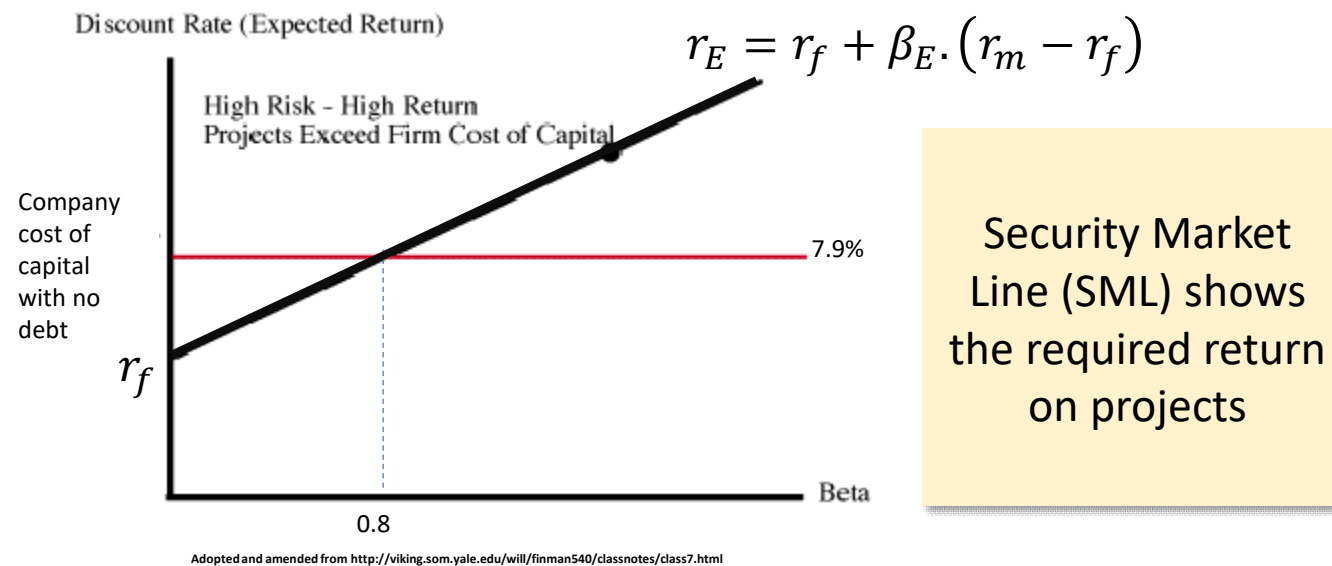
$$r_E = 1.5 + 0.8 \times 8 = 7.9\%$$

So, for a risky project, the company should agree to invest in it if the rate of return from the project is above this rate.

- This is the minimum expected rate of return required by the equity holders which needs to be considered as a benchmark by the financial manager of the company.

Company Cost of Capital (With No Debt)

- Graphically, this means any risky projects that lie above the **7.9%** horizontal line (**company cost of capital**) can be accepted.



Once Again: When there is **no debt** the company's cost of capital is measured by the company's cost of equity. In this example, **7.9%** is the return on equity (cost of equity) but at the same time (as a fixed value) it is the company's cost of capital.

Company Cost of Capital (With Debt)

❑ The cost of capital for a company with Equity & debt:

- But this rate is not very realistic because the assumption of having no outstanding debt (specifically for large corporations) is far from reality.
- A portfolio of all the company's securities includes debt as well as equity.
- According to the balance sheet of any company, the company's market value V (= asset value of the company in the market) is the summation of the company's debt D and the company's equity E , i.e.

$$V = D + E$$

- The company cost of capital, in this case, is not the cost of debt or the cost of equity alone, but it is a weighted average cost of capital (average rate of returns demanded by investors) that the company acquired through debt or equity. We return to this point a bit later.

Company Cost of Capital (With Debt)

- If r_D represents the rate of paying debt (to lenders or bondholders) then

$$\text{Company cost of capital} = \frac{D}{V} \cdot r_D + \frac{E}{V} \cdot r_E = \frac{D}{D+E} \cdot r_D + \frac{E}{D+E} \cdot r_E = r_{WACC}$$

Expected return
on all assets of a
company

In some books, the company **cost of capital** is also called **asset cost of capital** or **overall cost of capital**. For example, for a company with a balance sheet composed of **40%** debt and **60%** equity, if r_D and r_E are **8%** and **12%** respectively, then the company cost of capital will be:

$$\text{Company cost of capital}(WACC) = 8 \times 0.4 + 12 \times 0.6 = 10.4\%$$

- The real interest paid to the lenders can be obtained after deducting tax. So, **after-tax cost of debt** will be $(1 - \tau) \cdot r_D$ and eventually the **weighted average cost of capital (WACC)** can be calculated by:

Tax rate

$$\text{After - tax WACC} = r_{WACC} = (1 - \tau)r_D \cdot \frac{D}{V} + r_E \cdot \frac{E}{V}$$

Now, it will be easy to calculate the PV of the investment project by applying WACC as a discount rate:

$$PV = \sum_{i=1}^N \frac{C_i}{(1 + r_{WACC})^i}$$

Example

- Question:** Ityesi Inc. wants to apply the WACC technique to value a project in the United Kingdom. The project will be completely self-contained in the United Kingdom, such that all revenues are generated, and all costs are incurred there. The technology used in the new products will be obsolete after four years. Annual sales are expected to be **£37.5 million** per year. Manufacturing costs and operating expenses are expected to total **£15.625 million** and **£5.625 million** per year, respectively. Developing the product will require an upfront investment of **£15 million** in capital equipment that will be obsolete in four years and an initial marketing expense of **£4.167 million**. Ityesi pays a corporate tax rate of **40%** no matter in which country it manufactures its products. Assume the current spot exchange rate, S , is $1.60 \left(\frac{\$}{\pounds} \right)$, also assume the risk-free rate on dollars, $r_{\$}$, is **4%** and the risk-free interest rate on pounds, $r_{\pounds}$, is **7%**. Using the tables below, find the value of Ityesi's foreign project with WACC.

Ityesi's Current Market Value Balance Sheet (\$ millions)
and Cost of Capital Without the U.K. Project

Assets		Liabilities		Cost of Capital	
Cash	20	Debt	320	Debt	6%
Existing Assets	600	Equity	300	Equity	10%
	620		620		

	Year	0	1	2	3	4
Incremental Earnings Forecast (£ millions)						
1 Sales	—	37.500	37.500	37.500	37.500	37.500
2 Cost of Goods Sold	—	(15.625)	(15.625)	(15.625)	(15.625)	(15.625)
3 Gross Profit	—	21.875	21.875	21.875	21.875	21.875
4 Operating Expenses	(4.167)	(5.625)	(5.625)	(5.625)	(5.625)	(5.625)
5 Depreciation	—	(3.750)	(3.750)	(3.750)	(3.750)	(3.750)
6 EBIT	(4.167)	12.500	12.500	12.500	12.500	12.500
7 Income tax at 40%	1.667	(5.000)	(5.000)	(5.000)	(5.000)	(5.000)
8 Unlevered Net Income	(2.500)	7.500	7.500	7.500	7.500	7.500
Free Cash Flow						
9 Plus: Depreciation	—	3.750	3.750	3.750	3.750	3.750
10 Less: Capital Expenditures	(15.000)	—	—	—	—	—
11 Less: Increases in NWC	—	—	—	—	—	—
12 Pound Free Cash Flow	(17.500)	11.250	11.250	11.250	11.250	11.250

Example

- Answer:** Using the covered interest rate parity condition we can calculate forward exchange rates:

$$\begin{aligned}
 F_1 &= S \times \frac{(1 + r_{\$})}{(1 + r_{\pounds})} = (\$1.60/\pounds) \frac{(1.04)}{(1.07)} = \$1.5551/\pounds \\
 F_2 &= S \times \frac{(1 + r_{\$})^2}{(1 + r_{\pounds})^2} = (\$1.60/\pounds) \frac{(1.04)^2}{(1.07)^2} = \$1.5115/\pounds \\
 F_3 &= S \times \frac{(1 + r_{\$})^3}{(1 + r_{\pounds})^3} = (\$1.60/\pounds) \frac{(1.04)^3}{(1.07)^3} = \$1.4692/\pounds \\
 F_4 &= S \times \frac{(1 + r_{\$})^4}{(1 + r_{\pounds})^4} = (\$1.60/\pounds) \frac{(1.04)^4}{(1.07)^4} = \$1.4280/\pounds
 \end{aligned}$$

Free Cash Flow Conversion:

- Using these forward exchange rates, the expected free cash flows in dollars can be calculated by multiplying the expected cash flows in pounds by the forward exchange rate:

	0	1	2	3	4
Dollar Free Cash Flow (\$ millions)					
1 Pound FCF (£ millions)	(17.500)	11.250	11.250	11.250	11.250
2 Forward Exchange Rate (\$/£)	1.600	1.555	1.512	1.469	1.428
3 Dollar Value of Pound FCF (1 × 2)	(28.000)	17.495	17.004	16.528	16.065

Example

The Value of Ityesi's Foreign Project with the Domestic WACC (Domestic Cost of Capital):

- With the cash flows of the U.K. project now expressed in dollars, the foreign project can be valued as if it were a domestic U.S. project.
- Ityesi's WACC is calculated as follows:

$$r_{wacc} = \frac{E}{E + D} \cdot r_E + \frac{D}{E + D} \cdot r_D(1 - \tau_c) = (0.5)(10.0\%) + (0.5)(6.0\%)(1 - 40\%) = 6.8\%$$

- **Note:** Ityesi's net debt is \$320 million in debt minus the \$20 million in cash for net debt of \$300 million.
- The present value of the future free cash flows is:

$$PV = \frac{17.495}{1.068} + \frac{17.004}{1.068^2} + \frac{16.528}{1.068^3} + \frac{16.065}{1.068^4} = \$57.20 \text{ million}$$

- Given the upfront cost of launching the product line in dollars is only \$28 million, the net present value is \$29.20 million: \$57.20 – \$28 = \$29.20

Using The Law of One Price As a Robustness Check

- **Foreign Cost of Capital**: Ityesi could have computed the foreign NPV by discounting the foreign cash flows at the foreign cost of capital and converting this result to a domestic NPV using the spot rate.
- Determining the NPV, in this case, requires knowing the **foreign cost of capital**.
- Assume the foreign cost of capital is $r_{\text{£}}^*$. So, the foreign cost of capital must satisfy the Law of One Price:

$$(1 + r_{\text{£}}^*) = \frac{S}{F} (1 + r_{\text{₹}}^*)$$

- To calculate $r_{\text{£}}^*$, we get help from the covered interest rate parity, where $r_{\text{£}}$ and $r_{\text{₹}}$ are the foreign and domestic risk-free interest rates, respectively:
$$\frac{S}{F} = \frac{1 + r_{\text{£}}}{1 + r_{\text{₹}}}$$
- **The foreign cost of capital must satisfy the Law of One Price**: The foreign cost of capital in terms of the domestic cost of capital and interest rates is the **Foreign-Denominated Cost of Capital**, which can be obtained by combining the above equations. So,

$$1 + r_{\text{£}}^* = \frac{1 + r_{\text{£}}}{1 + r_{\text{₹}}} (1 + r_{\text{₹}}^*) \Leftrightarrow r_{\text{£}}^* \approx r_{\text{£}} + (r_{\text{₹}}^* - r_{\text{₹}})$$

Hint: $\ln(1 + X) \approx X$ when $X \approx 0$

So, we can estimate the foreign cost of capital $r_{\text{£}}^*$, using domestic cost of capital $r_{\text{₹}}^*$ and risk-free interest rates $r_{\text{£}}$ and $r_{\text{₹}}$.

Example

Internationalizing the Cost of Capital

Problem

Use the Law of One Price to infer the pound WACC from Ityesi's dollar WACC. Verify that the NPV of Ityesi's project is the same when its pound free cash flows are discounted at this WACC and converted at the spot rate.

Solution

Using Eq. 31.7 to compute the pound WACC gives

$$r_{\text{£}}^* = \frac{1 + r_{\text{£}}}{1 + r_{\$}}(1 - r_{\$}^*) - 1 \left(\frac{1.07}{1.04} \right) (1.068) - 1 = 0.0988$$

The pound WACC is 9.88%.

We can now use Ityesi's pound WACC to calculate the present value of the pound free cash flows in Table 31.3:

$$\frac{11.25}{1.0988} + \frac{11.25}{1.0988^2} + \frac{11.25}{1.0988^3} + \frac{11.25}{1.0988^4} = \text{£}35.75 \text{ million}$$

The NPV in pounds of the investment opportunity is $35.75 - 17.5 = \text{£}18.25$ million. Converting this amount to dollars at the spot rate gives $\text{£}18.25 \text{ million} \times 1.6\$/\text{£} = \$29.20$ million, which is exactly the NPV we calculated before.

Example

- **Question**: Sky Motors, based in Austin, TX, is considering opening a manufacturing plant in Mexico. Sky's weighted average cost of capital in the United States is 12%. The current risk-free rate is 2% in the United States and 8% in Mexico. What is the firm's peso WACC?
- **Answer**: Using Foreign-Denominated Cost of Capital formula:

$$r_{Peso}^* = \frac{1 + r_{Peso}}{1 + r_{Dollar}} (1 + r_{Dollar}^*) - 1 = \frac{1.08}{1.02} \times 1.12 - 1 = 18.59\%$$

- **Question**: In March 2007, the spot Canadian dollar (C\$)–U.S. dollar (U\$) exchange rate was C\$1.1740/U\$. At the time, the yield on one-year Canadian government bonds was about 4%, while the comparable one-year yield on U.S. Treasury securities was 5%. Using the covered interest parity relationship, calculate the implied one-year forward rate.

- **Answer**:

$$F = \frac{(1 + r_{C\$})}{(1 + r_{U\$})} S = \frac{1.04}{1.05} \times 1.1740 = 1.1628$$

- The implied one-year forward rate is C\$1.1628/U\$.

Hedging with Options

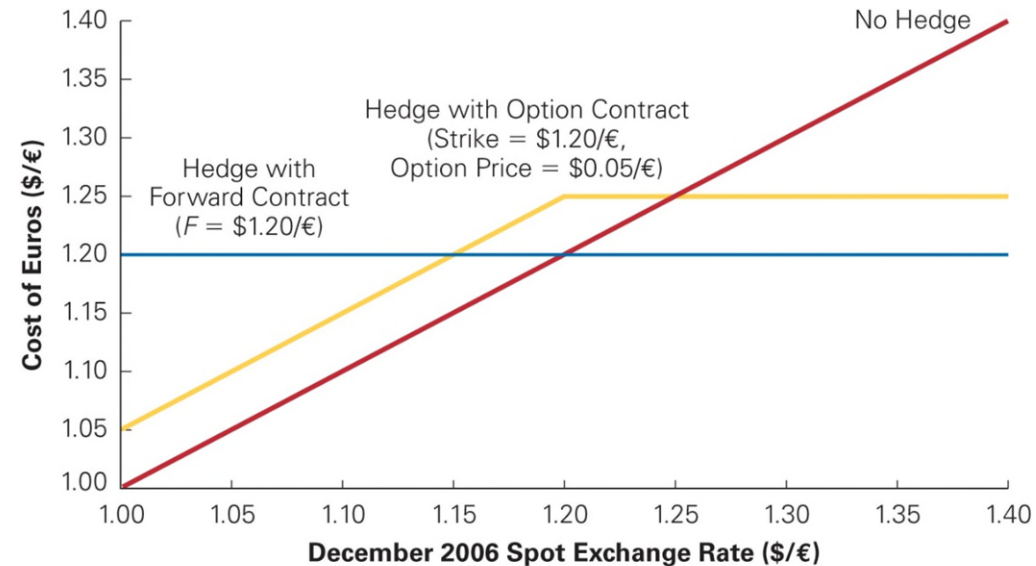
- ❑ **Third way to reduce risk:** Another way to manage risk in the exchange rate market is to use **currency options**.
- Assume that in December **2005**, the one-year forward exchange rate was **\$1.20** per euro. A firm that will need euros in one year can buy a call option on the euro, giving it the right to buy euros at a maximum price. Suppose a one-year European call option on the euro with a strike price of **\$1.20** per euro trades for **\$0.05** per euro.
- The following table shows the outcome of hedging with a call option:

Dec. 2006 Spot Exchange Rate	Exercise Option?	Exchange Rate Taken	+	Cost of Option	=	Total Cost
1.00	No	1.00		0.05		1.05
1.15	No	1.15		0.05		1.20
1.30	Yes	1.20		0.05		1.25
1.45	Yes	1.20		0.05		1.25

- If the spot exchange rate is less than the **\$1.20** per euro, which is the strike price of the option, then the firm will not exercise the option and will convert dollars to euros at the spot exchange rate.
- If the spot exchange rate is more than **\$1.20** per euro, the firm will exercise the option and convert dollars to euros at the rate of **\$1.20** per euro. Adding in the initial cost of the option gives the total dollar cost per euro paid by the firm.

Hedging with Options

The forward hedge locks in an exchange rate and thus eliminates all risk. Not hedging leaves the firm fully exposed. Hedging with an option allows the firm to benefit if the exchange rate falls and protects the firm from a very large increase.



- If the firm does not hedge at all, its cost for euros is simply the spot exchange rate.
- If the firm hedges with a forward contract, it locks in the cost of euros at the forward exchange rate, and the firm's cost is fixed.
- If the firm hedges with options, it puts a cap on its potential cost, but it will benefit if the euro depreciates in value.

Currency Option Pricing

- **Options V.S. Forward Contracts:**

- A firm may use options instead of a forward contract:
 - a) The firm can benefit if the exchange rate moves in its favour and not be stuck paying an above-market rate.
 - b) The transaction they are hedging might not take place, as options give rights not obligations we face in forward contracts.

- **Currency Option Pricing:**

- If the current spot exchange rate is S dollars per euro and the dollar and euro interest rates are $r_{\$}$ and $r_{\text{€}}$, respectively, then the price of a European call option on the euro that expires in T years with a strike price of $K \left(\frac{\$}{\text{€}} \right)$ is:

Price of a Call Option on a Currency: $C = \frac{S}{(1 + r_{\text{€}})^T} N(d_1) - \frac{K}{(1 + r_{\$})^T} N(d_2)$

Where:

$$d_1 = \frac{\ln(F_T / K)}{\sigma\sqrt{T}} + \frac{\sigma\sqrt{T}}{2} \quad \text{and} \quad d_2 = d_1 - \sigma\sqrt{T}$$

In these formulae we have used the fact that: $S^x = \frac{S}{(1 + r_{\text{€}})^T}$ and $\frac{S^x}{PV(K)} = \frac{F_T}{K}$

Example

Implied Volatility of Exchange Rates

Problem

Suppose the current exchange rate is \$1.752/£, the interest rate in the United States is 4.25%, the interest rate in the United Kingdom is 4.5%, and a six-month European call option on the British pound with a strike price of \$1.75/£ trades for a price of \$0.05/£. Use the Black-Scholes formula to determine the implied volatility of the \$/£ exchange rate.

Solution

We can use **previous equations** to compute the Black-Scholes price of a call option on the British pound. The inputs are S = spot exchange rate = 1.752, K = 1.75, T = 0.5, $r_{\$}$ = 4.25%, and the U.K. interest rate $r_{£}$ = 4.5%. The forward exchange rate is $F_{0.5} = 1.752 \times (1.0425)^{1/2} / (1.045)^{1/2} = 1.75$. With a volatility of 10%, we have $d_1 = 0.035$ and $d_2 = -0.035$, with $N(d_1) = 0.514$ and $N(d_2) = 0.486$, so the Black-Scholes value of the call is \$0.048/£. With a volatility of 11%, the Black-Scholes value is \$0.055/£. Thus, the implied volatility of the \$/£ exchange rate is between 10% and 11% per year.

Internationally Segmented Capital Markets

❑ What happens if Capital Markets are not integrated internationally?

- Capital markets that are not internationally integrated are called **Segmented Capital Markets**.
- **Reasons For Segmentation of The Capital Markets & Its Implications:**
 - Important macroeconomic reasons for segmented capital markets include **capital controls** and **foreign exchange controls** that create barriers to international capital flows and thus segment national markets.
 - **Political, legal, social, and cultural** characteristics that differ across countries may require compensation in the form of a country risk premium.
- As a result of these barriers, firms may face **differential access to markets** if there is any kind of asymmetry concerning information about them.
- For example, Ityesi may be well known in the U.S. but not be equally well known in the UK, thus increasing their WACC in the UK. Ityesi would then view the foreign project as less valuable if it raises capital in the United Kingdom rather than in the United States.

Example

- **Implication of Internationally Segmented Capital Market:**
- Firms may be able to benefit from a segmented international financial market if one country or currency has a higher rate of return than another country or currency, when the two rates are compared in the same currency.

Valuing a Foreign Acquisition in a Segmented Market

Problem

Camacho Enterprises is a U.S. company that is considering expanding by acquiring Xtapa, Inc., a firm in Mexico. The acquisition is expected to increase Camacho's free cash flows by 21 million pesos the first year; this amount is then expected to grow at a rate of 8% per year. The price of the investment is 525 million pesos, which is \$52.5 million at the current exchange rate of 10 pesos/\$. Based on an analysis in the Mexican market, Camacho has determined that the appropriate after-tax peso WACC is 12%. If Camacho has also determined that its after-tax dollar WACC for this expansion is 7.5%, what is the value of the Mexican acquisition? Assume that the Mexican and U.S. markets for risk-free securities are integrated and that the yield curve in both countries is flat. U.S. risk-free interest rates are 6%, and Mexican risk-free interest rates are 9%.

Example

Solution

Let's begin by calculating the NPV of the expansion in pesos and converting the result into dollars at the spot rate. Putting the free cash flows on a timeline:



The net present value of these cash flows at the peso WACC is

$$NPV = \frac{21}{0.12 - 0.08} - 525 = 0$$

so the purchase is a zero-NPV transaction. Presumably, Camacho is competing with other Mexican companies for the purchase, and they have bid up the price to the point that $NPV = 0$.

We can also compute the NPV in dollars by converting the expected cash flows into dollars using forward rates. The N -year forward rate (Eq. 30.3 in Chapter 30) expressed in pesos/\$ is

$$F_N = S \times \frac{(1 + r_p)^N}{(1 + r_s)^N} = 10 \times \left(\frac{1.09}{1.06} \right)^N = 10 \times 1.0283^N = 10.283 \times 1.0283^{N-1}$$

Thus, the dollar expected cash flows are the peso cash flows (from the earlier timeline) converted at the appropriate forward rate (we divide by the forward rate because it is in pesos/\$):

$$C_p^N / F_N = \frac{21(1.08)^{N-1}}{10.283 \times 1.0283^{N-1}} = 2.0422 \times 1.0503^{N-1}$$

The dollar expected cash flows are therefore



so the dollar cash flows grow at about 5% per year. The NPV of these cash flows is

$$NPV = \frac{2.0422}{0.075 - 0.0503} - 52.5 = \$30.18 \text{ million}$$

Which NPV more accurately represents the benefits of the expansion? The answer depends on the source of the difference. To compute the dollar expected cash flows by converting the peso expected cash flows at the forward rate, we must accept the assumption that spot rates and the project cash flows are uncorrelated. The difference might simply reflect that this assumption failed to hold. Another possibility is that the difference reflects estimation error in the respective WACC estimates.

If Camacho is relatively confident in its assumptions about spot rates and its WACC estimates, a third possibility is that Mexican and U.S. capital markets are not integrated. In this case, Camacho, because of its access to U.S. capital markets, might have a competitive advantage. Perhaps other companies with which it is competing for the purchase of Xtapa are all Mexican firms that do not have access to capital markets outside of Mexico. Hence Camacho can raise capital at a cheaper rate. Of course, this argument also requires that other U.S. companies are not competing for the purchase of Xtapa. Camacho, however, might have special knowledge of Xtapa's markets that other U.S.-based companies lack. This knowledge would give Camacho a competitive advantage in the product market over other U.S. companies and puts it on an equal footing in the product market with other Mexican companies. Because it has a competitive advantage in capital markets over other Mexican companies, the NPV of the purchase is positive for Camacho, but zero for the other bidders for Xtapa.

Test Yourself

- The spot GBP/USD exchange rate is 0.5025/USD, and the one-year forward rate is GBP 0.5048/USD. If the annual interest rate on dollar CDs is 6 percent, what would you expect the annual interest to be on GBP CDs? (GBP is the domestic currency)**
 - 5.52 percent
 - 6.49 percent
 - 3.55 percent
 - 8.25 percent
- The spot exchange rate for British pounds is 0.5025 (GBP/USD). The one-year risk-free rates in the United States and Britain are 3 percent and 2.75 percent, respectively. What is the forward exchange rate in GBP/USD? (GBP is the domestic currency)**
 - 0.6170
 - 0.5037
 - 0.5013
 - 0.6050
- Suppose that the G Company knows that in one month it must pay £7 million for goods that its U.S. subsidiary will receive in Britain. The current exchange rate is \$1.99/£. The risk that the corporate treasurer faces is that**
 - the \$US/pound exchange rate falls in a month's time (i.e., the pound weakens).
 - the \$US/pound exchange rate rises in a month's time (i.e., the pound strengthens).
 - the \$US/pound exchange rate does not change from its current position.
 - the pound exchange rate falls in a month's time (i.e., the pound strengthens).
- An Australian firm is evaluating a proposal to build a new plant in the United States. The expected cash flows in \$US (in millions) are as follows: Year 0, -100; Year 1, 40; Year 2, 50; Year 3, 65. The discount rate in \$A is 10 percent, while the discount rate in \$US is 12 percent and the spot rate is \$US0.85/\$A. Calculate the NPV in \$A.**
 - +25.69
 - 21.84
 - +13.10
 - +21.84

5. Which of the following statements regarding international projects is FALSE?

- Interest rates and costs of capital will likely be different in the foreign country as a result of the macroeconomic environment.
- The project will most likely generate foreign currency cash flows, although the firm cares about the foreign currency value of the project.
- Under internationally integrated capital markets, the value of an investment does not depend on the currency we use in the analysis.
- The firm will probably face a different tax rate in the foreign country and will be subject to both foreign and domestic tax codes

6. Consider the following equation:

$$S \times \frac{C_{FC}}{(1 + r_{FC}^*)} = \frac{F \times C_{FC}}{(1 + r_{\$}^*)}$$

The term $r_{\* in this equation is:

- the appropriate cost of capital from the standpoint of a U.S. investor.
- the risk-free rate for a foreign investor.
- the risk-free rate for a U.S. investor.
- the appropriate cost of capital from the standpoint of a foreign investor.

7. The dollar cost of debt for John Galt Industries is 8.0%. The firm faces a tax rate of 40% on all income, no matter where it is earned. Galt needs to know its Yen cost of debt. The risk-free interest rates on dollars and yen are $r_{\$} = 6\%$ and $r_{¥} = 2\%$, respectively. Galt is willing to assume that capital markets are internationally integrated and that its free cash flows are uncorrelated to the yen-dollar spot rate. Galt's after-tax cost of debt in yen is closest to:

- 0.9%
- 2.0%
- 3.9%
- 4.8%

8. You are a U.S. investor who is trying to calculate the present value of £5 million cash inflow that will occur one year in the future. The spot exchange rate is $S = \$1.8839/£$ and the forward rate is $F1 = \$1.8862/£$. The appropriate dollar discount rate for this cash flow is 5.32% and the appropriate £ discount rate is 5.24%. The present value of the £5 million cash inflow computed by first discounting the £s and then converting into dollars is closest to:

- \$8,961,420
- \$8,943,695
- \$8,954,615
- \$8,950,495

Some Explanations For the Previous Questions

Question 7:

After tax WACC = $r(1 - \tau) = 8\%(1 - 40\%) = 4.8\%$

$$r_{¥}^* = \frac{1 + r_{¥}}{1 + r_{\$}} (1 + r_{\$}^*) - 1 = \frac{1.02}{1.06} (1 + .048) - 1 = 0.008453 \text{ or } .845\%$$

Question 8:

$$PV£ = \frac{£5 \text{ million}}{1.0524} = £4,751,045.23$$

$$PV\$ = PV£ \times S = £4,751,045.23 \times \$1.8839/£ = \$8,950,494.10$$

Extra Questions & Answers

Extra Questions with Answers

Extra Questions & Answers

- **Question 1**: Suppose the exchange rate for Norwegian Krone is quoted as 12.54 NKr/£ in the spot market and 13 NKr/£ in the 90-day forward market.
 - a) Is the British pound selling at a premium or a discount relative to the Krone?
 - b) Does the financial market expect the Krone to weaken relative to the pound? Explain.
 - c) What do you suspect is true about relative economic conditions in the UK and Norway?
- **Answer**:
 - a) The pound is selling at a premium because it is more expensive in the forward market than in the spot market (NKr 13 versus NKr 12.54).
 - b) The kroner is expected to depreciate relative to the pound because it will take more kroner to buy one pound in the future than it does today.
 - c) Inflation in Norway is higher than in the United Kingdom, as are nominal interest rates.

Extra Questions & Answers

Apr 20	Currency	DOLLAR		EURO		POUND		Currency		DOLLAR		EURO		POUND	
		Closing Mid	Day's Change	Closing Mid	Day's Change	Closing Mid	Day's Change			Closing Mid	Day's Change	Closing Mid	Day's Change	Closing Mid	Day's Change
Argentina	(Peso)	4.4038	0.0008	5.8165	0.0295	7.0973	0.0254	Poland	(Zloty)	3.1728	-0.0091	4.1906	0.0088	5.1134	0.0030
Australia	(A\$)	0.9641	-0.0031	1.2734	0.0023	1.5538	0.0004	Romania	(NewLeu)	3.3143	-0.0142	4.3775	0.0030	5.3415	-0.0045
Bahrain	(Dinar)	0.3770	-	0.4980	0.0025	0.6076	0.0021	Russia	(Rouble)	29.4320	-0.0993	38.8738	0.0609	47.4341	0.0025
Bolivia	(Boliviano)	6.9100	-	9.1268	0.0450	11.1365	0.0380	Saudi Arabia	(SR)	3.7502	-0.0001	4.9532	0.0243	6.0440	0.0205
Brazil	(R\$)	1.8798	-0.0083	2.4828	0.0012	3.0296	-0.0029	Singapore	(S\$)	1.2483	-0.0025	1.6488	0.0048	2.0118	0.0028
Canada	(C\$)	0.9910	-0.0021	1.3089	0.0037	1.5917	0.0021	South Africa	(R)	7.7977	-0.0450	10.2992	-0.0085	12.5671	-0.0294
Chile	(Peso)	486.150	-2.0000	642.107	0.5313	783.504	-0.5384	South Korea	(Won)	1139.50	1.3500	1505.05	9.1810	1836.48	8.4355
China	(Yuan)	6.3085	0.0046	8.3323	0.0470	10.1671	0.0421	Sweden	(SKr)	6.6961	-0.0258	8.8441	0.0096	10.7917	-0.0046
Colombia	(Peso)	1771.50	-5.0150	2339.80	4.9238	2855.04	1.6888	Switzerland	(SFr)	0.9097	-0.0048	1.2015	-0.0005	1.4661	-0.0028
Costa Rica	(Colon)	503.420	0.1450	664.918	3.4628	811.338	3.0017	Taiwan	(T\$)	29.4985	0.0015	38.9616	0.1937	47.5413	0.1647
Czech Rep.	(Koruna)	18.8814	-0.0082	24.9385	0.1120	30.4302	0.0907	Thailand	(Bt)	30.9300	0.0550	40.8524	0.2734	49.8484	0.2585
Denmark	(DKr)	5.6320	-0.0278	7.4387	0.0000	9.0768	-0.0138	Tunisia	(Dinar)	1.5205	0.0034	2.0082	0.0053	2.4505	0.0028
Egypt	(Egypt £)	6.0473	-	7.9872	0.0393	9.7461	0.0332	Turkey	(Lira)	1.7918	0.0019	2.3666	0.0142	2.8877	0.0129
Hong Kong	(HK\$)	7.7619	-0.0007	10.2519	0.0496	12.5094	0.0415	UAE	(Dirham)	3.6730	0.0000	4.8513	0.0238	5.9196	0.0201
Hungary	(Forint)	224.682	-1.1721	296.760	-0.0800	362.109	-0.6467	UK (0.6205)*	(£)	1.6117	0.0055	0.8196	0.0013	-	-
India	(Rs)	52.0950	0.1000	68.8071	0.4701	83.9589	0.4471	One Month		1.6113	0.0000	0.8198	-	-	-
Indonesia	(Rupiah)	9183.50	4.5000	12129.665	6.064	14800.6	57.7360	Three Month		1.6107	0.0000	0.8205	-	-	-
Iran	(Rial)	123000.0	-2.5000	16245.876	6.642	19823.3	63.6346	One Year		1.6064	-0.0004	0.8251	0.0001	-	-
Israel	(Shk)	3.7552	-0.0036	4.9598	0.0196	6.0520	0.0148	Ukraine	(Hrywnja)	8.0265	-0.0040	10.6014	0.0469	12.9359	0.0377
Japan	(Y)	81.6050	0.0600	107.784	0.6093	131.519	0.5452	Uruguay	(Peso)	19.9500	0.1000	26.3500	0.2611	32.1525	0.2704
One Month		81.5857	-0.0005	107.769	-0.0011	131.462	-0.0014	USA	(£)	-	-	1.3208	0.0065	1.6117	0.0055
Three Month		81.5315	-0.0010	107.742	-0.0023	131.322	-0.0033	One Month		-	-	1.3209	-	1.6113	0.0000
One Year		81.0992	0.0008	107.483	-0.0114	130.279	-0.0331	Three Month		-	-	1.3215	0.0000	1.6107	0.0000
Kenya	(Shilling)	83.2500	-	109.957	0.5411	134.170	0.4579	One Year		-	-	1.3253	-0.0001	1.6064	-0.0004
Kuwait	(Dinar)	0.2783	-0.0002	0.3676	0.0016	0.4485	0.0012	Venezuela (Bolivar Fuerte)		4.2947	-	5.6724	0.0279	6.9215	0.0237
Malaysia	(M\$)	3.0646	-0.0004	4.0478	0.0195	4.9391	0.0162	Vietnam	(Dong)	20850.0	25.0000	27538.7	168.384	33602.9	154.830
Mexico	(New Peso)	13.1166	-0.1108	17.3244	-0.0604	21.1394	-0.1057								
New Zealand	(NZ\$)	1.2232	-0.0031	1.6156	0.0038	1.9713	0.0016	Euro (0.7571)*	(Euro)	1.3208	0.0065	-	-	1.2202	-0.0019
Nigeria	(Naira)	157.100	-0.0300	207.498	0.9818	253.190	0.8158	One Month		1.3209	-	-	-	1.2198	-
Norway	(Nkr)	5.7223	-0.0210	7.5580	0.0096	9.2224	-0.0022	Three Month		1.3215	0.0000	-	-	1.2189	0.0000
Pakistan	(Rupee)	90.7750	0.0400	119.869	0.6427	146.298	0.5635	One Year		1.3253	-0.0001	-	-	1.2121	-0.0001
Peru	(New Sol)	2.6525	-0.0010	3.5034	0.0159	4.2749	0.0130								
Philippines	(Peso)	42.6200	-0.0300	56.2925	0.2376	68.6886	0.1863	SDR	-	0.6469	-0.0014	0.8544	0.0024	1.0426	0.0014

Extra Questions & Answers

- **Question 2:** Take a look at the table in slide no. 57 and answer the following questions.
 - a) If you have €100, how many British pounds can you get?
 - b) Which is worth more, a New Zealand dollar or a Singapore dollar?
 - c) Which would you rather have, 100 Swiss francs (SFr) or 100 Norwegian kroner (NKR)? Why?
 - d) What is the 3-month forward rate for the US dollar per euro? Is the dollar selling at a premium or a discount? Explain.
 - e) What is the cross-rate in terms of Iranian Rial per Thai baht?
 - f) Suppose the cross-rate is 279 Rial=1 Thai baht. Is there any arbitrage opportunity here? If there is, how to take advantage of the mispricing.
- **Answer:**
 - a) $€100(€0.8196/£1) = £81.96$
 - b) New Zealand dollar
 - c) Use the €, £ or \$ as the base currency: $(SFr100)(£0.6821/SFr) = £68.21$, $(NKR100)(£0.10843/NKr) = £10.84$
 - d) $F90 = \$1.3215$ (per €). The dollar is selling at a discount because it is less expensive in the forward market than in the spot market (\$1.3215 versus \$1.3208).
 - e) The cross rate in Rial/Baht terms is: $(Rial19823/£1)(£0.02006/Baht1) = Rial397.67/Baht$ (Note: £1=49.8484 Baht)
 - f) The Rial is quoted as too high relative to the baht. Take out a loan for 100 baht and buy £2.006. Use the £2.006 to purchase a rial at the cross-rate, which will give you: $£2.006(Rial19823/£) = Rial39,766.57$. Now use the Rial to buy back baht and repay the loan. The cost to repay the loan will be: $Rial39,766.57(1/(Rial397.67/bt)) = 99.998 Baht$, your arbitrage profit is 0.00151 Baht per baht used.

Extra Questions & Answers

- **Question 3:** The spot rate of foreign exchange between the US and the UK is **1.6117 \$/£**. If the interest rate in the US is **13%** and it is **8%** in the UK, what would you expect the one-year forward rate to be if no immediate arbitrage opportunities existed?
- **Answer:** Using the interest-rate parity theorem:

$$(1 + r_{\$}) / (1 + r_{£}) = F / S$$

We can find the forward rate as:

$$F = [(1 + r_{\$}) / (1 + r_{£})] S$$

$$F = (1.13 / 1.08) \times \$1.6117 / £ = \$1.686 / £$$

Question 4: Using the interest rate parity for one-period shows that the forward rate for ***T*-period** can be approximately written as $F_T = S \times [1 + (r_{FC} - r_{DC})]^T$.

Answer: We have $F = S \times \frac{(1+r_{DC})}{(1+r_{FC})} \Rightarrow F = S \times [1 + (r_{FC} - r_{DC})]$

So, in general, if we have ***T*** periods instead of just one, the interest rate parity approximation can be written as

$$F = S \times [1 + (r_{FC} - r_{DC})]^T$$

Extra Questions & Answers

- **Question 5**: Imagine you are a resident of the EU. Using the table in slide no. 57 and the equation we obtained in Question 4, what must the annual risk-free rate in the UK be if the current annual risk-free rate in Eurozone is 3.8%?
- **Answer**: We can write the formula as :

$$r_{\text{£}} = \frac{F - S}{S} + r_{\text{€}} \Rightarrow r_{\text{£}} = (£0.8251 - £0.8196) / £0.8196 + 0.038 = 4.47\%$$

- **Question 6**: If financial markets are perfectly competitive and the Eurodollar rate is above the offered in the US loan market, you would immediately want to borrow money in the US and invest it in Eurodollars. True or false? Explain. (Eurodollar is the amount of dollar kept in the EU's financial system)
- **Answer**: False. If the financial markets are perfectly competitive, the difference between the Eurodollar rate and the U.S. rate will be due to differences in risk and government regulation. Therefore, speculating in those markets will not be beneficial.

Extra Questions & Answers

- Question 7:** A Dutch firm has an investment opportunity in the UK. The project costs **£12 million** and is expected to produce cash flows of **£2.7 million**, **£3.5 million** and **£3.3 million** in years **1 to 3**, respectively. The current spot exchange rate is **€1.12/£** and the current risk-free rate in the Eurozone is **2.12%**, compared to that in the UK of **2.13%**. The appropriate discount rate for the project is estimated to be **13%** which is the Eurozone cost of capital for the company. In addition, the subsidiary can be sold at the end of **3** years for an estimated **£7.4 million**. What is the NPV of the project?
- Answer:** First, we need to forecast the expected future rate for each of the next three years. From the exact form of interest rate parity, the expected exchange rate is: $E(S) = [(1 + r_{€}) / (1 + r_{£})]^T \times S$

$$E(S_1) = (1.0212 / 1.0213)^1 \text{ €1.12/£} = \text{€1.1199/£}$$

$$E(S_2) = (1.0212 / 1.0213)^2 \text{ €1.12/£} = \text{€1.1198/£}$$

$$E(S_3) = (1.0212 / 1.0213)^3 \text{ €1.12/£} = \text{€1.1197/£}$$
- Now we can use these expected future rates to find the euro cash flows. The euro cash flow each year will be:

$$\text{Year 0 cash flow} = -\text{£12,000,000}(\text{€1.12/£}) = -\text{€13,440,000}$$

$$\text{Year 1 cash flow} = \text{£2,700,000}(\text{€1.1199/£}) = \text{€3,023,704}$$

$$\text{Year 2 cash flow} = \text{£3,500,000}(\text{€1.1198/£}) = \text{€3,919,232}$$

$$\text{Year 3 cash flow} = (\text{£3,300,000} + \text{£7,400,000})(\text{€1.1197/£}) = \text{€11,980,480}$$

And the NPV of the project will be:

$$NPV = -\text{€13,440,000} + \text{€3,023,704}/1.13 + \text{€3,919,232}/1.13^2 + \text{€11,980,480}/1.13^3 = \text{€608,251.7}$$

International Competition & Risks

Learning Objectives:

- Explain the reasons that governments intervene in trade
- Explain the instruments government have/use to promote or restrict trade
- Outline the various sources of political risk
- Explain how companies can manage political risk

Governments, International Competition & Risks

- Why do governments intervene to regulate their national trade?
 - **Political Motives**
 - i. Protect jobs
 - ii. Preserve national security (Military equipment, Prevent importing Genetically modified crops)
 - iii. Respond to unfair trade
 - iv. Gain influence (in the region or on a bigger scale for political reasons, e.g., getting UN member votes in the time of crisis)
 - **Economic Motives**
 - i. Protect infant industries (industrial policy)
 - ii. Pursue strategic trade policy (positive trade balance or consolidating the economic power of some industries against severe global competition, e.g., shipbuilding in South Korea)
 - **Cultural Motives**
 - i. Achieve cultural objectives
 - ii. Protection of national identity
- { “French law bans foreign-language words from all business & gov. Communications” + 35% of the music played on Canadian radio must be from Canadian artists)

International Competition & Risks

- US, EU & Canada Used **Multi-Fiber Arrangement** (MFA) between **1974** and **2004** to regulate the imports of cheaper textile and clothing from China and India (due to economy of scale in production and lower wages in these countries) to safeguard their manufacturing businesses.

Multifiber Arrangement (https://www.wto.org/english/tratop_e/texti_e/texintro_e.htm)

- Governments use different instruments to **promote** or **restrict** trade for their national interests:



Instruments of Trade Promotion

1. Trade Promotion

- **Subsidies** (**Financial assistance**: Cash payment, Low-interest loan, price supports, etc.)
- **Export Financing** (all above financial assistance + loan guarantee by the government)
- **Foreign Trade Zones (FTZ)** (a designated geographic region through which merchandise is allowed to pass with lower customs duties (taxes) and/or fewer customs procedures)
- **Special Government Agencies** (to promote the growth of the export of mostly small and medium-sized companies, e.g., Japan External Trade Organization (JETRO: www.jetro.go.jp))

Instruments of Trade Restrictions

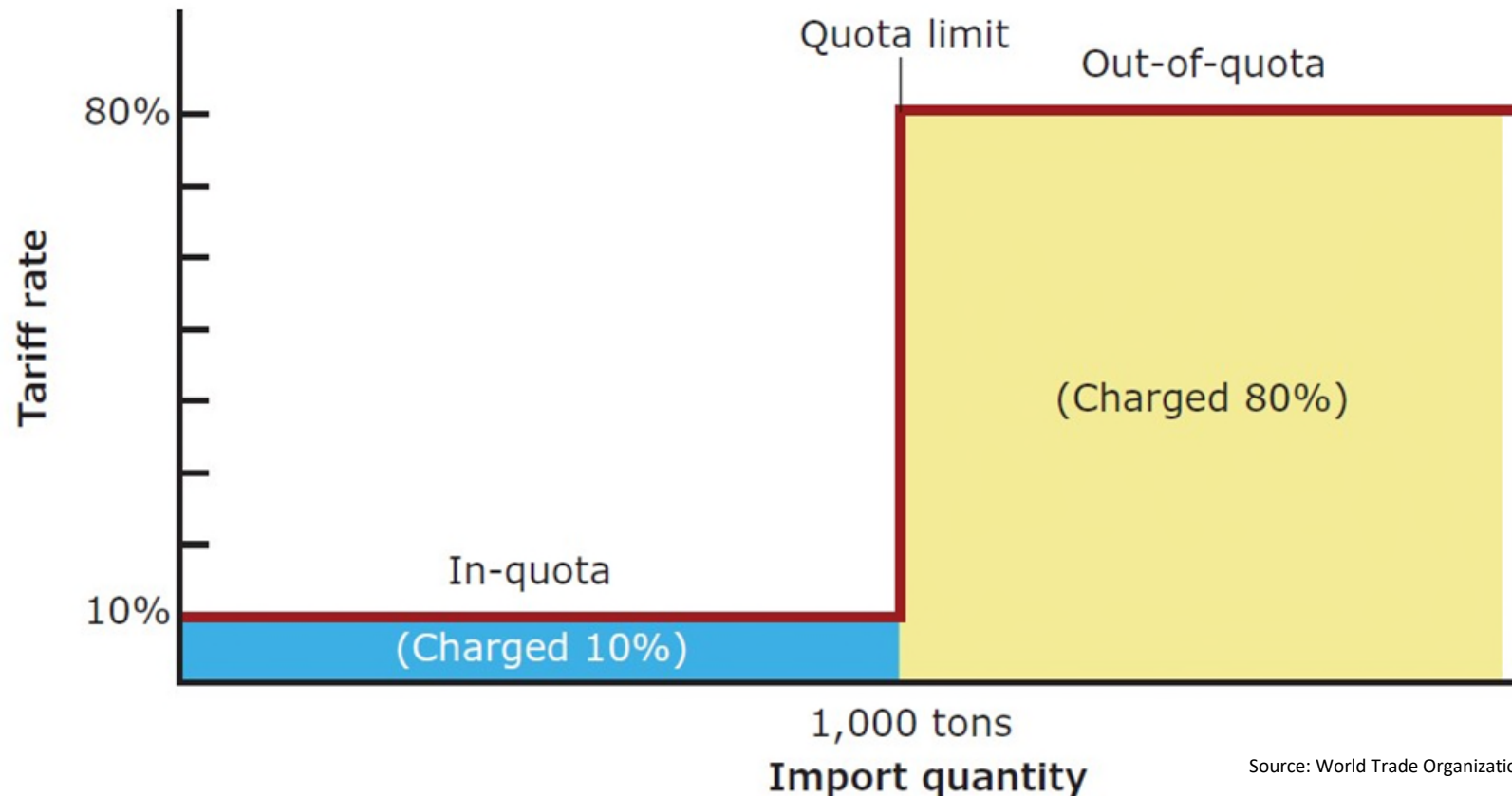
2. Trade Restrictions

- **Tariffs**
 - i. **Export tariff**: It is levied by the government of a country that is exporting a product.
 - ii. **Transit Tariff**: It is levied by the government of a country that a product is passing through on its way to its destination.
 - iii. **Import Tariff**: It is levied by the government of a country that is importing a product.
- **Quotas**: Restriction on the amount (measured in units or weight) of a good that can enter or leave a country during a certain period.
- **Embargoes**: Complete ban on trade (imports and exports) in one or more products with a particular country.
- **Local Content Requirements**: Laws stipulating that producers in the domestic market must supply a specified amount of a good or service.
- **Administrative Delays**: Regulatory controls or bureaucratic rules designed to impair the flow of imports into a country. (food products, cosmetic products, pharmaceutical products, ...)
- **Currency Controls**: Restrictions on the convertibility of a currency into other currencies.

Instruments of Trade Restrictions

- **Tariff-Quotas:** A hybrid form of trade restriction is called a tariff-quota—a lower tariff rate for a certain quantity of imports and a higher rate for quantities that exceed the quota.

Tariff-Quotas : How a Tariff-Quota Works



Source: World Trade Organization Website (www.wto.org).

Global Trading System

World trade volume reached a peak in the late 1800s



Smoot-Hawley Act in 1930

“The act represented a major shift in U.S. trade policy from one of free trade to one of protectionism”.



General Agreement on Tariffs and Trade (GATT)

“A treaty designed to promote free trade by reducing both tariff and non-tariff barriers to international trade”. Formed in 1947 by 23 nations. In the early years, tariffs were reduced from 40% to 5%—agreement on services, intellectual property & agricultural subsidies.



World Trade Organization (WTO)

Replaced the GATT and its agreements for the same goals and also help to negotiate for further opening of markets, and to settle trade disputes among its members + retaliation for following dumping policy.

Global Trading System (GATT)

General Agreement on Tariffs and Trade (GATT)

- **The General Agreement on Tariffs and Trade (G A T T):** A treaty designed to promote free trade by reducing tariff and non-tariff barriers to international trade. Its origin goes back to the **Bretton Woods** conference in **1944**, towards the end of World War II.
- **Between 1947 and 1988: Highly successful**
 - Reduced average tariffs from **40** per cent to **5** per cent
 - Multiplied the volume of international trade by a factor of **20**
- **By the middle to the late of 1980s: Challenges**
 - Non-tariff barriers (**rising nationalism globally led to a nearly 50% increase in non-tariffs**)
 - Services not covered by the original G A T T (e.g., **international calls, tourism, banking operations, business consultants**)



Examples of non-tariff barriers

<https://www.tutor2u.net/economics/reference/10-examples-of-non-tariff-barriers>

Global Trading System (GATT)

Round of Negotiations: Completed Rounds of GATT

Source: Based on About the WTO, World Trade Organization website (www.wto.org).

Year	Site	Number of Countries Involved	Topics Covered
1947	Geneva, Switzerland	23	Tariffs
1949	Annecy, France	13	Tariffs
1951	Torquay, England	38	Tariffs
1956	Geneva	26	Tariffs
1960-1961	Geneva (Dillon Round)	26	Tariffs
1964-1967	Geneva (Kennedy Round)	62	Tariffs, antidumping measures
1973-1979	Geneva (Tokyo Round)	102	Tariffs, nontariff measures, “framework agreements”
1986-1994	Geneva (Uruguay Round)	123	Tariffs, non-tariff measures, rules, services, intellectual property, dispute settlement, investment measures, agriculture, textiles and clothing, natural resources, creation of the World Trade Organization

Global Trading System (GATT)

Uruguay Round of Negotiations (1986-1994):

- Largest trade negotiation in history.
- Begun in 1986 in Punta del Este in Uruguay
- 7 years to complete

Agreements:

- **Agreement on services** (all services necessary to promote trade between countries)
- **Agreement on intellectual property** (to help standardise all rules around intellectual properties around the world)
- **Agreement on agricultural subsidies** (forces countries to convert all non-tariff barriers to tariffs—a process called “tariffication” e.g., ISO, CE= complies with the EU rules & regulations)
- **Creation of the WTO** (the greatest achievement of the Uruguay Round)

Global Trading System (WTO)

World Trade Organisation (WTO)

- **The World Trade Organisation (WTO):** the international organisation that regulates trade among nations. It came into existence on **January 1, 1995, with membership from 128** countries. Now, **164** members and **21** observers.
- Main goals of the WTO (www.wto.org)
 1. Help the free flow of trade
 2. Help negotiate the further opening of markets
 3. Settle trade disputes among its members
 4. Monitoring & surveillance of the trade between members to make sure the implementation of agreed policies
- The principle of nondiscrimination (called **normal trade relations**)

Global Trading System (WTO)



Three main reasons for the replacement of GATT with WTO:

GATT dealt with only tariff barriers but by the 1970s non-tariff barriers has also started increasing.

By the 1980s, developing countries started pursuing export-oriented growth. For e.g.- Singapore, South Korea etc.

1980s

1970s

1980s

GATT dealt with trade in goods. But by the 1980s developed countries started having comparative advantages in trade in services.

Global Trading System (WTO)

- **Dispute Settlement in the WTO** (in terms of the **time of action** (1 year) and **fairness**)
- **Dumping and the WTO** (Allows member countries to retaliate against **dumping** by imposing an **anti-dumping duty** which is an additional tariff placed on an imported product that a nation believes is being dumped on its market).
- **Subsidies and the WTO** (A **countervailing duty** is an additional tariff placed on an imported product that a nation believes is receiving an unfair subsidy).
- **Doha Round of Negotiations** (started in **2001** but very slow moving + without any significant achievement on agricultural trade issues, tariffs)
- **WTO and the Environment** (no separate agreement for environmental issues)

Note: **Dumping** occurs when a company exports a product at a price that is either lower than the price normally charged in its domestic market, or lower than the cost of production. Because dumping is an act by a company, not a country, the WTO cannot punish the country on which dumping is based.

Bottomline For Business

- Despite the theoretical benefits of trade, nations do not simply throw open their doors to free trade and force all their domestic businesses to sink or swim. This part has discussed the reasons why national governments continue to protect all or some of their industries and how they go about it.
- The global trading system through the World Trade Organisation tries to **strike a balance between national desires for protection and international desires for free trade**, and also serves to settle trade disputes between countries.

GDP vs GNP

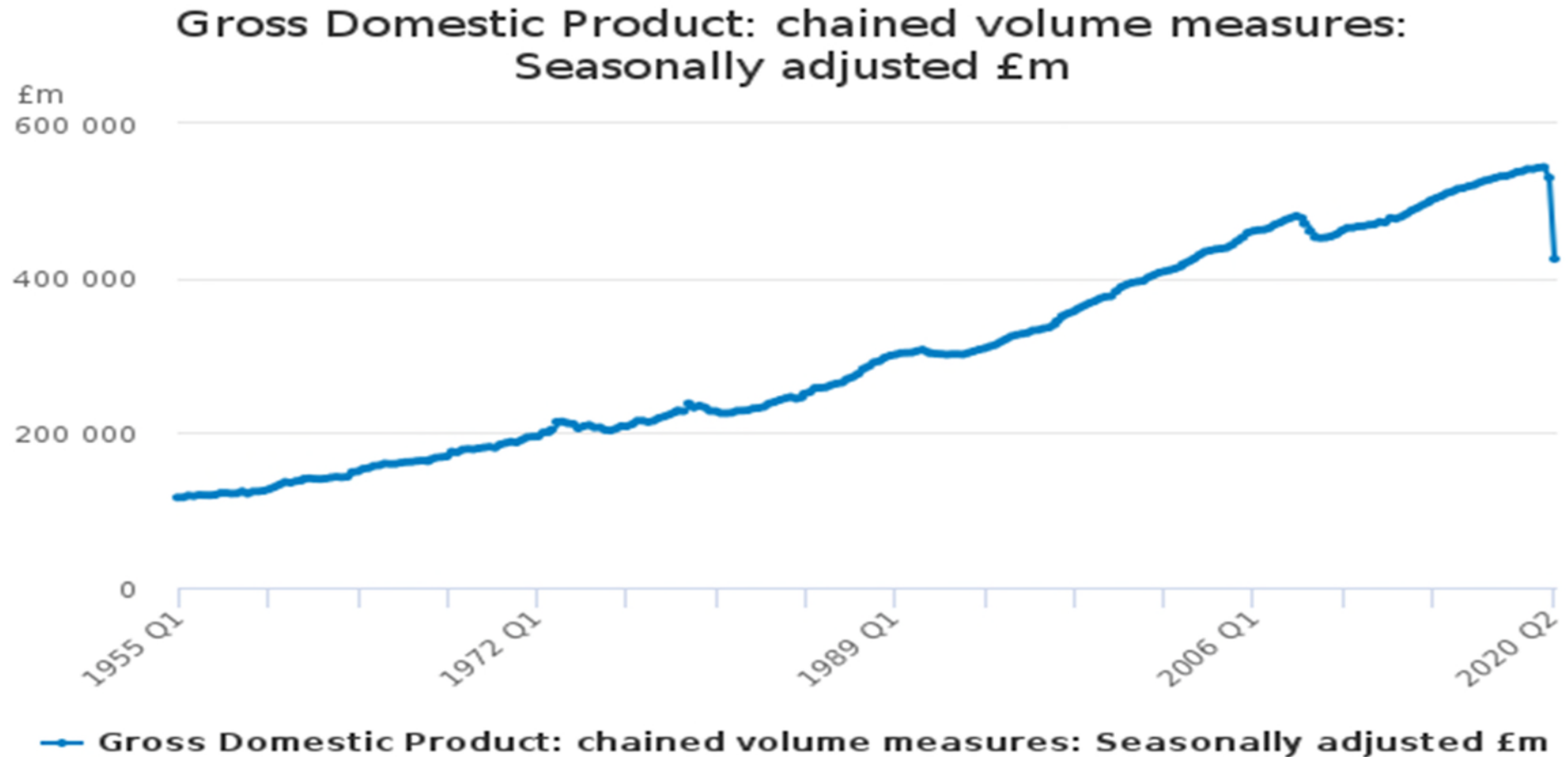
- In economics, we classify economic systems based on their GDP or GNP growth and their economic development.
- **Gross Domestic Product (GDP)** is one of the vastly accepted measures that estimate the total value of activities in an economy for a specific period of time.
- GDP today is the main and the most important measure to judge the success of an economy in terms of **accumulation of wealth**. This means how much **monetary value** an economic system can produce.
- **GDP or GNP?**
- **Gross National Product (GNP)** is another measure that includes the nation's net income from using their labour or capital out of the country.

GDP vs GNP

- While GDP measures the **total income which is domestically earned**, **GNI=GNP** estimates the **total net income which is internationally earned** including those citizens who work abroad.
- In the calculation of GNI=GNP, if a UK citizen works abroad or invests abroad, the income he/she receives (for the work/the investment) must be added to GDP but for the foreigners who work/invest in the UK, their incomes should be deducted from GDP. So;

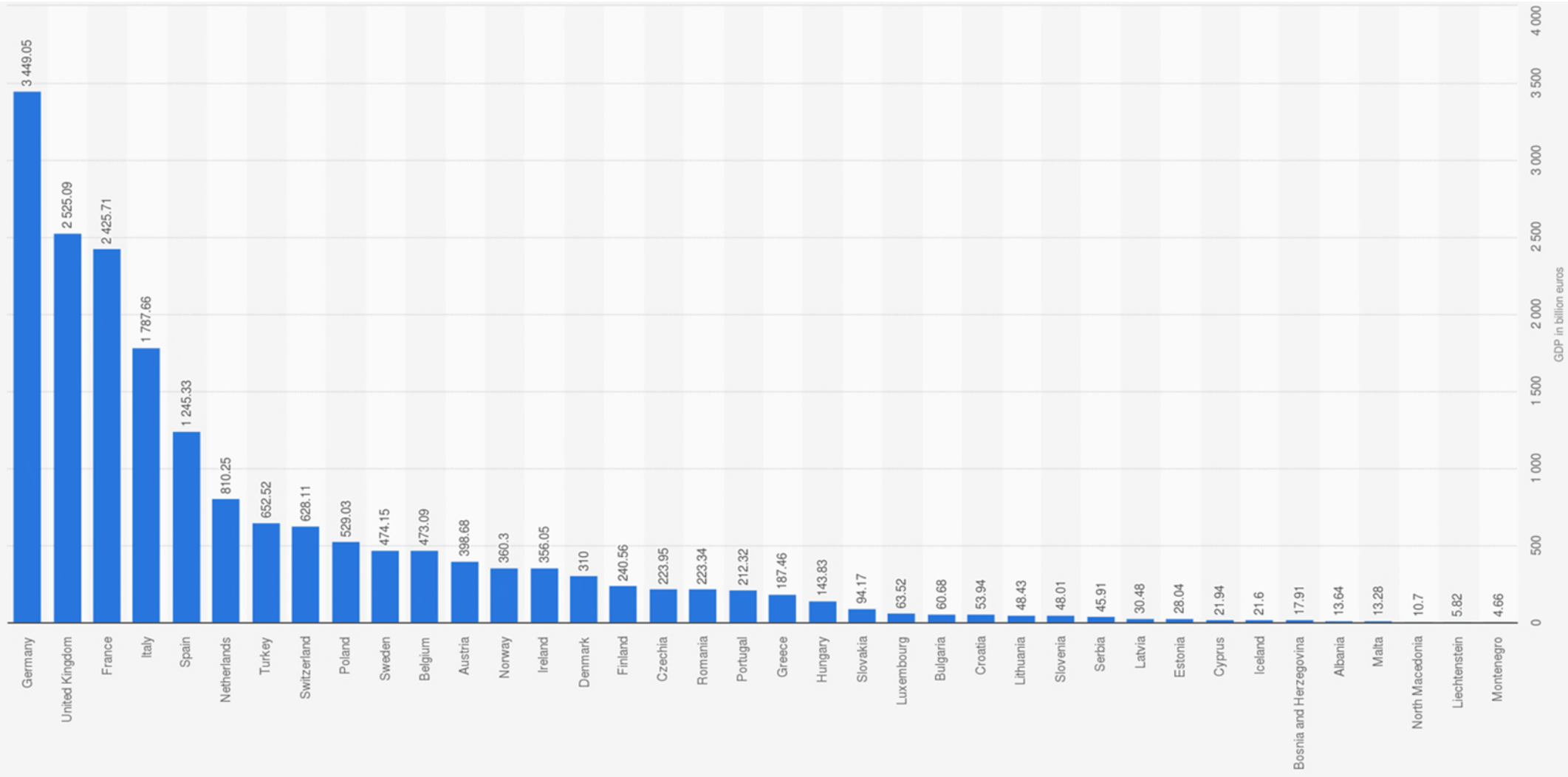
$$GNI = GNP = GDP + \text{Factor Payments from Abroad} - \text{Factor Payments to Abroad}$$

Gross Domestic Product (GDP)



Gross Domestic Product (GDP)

Gross domestic product (GDP) at current market prices of selected European countries in 2019 (in billion euros)



Additional Information:
Europe; Eurostat; 2019

Source
Eurostat
© Statista 2020

Gross Domestic Product (GDP)

- If GDP growth in a country is high and it grows continuously at a high level, the country is called economically successful as the higher GDP means more values are created domestically & more money comes into the economic system through international trade which provides more investment, employment, production and more economic score for the country.
- **GDP per Capita:**
- **GDP per capita** shows the value of the total output/income or expenditure per person (domestic population) in a specific period (usually a year).
- GNP per capita shows the share of all generated income per domestic population in a specific period.

Gross Domestic Product (GDP)

- **What does GDP measure?**
- GDP measures both the economy's **total income** (earned by domestically-located **factors of production** such as labour, land and capital) and the economy's **total expenditure** (on domestically-produced **final goods and services**).
- **How is that possible?**

In every transaction,
the buyer's expenditure becomes the seller's
income.

Thus, the sum of all expenditure equals
the sum of all income.

GDP & Its Limitations

- GDP has its own limitations. In his 1934 report, Kuznets “*cautioned against equating GDP growth with economic or social well-being*”. (Costanza et al, 2009)
 - A. It does not include the production of items which are **not supplied in the market for sale**, such as volunteer work, household services, work of prisoners, some defence productions etc. It also does not include the income resulting in the **black market** or **illegal activities**.
 - B. It does not work as the measure of **economic well-being** as it does not show how the profit of the monetary transaction in the market is distributed between different factors of production.
 - C. It does not consider the **environmental damage** and the **depletion & degradation of the natural resources** in the process of production. Countries with a high level of GDP provide more waste and create more pollution for the environment.
 - D. It does not reflect the **quality of life**. Higher GDP is not equal to more happiness.
 - E. It does not show any **social, political** or **environmental improvement**.
 - F. It does not show the **purchasing power** of the unit of the domestic currency compared to other currencies.

SPI Index As An Alternative To GDP

- If GDP is replaced by another index such as the “**Social Progress Index**”, some other countries get the highest ranks; including Finland, Canada, Denmark, Australia etc.
- The **Social Progress Index (SPI)** is an index to measure the society’s well-being based on social & environmental progress rather than just economic progress.

Basic Human Needs

Nutrition & Basic Medical Care

Undernourishment
Maternal mortality rate
Child mortality rate
Child stunting
Deaths from infectious diseases

Water & Sanitation

Access to at least basic drinking water
Access to piped water
Access to at least basic sanitation facilities
Rural open defecation

Shelter

Access to electricity
Quality of electricity supply
Household air pollution attributable deaths

Personal Safety

Homicide rate
Political killings and torture
Perceived criminality
Traffic deaths

Foundations of Wellbeing

Access to Basic Knowledge

Adult literacy rate
Primary school enrollment
Secondary school enrollment
Gender parity in secondary enrollment
Access to quality education

Access to Information & Communications

Mobile telephone subscriptions
Internet users
Participation in online governance
Access to independent media

Health & Wellness

Life expectancy at 60
Premature deaths from non-communicable diseases
Access to essential health services
Access to quality healthcare

Environmental Quality

Outdoor air pollution attributable deaths
Wastewater treatment
Greenhouse gas emissions
Biome protection

Opportunity

Personal Rights

Political rights
Freedom of expression
Freedom of religion
Access to justice
Property rights for women

Personal Freedom & Choice

Vulnerable employment
Early marriage
Satisfied demand for contraception
Corruption

Inclusiveness

Acceptance of gays and lesbians
Discrimination and violence against minorities
Equality of political power by gender
Equality of political power by socioeconomic position
Equality of political power by social group

Access to Advanced Education

Years of tertiary schooling
Women's average years in school
Globally ranked universities
Percent of tertiary students enrolled in globally ranked universities

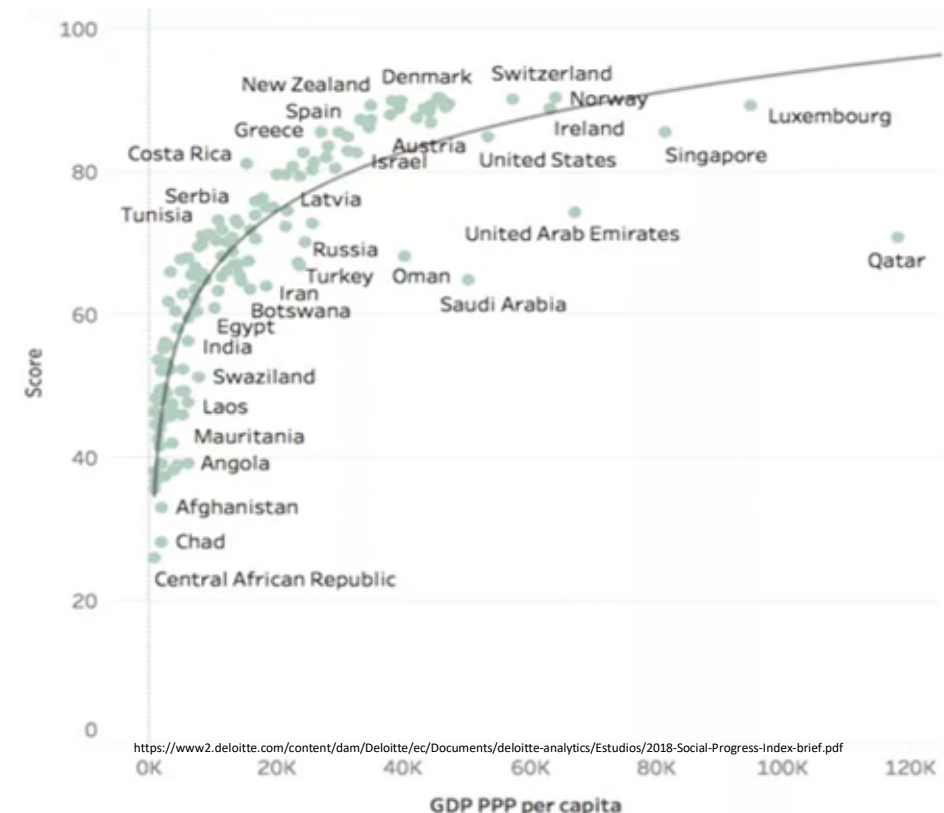


Figure: The SPI V.S. GDP per Capita

Purchasing Power Parity

- One of the limitations of GDP or GNP is that the measure does not show the purchasing power of each unit of the currency in a country.
- **Purchasing Power:** Value of goods and services that can be purchased with one unit of a country's currency.
- **Purchasing Power Parity:** Relative ability of two countries' currencies to buy the same "basket" of goods in those two countries.
- To understand the PPP theory, we need to have an idea about the **nominal exchange rate** and **real exchange rate**.

Nominal & Real Exchange Rates

- **Nominal exchange rate (e)**:
- International flows of capital, goods and services are all types of transactions between different countries, but these transactions occur at a price. In this part, we focus on the price of such transactions.

e = nominal exchange rate, the
**relative price of domestic
currency in terms of foreign
currency** (e.g., Yen per Euro
or Pound)

- **Real exchange rate (ε)**: This is the rate that shows the relative price of goods in two countries.

ε = real exchange rate, the **relative price of
domestic goods in terms of foreign
goods** (e.g., price of a Mars bar in Tokyo
per price of a Mars bar in Frankfurt)

Understanding the units of ε

$$\text{Real exchange rate} = \text{Nominal exchange rate} \times \frac{\text{Domestic price}}{\text{Foreign price}}$$

Or

$$\varepsilon = e \times \frac{P}{P^*}$$

- Price of a burger in the UK= **£6.00**
- Price of a burger in France= **€6.66** (**Similar burger in terms of the size and quality**)
- Nominal exchange rate= **1.11 €/\$** (for ever pound you get **1.11** Euro)

So, we have:

$$\varepsilon = 1.11 \left(\frac{\text{€}}{\text{£}} \right) \times \frac{6 \text{ (£)}}{6.66 \text{ (€)}} = 1$$

- **Now, if the price of the burger in France changes to €7.00, then the real exchange rate would be:**

$$\varepsilon = 1.11 \times \frac{6}{7} \approx 0.95$$

This means that the good is cheaper in the UK, i.e. if a French comes to the UK and buy a burger, at the UK's price, he/she can buy **95%** of the similar burger in his own country.

Purchasing Power Parity

- **Question:** Is it cheaper to buy a *hp* printer from the US? What about a *Toyota* car from Japan?
- **Definition 1:** PPP is a doctrine that states that goods must sell at the same (currency-adjusted) price in all countries.
- **Definition 2:** PPP asserts that the **nominal exchange rate adjusts to equalize** the cost of a basket of goods across countries.
- **Reasoning:** No arbitrage and the law of one price in the free markets.
- PPP says: $e \times P = P^*$

Cost of a basket of domestic goods, in foreign currency.

Cost of a basket of domestic goods, in domestic currency.

Cost of a basket of foreign goods, in foreign currency.

PPP implies that the nominal exchange rate between two countries equals the ratio of the countries' price levels. i.e.: $e = \frac{P^*}{P}$

Purchasing Power Parity

- US and Switzerland:

Country	GDP per capita	GDP per capita (adjusted for PPP)
US	\$39,700	\$39,700
Switzerland	\$47,900	\$34,700
Czech Republic	\$10,600	\$18,600

- **GDP per capita at PPP** is lower in Switzerland because of that nation's **higher cost of living**. It simply costs more to buy the same basket of goods in Switzerland than it does in the United States.
- In the case of the Czech Republic the cost of living is lower than in the United States, and the Czech Republic's GDP per capita rises from **\$10,600** to **\$18,600** when PPP is considered.

Human Development Index

- So far, we see that adjusting figures on national production for purchasing power provides numerical measures for comparing different nations/economies. But we also see that they do not capture **development's qualitative aspects**.
- Also, the PPP concept does a fairly good job of revealing different levels of economic development but is a poor indicator of a people's total well-being.
- The United Nations' **human development index (HDI)**—the measure of the extent to which a government equitably provides its people with long and healthy life, an education, and a decent standard of living.

Human Development Index

HDI Rank	Country	HDI Value	GNI per Capita Rank	Life Expectancy at Birth (Years)
Very High Human Development				
1	Norway	0.949	6	81.7
2	Switzerland	0.939	9	83.1
4	Germany	0.926	17	81.1
10	Canada	0.920	22	82.2
10	United States	0.920	11	79.2
16	United Kingdom	0.909	26	80.8
21	France	0.897	25	82.4
27	Spain	0.884	34	82.8
45	Argentina	0.827	57	76.5

This table also illustrates the disparity that can be present between a nation's wealth and the HDI.

Human Development Index

HDI Rank	Country	HDI Value	GNI per Capita Rank	Life Expectancy at Birth (Years)
High Human Development				
49	Russia	0.804	50	70.3
77	Mexico	0.762	68	77.0
90	China	0.738	83	76.0
Medium Human Development				
111	Egypt	0.691	104	71.3
119	South Africa	0.666	89	57.7
139	Bangladesh	0.579	147	72.0
Low Human Development				
152	Nigeria	0.527	129	53.1
188	Central African Rep.	0.352	192	51.5

Economic & Political Risks

- Risk factor is important when an investors plan to invest in another country.
- We focused on the economic risk (in week 1) and how we can use different strategies to reduce risk (e.g. Using **Options** or **forward contracts**).

Now we would like to focus on the political risks:

- **Property seizure**: **confiscation** (without compensation), **expropriation** (with compensation), or **nationalisation** (Egypt, Iran, Cuba)→

Confiscation: Cuban government faces nearly **6,000** company claims valued at **\$20** billion.

Expropriation: Buenos Aires Waterworks and Aerolineas Argentinas.

Nationalisation: Venezuela's late President Hugo Chavez nationalised the telephone, electricity and oil industries.

- **Policy changes** (Banning coal industry in England, Brexit)→ Some companies such as Panasonic, Sony, Nissan, Airbus and many banks changed their headquarters from London to Paris after Brexit

Managing Political Risks

- **Local content requirements** (40% FDI & 60% Domestic ownership) → in Many developing nations you cannot have dominant ownership of companies if the investing company is foreign.

❑ How to manage Political risks?

- The three main methods of managing **political risk** are **adaptation**, **information gathering**, and **political influence**.
- **Adoption**: It means incorporating risk into business strategies, often with the help of local officials. Companies can incorporate risk in four ways:
 - 1) First, **partnerships** help companies leverage expansion plans. They can be informal arrangements or include joint ventures, strategic alliances, and cross-holdings of company stock.
 - 2) Second, **localisation** entails modifying operations, the product mix, or some other business element—even the company name—to suit local tastes and culture.
 - 3) Third, **development assistance** allows an international business to assist the host country or region in improving the quality of life for locals.
 - 4) Fourth, **insurance** against political risk can be essential to companies entering risky business environments.

Managing Political Risks

- **Information Gathering**: International firms attempt to gather the information that will help them predict and manage political risk. (using special agencies specialised in providing such information such as international banks, domestic government agencies)
- **Political Influence**: Lobbying is the policy of hiring people to represent a company's views on political matters. Lobbyists meet with a local public official to influence their position on issues relevant to the company. Bribes often represent attempts to gain political influence.