



**appunti**  
www.centroappunti.it

Corso Luigi Einaudi, 55/B - Torino

Appunti universitari

Tesi di laurea

Cartoleria e cancelleria

Stampa file e fotocopie

Print on demand

Rilegature

NUMERO: 2368A

ANNO: 2018

# APPUNTI

STUDENTE: Sobrero Giovanni

MATERIA: Business economics and organization - Prof. Venuti

Il presente lavoro nasce dall'impegno dell'autore ed è distribuito in accordo con il Centro Appunti.

Tutti i diritti sono riservati. È vietata qualsiasi riproduzione, copia totale o parziale, dei contenuti inseriti nel presente volume, ivi inclusa la memorizzazione, rielaborazione, diffusione o distribuzione dei contenuti stessi mediante qualunque supporto magnetico o cartaceo, piattaforma tecnologica o rete telematica, senza previa autorizzazione scritta dell'autore.

ATTENZIONE: QUESTI APPUNTI SONO FATTI DA STUDENTI E NON SONO STATI VISIONATI DAL DOCENTE.  
IL NOME DEL PROFESSORE, SERVE SOLO PER IDENTIFICARE IL CORSO.

# Business Economics and Organization (BEO) (8 cfu)

## Professor

**BEO:** Prof. Francesco Venuti

Giovanni Soprero's Schemes

A.A. 2017 – 2018

## 2017 - 2018 Program

The subject aims to provide students with the knowledge of basic economics, management and business administration and is divided into three main parts, performed in an integrated way.

The first part provides the basic elements to introduce students into economics and to understand the behaviour of companies in a market, presenting the basic concepts of micro and macroeconomics. The subject will present and discuss concepts such as consumer behaviour and customers decision in a market, the demand curve, the nature and behaviour of costs in an enterprise, short and long-term decisions and the equilibrium conditions in both goods and financial markets, as well as the main forms of market (perfect competition, monopoly and oligopoly). Strategic decisions of firms will be analysed using basic elements of game theory (interaction in a strategic environment).

Starting from the elements learned about the nature and behaviour of a company in the economic system, the second part focuses leadership and organization. Organization structures and theories will be analysed both at a theoretical and a practical (case-studies) level.

The last part of the subject deals with an introduction to accounting, with some Financial Accounting and Financial Statements topics as well as Managerial Accounting (Cost accounting) and investment decision methods.

## Criteria, rules and procedures for the exam

The exam is written, with a series of multiple choices, open questions and problems. Students that have passed the written exam (at least 18/30) may (if they want) attend an oral exam that can change (increase or decrease) the result of the written exam up to 2 points.

The final result will be a number between 18 and 30 (e lode).

It will be determined considering:

- The mark of the written test;
- (eventually) the mark of the oral exam (not compulsory, that can increase or decrease the mark);
- (eventually) the additional mark(s) of the case study/paper/project;
- (eventually) a bonus for the class/activity participation.

## SCARCITY IS NOT POVERTY!

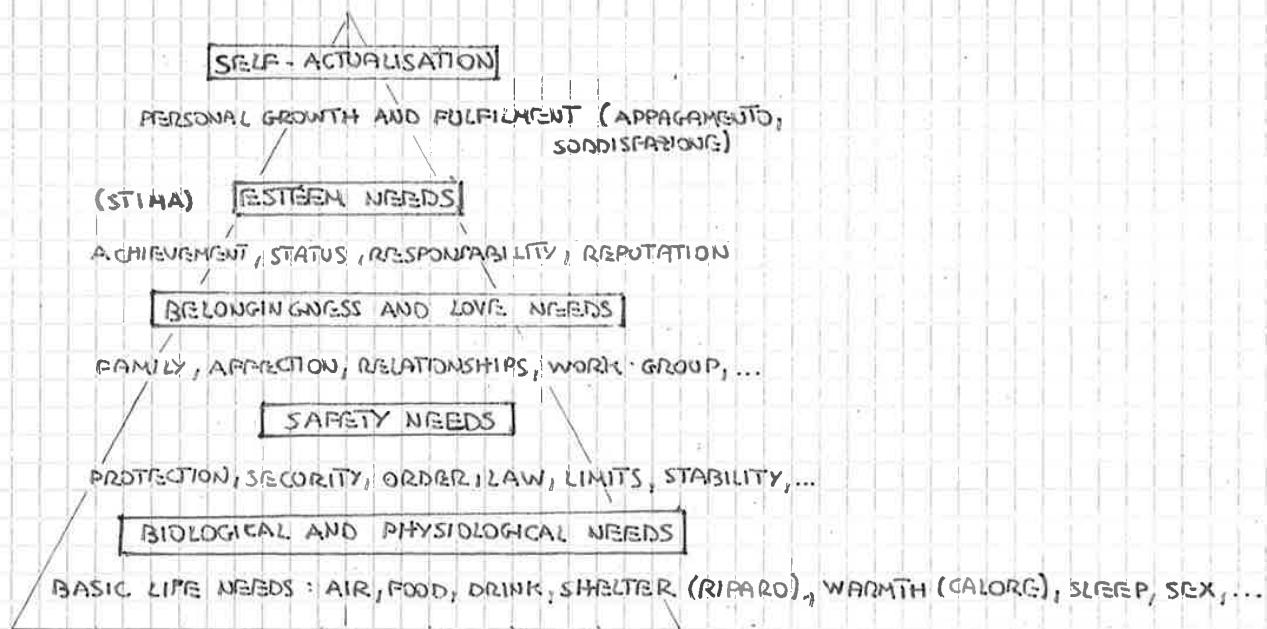
"SCARCE MEANS" DOES NOT MEAN "FEW"; DOESN'T MEAN UNCOMMONNESS NEITHER RARITY  
→ SCARCITY ARISES FROM THE ASSUMPTION OF VERY LARGE (OR INFINITE) WANTS OR DESIRES;  
AND THE FACT THAT RESOURCES TO OBTAIN GOODS AND SERVICES ARE LIMITED.

- WANTS EXCEED RESOURCES NECESSARY TO OBTAIN THEM;
  - THEFORE WE MUST MAKE CHOICES;
  - EVERY CHOICE LEADS TO A COST;

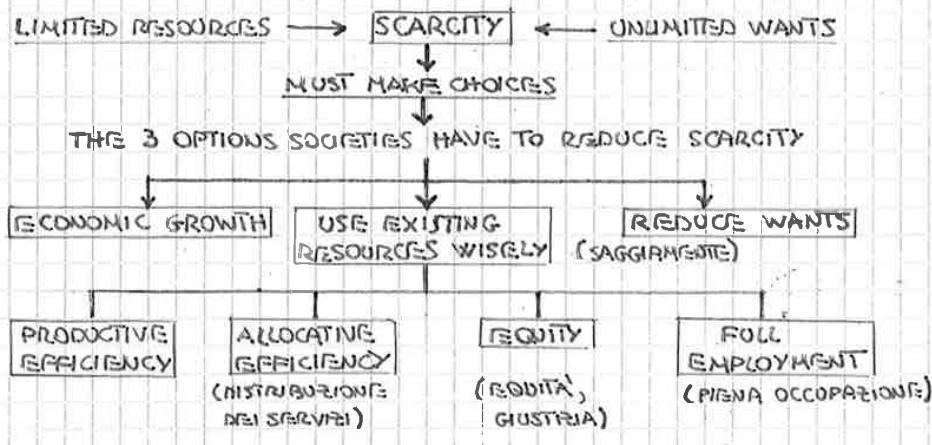
SO WE HAVE TO:

## 1<sup>ST</sup> ORDER THE PRIORITY OF WANTS

⇒ MASLOW'S CLASSIFICATION: "NEEDS AND WANTS CAN BE CLASSIFIED ACCORDING TO A PYRAMIDAL HIERARCHY": IN THE PYRAMID IT IS ONLY POSSIBLE TO GET STEP BY STEP, BECAUSE YOU CAN ONLY THINK TO THE HIGHER LEVEL IF YOU SATISFIED THE PREVIOUS (PRECEDENTIC) MASLOW'S HIERARCHY OF NEEDS (ORIGINAL FIVE-STAGE MODEL)



## THE 5 "E"s OF ECONOMICS



⇒ THE INVISIBLE HAND IS ESSENTIALLY A NATURAL PHENOMENON WHICH MAKES MEN PROMOTING THE PUBLIC INTEREST THROUGH THEIR OWN TRADE (COMMERCIO, AFFARE, BUSINESS) AND ENTREPRENEURSHIP (IMPRENDITORIA).

### MAIN CHARACTERS OF ECONOMICS [9]

[LECTURE 2]

1. HOUSEHOLDS : FAMILY → PRIVATE PEOPLE
2. FIRMS: PRODUCTION UNITS, PRIVATE OR PUBLIC (FIRMS = IMPRESSE, DITTE, AZIENDE)
3. PUBLIC ADMINISTRATION : GOVERNMENT SECTOR
4. THE REST OF THE WORLD : OVERSEAS SECTOR

#### 1. HOUSEHOLDS

ALL THOSE PEOPLE LIVING UNDER ONE ROOF ARE CONSIDERED A HOUSEHOLD.

A PERSON LIVING ALONE IS A FAMILY

HOUSEHOLDS DO TWO FUNDAMENTAL THINGS :

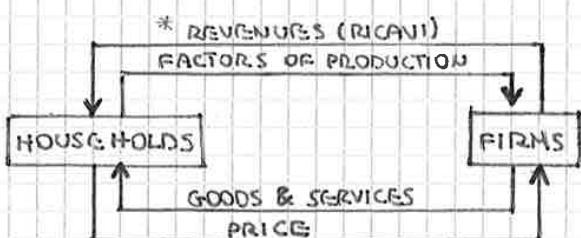
- CONSUMPTION (CONSUMO): USE GOODS AND SERVICES TO SATISFY THEIR NEEDS (WITH NO NEGATIVE CONNOTATION) BUYING FROM THE MARKET;

WHAT IS SAUGHT (NECESSARIO) IS DEMAND GOODS AND SERVICES.

- SUPPLY (FORNIRE) FACTORS OF PRODUCTION :

- LABOUR
- CAPITAL (FINANCIAL RESOURCES)
- LAND (NATURAL RESOURCE)
- ENTREPRENEURIAL ABILITY (ENTREPRENEURSHIP) = ABILITY OF ORGANIZATION

#### SIMPLEST ECONOMIC MODEL



WE WILL ADD THE GOVERNMENT WHICH INTERACTS WITH THE HOUSEHOLD THROUGH UNILATERAL TRANSFERS (PENSION).

THE HOUSEHOLDS RECEIVE \* REVENUES TO (THREE USES):

- SAVINGS (RISPARMI)  $S = Y_D - C$  = IS THE AMOUNT OF DISPOSABLE INCOME NOT USED FOR CONSUMPTION
- CONSUME C
- PAY TAXES  $Y_D = Y - T$ ,  $Y = \text{GROSS INCOME (RENDITO LORDO)}$ ,  $T = \text{TAXES}$ ,  $Y_D = \text{DISPOSABLE INCOME}$

$$\Rightarrow Y = C + T + S \quad \text{GROSS INCOME}$$

$$S = Y - T - C \quad \cdot \text{SAVINGS}$$

$$\text{IN U.S.A.: } C = 80\% ; T = 15\% ; S = 5\%$$

CONSUMPTION:

1. DURABLE GOODS (13%): DESIGNED FOR MORE THAN 3 YEARS
2. NON DURABLE GOODS (30%): FOOD, CLOTHING AND GASOLINE
3. SERVICES (57%): CHILDCARE, MEDICAL CARE

## DISTINCTION BETWEEN:

[LECTURE 3]

SHAREHOLDERS: PARTNERS OF THE FIRM => THEY ARE OWNERS OF THE FIRM.

STOCKHOLDERS: PARTICULAR KIND OF SHAREHOLDERS WHEN THE COMPANY IS DIVIDED IN STOCKS.

STAKEHOLDERS: ALL THE PEOPLE THAT HAVE A CERTAIN INTEREST IN THE FIRM'S ACTIVITY.

(EX.: OWNERS, MAKERS, CUSTOMERS (OR CLIENTS), SUPPLIERS (FORNITORI), COMPETITORS, BANKS, GOVERNMENT, JOURNALISTS)

## 3. GOVERNMENT

WHAT IS THE ACTIVITY OF GOVERNMENT? IT SHOULD DEAL (OCCUPARSI) WITH THE MARKET FAILURE.

### 3.1. MARKET FAILURE

- A CONDITION THAT ARISES WHEN UNRESTRAINED (INARRESTABILE) OPERATION OF MARKETS YIELDS (PRODUCE) SOCIALLY UNDESIRABLE RESULTS.
- IN THE CASE OF MARKET FAILURE, INTERVENTION COULD IMPROVE SOCIETY'S OVERALL WELFARE. (BENESSERE GENERALE)
- THE GOVERNMENT SHOULD NOT ACT IF THE MARKET WORKS EFFICIENTLY.

### 3.2. THE ROLE OF THE GOVERNMENT

3.2.1. ESTABLISHING AND ENFORCING (FAR RISPETTARE) THE RULES OF THE GAME.

3.2.2. PROMOTING COMPETITION

3.2.5 EXTERNALITY

3.2.3. REGULATING NATURAL MONOPOLIES

3.2.6 INCOME DISTRIBUTION (DISTR. DEL REDDITO)

3.2.4. PRODUCING PUBLIC GOODS

3.2.7 FULL EMPLOYMENT, PRICE STABILITY, ECONOMIC GROWTH (PIENA OCUPAZIONE)

### NATURAL MONOPOLY

- A NATURAL MONOPOLY EXISTS IN A PARTICULAR MARKET IF A SINGLE FIRM CAN SERVE THAT MARKET AT LOWER COST THAN ANY COMBINATION OF TWO OR MORE FIRMS.
- A NATURAL MONOPOLY IS "AN INDUSTRY IN WHICH MULTI-FIRM PRODUCTION IS MORE COSTLY THAN PRODUCTION BY A MONOPOLY"
- A NATURAL MONOPOLY IS A MONOPOLY IN AN INDUSTRY IN WHICH HIGH INFRASTRUCTURAL COSTS (FIXED COSTS) AND OTHER BARRIERS TO ENTRY RELATIVE TO THE SIZE OF THE MARKET GIVE THE LARGEST SUPPLIER IN AN INDUSTRY, OFTEN THE FIRST SUPPLIER IN A MARKET, AN OVERWHELMING ADVANTAGE OVER POTENTIAL COMPETITORS.
- THIS FREQUENTLY OCCURS IN INDUSTRIES WHERE CAPITAL COSTS PREDOMINATE, CREATING ECONOMIES OF SCALE THAT ARE LARGE IN RELATION TO THE SIZE OF THE MARKET.

(EXAMPLES INCLUDE PUBLIC UTILITIES SUCH AS WATER SERVICES AND ELECTRICITY...)

NATURAL MONOPOLIES WERE DISCUSSED AS A POTENTIAL SOURCE OF MARKET FAILURE BY THE ECONOMIST JOHN STUART MILL, WHO ADVOCATED GOVERNMENT REGULATION.

FREE RIDERS  $\Rightarrow$  OPPORTUNISTIC BEHAVIOUR  $\Rightarrow$  SMALLER INCOME FOR THE GOVERNMENT  $\Rightarrow$  HIGHER PRICES FOR EVERYONE

### INCOME DISTRIBUTION

- 1<sup>st</sup>) THE PERSON WHO HAS THE LOWEST INCOME HAS TO BE GREATER THAN THEM A MINIMUM THRESHOLD (SOGGIA MINIMA) (?);
- 2<sup>nd</sup>) THERE SHOULD BE A SMALL DIFFERENCE BETWEEN RICH AND POOR PEOPLE; BUT CAN WE HAVE 1<sup>st</sup> AND 2<sup>nd</sup> AT THE SAME TIME? IF NOT, WHICH ONE WOULD BE BETTER?  
 $\Rightarrow$  ARROW  $\Rightarrow$  IF YOU DON'T KNOW WHETHER (SE) YOU WILL BE RICH OR POOR, WHICH ONE WOULD BE PREFERABLE?

### FULL EMPLOYMENT, PRICE STABILITY, ECONOMIC GROWTH (INFLATION/DEFICTION)

THEY CANNOT BE COMBINED TOGETHER

- INFLATION = PROLONGED INCREASE IN THE AVERAGE (MEDIO) PRICE LEVEL OF GOODS AND SERVICES WITH A CONSEQUENT DECREASE IN THE PURCHASING (D'ACQUISTO) POWER OF THE CURRENCY (MONETA)
- DEFICTION = IN MACROECONOMICS THE DEFICTION DEFINES A GENERAL REDUCTION IN THE (INITIAL) PRICES OF NON-ESSENTIAL GOODS AND SERVICES; AND COMPANIES, FAILING TO SELL AT THOSE PRICES, PLACE GOODS AND SERVICES ON THE MARKET AT LOWER PRICES.

### 4. THE REST OF THE WORLD

HOUSEHOLDS, FIRMS, AND GOVERNMENTS IN COUNTRIES ALL AROUND THE WORLD.

#### [DIGRESSION]

THE CENTRAL BANK IS IN CHARGE FOR THE MONETARY POLICY OF THE EUROZONES (FED IS FOR USA) WHILE THE FISCAL POLICY IS UP TO THE GOVERNMENT OF THE COUNTRY.

P.T.I.G.S.: COUNTRIES WHICH HAVE A VERY HIGH PUBLIC DEBT.

(EXAMPLE: ARGENTINA TWICE DECLARED IT WAS NOT ABLE TO PAY ITS DEBT).

STOCK EXCHANGE: EXCHANGE OF STOCKS  $\rightarrow$  PIECES OF A FIRM  $\rightarrow$

$\rightarrow$  BECOME OWNER OF A PORTION OF A FIRM AND TAKE DIVIDEND ACCORDING TO THE BEHAVIOR (COMPORTAMENTO) OF THE FIRM.

- SPREAD: DIFFERENCE OF INTEREST RATES (TASSI DI INTERESSE) BETWEEN DIFFERENT COUNTRIES RELATED TO THE RISK OF HAVING MONEY BACK FROM THESE COUNTRIES.

NOTE: STOCKS  $\neq$  BONDS (OBBLIGAZIONI) = LOAN (PRESTITO) TO A FIRM (DITTA/IMPRESA)

### Co-operative societies

In worker co-operatives the business is owned by those who work in it. The workers provide the money to set up the business and take all the operational decisions, either collectively or by choosing managers. Profits are distributed to partners.

Governments often offer privileges to people who wish to set up co-operative societies as a means to fight unemployment. Privileges include low interest rate loans, simplification of accounting procedures and tax rebates.

### Joint-stock companies

A joint-stock company is an association of people who invest their money in units of property of the company, called shares. The partners of the company - the shareholders - are the owners of the company but are liable only for the value of the shares they possess. This limits their risk as their personal assets are not involved.

The profits of the company are distributed to shareholders in proportion to the number of shares they hold. These payments are called dividends.

Shares are called stocks in the U.S. and the partners of the company are called stockholders. A joint stock company is called a corporation (corp.), and is said to be incorporated (inc.) in the state of... (Delaware, Virginia ...).

There are two kinds of joint-stock company:

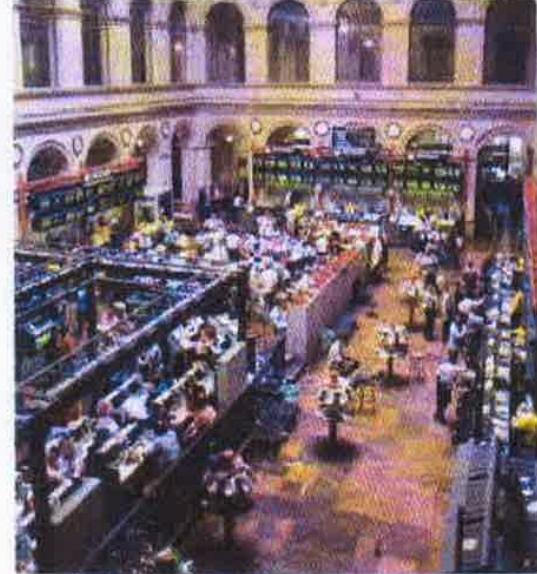
• Private limited companies (Ltd) are owned by between two to fifty shareholders. They are usually small companies and the shareholders are often members of the same family or friends. A small hotel or football club will have this form of legal organisation. In the UK private limited companies have the acronym 'Ltd' after their name. Shares representing the capital of the company are bought or sold privately by direct agreement, but they can normally be sold only with the permission of the other shareholders.

• Public limited companies (Plc) are very large companies. They have at least two shareholders, but there is no upper limit, so they can have thousands. They must have a minimum share capital and shares are freely bought and sold on the Stock Exchange.

### Debentures

When companies need to obtain more capital they can issue documents called debentures.

Debentures have a fixed rate of interest. Investors buying them become creditors of the company and their interest is paid whether the company makes a profit or not, and before the shareholders' dividends.



A limited company fails, as with limited partnerships, each shareholder is only liable for his/her original investment and not for his/her personal assets.

The profits made by the company are divided among the shareholders in proportion to the amount they have invested. These payments are called *dividends*. In a limited company, different types of shareholders are entitled to different types of dividends:

ordinary shares

Investors receive a share of any profits made, which varies depending on the fortunes of the company.

preferred ordinary shares

Investors receive any profits left over after the ordinary shareholders have been paid.

Preference shares

Investors receive a fixed dividend, provided enough profits are made.

In the UK there are two types of limited company: the *private limited company* and the *public limited company*. The equivalent of a limited company in the USA is a *corporation*. Their equivalents in Italy are, respectively, the *Società per azioni (S.p.A.) a costituzione libera* and the *Società per azioni (S.p.A.) costituita per pubblica sottoscrizione*. This is how they are organised:

Private limited company:

In this type of business, all of the shareholders must be in agreement before any shares can be sold, and shares can only be sold to people personally known to the original investors, not to the public in general. Private limited companies put the abbreviation **ltd** after their names to inform the public of their limited liability.

Public limited company:

In contrast to the private limited company, shares in this type of business can be bought and sold by the public. This brings in capital investment which can be used to expand the company, and most internationally known companies are organised in this way. Public limited companies put the abbreviation **plc** after their names.

## The Stock Exchange

In basic ways the **Stock Exchange** operates in much the same way as a vegetable market. Instead of offering potatoes or carrots for sale, however, it offers stocks, debentures and bonds (= certificates issued by the government when borrowing money from the public). Unlike the vegetable market where anyone can buy what they need, the Stock Exchange requires the shopping to be done by intermediaries - the brokers.

There are two main reasons for this:  
(a) buying and selling at the Stock Exchange is a complex procedure;

(b) the Stock Exchange deals in people's savings, which must be protected from fraudulent or ignorant handling.

Brokers belong to companies specialised in trading stocks, and they also act as investment advisers to their clients. Their profit is a commission charged on the operations they carry out on behalf of their clients. As the Stock Exchange is a market, the price of the shares and other securities changes every day. The 'game' that is played on the Stock Market is to guess which way the prices will move in the immediate future - up or down, on the basis of demand and supply.

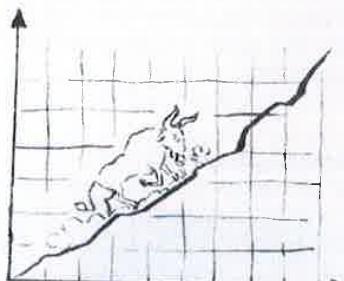
When the value of shares goes up investors may decide to buy shares counting on the fact that the positive trend will continue, or sell their shares and make a profit based on the difference between their buying and selling price.

When share prices go down investors may sell their shares at a loss, or buy shares anticipating that they will go back up again.

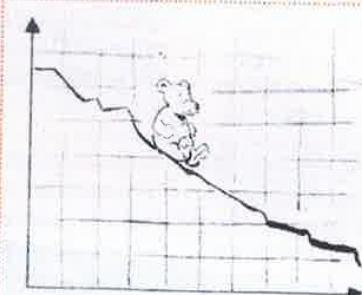


## Speculators

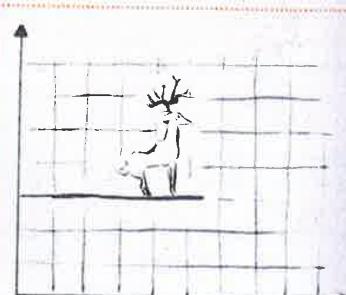
**Speculators** are people who buy and sell securities not as long-term investments but for making a profit. The speculators who take risks on the Stock Market are often referred to as *bulls, bears or stags*.



The **bull** is the stock market optimist. He buys shares because he believes that share prices will rise.  
A market showing rising trends is called a *bull market*.



The **bear** is the stock market pessimist. He sells shares because he is convinced that share prices will fall.  
A market with falling prices is called a *bear market*.



The **stag** is a speculator who 'books' shares of a company that has applied to go public expecting that when dealings start on the Stock Exchange the price of the shares will go higher.

## RECESSION

[LECTURE 4]

V - RECESSION : DRAMATIC BUT QUICK FALL-RECOVERY PROCESSES

U - RECESSION : WORST BECAUSE IT TAKES MORE TIME FOR THE RECOVERY.

W - RECESSION : DRAMATIC FALL AND DRAMATIC FALL RECOVERY. (USA)

L - RECESSION : DRAMATIC FALL WITHOUT RECOVERY. (EUROZONE)

IN THE INTERNATIONAL MONETARY FUND WE CAN FIND  $GDP = f(\text{YEAR})$ ;

- ALL THE DIFFERENT ECONOMICS MOVE WITH SIMILAR SHAPE BECAUSE ECONOMICS ARE HIGHLY CONNECTED.

- WHY SAME COUNTRIES HELP OTHERS TO RECOVER SPENDING MONEY;

=> MARSHALL PLAN: BIG PLAN OF USA AFTER 2nd W.W. TO HELP EUROPE WITH INTERNATIONAL AIDS FOR ECONOMIC REASONS: LOTS OF EXCHANGES BETWEEN THE TWO ECONOMIES.

$\Leftrightarrow$  IMPORTS, EXPORTS FROM USA TO EU => SO USA WOULD NOT HAVE BEEN ABLE TO SELL GOODS AND SERVICES.

- PERIOD OF GROWTH IS FREQUENTLY FOLLOWED BY PERIOD OF REDUCTION IN GDP BECAUSE THE SYSTEM IS NOT STABLE;

- CRISIS IN 2009 IS THE WORST SINCE 1990.

REAL GDP: GDP CONSIDERS ONLY GOODS/SERVICES.

NOMINAL GDP: GDP + INFLATION

CRISIS STARTED IN USA BECAUSE ITS PERCENTAGE OF CONSUMPTION IS 80% OF WAGES AND

PEOPLE PAY WITH CREDIT CARD (YOU DO NOT PAY IMMEDIATELY BUT AT THE END OF THE MONTH

=> BANK GIVES YOU A LOAN)

DEBIT CARD: YOU PAY WHEN YOU MAKE YOUR PURCHASE (ACQUISTO).

IF WE CONSIDER ECONOMIC GROWTH (GROWTH OF GDP) :

- NEGATIVE CORRELATION BETWEEN LEVEL OF GDP AND ITS GROWTH.

MALTHUS (1766-1834) : THE POPULATION OF THE WORLD WOULD HAVE RUN OUT OF RESOURCES

BUT THIS APPROACH IS BASED ON THE ASSUMPTION THAT THE TOTAL AMOUNT OF MONEY AND RESOURCES IS FIXED.

SO MONEY AND RESOURCES ARE NOT FIXED.

THE LEVEL OF NOMINAL RATE PER CAPITA (PRO CAPITE) IS ALMOST SYMMETRICAL WITH RESPECT TO THE PREVIOUS ONE.

## THE GREAT DEPRESSION (1929-1933): [UNDERSTANDING THE 2008 F. CRISIS] [LECTURE 5]

IN 1929, THE STOCK MARKET CRASHED (FELL BY 30%)

WHY?

- CONCLUSION OF I.W.W.
- "ROARING TWENTIES": PERIOD OF HAPPINESS, GROWTH, HIGH LEVEL OF EMPLOYMENT, INCOME OF THE MIDDLE CLASS.  
⇒ 1<sup>st</sup> PERIOD IN WHICH PEOPLE STARTED SAVING:
- STOCK MARKET: LEVEL OF STOCK EXCHANGE INCREASES
- HOUSES: (ESPECIALLY FOR HOLIDAYS), HOTELS.
- "FORD MODEL T" (CON= COULEUR) BY H. FORD: FIRST CAR TO BE PRODUCED FOR EVERYONE ⇒ MASSCAR.

PEOPLE WERE CONVINCED THAT THE VALUE WOULD HAVE INCREASED FOREVER.

PEOPLE HAD BORROWED FROM BANKS TO INVEST IN THE STOCK MARKET BOOM OF THE 1920S

WHEN THE STOCK MARKET CRASHED, BANKS BEGAN TO HAVE TROUBLE COLLECTING ON THOSE LOANS (PRESTITI). AFTER THE 1<sup>st</sup> W.W. EUROPEAN BANKS ASKED LOANS FROM AMERICAN BANKS AND WHEN AMERICAN BANKS FAILED THEY CLAIMED THEIR MONEY BACK.

IF A RUMOR BEGAN TO FLY ABOUT A BANK FAILING, PEOPLE WOULD WITHDRAW (RITIRATE) ALL THE MONEY THEY HAD DEPOSITED BEFORE THE BANK CLOSED (BANK RUNS = CONSE=BANCARIE)

THE CENTRAL BANK OF USA DID NOT DO ANYTHING.

"PROSPERITY IS JUST AROUND THE CORNER!"

THE U.S. GOVERNMENT ACTED TO PREVENT AN EVEN GREATER FINANCIAL BREAKDOWN, BUT THE ECONOMY DIDN'T RECOVER UNTIL WORLD WAR II

⇒ {  
NOT STABILITY OF PRICE  
UNEMPLOYMENT  
FALL OF GDP}

### 1929: CRISIS (FINANCIAL CRISIS)

1930-33: GREAT DEPRESSION

1933: ROOSEVELT ANNOUNCED THE NEW DEAL (NUOVO APPARE):  
- PRINTING A LOT OF MONEY  
- INVESTMENT IN INFRASTRUCTURES



THE 2<sup>nd</sup> W.W. HELPED ECONOMY GETTING OUT FROM THE RECESSION BECAUSE OF INDUSTRIAL INVESTMENTS AND DECREASE OF POPULATION.

### 3) FINANCIAL MELTDOWN AND POSSITIVE DEPRESSION:

A FINANCIAL MELTDOWN RESULTS WHEN A BURSTING BUBBLE UNDERMINES CONFIDENCE IN THE ENTIRE FINANCIAL SECTOR.

EXCESS LEVERAGING AND THE LEVERRAGING NEEDED IN THE NORMAL FUNCTIONING OF A MARKET ECONOMY DISAPPEARS.

AS CREDIT DISAPPEARS, THE ECONOMY SEIZES UP (SI BLOCCA) AND CONSUMER AND INVESTOR CONFIDENCE EVAPORATES.

THE EFFECTIVENESS OF THE STANDARD MONETARY AND FISCAL POLICY TOOLS IS ALSO COMPROMISED, MAKING THE PROBLEMS EXTREMELY DIFFICULT TO SOLVE.

### HOW DO ECONOMIES GET OUT OF A FINANCIAL CRISIS?

1) WHEN YOU REALIZE THE ECONOMIC CRISIS THE 1<sup>ST</sup> THING IS TO:

AVOID BANKS FAILURE (AVOID=EVITARE) [TRIAGE STAGE]

BECUSE FAILURES OF BANKS IS THE WORST THING WHICH CAN HAPPEN

(IN 2008 700 BILLION FINANCIAL BAIIOUT (PIANO DI SALVATAGGIO) OF BANKS IN AN ATTEMPT TO PREVENT THE ENTIRE FINANCIAL SYSTEM FROM COLLAPSING)

2) TREATMENT STAGE: INVOLVES EXPANSIONARY MONETARY (BY CENTRAL BANK) AND FISCAL POLICY (BY THE GOVERNMENT: INCREASES EXPENSES)

3) REHABILITATION STAGE: INVOLVES THE DEVELOPMENT OF REGULATORY RULES THAT PREVENT FUTURE HARMFUL ECONOMIC BUBBLES.

### HOW THE GOVERNMENT RESPONDED TO THE GREAT DEPRESSION

- FINANCIAL TRIAGE WAS REASONABLY SUCCESSFUL
- MONETARY POLICY WAS INEFFECTIVE DURING THE CRISIS
- FISCAL STIMULUS WAS LIMITED
  - DEPOSITOR INSURANCE IS A SYSTEM UNDER WHICH THE FEDERAL GOVERNMENT PROMISED TO STAND BY AN INDIVIDUAL'S BANK DEPOSITS
  - GLASS-STEARAGALL ACT WAS PASSED IN 1933 THAT CREATED DEPOSITOR INSURANCE AND A NUMBER OF BANKING REGULATIONS.

### HOW THE GOVERNMENT RESPONDED TO THE 2008 CRISIS

- STRONGER AND QUICKEF FINANCIAL TRIAGE USING:
  - QUANTITATIVE EASING IS NONSTANDARD MONETARY POLICY DESIGNED TO EXPAND CREDIT IN THE ECONOMY
  - TRROUBLED ASSET RELIEF PROGRAM (TARP)
- EXPANDING FISCAL AND MONETARY STIMULUS:
  - THE FED FUNDS TARGET RATE WAS FLASHED TO NEAR ZERO AND LENDING WAS EXPANDED DRAMATICALLY
  - FISCAL STIMULUS PACKAGES IN EARLY 2008 AND 2009

THE EXCHANGE RATE IS PRICE OF A CURRENCY WITH RESPECT TO OTHER;

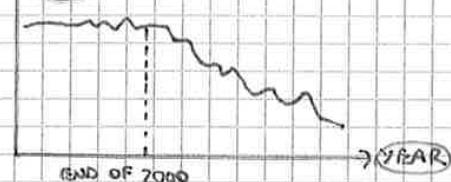
WHY A PERSON WOULD NEED TO BUY EURO AND SELL DOLLARS?

- PURCHASE AN ACTION (COMPRARE UN'AZIONE); IMPORT/EXPORT OF GOODS
- FINANCIAL TRANSACTION (BUY BONDS AND STOCKS)

THE LEVEL OF INTEREST RATES (FRR: FEDERAL FUNDS RATE)

INTEREST RATE: AT WHICH DEPOSITORY INSTITUTIONS ACTIVELY TRADE BALANCES HELD AT THE FEDERAL RESERVE CALLED FEDERAL FUNDS.

A (FRR)



IN 2001 THE USA ADOPTED AN EXPANSIONARY POLICY TO COME OUT FROM THE RECESSION:

- EXPANSIONARY MONETARY POLICY: FEDERAL RESERVE BANK (FED) SHARPLY (ACUTAMENTE) DECREASES THE INTEREST RATE (FFR)
- EXPANSIONARY FISCAL POLICY: THE BUSH GOVERNMENT SHARPLY CUT TAXES.

SO THIS RECESSION IS VERY SHORT AND THE US ECONOMY IS DOING WELL AGAIN FROM 2001-MID 2008

[TRADE DEFICIT]: DIFFERENCE BETWEEN EXPORTS (X) AND IMPORTS (IM)  $TD = X - IM$

{ X: EXPORT  $\Rightarrow$  YOU SELL A PRODUCT RECEIVING MONEY  $(\text{SO IF } TD = X - IM < 0 \Rightarrow IM > X)$

(IM: IMPORT  $\Rightarrow$  YOU BUY A PRODUCT GIVING MONEY)

$\uparrow$  USA PAYS WITH PRINTED MONEY (BY THEMSELVES) THE GOODS/NATURAL RESOURCES OF OTHER COUNTRIES

$\downarrow$  USA KEEPS BORROWING GOODS/NATURAL RESOURCES FROM OTHER COUNTRIES

AT THE START OF 1990s: THE US TRADE DEFICIT IS ABOUT 1% OF GDP. IN 2006, THE US TRADE DEFICIT IS 6% OF US GDP, APPROXIMATELY \$760 BILLION.

IMPLICATION?

1. US IS BORROWING FROM THE REST OF THE WORLD TO FINANCE ITS CONSUMPTION AND INVESTMENT;
2. BORROWING MORE MEANS HAVING TO REPAY MONEY AND HAVING LESS TO SPEND IN THE FUTURE.  
FOREIGNERS ARE STILL WILLING TO BUY US GOVERNMENT BOND.

CAUSE: BUDGET DEFICIT? LOW SAVING RATE?

[DEFINITION]: GROSS DOMESTIC PRODUCT (GDP) (PRODOTTO INTERNO LORDO) IS A MONETARY MEASURE OF THE MARKET VALUE OF ALL FINAL GOODS AND SERVICES PRODUCED IN A PERIOD OF TIME (QUARTERLY OR YEARLY)]

## CHINA

SINCE 1980, CHINESE OUTPUT HAS GROWN AT CLOSE TO 10% PER YEAR, AND THE FORECASTS ARE FOR MORE THE SAME.

THIS IS A TRULY ASTONISHING (STRABILANTE) NUMBER: COMPARED TO THE 3.1% NUMBER ACHIEVED BY THE US ECONOMY OVER THE SAME PERIOD.

## JAPAN

SINCE 1960, JAPAN'S OUTPUT HAS GROWN AT AN AVERAGE ANNUAL GROWTH RATE OF 4.7%, 1.9% HIGHER THAN THE GROWTH RATE OF THE U.S. OVER THE SAME TIME PERIOD. (GOOD NEWS) BUT JAPAN SUFFERS IN THE LAST TWO DECADES A PERIOD OF GREAT DEPRESSION (HOUSE PRICE)

IN THE JAPAN ECONOMY, THE BAD NEWS IS:

- THE AVERAGE ANNUAL RATE OF GROWTH OF OUTPUT FROM 1994 TO 2000 WAS ONLY 1.4%.
- THE UNEMPLOYMENT RATE STEADILY INCREASED
- AS A RESULT OF HIGH UNEMPLOYMENT, THE INFLATION RATE DECREASED AND EVENTUALLY TURNED NEGATIVE (DEFICTION).

HOW WILL JAPAN RECOVER?

- THE JAPANESE CB DECREASED INTEREST RATES TO VERY LOW LEVELS. (ACTUALLY ZERO INTEREST RATE FOR A FEW YEARS).
- THE JAPANESE GOVERNMENT INCREASED SPENDING ON PUBLIC WORKS AND CUT TAXES TO STIMULATE SPENDING BY CONSUMERS AND FIRMS. (ABC-NOMICS OF THE PRIME MINISTER ABÉ)  
→ NOT VERY USEFUL. SOME ECONOMISTS ARGUE IT IS BECAUSE OF STRUCTURAL PROBLEMS (SUCH AS BANKING PROBLEMS, CORRUPTION, ETC).

SINCE 2008, JAPAN'S OUTPUT GROWTH BECOMES POSITIVE (MANY REASONS: BANKING REFORM, CHINA'S STRONG GROWTH, POLICIES BEGIN TO WORK, ETC).

SO, ABCNOMICS:

- EXPANSIONARY FISCAL POLICY
- EXPANSIONARY MONETARY POLICY

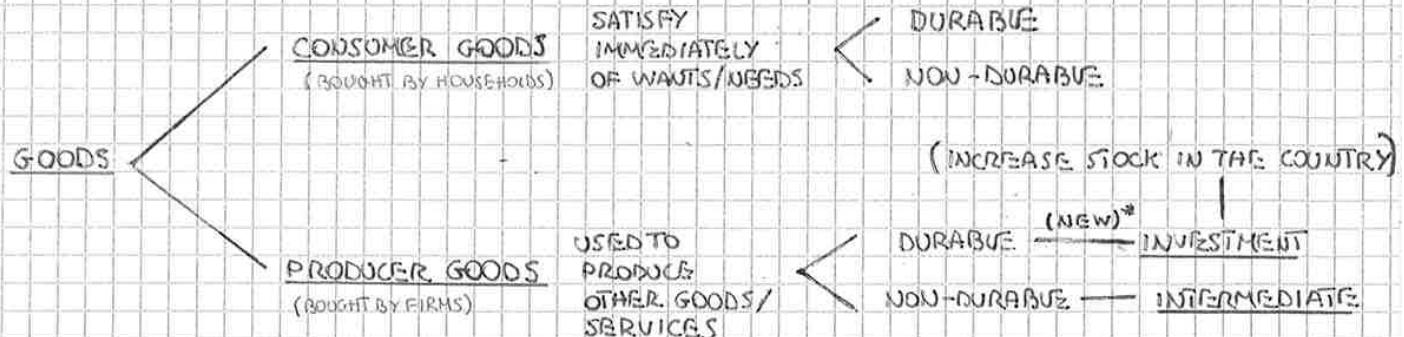
NOT ENOUGH.

+ STRUCTURAL REFORMS → TO ECONOMIC GROWTH

## NATIONAL INCOME ACCOUNTS ("CONTI DEL REDDITO NAZIONALE")

IT IS THE ACCOUNTING SYSTEM USED TO MEASURE AGGREGATE ECONOMIC ACTIVITY.

HOW CAN WE MEASURE THE GDP OF A COUNTRY?



THE DEFINITION OF A CONSUMER/PRODUCER GOOD DEPENDS ON THE USE OF IT.

IF A GOOD IS BOUGHT BY HOUSEHOLDS IT IS A CONSUMER GOOD WHILE A PRODUCER GOOD.

IF IT IS BOUGHT BY A FIRM

NW: HOUSES AND BUILDINGS ARE ALWAYS CONSIDERED PRODUCER GOODS BECAUSE THEY PRODUCE HOUSING SERVICES.

(AN HOUSE IS A DURABLE PRODUCER GOOD IF IT IS NEW AND IT INCREASES VALUE FOR ITALY)

(A CAR IS A DURABLE PRODUCER GOOD IF IT IS BOUGHT BY A FIRM AND IT IS NEW)

\* NW, IN MOST OF THE COUNTRIES, IS CONSIDERED AS NEVER USED BEFORE (SOLE MOMENT)

(BUYING STOCKS, BONDS IS NOT AN INVESTMENT BECAUSE IT LEADS NOT TO AN INCREASE OF STOCKS IN THE COUNTRY).

## STOCK AND FLOW VARIABLES (VARIABILI AZIONANTI E DI FLUSSO)

[LECTURE 7]

FLOW VARIABLE: MEASURED DURING A TIME PERIOD. CHANGE OF A VARIABLE IN A CERTAIN

STOCK VARIABLE: DEFINED AT A PARTICULAR POINT IN TIME (AT A CERTAIN INSTANT). VARIABLE

THAT MEASURES THE QUANTITY OF A CERTAIN PROPERTY AT A CERTAIN MOMENT.

EX: • THE AMOUNT OF MONEY IN A BANK IS A STOCK VARIABLE;

• INCOME (LABOUR INCOME (EARN FROM WORK) AND CAPITAL INCOME (INTEREST + DIVIDEND)) IS A FLOW VARIABLE.

• INVESTMENT IS A FLOW VARIABLE

• POPULATION IS A STOCK VARIABLE

## AGGREGATE OUTPUT

NATIONAL INCOME ACCOUNTS = ACCOUNTING SYSTEM USED TO MEASURE AGGREGATE ECONOMIC ACTIVITY (NW!)

THE INCOME IS THE CHANGE OF THE ASSET VARIABLE OF A PERSON/FAMILY/COUNTRY (FLOW VARIABLE)

WHAT IF THE SYSTEM IS NOT CLOSED?

10:30

1) AND 3) DON'T COINCIDE

EX.: FIRM M.I. IS FOREIGN:

1) € FINAL GOODS = € 200

2) € VA = € 100

3) € FACTORS OF PRODUCTION = € 100

THE DISPOSABLE INCOME (IL REDDITO DISPONIBILE):

$$Y_D = Y - T + \bar{T}_R$$

↓

T<sub>R</sub> CAN BE POSITIVE OR NEGATIVE

FRACTION OF THE PRODUCTION OF

THE COUNTRY WHICH GOES AWAY FROM IT

= UNILATERAL TRANSFERS (FINANCIAL AID)

REAL AND NOMINAL GDP

NOMINAL GDP: IS THE SUM OF THE QUANTITIES OF FINAL GOODS PRODUCED MULTIPLIED

BY THEIR CURRENT PRICE. NOMINAL GDP INCREASES OVER TIME BECAUSE:

- THE PRODUCTION OF MOST GOODS INCREASES OVER TIME
- THE PRICES OF MOST GOODS ALSO INCREASE OVER TIME

REAL GDP: IS CONSTRUCTED AS THE SUM OF THE QUANTITIES OF FINAL GOODS MULTIPLIED BY

CONSTANT (RATHER THAN CURRENT) PRICES.

EXAMPLE:

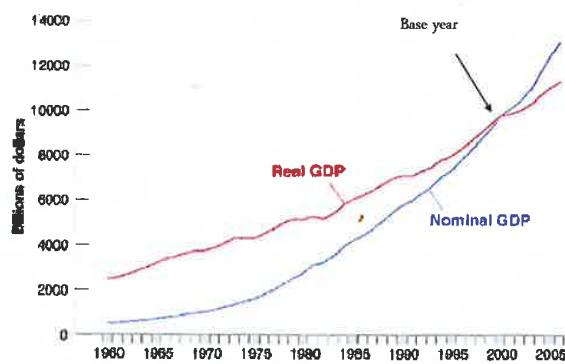
YEAR	M° CARS	PRICE OF CARS	NOMINAL GDP	REAL GDP (IN 2000 DOLLARS)
1999	10	\$ 20,000	\$ 200,000	\$ 200,000
2000	12	\$ 24,000	\$ 288,000	\$ 288,000
2001	13	\$ 26,000	\$ 338,000	\$ 312,000

TO CONSTRUCT REAL GDP, MULTIPLY THE NUMBER OF CARS IN EACH YEAR BY A COMMON PRICE.

SUPPOSE WE USE THE PRICE OF THE CAR IN 2000 AS THE COMMON PRICE. THIS APPROACH GIVES US, IN EFFECT, REAL GDP IN CHAINED (2000) DOLLARS.

### Nominal and Real U.S. GDP, Since 1960

From 1960 to 2006, nominal GDP increased by a factor of 25. Real GDP increased by a factor of about 4.5.



THE NOMINAL AND REAL GDP

COINCIDE IN THE: BASE-YEAR

EXERCISE:

	(2008)		(2009)	
	QUANTITY	PRICE	QUANTITY	PRICE
CARS	10	€ 2000	12	€ 3000
COMPUTERS	4	€ 1000	6	€ 500
ORANGES	1000	€ 1	1000	€ 1

a) WHAT IS NOMINAL GDP IN 2008 AND 2009? BY WHAT PERCENTAGE DOES NOMINAL GDP CHANGE FROM 2008 TO 2009?

b) USING THE PRICES FOR 2008 AS THE SET OF COMMON PRICES, WHAT IS REAL GDP IN 2008 AND IN 2009?

c) USING THE PRICES FOR 2009 AS THE SET OF COMMON PRICES, WHAT IS REAL GDP IN 2008 AND IN 2009?

RESOLUTION:

a)  $(10 \cdot 2000 + 4 \cdot 1000 + 1000 \cdot 1) \text{ €} = 25,000 \text{ €}$  (2008 NOMINAL GDP)

$(12 \cdot 3000 + 6 \cdot 500 + 1000 \cdot 1) \text{ €} = 40,000 \text{ €}$  (2009 NOMINAL GDP)

$$R\% = \frac{Y_t - Y_{t-1}}{Y_{t-1}} = \frac{40,000 - 25,000}{25,000} = 0.6 \cdot 100 = 60\%$$

b)  $(10 \cdot 2000 + 4 \cdot 1000 + 1000 \cdot 1) \text{ €} = 25,000 \text{ €}$  (2008 NOMINAL GDP ≡ REAL GDP BECAUSE 2008 = BASE YEAR)

$(12 \cdot 2000 + 6 \cdot 1000 + 1000 \cdot 1) \text{ €} = 31,000 \text{ €}$  (2009 REAL GDP, REFERRED TO 2008 PRICES)

$$R\% = \frac{Y_t - Y_{t-1}}{Y_{t-1}} = \frac{31,000 - 25,000}{25,000} = 0.24 \cdot 100 = 24\%$$

c)  $(10 \cdot 3000 + 4 \cdot 500 + 1000 \cdot 1) \text{ €} = 33,000 \text{ €}$  (2008 REAL GDP REFERRED TO 2009 PRICES)

$(12 \cdot 3000 + 6 \cdot 500 + 1000 \cdot 1) \text{ €} = 40,000 \text{ €}$  (2009 NOMINAL GDP ≡ REAL GDP BECAUSE 2009 = BASE YEAR)

$$R\% = \frac{Y_t - Y_{t-1}}{Y_{t-1}} = \frac{40,000 - 33,000}{33,000} = 0.21 \cdot 100 = 21\%$$

SYMBOLICITY:

a) € GDP (2008) = 25,000 € (2008 NOMINAL GDP)

€ GDP (2009) = 40,000 € (2009 NOMINAL GDP)

b)  $\frac{\text{GDP}_{2008}^{2008}}{\text{GDP}_{2009}^{2008}} = \frac{25,000 \text{ €}}{25,000 \text{ €}}$  (2008 REAL GDP REFERRED TO 2008 PRICES) = € GDP (2008) (2008 NOMINAL GDP)

$\frac{\text{GDP}_{2009}^{2008}}{\text{GDP}_{2009}^{2009}} = \frac{31,000 \text{ €}}{31,000 \text{ €}}$  (2009 REAL GDP REFERRED TO 2008 PRICES)

c)  $\frac{\text{GDP}_{2009}^{2009}}{\text{GDP}_{2008}^{2009}} = \frac{33,000 \text{ €}}{33,000 \text{ €}}$  (2008 REAL GDP REFERRED TO 2009 PRICES)

$\frac{\text{GDP}_{2009}^{2009}}{\text{GDP}_{2009}^{2009}} = \frac{40,000 \text{ €}}{40,000 \text{ €}}$  (2009 REAL GDP REFERRED TO 2009 PRICES) = € GDP (2009) (2009 NOMINAL GDP)

so € GDP (YEAR)

→ SAYS US IT'S ABOUT NOMINAL GDP

2008 ← BASE YEAR  
GDP<sub>2009</sub> ← YEAR UNDER STUDY

TURNING NOMINAL GDP INTO REAL GDP

€ GDP (2013) = € 1,400 bm PRICE INDEX (2013) = 100

•  $\text{GDP}_Y^{\text{BY}} = \frac{\text{GDP}_{2013}}{\text{PRICE INDEX}(Y)}$  ?

€ GDP (2014) = € 1,450 bm PRICE INDEX (2014) = 103

By  
 $\text{GDP}_Y^{\text{BY}} = \frac{\text{NOMINAL GDP}(Y) \cdot \text{PRICE INDEX}(BY)}{\text{PRICE INDEX}(Y)} = \frac{\text{GDP}(Y) \cdot \text{PRICE INDEX}(BY)}{\text{PRICE INDEX}(Y)}$

$\text{GDP}_{2014}^{\text{2013}} = \frac{\text{GDP}(2014) \cdot \text{PRICE INDEX}(2013)}{\text{PRICE INDEX}(2014)} = \frac{\text{€ } 1,450 \cdot 100}{103} \approx \text{€ } 1,408 \text{ bm}$

## THE MAJOR MACROECONOMIC VARIABLES

- \* GDP
- + \* UNEMPLOYMENT RATE
- + \* INFLATION RATE

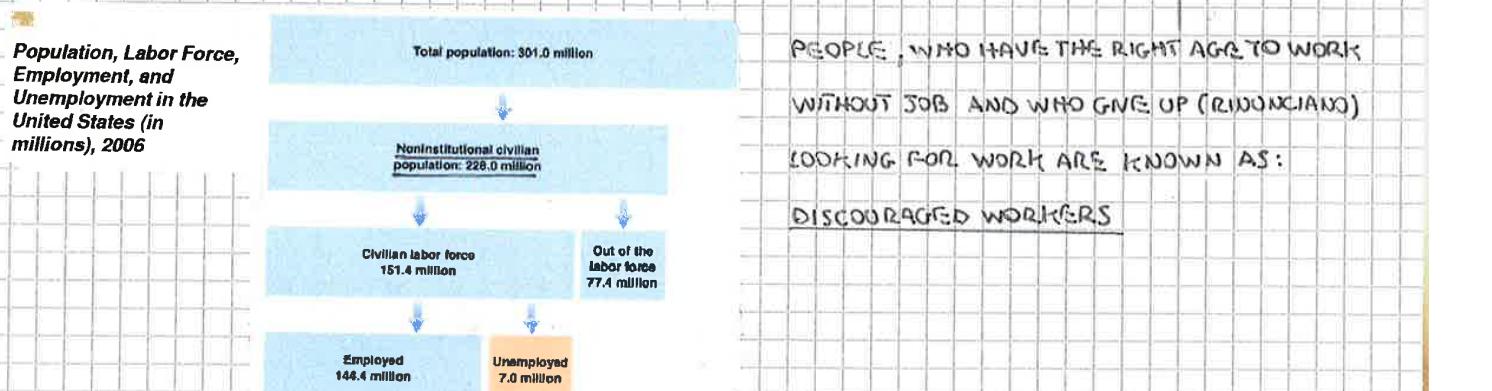
BECAUSE IT IS MEASURE OF AGGREGATE ACTIVITY, GDP IS OBVIOUSLY THE MOST IMPORTANT MACROECONOMIC VARIABLE. BUT TWO OTHER VARIABLES TELL US ABOUT OTHER IMPORTANT ASPECTS OF HOW AN ECONOMY IS PERFORMING: UNEMPLOYMENT AND INFLATION RATES.

### THE UNEMPLOYMENT RATE (TASSO DI DISOCCUPAZIONE)

LABOUR FORCE: PEOPLE FROM 17 TO 70 WHO HAVE A JOB (EMPLOYED) AND PEOPLE WHO ARE SEEKING (IN CERCA DI) LOOKING FOR A JOB (UNEMPLOYED). (SUM OF THESE TWO TIPOLOGY OF PEOPLE).

- IF YOU REJECT TWO OFFERS IN 6 MONTHS YOU ARE NOT CONSIDERED LABOUR FORCE.

NOT-LABOUR FORCE: CHILDREN, STUDENTS, PEOPLE WHO DO NOT SEARCH A JOB



PEOPLE WHO HAVE THE RIGHT AGO TO WORK WITHOUT JOB AND WHO GIVE UP (RINUNCIANO) LOOKING FOR WORK ARE KNOWN AS:  
**DISCOURAGED WORKERS**

(LABOUR FORCE) { EMPLOYMENT (N) IS THE NUMBER OF PEOPLE WHO HAVE A JOB  
UNEMPLOYMENT (U) IS THE NUMBER OF PEOPLE WHO DO NOT HAVE A JOB BUT ARE LOOKING FOR ONE.

$$\text{LABOUR FORCE (L)} = \text{EMPLOYMENT (N)} + \text{UNEMPLOYMENT (U)}$$

### UNEMPLOYMENT RATE (u)

$u = \frac{U}{L}$  IS THE RATIO OF THE NUMBER OF PEOPLE WHO ARE UNEMPLOYED TO THE NUMBER OF PEOPLE IN THE LABOUR FORCE.

### PARTICIPATION RATE

IS THE RATIO OF THE LABOUR FORCE TO THE NONINSTITUTIONAL CIVILIAN POPULATION.

$$\text{PARTICIPATION RATE} = \frac{\text{LABOUR FORCE}}{\text{POPULATION OF WORKING AGE (NONINSTITUTIONAL)}}$$

- THE GDP DEFULATOR ( $P_t$ ) MEASURES THE AVERAGE PRICE OF OUTPUT

$$P_t = \frac{\text{Nominal GDP}_t}{\text{Real GDP}_t} = \frac{\$Y_t}{Y_t} = \frac{\$GDP_t}{GDP_t} \Rightarrow \frac{\$Y_t}{Y_t} = P_t Y_t$$

THE GDP DEFULATOR IS WHAT IS CALLED AN INDEX NUMBER - SET EQUAL TO 100 IN THE BASE YEAR (NW!)

$$\text{RATE OF INFLATION} = \text{RATE OF CHANGE IN THE GDP DEFULATOR} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

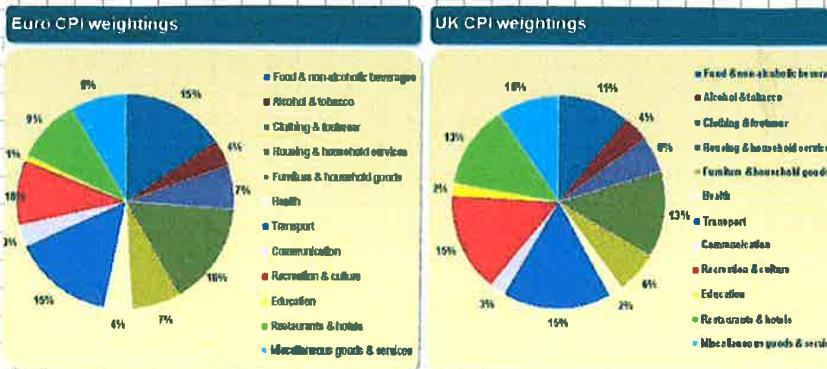
- THE CONSUMER PRICE INDEX (CPI) MEASURES THE AVERAGE PRICE OF CONSUMPTION (OR COST OF LIVING)

THE CPI GIVES THE COST IN DOLLARS OF A SPECIFIC LIST OF GOODS AND SERVICES OVER TIME,

WHICH ATTEMPTS TO REPRESENT THE CONSUMPTION BASKET OF A TYPICAL URBAN CONSUMER.

THE SET OF GOODS PRODUCED IN THE ECONOMY IS NOT THE SAME AS THE SET OF GOODS PURCHASED BY CONSUMERS, FOR TWO REASONS:

- SOME OF THE GOODS ARE SOLD TO FIRMS, TO THE GOVERNMENT, OR TO FOREIGNERS.
- SOME OF THE GOODS ARE NOT PRODUCED DOMESTICALLY BUT ARE IMPORTED FROM ABROAD (DALL'ESTERO)



### PROBLEMS WITH CPI

1. SUBSTITUTION BIAS - AS PRICES INCREASE FOR THE FIXED MARKET BASKET, CONSUMERS BUY LESS OF THESE PRODUCTS AND MORE SUBSTITUTES THAT MAY NOT BE PART OF THE MARKET BASKET. (RESULT: CPI MAY BE HIGHER THAN WHAT CONSUMERS ARE REALLY PAYING)
2. NEW PRODUCT - THE CPI MARKET BASKET MAY NOT INCLUDE THE NEWEST CONSUMER PRODUCTS. (RESULT: CPI MEASURES PRICES BUT NOT THE INCREASE IN CHOICES).
3. PRODUCT QUALITY - THE CPI IGNORES BOTH IMPROVEMENTS AND DECLINE IN PRODUCT QUALITY. (RESULT: CPI MAY SUGGEST THAT PRICES STAY THE SAME THOUGH (ANCHE SE) THE ECONOMIC WELL BEING HAS IMPROVED SIGNIFICANTLY).

... RETURNING TO TALK ABOUT INFLATION IN GENERAL

## INFLATION

is not caused exclusively by a rise in MONEY SUPPLY



but also changes in DEMAND & CURRENCY VALUE are critical

## DEFIATION



Copyright Martin Armstrong  
1986-1998, 2014

### THE MAIN CAUSES OF INFLATION

#### ① DEMAND PULL INFLATION

- CAUSED BY EXCESS AGGREGATE DEMAND
- OFTEN LINKED TO MONEY AND CREDIT BOOM
- ECONOMY CLOSE TO FULL CAPACITY (INELASTIC AS)
- POSITIVE OUTPUT GAP ( $AD > \text{POTENTIAL GDP}$ )

#### ② COST PUSH INFLATION

- RISING WAGE COSTS IN LABOUR MARKET
- INCREASING RAW (GARAGE) MATERIAL AND COMPONENT COSTS FROM DOMESTIC AND OVERSEAS SUPPLIERS.
- RISING IMPORT PRICES DUE TO A FALLING EXCHANGE RATE - THIS INCREASES IMPORT COSTS

#### ③ ADMINISTERED PRICES

- CHANGES IN REGULATED PRICES (EX. WATER BILLS (BOLLETTI))
- CHANGES IN INDIRECT TAXES AND SUBSIDIES

### INTERNAL AND EXTERNAL CAUSES OF INFLATION

#### Internal causes of inflation



A large surge in property prices



Higher wages / labour costs

#### External causes of inflation



Increase in world oil / gas prices



Global inflation in commodity prices



Boom in credit / money supply



Rise in business taxes e.g. VAT



A depreciation of the exchange rate



High inflation in other countries

### INFLATION EXPECTATIONS

ONCE INFLATION BECOMES ESTABLISHED IN AN ECONOMY IT CAN BE DIFFICULT TO REMOVE. MOST AGENT IN THE ECONOMY (WORKERS, BUSINESSES, LENDERS) WILL RAISE (AUMENTARE) THEIR INFLATION EXPECTATIONS AND BUILD IT INTO THEIR CALCULATIONS AND DECISIONS.

### Possible winners and losers from high inflation

One of the effects of inflation is that it can lead (conduire) to arbitrary changes in the distribution of real incomes and wealth in a country.

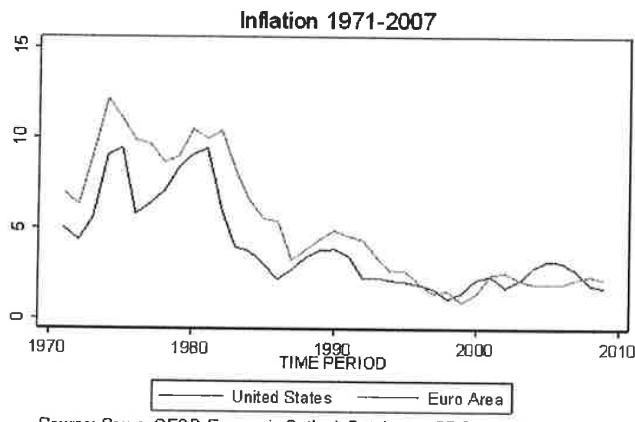
#### WINNERS

- WORKERS WITH STRONG WAGE BARGAINING POWER (LAVORATORI CON UN FORTE POTERE CONTRATTUALE).
- DEBTORS IF REAL INTEREST RATES ARE NEGATIVE.
- PRODUCERS IF PRICES RISE FASTER THAN COSTS.

#### LOSERS

- RETIREES ON FIXED INCOMES (CON REDDITI FISSI).
- LENDERS IF REAL INTEREST RATES ARE NEGATIVE.
- SAVERS IF REAL RETURNS ARE NEGATIVE.
- WORKERS IN LOW PAY JOBS.

### The inflation rate (1971-2007)



EXERCISESCalculating the CPI

The consumer price index (CPI) compares the cost of a market basket of goods in a given year with the cost of the same market basket in the base year. Suppose that a market basket includes (1) admission for two to a local theatre for a weekend movie, (2) a large box of popcorn at the theatre, (3) a large pepperoni pizza (carry-out from a local pizzeria), and (4) a two-liter bottle of Diet Coke.

Year	Theatre admission for one person	Popcorn	Pizza	Diet Coke
1	\$5.00	\$2.00	\$12.00	\$1.25
2	6.00	2.50	12.50	1.40
3	6.50	3.00	13.00	1.50

Assume that Year 1 is the base year. Calculate the value of the CPI for each year and the rate of inflation for Years 2 and 3.

$$\$GDP_1 = \$Y_1 = (2.5 + 1.2 + 1.12 + 2 \cdot 1.25) = 26.5 \$$$

$$\$GDP_1 = \$Y_1 = Y_1^1 = GDP_1^1 = 26.5 \$$$

$$\$GDP_2 = \$Y_2 = (2.6 + 1.25 + 1.125 + 2 \cdot 1.4) = 29.8 \$$$

$$GDP_2^1 = Y_2^1 = GDP_1^1 = 26.5 \$$$

$$\$GDP_3 = \$Y_3 = (2.65 + 1.3 + 1.13 + 2 \cdot 1.5) = 32 \$$$

$$GDP_3^1 = Y_3^1 = GDP_1^1 = 26.5 \$$$

$$CPI = P_y = \frac{\$GDP_y}{GDP_y^1} = \frac{\$Y_y}{Y_y^1}$$

$$GDP_y = \$Y_y = \sum_i (m_{GDP_y} \cdot P_{GDP_y}) \quad (\text{NOMINAL})$$

$$GDP_y^1 = Y_y^1 = \sum_i (m_{GDP_1} \cdot P_{GDP_1}) \quad (\text{REAL})$$

$$i = \frac{P_y - P_{y-1}}{P_{y-1}} \cdot 100 \quad \text{INFLATION RATE}$$

$$P_1 = \frac{\$GDP_y}{GDP_y^1} = \frac{\$Y_y}{Y_y^1} = \frac{26.5}{26.5} = 1$$

$$i_1 = \frac{1.1245 - 1}{1} \cdot 100 = 12.45\%$$

$$P_2 = \frac{29.8}{26.5} = 1.1245$$

$$i_2 = \frac{1.21 - 1.1245}{1.1245} \cdot 100 = 7.6\%$$

$$P_3 = \frac{32}{26.5} = 1.21$$

$$\text{GDP DEFULATOR} = CPI = P_y = \frac{\$GDP_y}{GDP_y^1} = \frac{\$Y_y}{Y_y^1}$$

Inflation Schedule						
Year	Price	Quantity	Price	Quantity	Price	Quantity
	Sweaters	Sweaters	CDs	CDs	Shirts	Shirts
2012	\$25	5	\$4	4	\$15	20
2013	\$24	6	\$5	4	\$16	16
2014	\$23	7	\$6	3	\$17	12

- Calculate the CPI and the GDP deflator for each year (with 2012 as the base year).
- Is either a good measure of inflation? Give some examples as to why the CPI miss-measures inflation.
- If nominal per capita GDP is \$55904 in 2014 what is real GDP

THE GOODS MARKET

[LECTURE 9]

IS-LM MODEL:

2 MARKETS:

- IS : GOODS MARKET (INVESTMENT & SAVING)
- LM : FINANCIAL MARKET (LIQUIDITY & MONEY)

WHEN A MARKET IS AT EQUILIBRIUM?

WHEN THE DEMAND IS EQUAL TO THE SUPPLY.

THE DEMAND FOR GOODS ( $\bar{Z}$ )

$$\bar{Z} \equiv C + I + G + X - IM$$

 $\bar{Z}$  = AGGREGATE DEMAND (AGGREGATE = ENTIRE ECONOMIC SYSTEM)

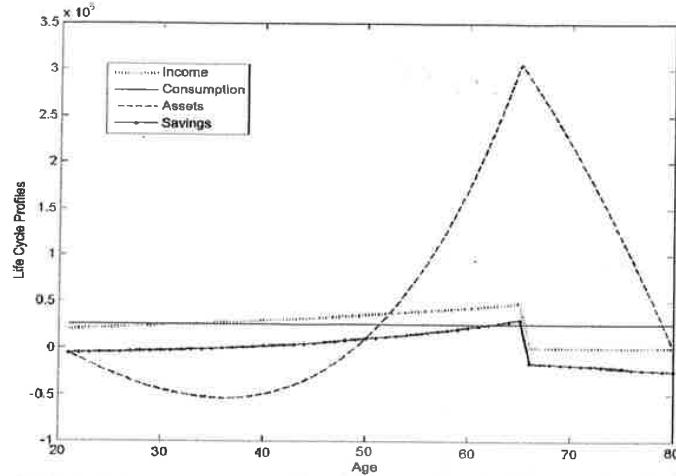
- C = CONSUMPTION = REFERS TO THE GOODS AND SERVICES PURCHASED BY CONSUMERS ( $\rightarrow$  HOUSEHOLDS)
- I = INVESTMENT = SOMETIMES CALLED "FIXED INVESTMENT" = IT'S THE PURCHASE OF CAPITAL GOODS.  
IT IS THE SUM OF NONRESIDENTIAL INVESTMENT AND RESIDENTIAL INVESTMENT.  
INVESTMENT = PRODUCTION OF NEW PRODUCER, DURABLE, GOODS ( $\rightarrow$  FIRMS)
- G = GOVERNMENT SPENDING = REFERS TO THE PURCHASES OF GOODS AND SERVICES BY THE FEDERAL, STATE, AND LOCAL GOVERNMENTS. IT DOES NOT INCLUDE GOVERNMENT TRANSFERS, NOR INTEREST PAYMENTS ON THE GOVERNMENT DEBT. ( $\rightarrow$  PUBLIC ADMINISTRATION)
- X - IM = NET EXPORTS / TRADE BALANCE ( $\rightarrow$  THE REST OF THE WORLD)

 $X$  = EXPORTS = ARE THE PURCHASES OF GOODS AND SERVICES BY FOREIGNERS ( $\rightarrow$  FOREIGNERS)IM = IMPORTS = ARE THE PURCHASES OF FOREIGN GOODS AND SERVICES ( $\rightarrow$  CONSUMERS, FIRMS, GOVERNMENT)EXPORTS = IMPORTS  $\Leftrightarrow$  TRADE BALANCEEXPORTS > IMPORTS  $\Leftrightarrow$  TRADE SURPLUSEXPORTS < IMPORTS  $\Leftrightarrow$  TRADE DEFICIT

(INVENTORY INVESTMENT = IS THE DIFFERENCE BETWEEN PRODUCTION AND SALES. INVENTORY IS CONSIDERED INVESTMENT BECAUSE IT WILL PRODUCE NEW INCOME (ACTUALLY IT'S THE CHANGE OF INVENTORY LEVEL WHICH IS CONSIDERED AS AN INVESTMENT)).

(THE SYMBOL " $\equiv$ " MEANS THAT THIS EQUATION IS AN IDENTITY (OR DEFINITION)).WE WILL ASSUME, FOR THE MOMENT, A CLOSED ECONOMY :  $X = IM = 0$ SO THE TOTAL DEMAND FOR GOODS BECOMES :  $\bar{Z} = C + I + G$

## Consumption ( $C$ ) – Life Cycle Model



### SAVINGS

$$S = Y_D - C = Y_D - (C_0 + C_1 Y_D) = (1 - C_1)Y_D - C_0$$

### • INVESTMENT (I)

INVESTMENT = PURCHASE OF NEW CAPITAL GOODS

GROSS PRIVATE DOMESTIC INVESTMENT IS GIVEN BY:

- FIXED INVESTMENT { NON RESIDENTIAL INVESTMENT (EXPENDITURES BY FIRMS FOR MACHINES, TOOLS,...)  
RESIDENTIAL INVESTMENT (EXPENDITURES BY HOUSEHOLDS AND FIRMS FOR BUILDINGS,...)
- CHANGE IN INVENTORIES: CHANGE OF FIRM INVENTORIES IN A GIVEN PERIOD.
  - IT CAN BE POSITIVE OR NEGATIVE
  - IT CAN BE INTENDED OR UNINTENDED

### NOTES:

- FIXED INVESTMENT → WITHOUT TAKING ACCOUNT OF THE COST OF DEPRECIATION
- THE PURCHASES OF OLD HOUSES, OLD MACHINES, ... AND THE PURCHASE OF STOCKS OR BONDS ARE NOT INVESTMENTS FOR MACROECONOMICS AND NATIONAL PRODUCT ACCOUNTING.
- NET INVESTMENT IN ANY GIVEN YEAR = GROSS INVESTMENT MINUS AN ESTIMATE FOR REPLACEMENT INVESTMENT (I.E. =  $I_{DEST}$  (LAT) = FOR EXAMPLE: DEPRECIATION). GROSS INVESTMENT THAT TAKES INTO ACCOUNT THE DEPRECIATION.
- VARIABLES THAT DEPEND ON OTHER VARIABLES WITHIN THE MODEL ARE CALLED ENDOGENOUS.
- VARIABLES THAT ARE NOT EXPLAINED WITHIN THE MODEL ARE CALLED EXOGENOUS.
- INVESTMENT HERE IS TAKEN AS GIVEN, OR TREATED AS AN EXOGENOUS VARIABLE:  $I = \bar{I}$  (FOR THIS MOMENT)

## DIGRESSION:

[LECTURE 10]

AQR = ASSET QUALITY REVIEW = IT'S A BIG CHECK UP THAT THE EUROPEAN CENTRAL BANK CARRIES OUT ON THE BALANCE SHEETS (BILANCI) OF THE BIG EUROPEAN BANKS (128).

IT INCLUDES A GENERAL RISK ASSESSMENT (VALUTAZIONE) OF BANKS AND A STRESS TEST TO VERIFY THE STABILITY OF ACCOUNTS IN EXTREME SITUATIONS AT THE MACROECONOMIC LEVEL.

[A GROUP OF BIG BANKS, SYSTEMIC BANKS, HAVE A GREAT EFFECT ON ECONOMY (GREAT EXTERNALITIES)]

⇒ THEY ARE NO MORE UNDER THE GUIDE OF CB OF ITALY BUT THEIR GUIDE BECOMES THE EU CB]

AQR TAKES THE OFFICIAL ANNUAL REPORTS IN TERMS OF ASSETS (RISORSE): LOANS, FINANCIAL INSTRUMENTS.

[A BANK IS A FIRM! IT IS PROFIT-ORIENTED:

- IT COLLECTS SAVINGS FROM EVERYONE (DEBTS).
- THEY INVEST THIS MONEY PROVIDING LOANS, ASSETS.]

THE AQR IS FOCUSED ON USES OF A BANK.

WHAT IS THE REAL VALUE OF THE ASSETS?

SUPPOSE YOU ASK A LOAN OF 300,000 € (ASSETS SIDE OF THE BANK); BUT IF THERE IS 50% OF PROBABILITY YOU WON'T BE ABLE TO GIVE THE MONEY BACK TO THE BANK,

THE BANK'S ACTUAL LOAN IS:  $300,000 \cdot 50\% = 150,000 \text{ €}$

HOW IS IT MEASURED THE PROBABILITY?

- THE BANK USES VERY COMPLEX RISK MANAGEMENT COMPUTATIONS TO CALCULATE THE PROBABILITY OF ONE LOAN AND TO EVALUATE THE PROBABILITY OF DEFAULT (PD).

⇒ AQR CHECKS THE VALUE OF THEIR ASSETS, IF THEY ARE CORRECT OR NOT

ONCE CHECKED THE BANK ASSETS → STRESS TEST.

THERE IS A SITUATION OF STRESS?

WHAT DOES IT CHANGE?

WHAT DOES IT OCCUR FOR THE FINANCIAL ASSET REPORT?

DOES THE BANK HAVE A SUFFICIENT CAPITAL?

⇒ SIMULATION TO FIND OUT IF THE BANK IS ABLE TO SURVIVE

SO: IF THERE IS EQUILIBRIUM IN THE GOODS MARKET:

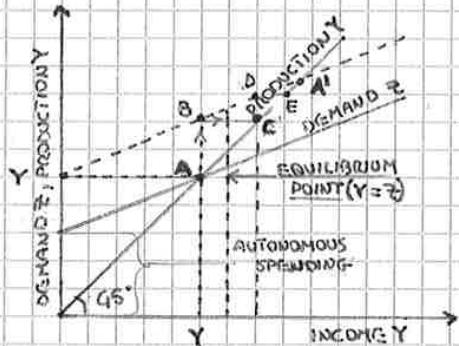
$$Y^* = \frac{1}{1-C_1} (C_0 + C_1 Y - C_1 T + I + G)$$

#### ⊕ CONSIDERATIONS:

- THERE IS NOTHING WHICH CAN GARANTEE HOW GOOD IS THE EQUILIBRIUM POINT REACHED.
- THE AGGREGATE DEMAND AND SUPPLY MODEL:
  - SHORT TIME PERIOD;
  - FOCUSED ONLY ON DEMAND (THE MODEL CONSIDERS BOTH);
  - INFLATION IS NOT CONSIDERED;
  - QUESTION IS ABOUT IF WE HAVE TO DO SOMETHING TO IMPROVE THE ECONOMICS (EX: REDUCING T)
- IN THE LAST 5 YEARS THE SITUATION IS:
  - + DECREASE/STABILISATION GDP;
  - + INCREASE OF UNEMPLOYMENT RATE;
- ⇒ TO INCREASE Y WE CAN INCREASE G BUT WHAT ABOUT THIS MONEY? FOR COUNTRIES WITH HIGH DEBTS?
- ⇒ ENCOURAGING INVESTMENTS MAKING ECONOMIC SYSTEM ATTRACTIVE FOR FOREIGN INVESTORS.
- CAN WE CHANGE  $C_1$ ? IF  $C_1$  INCREASES THE MULTIPLIER INDEX IS 1.5/6 TIMES HIGHER. BUT  $C_1$  DEPENDS ON HUMAN BEHAVIOUR AND ITS CHANGES CAN OCCUR IN DECADES.

## 2. USING GRAPHS

$$\bar{Y} = C + I + G = C_0 + C_1 Y_D + I + G = C_0 + C_1(Y - T) + I + G = C_0 + C_1 Y - C_1 T + I + G = C_1 Y + (C_0 - C_1 T + I + G)$$



AB = INCREASE IN DEMAND ( $\bar{Y}$ ) ⇒ INCREASE OF PRODUCTION (Y)

BC = INCREASE OF PRODUCTION (Y) LEADS TO AN EQUAL INCREASE OF INCOME (Y)

CD = INCREASE OF CONSUMPTION (AND SO OF THE DEMAND (Y)) GIVEN BY  $C_1 Y_D$

FIRST, PLOT (TRAZIA) PRODUCTION (Y) AS A FUNCTION OF INCOME (Y);

SECOND, PLOT DEMAND ( $\bar{Y}$ ) AS A FUNCTION OF INCOME (Y);

IN EQUILIBRIUM, PRODUCTION (Y) EQUALS DEMAND ( $\bar{Y}$ );

THE DEMAND PASSES FROM A TO B

⇒ THEN FIRM INCREASE THE PRODUCTION Y; NEW EQUILIBRIUM POINT (A') TO REACH

FOLLOWING THIS LOGIC, THE TOTAL INCREASE IN PRODUCTION AFTER  $m+1$  ROUNDS,

EQUALS \$1 BILLION MULTIPLIED BY THE SUM:

$$1 + c_1 + c_1^2 + \dots + c_1^m \quad \text{GEOMETRIC SERIES}$$

### 3. USING WORDS

- AN INCREASE IN DEMAND LEADS TO AN INCREASE IN PRODUCTION AND A CORRESPONDING INCREASE IN INCOME. THE END RESULT IS AN INCREASE IN OUTPUT THAT IS LARGER THAN THE INITIAL SHIFT IN DEMAND, BY A FACTOR EQUAL TO THE MULTIPLIER ( $\frac{1}{1-c_1}$ ).
- TO ESTIMATE THE VALUE OF THE MULTIPLIER, AND MORE GENERALLY, TO ESTIMATE BEHAVIORAL EQUATIONS AND THEIR PARAMETERS, ECONOMISTS USE ECONOMETRICS = A SET OF STATISTICAL METHODS USED IN ECONOMICS.

#### HOW LONG DOES IT TAKE FOR OUTPUT TO ADJUST?

DESCRIBING FORMALLY THE ADJUSTMENT OF OUTPUT OVER TIME IS WHAT ECONOMISTS CALL THE DYNAMICS OF ADJUSTMENT.

1. SUPPOSE THAT FIRMS MAKE DECISIONS ABOUT THEIR PRODUCTION LEVELS AT THE BEGINNING OF EACH QUARTER.
2. NOW SUPPOSE CONSUMERS DECIDE TO SPEND MORE, THAT THEY INCREASE  $c_1$ .
3. HAVING OBSERVED AN INCREASE IN DEMAND, FIRMS ARE LIKELY TO SET A HIGHER LEVEL OF PRODUCTION  
↓ IN THE FOLLOWING QUARTER.

⇒ IN RESPONSE TO AN INCREASE IN CONSUMER SPENDING, OUTPUT DOES NOT JUMP TO THE NEW EQUILIBRIUM, BUT RATHER INCREASES OVER TIME.

(FROM A STATISTICAL POINT OF VIEW 18/26 MONTHS ARE EMPLOYED FOR ADJUSTMENT (REACHING NEW POINT OF EQUILIBRIUM) BUT ONLY IF NOTHING ELSE HAPPENS).

EXERCISE

SUPPOSE THE ECONOMY IS CHARACTERIZED BY THE FOLLOWING BEHAVIORAL EQUATIONS (DATA):

$$C = 180 + 0.8Y_D$$

$$I = 160$$

$$G = 160$$

$$T = 120$$

$$\text{a) EQUILIBRIUM GDP } (Y^*) = ?$$

$$\text{b) DISPOSABLE INCOME } (Y_D) = ?$$

$$\text{c) CONSUMPTION SPENDING } (C) = ?$$

$$\text{d) IF } G = 136, \text{ HOW MUCH GDP INCREASES } (\Delta Y^*) = ?$$

RESOLUTION

$$\begin{cases} Y = C + I + G \\ C = C_0 + C_1(Y_D) = C_0 + C_1(Y - T) \\ Y = Y \end{cases}$$

$$Y = C_0 + C_1(Y - T) + I + G$$

$$\text{a) } Y^* = \frac{1}{1-C_1} (C_0 - C_1 T + I + G) = \frac{1}{1-0.8} (180 - 0.8 \cdot 120 + 160 + 160) = 2020 \quad (\text{EQUILIBRIUM GDP } Y^*)$$

$$\text{b) } Y_D = Y - T = 2020 - 120 = 1900 \quad (\text{DISPOSABLE INCOME } Y_D)$$

$$\text{c) } C = C_0 + C_1 Y_D = 180 + 0.8 \cdot 1900 = 1700$$

$$\text{d) } Y^{*1} = \frac{1}{1-0.8} (180 - 0.8 \cdot 120 + 160 + 136) = 1900 \Rightarrow \Delta Y^* = Y^{*1} - Y^* = 1900 - 2020 = -120$$

[CONSIDERATION]: IS THE GOVERNMENT OMNIPOTENT?

- CHANGING GOVERNMENT SPENDING OR TAXES IS NOT ALWAYS EASY.
- THE RESPONSES OF CONSUMPTION, INVESTMENT, IMPORTS, ETC., ARE HARD TO ASSESS WITH MUCH CERTAINTY.
- ANTICIPATIONS ARE LIKELY TO MATTER.
- ACHIEVING A GIVEN LEVEL OF OUTPUT CAN COME WITH UNPLEASANT SIDE EFFECTS.
- BUDGET DEFICITS AND PUBLIC DEBT MAY HAVE ADVERSE IMPLICATIONS IN THE LONG RUN.

ENDOGENOUS TAXATION

WE TALK ABOUT ENDOGENOUS TAXATION WHEN THE TAXATION DEPEND ON INCOME (Y).

$$T = \bar{t} \cdot Y \quad \bar{t} = \frac{T}{Y} \quad \text{AVERAGE TAXES INCIDENCE} \quad (0 \leq \bar{t} \leq 1)$$

SO THE DEMAND FOR GOODS ( $\bar{c}$ ) CONSIDERING THE EQUILIBRIUM  $Y = \bar{c}$ , IN A CLOSED ECONOMY ( $X = IM = 0$ ) BECOMES:

$$Y = \bar{c} = C_0 + \bar{I} + \bar{G} = C_0 + C_1(Y - \bar{t}) + \bar{I} + \bar{G} = C_0 + C_1(Y - \bar{t}Y) + \bar{I} + \bar{G} = C_0 + C_1(1 - \bar{t})Y + \bar{I} + \bar{G}$$

$$Y^* = \frac{1}{[1 - C_1(1 - \bar{t})]} \cdot (C_0 + \bar{I} + \bar{G}) \quad \text{EQUILIBRIUM GDP } Y^*$$

NEW MULTIPLIER (THE VALUE DECREASES)

EXOGENOUS

$$\Delta Y = 1$$

$$\Delta Y_D = \Delta Y - \bar{t} = 1$$

$$\Delta C = C_1 \Delta Y_D = C_1$$

$$\Delta S = 1 - \Delta C = 1 - C_1$$

ENDOGENOUS

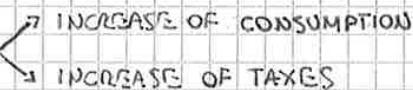
$$\Delta Y = 1$$

$$\Delta Y_D = \Delta Y - \bar{t} = 1 - \bar{t}$$

$$\Delta C = C_1 \cdot \Delta Y_D = C_1(1 - \bar{t})$$

$$\Delta S = \Delta Y_D - \bar{t} = 1 - C_1(1 - \bar{t})$$

WHAT DOES IT MEAN?

AN INCREASE OF Y ( $\Delta Y$ ) IS SPLIT TO 

$\Rightarrow$  INCREASE OF CONSUMPTION OF A SMALLER AMOUNT BECAUSE A PART GOES TO INCREASE TAXES.

WHAT ABOUT  $\bar{t}$ ?

WHEN  $\bar{t}$  INCREASES, THE MULTIPLIER DECREASES AND THE EFFECT OF CHANGES IN AUTONOMOUS SPENDING IS SMALLER.  $\Rightarrow$  REDUCE POWER OF MULTIPLIER.

• IF  $T = t_0 + \bar{t} \cdot Y$  — ENDOGENOUS TAXATION THE EQUILIBRIUM GDP POINT ( $Y^*$ ) BECOME:

EXOGENOUS EQUILIBRIUM  
OF TAXATION

$$Y = \bar{c} = C_0 + \bar{I} + \bar{G} = C_0 + C_1 Y_D + \bar{I} + \bar{G} = C_0 + C_1(Y - \bar{t}) + \bar{I} + \bar{G} = C_0 + C_1(Y - t_0 - \bar{t}Y) + \bar{I} + \bar{G}$$

$$Y^* = \frac{1}{[1 - C_1(1 - \bar{t})]} \cdot (C_0 - C_1 t_0 + \bar{I} + \bar{G})$$

## EXERCISES

[LECTURE 12]

- ① A CLOSED ECONOMY CAN BE DESCRIBED, WITHOUT CONSIDERING THE GOVERNMENT, BY THE FOLLOWING EQUATIONS:

$$C = 8000 + 0.65Y_D$$

$$I = 40,000$$

a) WHAT IS THE GDP EQUILIBRIUM LEVEL?

b) WHAT IS THE IMPACT ON THE GDP OF AN INCREASE OF 15,000 IN INVESTMENT?

c) AND A REDUCTION OF 9,000?

SHOW IT IN A GRAPH AND GIVE DETAILED EXPLANATIONS.

4) CONSIDER A CLOSED ECONOMY IN WHICH THE MARGINAL PROPENSITY TO CONSUME IS 0.85. THE GOVERNMENT, NEAR RELECTION-DAY, ANNOUNCED A DECREASE IN TAXES OF 7.000. BECAUSE OF THE BUDGET DEFICIT, IT IS NECESSARY TO CUT GOVERNMENT EXPENSES OF THE SAME AMOUNT. ADDITIONALLY, THE GOVERNMENT DECIDED TO INCREASE UNILATERAL TRANSFERS BY 1.000. WHAT IS THE EFFECT OVER THE EQUILIBRIUM GDP?

DATA

CLOSED ECONOMY

$c_1 = 0.85$

$\Delta T = -7.000$

$\Delta G = -3.000$

$Y = \bar{z} = C + \bar{I} + \bar{G} = c_0 + c_1 Y_D + \bar{I} + \bar{G} = c_0 + c_1(Y - \bar{T}) + \bar{I} + \bar{G}$

$Y^* = \frac{1}{1 - c_1} (c_0 - c_1 \bar{T} + \bar{I} + \bar{G})$

$$\begin{aligned}\Delta Y^* &= \frac{1}{1 - c_1} (\Delta c_0 - c_1 \Delta \bar{T} + \Delta \bar{I} + \Delta \bar{G}) = \frac{1}{1 - c_1} (-c_1 \Delta \bar{T} + \Delta \bar{G}) = \frac{-1}{1 - 0.85} [-0.85(-7.000) + (-3.000)] = \\ &= \frac{1}{0.15} (0.85 \cdot 7.000 - 3.000) = +19.666\end{aligned}$$

5) IN A CLOSED ECONOMY WE HAVE:

$C = 2.000 + 0.75 Y_D$

$G = 20.000$

$T = \tau \cdot Y$

IF THE FULL-EMPLOYMENT GDP IS 100.000, WHAT SHOULD BE THE INVESTMENT LEVEL AND THE VALUE OF  $\tau$  THAT LEAD BOTH TO FULL-EMPLOYMENT GDP AND BUDGET EQUILIBRIUM (GOVERNMENT BALANCED BUDGET)?

DATA

CLOSED ECONOMY

$C = 2.000 + 0.75 Y_D$

$G = 20.000$

$T = \tau \cdot Y$

$GDP_{FULL-EMPLOYMENT} = 100.000$

$Y^* = Y_{FULL-EMPLOYMENT}$

BUDGET EQUILIBRIUM

$\tau = ? \quad \bar{I} = ?$

RESOLUTION

$BUDGET EQUILIBRIUM \Rightarrow T = G$

$T = \tau \cdot Y = G \Rightarrow \tau = \frac{G}{Y} = \frac{20.000}{100.000} = 0.2$

$Y = \bar{z} = C + \bar{I} + \bar{G} = c_0 + c_1(Y - \bar{T}) + \bar{I} + \bar{G}$

$\bar{I} = Y^* - c_0 - c_1(Y^* - \bar{T}) - \bar{G} = Y^* - c_0 - c_1(Y^* - \tau Y^*) - \bar{G} =$

$= Y^*(1 - c_1 + c_1 \tau) - c_0 - \bar{G} = 100.000 (1 - 0.75 + 0.75 \cdot 0.2) - 2000 - 20.000 = 18.000$

- 8) GIVING THE CONSUMPTION FUNCTION,  $C = 200 + 0.8Y$
- DERIVE THE SAVING FUNCTION;
  - GRAPH THE SAVING FUNCTION;
  - HOW MUCH IS SAVING/DISSAVING WHEN  $Y=400$  AND  $Y=2000$ ?

→ IS IT BETTER TO LIMIT SURPLUS TRADE OR DEFICIT TRADE? (SO?)

- IF A COUNTRY HAS TO REDUCE EXPORTS ( $X$ )  $\Rightarrow$  REDUCE OF GDP BY THE MULTIPLIER.
- IF A COUNTRY HAS TO INCREASE EXPORTS ( $X$ )  $\Rightarrow$  INCREASE OF GDP BY THE MULTIPLIER.  
(POSITIVE EFFECT)
- IF A COUNTRY HAS A LOW CURRENCY VALUE,  $X$  IS FAVOURED  $\Rightarrow$  TIMOTHY GEITHNER'S PROPOSAL WAS DIRECTED TO STOP CHINA'S CURRENCY TO DEPRECIATE.

CAN EXPORTS EXCEED GDP?

COUNTRIES CAN HAVE EXPORT RATIOS LARGER THAN THE VALUE OF THEIR GDP BECAUSE EXPORTS AND IMPORTS MAY INCLUDE REEXPORTS AND IMPORTS OF INTERMEDIATE GOODS.

IS IT BETTER TO BUY DOMESTIC GOODS OR FOREIGN GOODS?

WHEN GOODS MARKETS ARE OPEN, DOMESTIC CONSUMERS MUST DECIDE NOT ONLY HOW MUCH TO CONSUME AND SAVE, BUT ALSO WHETHER TO BUY DOMESTIC GOODS OR TO BUY FOREIGN GOODS. CENTRAL TO THE SECOND DECISION IS THE PRICE OF DOMESTIC GOODS RELATIVE TO FOREIGN GOODS, OR THE REAL EXCHANGE RATE.

(SO) WHAT DO  $X$  AND  $IM$  DEPEND ON?

- EXCHANGE RATE ( $E$ ): VALUE OF ONE CURRENCY IN TERMS OF ANOTHER ONE;
- (COST OF PRODUCTION (LABOUR COST)) IS SUPPLY-SIDED, NOT DEMAND-SIDED AND SO IT IS NOT CONSIDERED;)
- DISPOSABLE INCOME  $Y_D^F$  (OF FOREIGN) FOR  $X$ ;
- DISPOSABLE INCOME  $Y_D$  (OF A COUNTRY) FOR  $IM$ ;

$$X = f(E, Y_D^F)$$

$$IM = f(E, Y_D)$$

GERMANY EXPORTS ( $X_G$ ) DEPEND ON FOREIGN DISPOSABLE INCOME ( $Y_D^F$ ) AND THAT IS THE REASON WHY GERMANY WANTS OTHER COUNTRIES NOT TO ENTER IN RECESSION.

IF  $Y_D$ , ITALY  $\rightarrow$  THEN  $X_G \rightarrow \leftarrow$  ( $\Rightarrow Y_D^F \rightarrow$  (GDP<sub>G</sub> DECREASES BY KEYNESIAN MULTIPLIER)  
(THAT IS THE ECONOMICAL EXPLANATION OF MARSHALL'S PLAN!)

## REAL EXCHANGE RATE (E)

THE REAL EXCHANGE RATE IS DEFINED AS THE RATIO BETWEEN PRICE OF ONE OBJECT WITH THE CURRENT MONEY AND THE COST OF A SIMILAR OBJECT WITH THE SAME CURRENCY IN AN OTHER COUNTRY.

IT IS NOT THE SAME TO CONSIDER THE SAME CAR IN TWO COUNTRIES BECAUSE ONE COUNTRY (THAT ONE WHICH DOES NOT PRODUCE THAT CAR) WOULD HAVE TO IMPORT IT AND SO ITS COST WOULD BE AFFECTED BY THE COST OF TRANSPORTATION AND OTHERS.

$$\boxed{E = \frac{P \cdot E}{P^*}}$$

REAL EXCHANGE RATE (E)

$P$  = PRICE IN YOUR COUNTRY.

$P^*$  = PRICE IN \* COUNTRY.

$E$  = NOMINAL EXCHANGE RATE ( $\$ = \dots *$ )

LIKE NOMINAL EXCHANGE RATES, REAL EXCHANGE RATES MOVE OVER TIME:

- AN INCREASE IN THE RELATIVE PRICE OF DOMESTIC GOODS IN TERMS OF FOREIGN GOODS IS CALLED A REAL APPRECIATION, WHICH CORRESPONDS TO AN INCREASE IN THE REAL EXCHANGE RATE ( $E$ ).
- A DECREASE IN THE RELATIVE PRICE OF DOMESTIC GOODS IN TERMS OF FOREIGN GOODS IS CALLED A REAL DEPRECIATION, WHICH CORRESPONDS TO A DECREASE IN THE REAL EXCHANGE RATE ( $E$ ).

## GDP VS GNP

GDP = GROSS DOMESTIC PRODUCT: IS THE MEASURE THAT CORRESPONDS TO VALUE ADDED DOMESTICALLY.

GNP = GROSS NATIONAL PRODUCT: CORRESPONDS TO THE VALUE ADDED BY DOMESTICALLY OWNED FACTORS OF PRODUCTION.

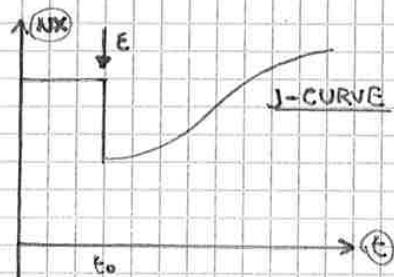
NOW WE MUST BE ABLE TO DISTINGUISH BETWEEN THE DOMESTIC DEMAND FOR GOODS AND THE DEMAND FOR DOMESTIC GOODS.

SOME DOMESTIC DEMAND FALLS ON FOREIGN GOODS, AND SOME OF THE DEMAND FOR DOMESTIC GOODS COMES FROM FOREIGNERS.

### MARSHALL - LERNER STUDY

$E \Rightarrow NX$  MARSHALL - LERNER CONDITION

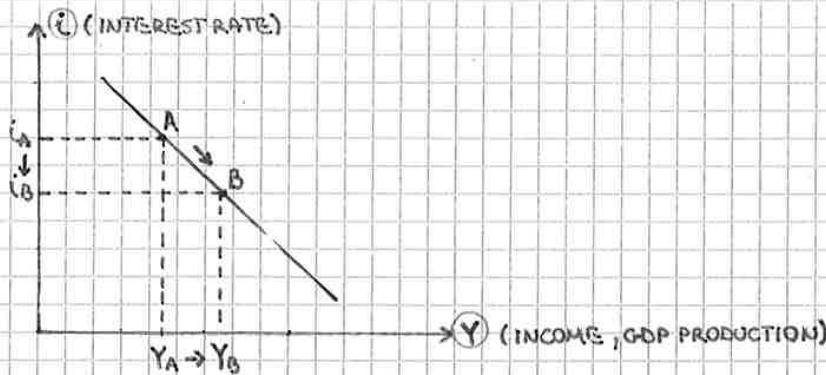
IT'S NOT SOMETHING THAT HAPPENS IMMEDIATELY; IT TAKES SOME TIME.



- SUPPOSE EURO DEPRECIATES AT  $t_0$  WITH RESPECT TO DOLLAR; TOMORROW THE VALUE OF NX :  $X - IM$  CHANGES BECAUSE E CHANGES.  
 $E$   
⇒ NX DECREASES
- ALWAYS IT IS TO CONSIDER A SHORT TIME PERIOD.
- GOVERNMENT SHOULD NOT DEPRECIATE ITS CURRENCY BECAUSE:
  - DEPRECIATION INCREASES EXPORTS WHICH INCREASES INFLATION IMPORTATION;
  - OTHER COUNTRIES CAN REACT OR BE DISAPPOINTED;
  - THE DEPRECIATION LEADS TO BLOCK THE COMPETITIVENESS OF FIRMS WHICH ARE SURE TO SELL THEIR PRODUCTS BECAUSE OF GOVERNMENT DEPRECIATION IN THE NEXT FUTURE.

## IS EQUATION

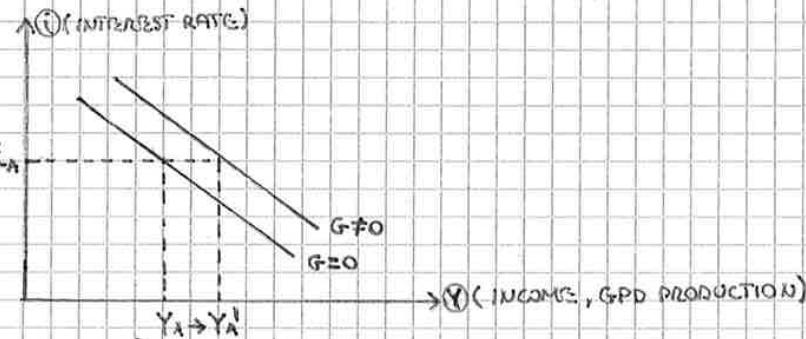
$$i = -\frac{1}{M b_1} Y + \frac{C_0 + b_0}{b_1} \quad ; \quad M = \frac{1}{1 - c_1}$$



- NEGATIVE RELATIONSHIP BETWEEN  $i$  AND  $Y$ .
- IF  $i$  DECREASES  $\Rightarrow$   $I$  INCREASES  $\Rightarrow$   $\bar{z}$  INCREASES  $\Rightarrow$   $Y$  INCREASES. ( $i \downarrow \Rightarrow I \uparrow \Rightarrow \bar{z} \uparrow \Rightarrow Y \uparrow$ )
- CB DECREASES  $i$  WHEN  $Y$  IS TOO LOW.
- WHEN  $Y$  GETS CLOSER TO  $Y_{FULL-EMPLOYMENT}$  THE RISK OF INFLATION IS VERY HIGH

→ WHAT HAPPENS IF THE GOVERNMENT SPENDING ( $G$ ) IS INCREASED?

$G \uparrow$ : EXPANSIONARY FISCAL POLICY (EXPANSIONARY BECAUSE IT INCREASES GDP)

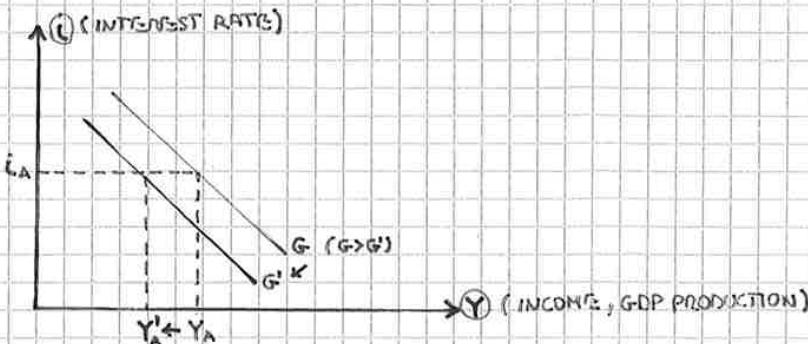


- IF  $G$  INCREASES  $\Rightarrow \bar{z}$  INCREASES  $\Rightarrow Y$  INCREASES. ( $G \uparrow \Rightarrow \bar{z} \uparrow \Rightarrow Y \uparrow$ )
- IF WE INTRODUCE  $G$  THE IS EQUATION BECOME:

$$i = -\frac{1}{M b_1} Y + \frac{C_0 + b_0 + G_1}{b_1}$$

→ WHAT HAPPENS IF GOVERNMENT SPENDING ( $G$ ) IS DECREASED OR TAXES ( $T$ ) ARE INCREASED?

$G \downarrow$  OR  $T \uparrow$ : RESTRICTIVE FISCAL POLICY (RESTRICTIVE BECAUSE IT REDUCES GDP)



### DIGRESSION: SEMANTIC TRAPS: MONEY, INCOME AND WEALTH

INCOME: IS WHAT YOU EARN FROM WORKING (LABOUR INCOME) PLUS WHAT YOU RECEIVE:

IN INTEREST AND DIVIDENDS (CAPITAL INCOME). IT IS A FLOW (EXRESSED PER UNIT OF TIME).

SAVING: IS THAT PART OF AFTER-TAX INCOME THAT IS NOT SPENT / CONSUMED. IT IS ALSO A FLOW.

FINANCIAL WEALTH (OR SIMPLY WEALTH): IS THE VALUE OF ALL YOUR FINANCIAL ASSETS (RISORSE) MINUS ALL YOUR FINANCIAL LIABILITIES. IN CONTRAST TO INCOME AND SAVING, WHICH ARE FLOW VARIABLES, FINANCIAL WEALTH IS A STOCK VARIABLE.

INVESTMENT: IS A TERM ECONOMISTS RESERVE FOR THE PURCHASE OF NEW CAPITAL GOODS, FROM MACHINES TO PLANTS TO OFFICE BUILDINGS. WHEN YOU WANT TO TALK ABOUT THE PURCHASE OF SHARES OR OTHER FINANCIAL ASSETS, YOU SHOULD REFER THEM AS A FINANCIAL INVESTMENT.

SO, TRY NOT TO SAY:

1. "JOHN IS MAKING A LOT OF MONEY" BUT "JOHN HAS A HIGH INCOME".
2. "JOHN HAS A LOT OF MONEY" BUT "JOHN IS VERY WEALTHY".

3) IN COUNTRY "A", IN 2005, WE HAVE:

CONSUMPTION AT CURRENT PRICE: 90

GDP (CURRENT PRICE): 108

EXPORTS (CURRENT PRICE): 26

TRADE DEFICIT (CURRENT PRICE): -12

IF WE KNOW THAT CONSTANT PRICE GDP (BASE YEAR 2000) IS 90, DERIVE THE RESOURCES AND USES ACCOUNT BOTH AT CURRENT AND AT CONSTANT PRICES USING THE GDP DEFLATOR.

(m) a) INFLATION RATE 1989 → 1998

$$\text{GDP DEFATOR}_{1989} \left( \frac{849,78}{618,09} \right)^{-1} = Y_0 = 0,727$$

$$\text{GDP DEFATOR} = \frac{\text{Nom GDP}}{\text{Real GDP}}$$

$$\text{GDP DEFATOR}_{1998} \left( \frac{1062,73}{957,48} \right) = Y_m = 1,110$$

$$Y_m = Y_0 (1+g)^m$$

$$g = -1 + \left( \frac{Y_m}{Y_0} \right)^{1/m} = 4,81\%$$

(+ GS 5, 6, 7, 8.)

(MAGARI NELLA TEORIA ANTICA: 1) 2) 3) → EX: ex; ex; )

↑ MEGLIO MENO

+ ULTIMA DIPOSITIVA GOODS MKT 01

SEMANTIC TRAP: MONEY, INCOME AND WEALTH

↳ ANZI MEGLIO METTERE PRIMA NEGLI BS \*

### 3) STORE OF VALUE

- IT IS AN ASSET (BENEFIT) AND IT IS ONE WAY OF HOLDING WEALTH.
- IT CAN BE USED TO MAKE PURCHASES IN THE FUTURE.
- IT IS A TRANSFER RESOURCE FROM THE PRESENT TO THE FUTURE FOR LATER CONSUMPTION OR FURTHER WEALTH ACCUMULATION.

#### DEFINITIONS OF MONEY:

(3) MONETARY AGGREGATES : M1, M2, M3)

M1 : " CURRENCY (COINS + BANKNOTES) IN THE HANDS OF THE PUBLIC (HOUSEHOLDS, FIRMS, ...) PLUS SIGHT DEPOSIT (BANK ACCOUNT PAYABLE ON DEMAND)"

M1 = CURRENCY + SIGHT DEPOSIT

M2 = M1 + SHORT-TERM TIME DEPOSITS AT BANKS WITH UNRESTRICTED ACCESS.

M3 = M2 + OTHER SHORT-TERM TIME MARKETABLE INSTRUMENTS.

#### • WHAT IS MONEY FOR EUROPEAN CB?

THE CB CONSIDERS AS MONEY THE 3 DIFFERENT MONEY AGGREGATES,



M1 IS THE MOST LIQUID, M3 IS THE LEAST LIQUID.

#### • WHAT IS LIQUID?

SOMETHING IS LIQUID IF IT CAN BE BOUGHT OR SOLD WITHOUT HIGH COST.

(THE COST OF KEEPING LIQUID MONEY IS THE INTEREST RATE ( $i$ ) BECAUSE IF YOU HAVE A CERTAIN S TODAY, IN THE FUTURE IT WILL REACH  $S(1+i)$  VALUE).

**Definitions of euro area monetary aggregates**

<i>Liabilities<sup>b)</sup></i>	<i>M1</i>	<i>M2</i>	<i>M3</i>
Currency in circulation <b>M1</b>	X	X	X
Overnight deposits <b>M1</b>	X	X	X
Deposits with agreed maturity up to 2 years <b>M2</b>		X	X
Deposits redeemable at notice up to 3 months <b>M2</b>		X	X
Repurchase agreements			X
Money market fund (MMF) shares/units and money market paper			X
Debt securities up to 2 years			X

*b) Liabilities of the money-issuing sector and central government liabilities with a monetary character held by the money-holding sector.*

DERIVING THE DEMAND FOR MONEY

$$M^d = L(i, \epsilon Y)$$

- +

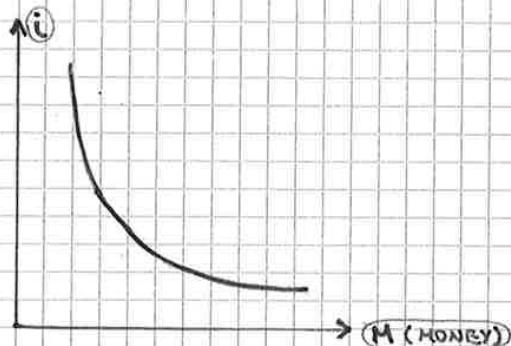
DEMAND FOR MONEY

(  $\epsilon Y$  OR  $\$Y$  : NOMINAL INCOME )

- IT INCREASES IN PROPORTION TO NOMINAL INCOME ( $\epsilon Y$ ),
- DEPENDS NEGATIVELY ON THE INTEREST RATE ( $i$ ),

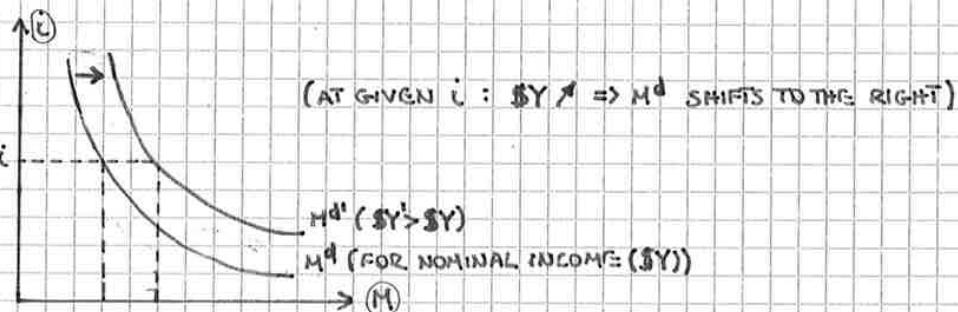
$$M^d = (\epsilon Y) \cdot L(i)$$

NW: THE DEMAND FOR MONEY CAN BE REPRESENTED ONLY FOR GIVEN LEVELS OF NOMINAL INCOME ( $\epsilon Y$ ).



FOR A GIVEN LEVEL OF NOMINAL INCOME, A LOWER INTEREST RATE ( $i$ ) INCREASES THE DEMAND FOR MONEY. (AT GIVEN  $\$Y$ :  $i \downarrow \Rightarrow M^d \uparrow$ )

↓ AT A GIVEN INTEREST RATE ( $i$ ), AN INCREASE IN NOMINAL INCOME ( $\$Y$ ) SHIFTS THE DEMAND FOR MONEY TO THE RIGHT.



## 2) PRECAUTIONARY MOTIVE

- PEOPLE HOLD MONEY FOR EMERGENCIES OR SOCIAL UNEXPECTED PROBLEMS THAT NEED UNUSUAL COSTS.

## 3) SPECULATIVE MOTIVE

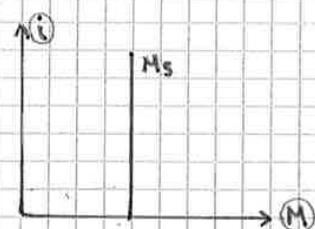
- MONEY IS ALSO A WAY FOR PEOPLE TO STORE WEALTH.
  - PEOPLE PREFER LIQUIDITY TO SPECULATE THAT BOND PRICES WILL FALL.
- WHEN INTEREST RATE ( $i$ ) ARE LOW, THEY WOULD BE EXPECTED TO RISE IN THE FUTURE AND THUS BOND PRICES WOULD BE EXPECTED TO FALL. SO MONEY IS MORE ATTRACTIVE THAN BONDS WHEN INTEREST RATES ARE LOW. SO UNDER THE SPECULATIVE MOTIVE, MONEY DEMAND IS NEGATIVELY RELATED TO THE INTEREST RATE.
- THE FACT THAT CURRENT DEMAND FOR MONEY CAN DEPEND ON EXPECTATIONS OF THE FUTURE INTEREST RATES CAUSES MONEY DEMAND TO BE QUITE UNSTABLE.

## EQUILIBRIUM OF THE LM MODEL

EQUILIBRIUM IN FINANCIAL MARKETS REQUIRES THAT MONEY SUPPLY ( $M = M^s$ ) BE EQUAL TO MONEY DEMAND ( $M^d = \$Y \cdot L(i)$ ).

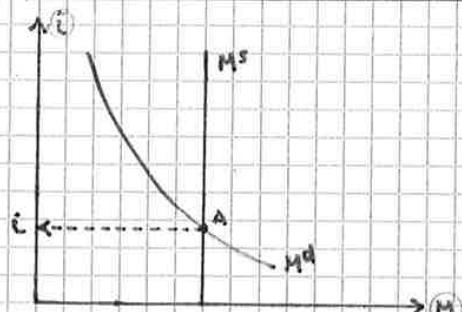
$$M = M^s = M^d = \$Y \cdot L(i)$$

### LM RELATION

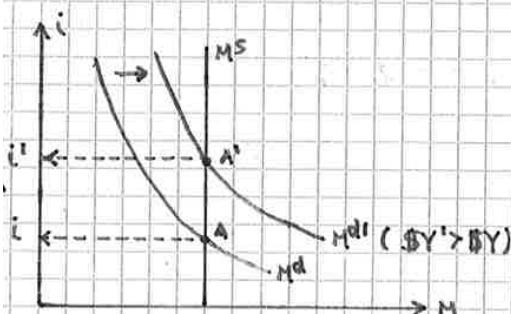


- THE MONEY SUPPLY ( $M^s$ ) IS INDEPENDENT OF THE INTEREST RATE ( $i$ ).
- THE MONEY SUPPLY ( $M^s$ ) IS DECIDED BY THE CENTRAL BANK (CB).
- THE MONEY SUPPLY ( $M^s$ ) IS EXOGENOUS (NOT DEPENDS ON OTHER VARIABLES):  $M^s = \bar{M}^s$

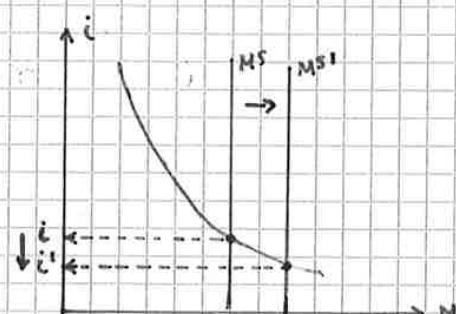
## DETERMINATION OF THE INTEREST RATE ( $i$ )



THE INTEREST RATE ( $i$ ) MUST BE SUCH THAT THE SUPPLY OF MONEY (WHICH IS INDEPENDENT OF THE  $i$ ) IS EQUAL TO THE DEMAND FOR MONEY (WHICH DEPENDS ON THE INTEREST RATE ( $i$ )).



$\$Y \uparrow$  ( $\Rightarrow$  THE  $M^d$  SHIFTS TO THE RIGHT):  $i \uparrow$



$M^s \uparrow$  ( $\Rightarrow$   $M^s$  SHIFTS TO THE RIGHT):  $i \downarrow$

## MONETARY POLICY

THE CB CAN AFFECT MONEY SUPPLY ( $M^S$ ):  $\rightarrow M^S \checkmark$  : CONTRACTIONARY/RESTRICTIVE MONETARY POLICY  
 $\downarrow M^S \checkmark$  : EXPANSIONARY MONETARY POLICY

- 1 WITH OPEN MARKET OPERATIONS;
- 2 CHANGE IN THE AMOUNT OF (RESERVE REQUIREMENTS) OF COMMERCIAL BANKS;
- 3 CHANGE IN THE (OFFICIAL INTEREST RATE) IN THE INTERBANK MARKET;

4 RESERVE REQUIREMENT (OR CASH RESERVE RATIO): IS A CENTRAL BANK REGULATION EMPLOYED BY MOST, BUT NOT ALL, OF THE WORLD'S CENTRAL BANKS, THAT SETS THE MINIMUM FRACTION OF CUSTOMER (RELATIVI) DEPOSITS AND NOTES THAT EACH COMMERCIAL BANK MUST HOLD AS RESERVES (RATHER THAN LEND OUT = PIUTTOSTO CHE PRESTARLA)

THESE REQUIRED RESERVES ARE NORMALLY IN THE FORM OF DEPOSITS MADE WITH A CENTRAL BANK, OR CASH STORED PHYSICALLY IN THE BANK VAULT (VAULT CASH).

THE CB DOES NOT HAVE RELATIONSHIPS WITH PRIVATE PEOPLE BUT ONLY WITH OTHER BANKS (COMMERCIAL BANKS).



( CB INCREASES THE PERCENTAGE OF CUSTOMER DEPOSITS KEPT IN THE BANKS (↑) )

$\Rightarrow$  THE MONEY SUPPLY DECREASES ( $M^S \checkmark$ ) [ CONTRACTIONARY/RESTRICTIVE MONETARY POLICY ] )

( CB DECREASES THE PERCENTAGE OF CUSTOMER DEPOSITS KEPT IN THE BANKS (↓) )

$\Rightarrow$  THE MONEY SUPPLY INCREASES ( $M^S \checkmark$ ) [ EXPANSIONARY MONETARY POLICY ] )

2 OFFICIAL INTEREST RATE (OR INTERBANK RATE): IS THE INTEREST RATE CHARGED ON SHORT-TERM LOANS BETWEEN BANKS (IN THE INTERBANK MARKET).

INTERBANK LENDING MARKET: IS A MARKET IN WHICH BANKS EXTEND LOANS TO ONE ANOTHER FOR A SPECIFIC TERM. MOST INTERBANK LOANS ARE FOR MATURITIES OF ONE WEEK OR LESS, THE MAJORITY BEING OVERNIGHT. SUCH LOANS ARE MADE AT THE INTERBANK RATE. (ALSO CALLED THE ONGNIGHT RATE IF THE TERM OF THE LOAN IS OVERNIGHT).

BANKS BORROW AND LEND MONEY IN THE INTERBANK LENDING MARKET IN ORDER TO MANAGE LIQUIDITY AND SATISFY REGULATIONS SUCH AS RESERVE REQUIREMENTS.

THE INTEREST RATE CHARGED DEPENDS ON :

- THE AVAILABILITY OF MONEY IN THE MARKET;
- PREVAILING RATES;
- SPECIFIC TERMS OF THE CONTRACT, SUCH AS TERM LENGTH (DURATA);

## BALANCE SHEET, ASSETS, LIABILITIES

THE BALANCE SHEET (BILANCIO) OF A BANK (OR A FIRM) IS A LIST OF ITS ASSETS AND LIABILITIES AT A POINT IN TIME (STOCCHI VARIABILI = VARIABILI AZIONARIE)

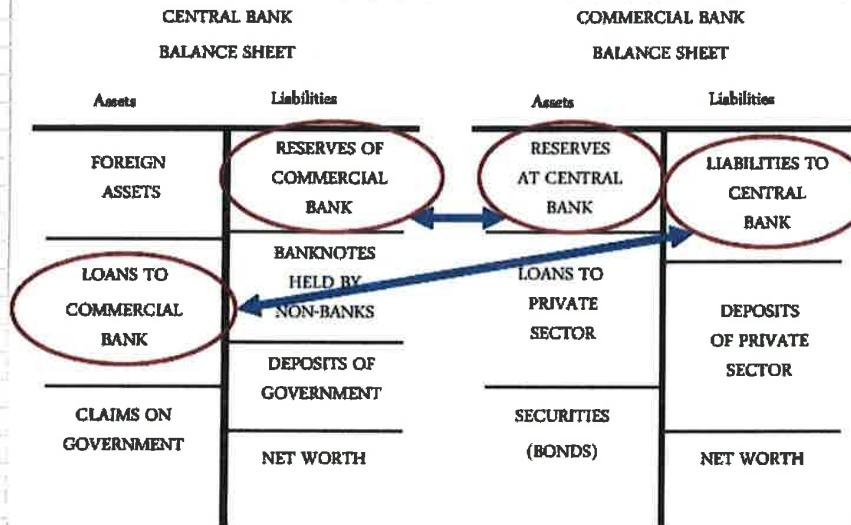
THE ASSETS (RISORSE) ARE THE SUM OF WHAT THE BANK OWNS AND WHAT IS OWNED TO IT BY OTHERS. (FOR US ASSETS = MONEY AND BONDS!)

THE LIABILITIES ARE WHAT THE BANK OWES (DEVE) TO OTHERS.

### BALANCE SHEET

ASSETS	LIABILITIES
NET EQUITY	

$$\boxed{\text{ASSETS} = \text{LIABILITIES} + \text{NET EQUITY}}$$



Figure

**The Balance Sheet of the Central Bank and the Effects of an Expansionary Open Market Operation**

Many assets of the central bank are the bonds it holds. The liabilities are the stock of money in the economy. An open market operation in which the central bank buys bonds and issues money increases both assets and liabilities by the same amount.

(a)

Balance Sheet	
Assets	Liabilities
Bonds	Money (currency)

(b)

**The Effects of an Expansionary Open-Market Operation**

Assets	Liabilities
Change in bond holdings: +\$1 million	Change in money stock: +\$1 million

- WE HAVE BEEN LOOKING AT AN ECONOMY WITH ONLY TWO ASSETS : MONEY AND BONDS.  
(THIS IS OBVIOUSLY A MUCH SIMPLIFIED VERSION OF ACTUAL ECONOMIES, WITH THEIR MANY FINANCIAL ASSETS AND MANY FINANCIAL MARKETS.)
- THERE IS ONE DIMENSION, HOWEVER, TO WHICH OUR MODEL MUST BE EXTENDED. WE HAVE ASSUMED THAT ALL MONEY IN THE ECONOMY CONSISTS OF CURRENCY SUPPLIED BY THE CB. IN THE REAL WORLD, MONEY INCLUDES NOT ONLY CURRENCY BUT ALSO CHECKABLE DEPOSITS. (TWO ASSETS: BONDS AND MONEY (CURRENCY) → MONEY (CURRENCY + DEPOSITS).)

### WHAT BANKS DO

(FINANCIAL INTERMEDIARIES: ANY INSTITUTIONS THAT RECEIVE FUNDS FROM PEOPLE AND FIRMS, AND USE THESE FUNDS TO BUY BONDS OR STOCKS, OR TO MAKE LOANS TO OTHER PEOPLE AND FIRMS.)

- BANKS RECEIVING FUNDS FROM PEOPLE AND FIRMS WHO EITHER DEPOSIT FUNDS DIRECTLY OR HAVE FUNDS SENT TO THEIR CHECKING ACCOUNTS. THE LIABILITIES OF THE BANKS ARE THEREFORE EQUAL TO THE VALUE OF THESE CHECKABLE DEPOSITS.
- BANKS KEEP AS RESERVES SOME OF THE FUNDS THEY RECEIVING.

BANKS HOLD RESERVES FOR THREE REASONS:

1. ON ANY GIVEN DAY, SOME DEPOSITORS WITHDRAW (RITIRANO / PRELEVANO) CASH FROM THEIR CHECKING ACCOUNTS, WHILE OTHERS DEPOSIT INTO THEIR ACCOUNTS.
  2. IN THE SAME WAY, ON ANY GIVEN DAY, PEOPLE WITH ACCOUNTS AT THE BANK WRITE CHECKS TO PEOPLE WITH ACCOUNTS AT OTHER BANKS; AND PEOPLE WITH ACCOUNTS AT OTHER BANKS WRITE CHECKS TO PEOPLE WITH ACCOUNTS AT THE BANK.
  3. BANKS ARE SUBJECT TO RESERVE REQUIREMENTS. THE ACTUAL RESERVE RATIO (THE RESERVE RATIO IS THE RATIO OF BANK RESERVES TO BANK CHECKABLE DEPOSITS) IS ABOUT 10% IN THE UNITED STATES.
- LOANS REPRESENT ROUGHLY (APPROXIMATIVAMENTE) 70% OF BANKS NON-RESERVE ASSETS.  
BONDS COUNT FOR THE REST, 30%.

Banks	
Assets	Liabilities
Reserves	
Loans	
Bonds	Checkable deposits

Central Bank	
Assets	Liabilities
Bonds	Central Bank Money = Reserves + Currency

### ABOUT THE CENTRAL BANK (CB)

THE ASSETS OF THE CB ARE THE BONDS IT HOLDS.  
THE LIABILITIES OF THE CB ARE THE MONEY IT HAS ISSUED: CENTRAL BANK MONEY: NOT ALL OF CB MONEY IS HELD AS CURRENCY BY THE PUBLIC. SOME OF IT IS HELD AS RESERVES BY BANKS.

## THE DEMAND FOR CENTRAL BANK MONEY ( $H^d$ )

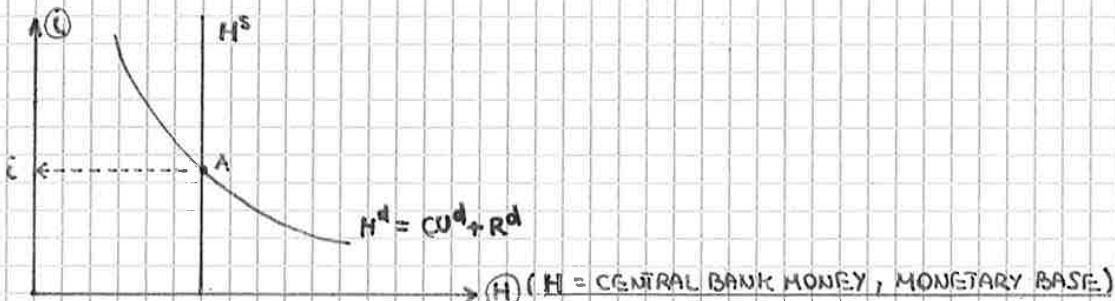
THE DEMAND FOR CENTRAL BANK MONEY IS EQUAL TO THE SUM OF THE DEMAND FOR CURRENCY ( $CU^d$ ) AND THE DEMAND FOR RESERVES ( $R^d$ ).

$$H^d = CU^d + R^d$$

$$H^d = CU^d + R^d = cM^d + \theta(1-c)M^d = [c + \theta(1-c)]M^d = [c + \theta(1-c)]\$L(i)$$

IN EQUILIBRIUM, THE SUPPLY OF CENTRAL BANK MONEY ( $H = H^s$ ) IS EQUAL TO THE DEMAND FOR CENTRAL BANK MONEY ( $H^d$ ).

$$H = H^s = H^d$$



## THE FEDERAL FUNDS MARKET AND THE FEDERAL FUNDS RATE

THE EQUILIBRIUM CONDITION THAT THE SUPPLY AND THE DEMAND FOR BANKS RESERVES BE EQUAL IS GIVEN BY:

$$H - CU^d = R^d$$

THE FEDERAL FUNDS MARKET IS A MARKET FOR BANK RESERVES.

IN EQUILIBRIUM THE DEMAND ( $R^d$ ) MUST BE EQUAL TO:  $H - CU^d$

THE INTEREST RATE DETERMINED IN THE MARKET IS CALLED THE FEDERAL FUNDS RATE.

THE SUPPLY OF MONEY ( $M = M^s$ ) AND THE MONEY MULTIPLIER

$$H = H^s = H^d = CU^d + R^d = cM^d + \theta(1-c)M^d = [c + \theta(1-c)]M^d$$

$$M = M^s = M^d = \frac{1}{[c + \theta(1-c)]} \cdot H$$

- THE OVERALL SUPPLY OF MONEY ( $M = M^s$ ) IS EQUAL TO CENTRAL BANK MONEY ( $H$ ) TIMES THE MONEY MULTIPLIER:  $1/[c + \theta(1-c)]$ .

- HIGH-POWERED MONEY IS THE TERM USED TO REFLECT THE FACT THAT THE OVERALL SUPPLY OF MONEY DEPENDS IN THE END ON THE AMOUNT OF CENTRAL BANK MONEY ( $H$ ), OR MONETARY BASE.

## UNDERSTANDING THE MONEY MULTIPLIER

WE CAN THINK OF THE ULTIMATE INCREASE IN THE MONEY SUPPLY ( $M = M^s$ ) AS THE RESULT OF SUCCESSIVE ROUNDS OF PURCHASES OF BONDS - THE FIRST STARTED BY THE FED IN ITS OPEN MARKET OPERATION, THE FOLLOWING ROUNDS BY BANKS.

TAKING INTO ACCOUNT THE INVESTMENT RELATION, THE EQUILIBRIUM CONDITION IN THE GOODS MARKET BECOMES:

$$Y = C(Y-T) + I(Y, i) + G$$

FOR A GIVEN VALUE OF THE INTEREST RATE ( $i$ ), DEMAND IS AN INCREASING FUNCTION OF OUTPUT, FOR TWO REASONS:

1<sup>st</sup> AN INCREASE IN OUTPUT LEADS TO AN INCREASE IN INCOME AND ALSO TO AN INCREASE IN DISPOSABLES INCOME ( $Y_d$ ).

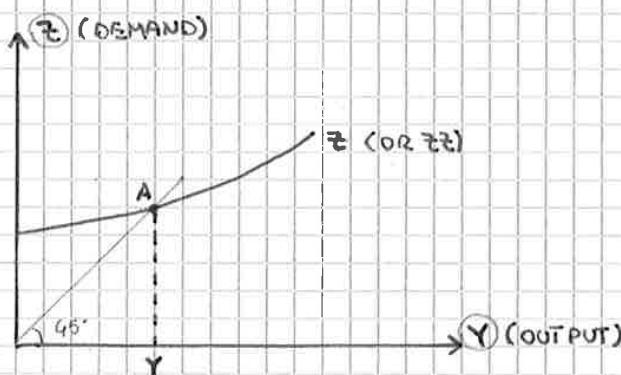
2<sup>nd</sup> AN INCREASE IN OUTPUT ALSO LEADS TO AN INCREASE IN INVESTMENT ( $I$ ).

### DETERMINING OUTPUT

NOTE TWO CHARACTERISTICS OF  $\bar{z}$ :

1<sup>st</sup> BECAUSE IT'S ASSUMED THAT THE CONSUMPTION ( $C$ ) AND INVESTMENT ( $I$ ) RELATIONS ARE UNPLAR,  $\bar{z}$  IS, IN GENERAL, A CURVE RATHER THAN A LINE.

2<sup>nd</sup>  $\bar{z}$  IS DRAWN FLATTER THAN A 45-DEGREE LINE BECAUSE IT'S ASSUMED THAT AN INCREASE IN OUTPUT LEADS TO A LESS THAN ONE-FOR-ONE INCREASE IN DEMAND ( $\bar{z}$ ).



### DRAWING THE IS CURVE

WE HAVE DRAWN THE DEMAND RELATION ( $\bar{z}$ ) FOR A GIVEN VALUE OF THE INTEREST RATE ( $i$ ).

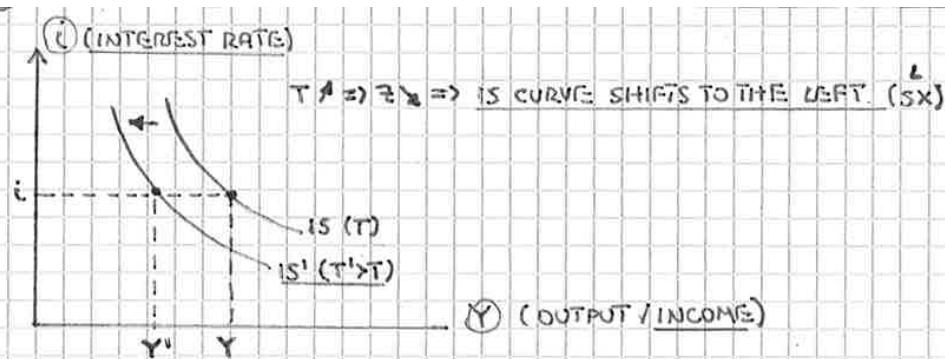
NOW WE WANT TO DRAW THE RELATION BETWEEN THE INTEREST RATE ( $i$ ) AND PRODUCTION = IS CURVE.

WHAT HAPPENS IF THE INTEREST RATE ( $i$ ) CHANGES?

IN WORDS :

"THE INCREASE IN THE INTEREST RATE ( $i$ ) DECREASES INVESTMENT ( $I$ ). THE DECREASE IN INVESTMENT ( $I$ ) LEADS TO A DECREASE IN THE AGGREGATE DEMAND ( $\bar{z}$ ) AND IN OUTPUT, WHICH FURTHER DECREASES CONSUMPTION ( $C$ ) AND INVESTMENT ( $I$ ) THROUGH THE MULTIPLIER EFFECT".

$$i \uparrow \Rightarrow I \downarrow \Rightarrow \bar{z} \downarrow \Rightarrow Y \downarrow \Rightarrow Y_d \downarrow \Rightarrow C \downarrow \Rightarrow \bar{z} \downarrow \Rightarrow Y \downarrow \dots$$

REAL MONEY, REAL INCOME AND INTEREST RATE

THE EQUATION:  $M = PYL(i)$  GIVES A RELATION BETWEEN MONEY, NOMINAL INCOME AND INTEREST RATE.

LM RELATION: IN EQUILIBRIUM, THE REAL MONEY SUPPLY IS EQUAL TO THE REAL MONEY DEMAND, WHICH DEPENDS ON REAL INCOME ( $Y$ ) AND THE INTEREST RATE ( $i$ ):

$$\frac{M}{P} = YL(i)$$

RECALL THAT THE NOMINAL GDP ( $\$Y$ ) = REAL GDP ( $Y$ ) MULTIPLIED BY THE GDP DEFLATOR ( $P$ )

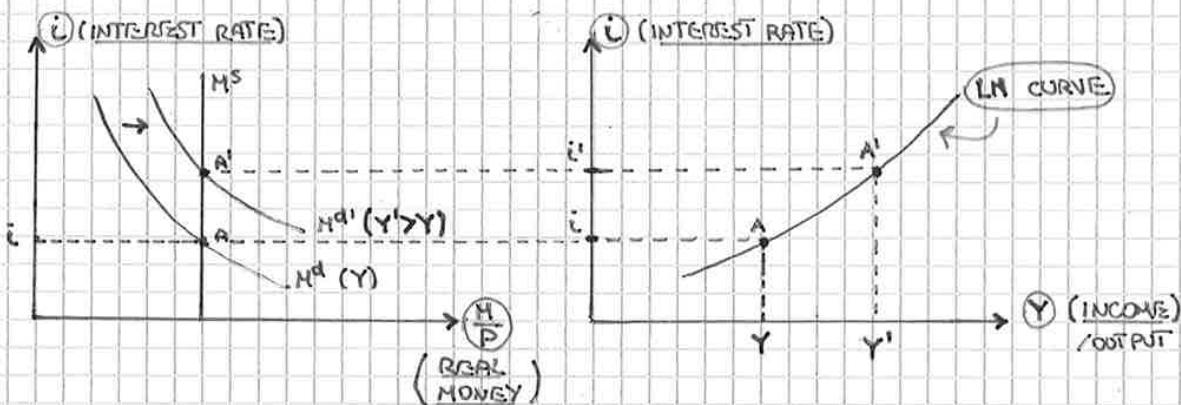
$$\$Y = YP$$

DERIVING THE LM CURVE

a) AN INCREASE IN INCOME LEADS, AT A GIVEN INTEREST RATE ( $i$ ), TO AN INCREASE IN THE DEMAND FOR MONEY. GIVEN THE MONEY SUPPLY ( $M^S$ ), THIS INCREASE IN THE DEMAND FOR MONEY ( $M^D$ ) LEADS AN INCREASE IN THE EQUILIBRIUM INTEREST RATE.

b) EQUILIBRIUM IN THE FINANCIAL MARKETS IMPLIES THAT AN INCREASE IN INCOME ( $Y$ ) LEADS TO AN INCREASE IN THE INTEREST RATE ( $i$ ). THEREFORE WE OBTAIN:

THE UPWARD SLOPING LM CURVE.



- INTEREST RATE ( $i$ ) ON THE VERTICAL AXIS AND INCOME ( $Y$ ) ON THE HORIZONTAL AXIS.
- THIS RELATION BETWEEN OUTPUT ( $Y$ ) AND THE INTEREST RATE ( $i$ ) IS REPRESENTED BY THE UPWARD SLOPING CURVE. THIS CURVE IS CALLED THE LM CURVE.