

## Macroeconomics<sup>1</sup>

Examines issues relating to an economy as a whole, such as unemployment, inflation, growth and the balance of payments. The focus of macroeconomics is on aggregate economic variables.

### Macroeconomic goals

- High levels of employment (low unemployment)
- Price stability (low or no inflation)
- Satisfactory and *sustainable* real (non-inflationary) growth
- Long run equilibrium in the Balance of Payments and the Exchange Rate (foreign sector should not impose a constraint on domestic objectives)
- Equitable (i.e. fair) distribution of income

### Gross Domestic Product (GDP)

The value of all final goods and services produced within an economy over a certain period of time, usually a year or a quarter (by factors of production residing in the country)

- Only final goods and services: since, if *all* produced goods and services were included, double-counting would result and thus overestimation of the true value of output. (Intermediate goods are not included; or equivalently, only the value-added<sup>2</sup> contributed by each firm is included).
- Used goods transactions are not included since we are interested in current production.
- Financial transactions are not included (such as the buying and selling of shares etc.) since they represent only transfer of ownership and they do not reflect a contribution to current production.
- Transfer payments (such as pensions and unemployment benefits) are not included since they do not reflect a contribution to current output.
- Factors residing in the economy i.e. within the geographical boundaries of the country, in contrast to factors domestically owned that may reside outside its

<sup>1</sup> C.H. Ziogas prepared this set of notes for exclusive use by his students.

<sup>2</sup> Value added is defined as the difference between total revenue of a firm and the cost of bought-in raw materials, services, and components. It thus measures the value which the firm has “added” to these bought-in materials and components by its processes of production (see the ‘Penguin Dictionary of Economics’)

geographical boundaries: see distinction between gross domestic and gross national product later in these notes.

### Nominal vs. Real

Note that even though we are truly interested in an *output* measure, we are forced to sum values (i.e. prices times quantities), which makes our measure dependent not only on output changes (which are of interest to us) but also on price changes (that do not interest us here). Comparison thus of GDP figures in successive years becomes problematical since, assuming that an increase is recorded, we can not know whether the increased figure is due to an increase in output produced or to an increase in prices (in the general or average price level, i.e. in inflation). Using the economist's jargon we can not know to what extent the increase in the GDP figure is 'real' and to what extent it's 'inflationary'. For example, if GDP measured at current prices increased from one year to the next by 5.5%, it can not be known what proportion of this increase is due to an output increase and what proportion is due to inflation. It could be, for example, that output increased by, say, 4% (i.e. real GDP increased by 4%) and that thus the remaining 1.5% was due to price level increases i.e. to inflation, or, that output increased only by 0.5% and prices by 5.0%.

*Nominal GDP* (or, money GDP, or, GDP at current prices) is a measure of output of a certain period *valued at the prices prevailing in that same period*.

*Real GDP* (or, GDP at constant prices) is a measure of output of a certain period valued at the prices prevailing at some 'reference' period (known as the 'base' period or, base year). It is a measure of output *after having isolated the effect of inflation*. It is thus measured in terms of goods. *Real GDP figures* reflect *volumes*, not values.

To arrive at real GDP for a certain year we divide nominal GDP of that year by a price index (usually the RPI; see RPI discussion later) for that year and multiply the fraction by 100:

$$\text{Real GDP} = (\text{nominal GDP} / \text{price index}) * 100$$

### Measuring GDP:

There are three (3) equivalent ways of arriving at the GDP figure:

- The *output* method, where we add all domestically produced final goods and services (or, value added from each firm)
- The *expenditure* method, where we add all expenditures made on domestically produced final goods and services
- The *income* method, where we add all incomes generated in the domestic production process

Conceptually, the three methods are equivalent, and with some minor adjustments the figures arrived at through each are equal. The value of all output produced did not become thin air but ended up in pockets in the form of wages, profits, interest or rent, i.e. as income to the factors of production involved. This income is then spent on this output. The accounting equivalency of these methods can become clearer through the circular flow model<sup>3</sup>. Each method is useful because of the breakdown it leads to. The output method, for example, will give us the share of total output accounted for by each of the three sectors of an economy. The expenditure method permits us to monitor the level of investment spending through time. The income method provides information about the proportion of total income earned by labor in contrast to owners of capital. Refer to any text for details.

### **Three minor accounting complications:**

#### *· Domestic vs. National*

Gross Domestic Product refers to output produced within the boundaries of a country independently of the nationality of the factors of production involved. Gross National Product refers to the value of final output produced by domestically owned factors of production independently of where production actually takes place. For example, UK GNP figures will include the income earned by British multinationals in continental Europe but will not include the income earned by foreign multinationals in the UK. To convert GDP to GNP:

$GNP = GDP + \text{Net Property Income from Abroad}$ , where  $\text{Net Property Income from Abroad} = (\text{income from abroad} - \text{income paid abroad})$

#### *· Gross vs. Net*

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<sup>3</sup> The circular flow model is a simplified representation of how the basic decision making units of an economy (households, firms, the government and, in an 'open' economy, the foreign sector) interact i.e it describes the flows between these units. At the most basic version, where there are only households and firms, it is understood that households own the factors of production which they offer to firms (a real flow). In exchange, firms offer payments (a 'monetary' flow) for these factors in the form of wages, rents, interest and profits the sum of which is defined as income. Firms combine these factors to produce goods and services which they offer to households (a 'real' flow) in return for payments that constitute consumption expenditures on domestically produced goods (a 'monetary' flow). In the absence of tomorrow (i.e if this is a 'one shot model') then these two flows must be equal. If a time dimension is added then part of income may be saved (a 'withdrawal' from this system) while firms may also spend on capital goods (= investment). This latter expenditure is an 'injection' to the system. It follows that for equilibrium to exist (implying that national income neither increases nor decreases) injections (investment spending) must equal withdrawals (savings). If the Government and a foreign sector are added then injections also include government spending on domestically produced goods and services as well as expenditures that foreigners make on our goods (= exports) while withdrawals include also expenditures that domestic entities make on foreign goods (= imports) as well as taxes the government collects.

Portion of investment spending is aimed at replacing obsolete capital equipment (known as depreciation or, capital consumption). Thus the stock of capital increases by the difference between (gross) investment spending and depreciation:

Net Investment = Gross Investment - Capital Consumption

As a result:

NDP = GDP - depreciation

· *Market prices vs. factor cost*

Output is measured (when measured through the expenditure method) at market prices. Market prices though do not reflect factor reward since they include indirect taxes and they do not include subsidies. To arrive at factor cost valuation we subtract indirect taxation and add subsidies. Thus,

GDP at factor cost = GDP at market prices - indirect taxation + subsidies

Note that NNP is also known as National Income (NY or, Y). Personal Disposable Income is equal to NY minus direct taxation plus transfer payments

### **Problems in GDP measurement**

GDP measurement is fraught with problems. For example, official GDP figures in many countries understate the true level of economic activity because of the existence of a large parallel (or black, or shadow) economy. Individuals in many countries underreport their incomes *to avoid taxation*. A heavy tax burden, especially high marginal (top) tax rates may be responsible for this tax-evading behavior. Some productive activity may also be illegal per se (drugs, prostitution etc)

Furthermore, 'do it yourself' activities are not included. If I repair my car myself instead of taking it to the mechanic the value of the service produced will not show up in official statistics. This becomes an important issue in the case of *developing* countries because of 'subsistence farming activities' (which is defined as farming to feed the family; contrast this to 'cash' crops. See the Smith & Rees development text) which are not included in GDP measurements thus tending to underestimate per capita income levels.

In addition, data collection in many countries is poor and unreliable.



## **The concept of Equilibrium in Economics**

Essentially, the concept means the same as in Physics or Chemistry; a system is considered to be in equilibrium if there are no inherent (endogenous) forces inducing change.

In our case, an economy (economic activity i.e. national income, GDP) is considered to be in equilibrium if there is no tendency for it to 'change' (i.e. for the level of total output to rise or decrease).

**Aggregate Demand = Aggregate Supply**

## Aggregate Demand and Aggregate Supply

The term Aggregate Demand (AD) refers to total spending in an economy. In a closed economy spending can originate either from the private or from the public sector. Private sector spending is distinguished into consumption expenditures that households make and investment expenditures that firms make. The public sector expenditures are usually termed government expenditures in which both consumption and capital public spending is included. In an open economy, one that trades with the rest of the world, spending on domestic goods can originate from abroad; these are the exports of an economy. Since though some of domestic spending is on foreign goods, imports will have to be subtracted to arrive at Aggregate Demand:  $AD (=AE) = C + I + G + (X - M)$

Aggregate spending in the so-called 'Keynesian-cross' diagram is depicted as a positive function of national income (output)  $Y^4$ . This model though has no explicit treatment of the general price level of an economy<sup>5</sup>. It is thus not as useful compared to the so-called AD/AS model which makes AD a function of the price level and explicitly incorporates aggregate supply (AS) in the picture.

In this latter diagrammatic exposition, AD is negatively related to the price level for three reasons: because of the wealth effect, the interest-rate effect, and the trade effect. The '*wealth effect*' simply states that as the price level rises, since the real value of wealth held in assets, whose value is fixed in terms of money, decreases, consumption, a component of AD, decreases and consequently so does AD. The '*interest rate effect*' is slightly more complicated and it is advisable that you return later to better understand it. It states that as the price level rises, money demand for transaction purposes rises and, given a fixed money supply, the interest rate will rise; as a result consumption and investment spending, and thus AD, will drop. The '*trade effect*' states that as the price level rises exports become less competitive and thus drop, while imports more attractive and thus rise, leading to a drop in net exports  $NX (= X - M)$ , and to AD.

The shape of Aggregate Supply is controversial in macroeconomics. It is instructive to initially distinguish between the long run and the short run. In the long run, aggregate supply of an economy is constrained by the amount of its resources<sup>6</sup> and by its technology<sup>7</sup>. As a result, AS in the long run is considered fixed (vertical) at the 'full employment' level of output<sup>8</sup>. In the short run though, AS can rise since total output can increase, given a rise in aggregate demand. In the AD/AS diagram with the price level on the vertical axis and real output (income) on the horizontal, this means that AS is not anymore vertical. It is upward sloping and the slope itself is of paramount importance. On a purely technical level the slope of AS determines to what extent a rise (a shift

<sup>4</sup> The Keynesian cross diagram is not in the new syllabus

<sup>5</sup> In the 1930's, inflation was not a problem to worry about.

<sup>6</sup> land, labor, human capital, physical capital, entrepreneurship

<sup>7</sup> A very broad term implying how resources are being used as well as the institutional and regulatory framework.

<sup>8</sup> Also called 'capacity' output or 'potential' output.

rightwards) of AD will be expressed as a rise in real output and thus employment and to what extent it will express itself as a rise in the price level, i.e. in inflation.

Now the debate between the ‘Keynesians’<sup>9</sup> on the one hand, and the ‘Monetarists’<sup>10</sup> on the other hand will become clear. Let us first consider the two extreme cases for the slope of the AS curve.

Say that it is horizontal at some (the ‘current’) price level. This means that any increase (shift to the right) in AD will imply an increase in real output and thus in the level of employment *without* any rise in the average price level, i.e. without any inflation. Hence, if the level of total output (real GDP) determined at the current intersection of some AD and a horizontal AS does not correspond to full employment of resources<sup>11</sup>, then, given that the government directly controls the level of AD by its hold on government expenditures (G), it can induce the economy to grow (real output to rise) and thus decrease (or even eliminate) unemployment! A horizontal AS and the government’s ability to manipulate AD through changes in G (and T) make it a major player in the workings of the macroeconomy.

The ups and downs through time of the level of general economic activity (of GDP) are referred to as the *trade cycle* (or, *business cycle* in the US). Periods of expansion (booms) are followed by periods of contraction (recession<sup>12</sup>, busts). The downturn’s major characteristic is increasing levels of unemployment whereas, the upturn, if it is ‘too steep’, may give rise to inflationary pressures. Ideally, steady, sustainable, non-inflationary long-term growth would be desirable. If now the government can manipulate aggregate demand (demand management policy) through fiscal (government spending and taxation) and/or monetary (interest rates and/money supply; credit conditions) tools, then it could ‘stabilize’ the economy’s path through time. For this reason these demand management policies are also known as stabilization (or, counter cyclical) policies.

If now we consider the other extreme case where AS is *vertical* at the economy’s capacity level of output, then any rise in AD will only lead to an increased price level (i.e. to inflation) *without* any real output / employment gain in the economy. This extreme illustrates the Classical School<sup>13</sup> (before Keynes) which is considered as the intellectual father of Monetarism (and, later to supply-siders). Reflationary demand management policies (stabilization policies) are useless and may hurt the economy since they will prove instead inflationary and may instead destabilize the economy. What matters is the supply side of the economy, which is determined by the amount and quality of resources it

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<sup>9</sup> More generally, the ‘interventionists’, the ‘activists’.

<sup>10</sup> Better thought of as the ‘non-interventionists’, the ‘non-activists’ or, for reasons that will become evident later, the ‘supply-siders’.

<sup>11</sup> In other words, the economy *is* in equilibrium *but* with unemployment prevailing.

<sup>12</sup> Technically, a recession exists when real output decreases for a time period that extends beyond two consecutive quarters.

<sup>13</sup> The Classical School accepted ‘Say’s Law’ which states that ‘supply creates its own demand’; it considered prices and wages flexible and thus able to restore equilibrium in product and labor markets. The self-regulatory properties of a market economy would guarantee full employment.

commands, by its technology and by its institutional setup (i.e. the laws relating to product, labor and capital markets). It is *microeconomic* efficiency that matters, and that is achieved when market forces are left unhampered. The government is left out of the ‘big’, macro, picture and its role is shrunk and isolated in intervening to correct market failures (monopoly power, externalities, and public & merit goods)

In the intermediate case, where AS is upward sloping, reflationary policies will end up raising real output and employment levels *but* at the cost of higher inflation (see notes on inflation and unemployment later). In other words, the question becomes what proportion of the rise in nominal (money) income is real and what is inflationary. The closer to capacity the economy is operating, the greater the inflationary effect of a rise in AD and the smaller the gain in real output and employment. On the other hand, if there is massive unemployment, then the real effect will be greater and the effect on the price level small. It becomes obvious why it is of paramount importance to policymakers to know the amount of available ‘slack’ in the economy<sup>14</sup>. Considering the Keynesian – Monetarist debate, it will become clear that Keynesians focus more on the short run<sup>15</sup> while monetarists (and new classical school) focus more on the long run.

We will discuss economic policy in some detail (both demand management and supply-side policies) as well as inflation and unemployment later in these notes.

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<sup>14</sup> Given that information on the overall level of activity (on GDP) is not immediately available, they have to rely on so-called *leading indicators* (economic variables with a similar cyclical behavior that peak earlier). For example, the percentage changes in hourly worker compensation, the changes in the number of permits issued for housing starts, the change in orders of raw materials etc.

<sup>15</sup> Keynes had said: ‘But this long run is a misleading guide to current affairs. In the long run we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is long past the ocean is flat again.’

## Consumption Expenditures [C]

Consumption expenditures are the largest in size component (about 60% in advanced economies) of Aggregate Demand (or, Aggregate Expenditures). The simple 'Keynesian' consumption function relates the total level of consumer spending primarily to the level of disposable income (which is equal to national income less income taxes and National Insurance contributions, plus transfer payments [ $Y_d$ ]):

$$C = f(Y_d)$$

The specific properties postulated in the simple Keynesian consumption function could best be summarized through the so-called marginal and average propensities to consume. These are defined in the following manner:

MPC:	the proportion of an <i>increase</i> in income spent (or, equivalently, the change in consumption given a change in income)
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Algebraically:	$MPC = (\Delta C / \Delta Y)$
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APC:	the proportion of income consumed
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Algebraically:	$APV = C/Y$
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It is instructive to distinguish consumption expenditures into expenditures on basic, day to day (non-durable) goods, durable goods and services<sup>16</sup>. The effect of a rise (a change) in income on spending depends on the income elasticity of each category. Day-to-day, basic non-durable goods are characterized by a low IED (income elasticity of demand); spending on these goods is stable and is *not* affected by the trade cycle. On the other hand, spending on durable goods (cars, appliances, furniture etc.) is cyclical but it is not smooth through time. Households tend to postpone replacement during the downswing (when consumer confidence is also dropping) and to concentrate renewal during recoveries, thus leading to large swings in total consumption expenditures. The sharp rises are reflected as short run MPC's greater than 1. Services in general are highly income elastic with IED greater than 1 which means that as incomes rise, spending on these rise faster.<sup>17, 18</sup>

<sup>16</sup> Defining services is a bit tricky. Usually they are defined as 'intangible', 'invisible' and 'non-storable' or 'transient'. Goods can be exchanged but services are consumed simultaneously with production. But insurance, for example, is intangible and invisible but not transient; haircuts are both visible and have some permanence while a U2 concert is also visible but is transient; in an investment analysis, consumption is not simultaneous with production! (see Ph. Nicolaides, "Liberalizing Service Trade", p.7)

<sup>17</sup> This analysis leads us also to the **Fisher-Clark Thesis**: it is often argued that countries pass through phases during the course of development and that by identifying these stages, according to certain characteristics, a country can be deemed to have reached a certain stage of development. The simplest stage theory is the sector thesis of A.G.B. Fisher and Colin Clark, who employ the distinction between primary, secondary and tertiary production as a basis of a theory of development. Countries are assumed to start as primary producers and then, as the basic

### *Other Factors Affecting Consumption Expenditures*

- Interest Rates [r]

A rise in the rate of interest (i.e. a *tight monetary policy* - see relevant section later) will tend to decrease consumption expenditures, and consequently the overall level of Aggregate Demand. Possible **routes** through which this may happen follow:

- Consumer durable goods (cars, appliances, furniture etc.) are usually purchased on credit; higher interest rates in the economy means that borrowing to finance these purchases is now more expensive; some consumers will thus be dissuaded and postpone spending on such goods. As a result consumption will drop.
- The single largest expenditure of a typical household is the purchase of its house. Households borrow from banks to finance this purchase and these specialized very long-term loans are known as mortgage loans. These loans are characterized by adjustable (not fixed) interest rates, meaning that if market rates decline, your mortgage rate will follow and vice versa. A rise in market interest rates will thus increase the monthly installments households have to make and since they do not wish to have their house repossessed by the bank, they will decrease all other expenditures.
- A rise in [r] will make saving more attractive thus lowering spending.

- Terms of Credit

Besides the interest rate charged for a loan, its length (its maturity) and the size of the down payment required define the terms of credit. If, for example, the Central Bank, which is responsible for implementing monetary policy (more details follow), demands shorter loan maturities and increased down payments on consumer loans issued by commercial banks, then households will borrow less and consumption will decrease.

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necessities of life are met, resources shift into manufacturing or secondary activities. Finally, with rising income, more leisure and an increasingly saturated market for manufactured goods, resources move into service or tertiary activities producing 'commodities' with a high income elasticity of demand.

<sup>18</sup> There are two explanations for the growth in services in economies over time. The first relates it to their high IED. A second reason has to do with the growth in the demand by firms for services as an input, accompanied by specialization and 'out-sourcing'. In part the growth in services has resulted from increased specialization and division of labor as firms outside the service sector *contract-out* for services which in the past would have been provided internally (security, advertising and transport are good examples of this). It is an example of the process of the division of labor accompanying increased specialization which is itself a reflection of the expansion of markets and economic growth

- Consumer Confidence

A stable and growing economy with low inflation and a declining unemployment rate will boost consumer confidence. Increased consumer confidence favorably affects household spending. On the other hand, uncertainty over future job prospects and insecurity about one's future income adversely affect present consumption. Spending on durable goods is for obvious reasons greatly affected by consumer moods.

- Wealth

The total value of a household's assets may affect the level of its spending; if, for example, wealth decreases, consumption will be negatively affected. The effect on Greek consumption levels of the stock market boom in the late 1990's may serve as an example.

- Stock of Durable Goods

Usually, following a long recession characterized by low spending on income elastic (cyclically sensitive) goods, households decide to renew their *aging* stock of durable goods. (See earlier analysis)

- Expected Inflation

If households expect the inflation rate to rise in the near future, spending may rise *now* to beat the price increases. On the other hand, saving may increase (and thus spending drop) if consumers attempt to maintain their real level of savings constant.

- Tastes and Time Preference

Cultural factors determine consumption patterns as well. Some countries (East Asian economies are a good example) are characterized by higher marginal propensities to save than other countries and thus save a greater proportion of a rise in their income.

- The Level of Consumer Indebtedness

If private consumer debt (from taking out loans and/or from charging credit cards) has accumulated, household spending is bound to decline.

### *Savings*

In an economy with no government sector income that is not spent is, by definition, saved (note that if we are considering an open economy then we should distinguish between spending on domestically produced goods and spending on imports). Once Government is introduced then savings are defined as disposable income not spent ( $S = Y_d - C$ ).

We define MPS (Marginal Propensity to Save) as the extra savings induced by an increase in income ( $MPS = \Delta S / \Delta Y$ ) and APS (Average Propensity to Save or, better known as the *savings ratio*) the proportion of income saved ( $APS = S/Y$ ).

Thus the factors that affect consumption will affect savings, namely, a rise in  $Y$  will increase the level of savings; a rise in  $[r]$  will increase savings etc.

It is conceivable for the MPS to be negative (i.e. for the MPC to be greater than one); it implies that dissaving takes place, which a spending spree has occurred.

## Investment spending [I]

When firms spend to acquire capital [K] we say that they invest. Investment is important both because of its short run influence on aggregate demand and because in the long run it affects aggregate supply.

Firm spending on plant and equipment is known as business fixed capital investment (capital formation) whereas spending on circulating capital (e.g. on raw materials) is known as inventory investment. Spending on new residential houses is also classified as investment spending.

We thus distinguish 3 types of investment spending:

1. Business Fixed Capital Formation: expenditures on fixed assets (buildings, plant and machinery, vehicles, etc.), either for replacing or for adding to the stocks of existing assets.
2. Inventory Investment
3. Housing

Investment is defined as the change in the stock of capital of an economy ( $I = \Delta K / \Delta t$ ). Capital equipment though wears out and becomes technologically obsolete. This is known as depreciation<sup>19</sup> or capital consumption; we thus define:

Net Investment = Gross Investment - Depreciation

### 1. Business Fixed Capital Formation

Investment spending is the most volatile component of Aggregate Demand. It is also important since it is vital in determining the rate of (actual and potential) growth of an economy. Firms invest when they sense that by doing so they may increase their profits. It is expected profitability that drives investment spending and thus whatever factor influences the level of expected profitability will affect the level of investment spending by firms. Higher profits indicate a more favorable return on capital, they improve business confidence and they provide a source of funding. Financing expansion requires funds, which are either borrowed from the financial markets or are part of past-retained firm profits. In either case, there is an opportunity cost of using these funds to finance an investment project, which is given by the market interest rate. If firms borrow, they will be charged while if they use own funds, they will sacrifice the return that they would have earned by having them financially invested. Consequently, a rise in the market interest rate will decrease investment spending in the economy. At higher interest rates, fewer investment projects will be considered profitable<sup>20</sup>. For an entrepreneur to undertake economic investment the expected profitability of the project expressed as a percentage of

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<sup>19</sup> Measuring depreciation is difficult; estimating the loss in value of a machine is difficult since it may be guided more by tax concessions than by the physical state of the asset.

<sup>20</sup> The marginal efficiency of capital (MEC) declines as more and more capital is employed; can be thought of as the equivalent of the marginal product of labor.

the initial capital outlay<sup>21</sup> has to be greater than the market interest rate. Fewer projects will remain profitable following a rise in interest rates. If one plots investment spending against the market interest rate, the function will be negatively sloped. Bear in mind that, once again, overall credit market conditions are important.

*Other Factors Influencing the Investment Decision:*

- **Business Confidence and Entrepreneurial Expectations**

When a firm weighs whether or not to proceed with an investment project it basically performs a cost - benefit analysis (regarding though only private costs and benefits). The firm needs to make projections concerning future prices, future market share, future rival behavior, future interest costs, future labor and material costs, even the time path of the exchange rate (if it is directly or indirectly involved with the rest of the world). Consequently, it needs to make reasonable assumptions about any and all variables that may in turn affect the aforementioned. For example, it needs to guess the most probable fiscal and monetary policy stance of the government, the future rate of inflation, exchange rate policy, trade policy, developments in the specific market the firm is involved and even developments in international markets. The numbers of possible influencing variables is thus enormous and, in practice only a select few are considered and the few most probable scenarios. The point that needs to be emphasized is that the investment decision is inherently risky. Expectations of the entrepreneur or better, the degree of business confidence is thus of paramount importance. The greater the degree of business confidence in an economy, the less uncertain the business environment and thus the more willing will firms be to expand. Economic and political stability as well as policy continuity are the 'sine qua non' for a positive business climate to evolve and thus for investments to take place.

It is interesting to note here that Keynes considered the behavior of entrepreneurs with respect to private investment decisions similar to that of a herd and, in his opinion, the observed instability of investments was due to these 'animal spirits'. Expectations can be changed radically by a host of unpredictable factors leading to wild swings in the prevailing business climate and thus to changes in the level of investment spending.

- **The Rate of Innovation and Technological Change**

Sectors and markets in which technology advances rapidly and innovations are regularly introduced will experience greater levels of investment spending. Firms in such sectors will be forced to undertake such spending to remain ahead or to keep up with rivals.

- **Labor and Capital Costs**

An increase in labor costs (which include National Insurance employer contributions in addition to wages) will make labor relatively less attractive and will induce firms to substitute capital for labor (to the extent that technology permits) and thus invest. On the

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<sup>21</sup> The MEC (or ME of Investment)

other hand, an increase in the cost of new capital equipment will decrease the expected rate of return of a project and will lower its chances of it being undertaken.

- **Public Policy toward Investment**

Governments attempt to influence the level and direction of investment by offering tax incentives to firms such as selected tax allowances, targeted subsidies, preferential loan terms, protection from foreign competition etc. Note that the size per se of the public sector may influence the growth of private investment. See the ‘crowding-out’ notes later. It may be worth mentioning here the efforts that many governments make in the form of preferential tax treatment etc. to attract foreign direct investment (FDI, multinational corporations)

- **The Overall Macroeconomic Environment**

If sound macroeconomic policies are pursued by a government resulting in very low rates of inflation, low budget deficits, sustainable public debt, realistic exchange rate and flexible labor markets then investment spending will normally be higher.

## 2. Inventory Investment

Inventory investment includes *changes* in the stocks of raw materials, of semi-processed goods as well as in finished goods ready to be sold that a firm *wishes* to hold. Many factors may affect inventory investment such as the nature of production of the firm, the volatility of demand for its product, the nature of the product itself, and the rate of interest. The market rate of interest represents the opportunity cost of the tied up funds in the form of inventories. A firm will lose more if it holds a high value of inventories when interest rates rise since it could have been enjoying the higher return had it financially invested these funds.

## 3. Housing Investment

Interest rates are a prime factor since they drive up or down mortgage rates; in addition, consumer confidence is of great importance since whether households are riding on a pessimistic or an optimistic wave may prove decisive in their decision to buy a house.

### **The Multiplier Effect** (addendum)

In order to understand the multiplier effect it is useful to remind us of the circular flow diagram and the injections - withdrawals analysis. Any increase in injections will lead to an *even greater* increase in national income because of the multiplier effect. The rationale behind is the fact that one’s spending is someone else’s income, which in turn, when spent, becomes someone else’s income etc. The size of the eventual total rise in national income resulting from an increase in investment spending (or government spending, or exports) obviously depends on the proportion of increased income that is spent on domestically produced goods and does not leak out of the circular flow. The multiplier effect is thus larger, the greater the marginal propensity to consume domestically produced goods. Equivalently, the smaller the marginal withdrawals are (i.e. the marginal propensity to

save, the marginal propensity to import and the marginal rate of taxation), the greater the multiplier effect.

Note that one mechanism through which trade cycles are transmitted internationally is the export multiplier; a recession in the US economy will lead to lower imports i.e., lower European, and Japanese exports. Depending on the size of this decrease as well as on the openness of these economies, economic activity in Europe and Japan will be adversely affected and this effect will be magnified through the export multiplier<sup>22</sup>.

More analytically:

The multiplier effect refers to the fact that an increase in autonomous spending (such as an increase in G – government spending-, I –private investment – and X – exports-) leads to a *greater* increase in income (output, Y):

$\Delta Y = k \Delta G$ , where little ‘k’ is the multiplier!

The resulting change in income (output) will be ‘k’ times the change in G (or I, or X)

(thus,  $k = \Delta Y / \Delta G$ )

What does the size of ‘k’ depend on?

$$k = [1 / (1 - MPC_d)] = [1 / (MPS + MPM + MRT)]$$

It depends on the marginal propensity to consume (domestic goods): the bigger the  $MPC_d$ , the greater the multiplier effect will be.

Or, equivalently,

the smaller the marginal leakages (withdrawals, i.e. the marginal propensity to save, to import and the marginal rate of taxation!), the greater the multiplier effect will be.

Measurements:

knowledge of  $\Delta Y$  and of  $\Delta J$  (since  $\Delta Y / \Delta J = 'k'$ )

or of  $MPC_d$  or, of MPM, MPS and MRT!

Why does the multiplier exist?

It results because:

- a. my spending is your income
- b. economic activity takes place in successive rounds

The effect is NOT instantaneous because there is a time lag between receipt of income and subsequent spending

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<sup>22</sup> “When the US catches a cold, Europe sneezes and the rest of the world dies of pneumonia”.

## The Public Sector

### Government Expenditures [G]

Public Expenditures are distinguished into:

- i. current spending on goods and services
- ii. capital (i.e. investment) spending, such as spending on roads, ports, dams, telecommunications and other infrastructure, including spending on education (human capital)
- iii. transfer payments, i.e. pensions and unemployment benefits (which are not included in NY since they do not represent rewards to current productive effort)

### *Motives for Public Spending*

Government spending is frequently related to some sort of *market failure*. More specifically, governments spend:

- i. To ensure that adequate amounts of public and merit goods and services are consumed such as national defense, monetary stability, law and order, educational and health services etc.
- ii. To redistribute income so that a socially acceptable minimum is guaranteed. Social Security spending is the largest category and it includes state pensions, unemployment benefits, disability benefits, etc.
- iii. To regulate markets e.g. to enforce product safety and hygienic standards, to guarantee that competitive conditions prevail (e.g. the MMC in the UK), to guarantee environmental standards etc.
- iv. To stabilize the economy: this is the rationale of Keynesian inspired Fiscal Policy. In a sense, the inherent instability of the economy is a *systemic* market failure. If, for example, certain economic agents (consumers or producers) become for whatever reason pessimistic and decide to spend less (i.e. to save more), since spending is someone else's income, incomes will drop and through the interaction of the (downward) multiplier - accelerator, the economy will enter a recession<sup>23</sup>. Two points need be emphasized here: the importance of the Keynesian *psychological* factor as well as the failure of behavior coordination. With respect to the latter, if some entity could credibly guarantee all market participants that there is no need to fear and to alter spending patterns, then the recession would not follow! This role, according to Keynesian economists) is to be played by the Government, and since it can not force private parties to alter *their* spending levels, it can resort to the equally effective changing of its *own* level of spending, i.e. of government expenditures. If private sector spending (demand) is not sufficient to generate full employment of resources then the government can take up the slack by pumping into the circular flow a greater level of public spending (and/or decreasing taxation, which amounts to lowering withdrawals of the system). Fiscal Policy is a demand management (stabilization) policy. "If modern market economies are inherently unstable and liable to cause booms and slumps then governments have the duty and ability to intervene and smooth

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<sup>23</sup> See the paradox of thrift in any textbook.

out the path to growth via macroeconomic, contra-cyclical fiscal [and monetary] policies” (Cleaver, p.61)

#### *Explanations for the secular growth of Public Expenditures*

- i. The high income elasticity of demand for public sector services. For example, as per capita incomes have been increasing, demand for better (and thus more expensive) health and education services have increased faster.
- ii. Aging populations, populations where the average age is rising; this fact implies that pension spending will increase disproportionately and so will social services that cater to the old. This is an especially significant argument now in the US against the Bush administration tax cuts and the budget deficits that are lately being recorded as the ‘baby boom’ generation is about to start retiring. See the unofficial Paul Krugman site and/or ‘google’ the term ‘budget deficit’ on the net.
- iii. The expansionary bias of Fiscal policy: politicians favor increased spending to maximize re-election chances.

#### *The Public Sector Borrowing Requirement (PSBR)* (Or, the Budget Deficit)

For most of the period after WWII the revenues of general government (UK and elsewhere) were not sufficient to finance total government spending. Budget deficits would result which forced Governments to borrow. The PSBR (a British term) is equal to the total annual borrowing needs of the public sector. Note the difference between a budget deficit and the public (or, national) debt: the debt is the *accumulation* of past deficits (minus any surpluses); since borrowing can be secured from both internal and external sources, the national debt includes a country’s foreign debt.

The Government can borrow (by selling bonds) either from the banking sector or from the private non-bank sector. If it sells bonds to the Central Bank it amounts to printing new money. The money supply will also increase if it sells bonds to the private commercial banks. Either way, inflation may result. If, on the other hand, it sells bonds to the non-bank private sector, the money supply will not increase but interest rates will and crowding-out of private investment may result.

[Note that PSD(ebt)R(epayment) refers to the case where revenues exceed spending and is equal to the difference] (these terms are no more used à re-write section)

## Taxation

### *Aims of Taxation:*

- i. Revenue raising
- ii. Correction of market failures e.g. taxing monopoly profits, discouraging consumption of demerit goods, correcting resource allocation when negative externalities are present etc.
- iii. Keynesian demand management (fiscal policy): lowering taxes increases disposable income and, through the multiplier effect, raises aggregate demand and thus output and employment; increasing taxes lowers disposable income and thus spending and consequently can be used as part of an anti-inflationary policy

### *Principles of Taxation (Adam Smith's 'Canons')*

- i. Equity: taxes should be fair
- ii. Certainty: tax regulations should be straight forward so that economic agents can plan ahead their behavior
- iii. Convenience: tax collection must be at a convenient form and time
- iv. Economy: tax administration and collection costs should be small compared to tax revenues

### *Direct and Indirect Taxation*

Direct taxes are paid directly by the taxpayers to the tax authorities. Examples include income tax, corporation tax, capital gains tax, inheritance tax etc.

Indirect taxes are collected indirectly largely through retailers and examples include sales taxes such as VAT, custom duties etc. Indirect taxes can be general or specific; a general tax is one that is levied on a wide range of goods or services (e.g. VAT) whereas a specific tax is levied on certain commodities e.g. the duty on alcohol. Note that usually the specific tax is in addition to a general tax. Indirect taxes are also distinguished between flat rate (or, per unit) and ad valorem taxes. A per unit tax is imposed as an absolute sum on each unit sold e.g. 2 euros / dollars per bottle of wine whereas an ad valorem is levied as a percentage of price so that the higher the price the higher the tax, e.g. VAT 16%.

### *Arguments in favor of indirect taxation*

1. Indirect taxes can be varied more quickly and easily, taking more immediate effect and reducing the administrative time lag associated with fiscal policy; direct taxes can be varied only at budget time.
2. Indirect taxes do not create disincentives for work, saving and investment; income taxation may result in fewer working hours (supply-siders favor reductions in income taxes on the basis that they will increase the labor supply and have a favorable effect on AS. Their argument may be but is not necessarily valid. Analytically, the effect of

lowering a tax on income on work can be broken down into a substitution effect<sup>24</sup> and an income effect<sup>25</sup>. Which of the two is strong is an empirical matter.

3. Some argue that indirect taxes are preferable since they leave the taxpayer free to make a choice. But what is true for the individual may not be true for society. If a large number of individuals choose not to consume a taxed good than either the government will be forced to widen the range of taxed goods or it will be forced to increase the tax rate given that it needs to raise a certain level of tax revenues.
4. Indirect taxation is used to fight negative externalities and to lower the consumption of demerit goods.
5. A tax system that is based more on indirect taxation can rid itself of market distorting (tax concessions to house buyers increase housing demand) and unfair tax allowances that characterize income (direct) taxation.
6. Indirect taxes have lower administrative costs since companies are fewer in number than individuals who file income tax.

#### *Arguments in favor of Direct Taxation*

1. Direct taxes are more equitable; indirect taxes are regressive with respect to income and are thus considered to be unfair.
2. Direct taxation has an automatic stabilizing effect: if an economy is overheating, revenues from direct (progressive) income taxes automatically rise (faster) thus limiting expansion and inflationary pressures (built-in stabilizers)

#### *Progressive, proportional and regressive taxation*

First some definitions:

The *marginal* tax rate is the percentage taken by the government on the last drachma (pound, dollar, etc.; unit of income) earned. The *average* tax rate is the percentage that government takes of an individual's total income.

A progressive tax system is one in which the average tax rate rises as income rises (i.e. where  $MTR > ATR$ )

A proportional tax system is one in which the average tax rate remains constant as income rises ( $MTR = ATR$ )

A regressive tax system is one in which the average tax rate decreases as income rises ( $MTR < ATR$ )

#### *The tax burden*

The tax burden is defined as the percentage of total taxes to GDP.

Arguments against a high tax burden include:

- Their adverse effect on incentives (See the Laffer curve literature in any text)
- That it leads to a larger black (shadow, parallel) economy since the incentive to evade taxes becomes stronger; tax revenues may thus be lower, regulation may become more difficult etc.

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<sup>24</sup> leisure now becomes more expensive and thus individuals will tend to substitute work for leisure  
<sup>25</sup> the higher income will make people demand more leisure: which of the two is stronger is an empirical matter

- That poverty and unemployment traps may develop if the unemployed face high *effective* marginal tax rates

## Economic Policy

### **The Trade (or, Business) Cycle:**

defined as the short run fluctuations in real GDP (the ups and downs in economic activity) around its long run trend. Trend GDP reflects the annual average real growth rate of an economy over a period of time. Potential GDP is defined as the level of real output attainable if full employment of resources exists. On a trade cycle diagram, some consider it as peak – to peak GDP while other as a line above all peaks.

### **Phases of the trade cycle:**

A recession (also referred to as contraction, a slump) is followed by recovery (boom – expansion); A peak is reached right before economic activity starts to decrease and a trough right before output starts to rise again.

### **Definition of Recession:**

A phase of the trade cycle; a recession exists if economic activity (measured by real GDP) decreases; if real GDP (the **volume** of output) decreases for at least 2 consecutive quarters we say that the economy has entered a recession<sup>26</sup>. During recessions unemployment (cyclical) rises since businesses decrease their output levels or even are forced to shut down. Confidence (both consumer and business) is low and as a result consumer and investment spending is low.

In a diagram that shows the % (percentage) change in real GDP through time, recessions exist when these growth rates are **negative**. If the growth rate decreases there is no recession yet, since the economy is still growing albeit at a decreasing rate.

## **Demand Management Policies**

### **Fiscal Policy**

FP is a so-called demand management policy and is defined as the manipulation of government expenditures and/or of taxes in order to influence aggregate demand and thus economic activity and employment.

Fiscal policy is a manifestation of an active role of the government; Keynesian analysis pushed forward the idea that an active, interventionist and stabilizing role for the government is necessary since the private sector is unstable and aggregate demand may be insufficient to lead to full employment of resources. There may be equilibrium at less than full employment levels of output i.e. with unemployment. In such a case a rise in government expenditures and/or a decrease in taxes (i.e. an increase of injections over withdrawals) will lead to an even greater (through the multiplier) rise in national income and thus of employment. In other words, deficit spending (i.e. when  $G > T$ ) by the

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<sup>26</sup> A recession can also be defined as a period when the economy registers *negative* real growth rates (often used in data response questions)

government will lead to an expansion of economic activity; it is known as expansionary (or, reflationary) fiscal policy.

On the other hand, an overheating economy, i.e. one where aggregate demand is rapidly rising while aggregate supply is reaching its potential (or, capacity) level, requires contractionary fiscal policy, i.e. a decrease in government expenditures and a rise in taxes (surplus).

Fiscal policy can be divided into *automatic* and *discretionary* policy. Discretionary fiscal policy involves deliberate legislative changes designed to change the tax structure and/or the level of government expenditures.

Automatic fiscal policy is based on the so-called 'automatic stabilizers' of the system: changes in the level of government expenditures and of tax revenues can occur automatically because of the trade (or, business) cycle. Alternatively, automatic stabilizers are changes in fiscal policy (taxes and government expenditures) that stimulate (or slow down) the economy when entering a recession (or boom respectively) *and that take place without an active decision by policymakers.*

Most economies are institutionally equipped with a progressive income tax system as well as with the existence of unemployment benefits. As an economy enters a recession tax revenues will decrease since incomes will be shrinking and benefits will be granted to those losing their jobs. As a result of both automatic effects disposable incomes will not drop as fast and the recession will thus be milder. In the opposite case of an overheating economy progressive income taxation automatically relieves some of the inflationary pressures since tax revenues will rise faster than incomes.

Note though that both slow down the recovery phase of an economy (fiscal drag).

Since government expenditures and tax revenues can increase or decrease automatically simply as a result of changes in national income and of the movement of an economy through the different phases of the trade cycle, how can one judge whether a government is pursuing reflationary or contractionary fiscal policy? An increased budget deficit may, for example, not be the result of deliberate fiscal policy changes but only the effect of a recession!

To judge the so called true '*fiscal stance*' of a government economists try to estimate the size of the deficit (or, surplus) at the capacity (or, full employment or, potential) level of output. In other words, economists ask what the fiscal position would be, had the economy been operating at full employment. The size of that deficit (or, surplus) reflects the structure of taxation and government spending that the government has chosen and constitutes what is known as the structural deficit. The actual deficit (or, surplus) can be larger or smaller depending on the phase of the trade cycle. The difference between the actual and the structural is thus due to the effect of the trade cycle and is this known as the cyclical deficit (or, surplus). Summarizing:

*Actual deficit* = *Structural component* + *Cyclical component*, with the structural component reflecting the fiscal stance and the cyclical component the effect of the trade cycle.

### **Problems of Fiscal Policy**

The post WWII performance of western economies was considered the proof of the success of fiscal policy. Up until the late 1960's Keynesian orthodoxy reigned and demand management was able to keep unemployment at very low level with only minor inflation. Fiscal policy, and more generally demand management policy, is not anymore thought to be capable of achieving these goals. 'Fine tuning' is not accepted anymore as a feasible policy choice and most economists agree that fiscal policy has the following problems:

1. FP is characterized by long and potentially destabilizing *time lags*. These can be broken down into the detection lag time<sup>27</sup>, the administrative lag,<sup>28</sup> and lastly the execution lag<sup>29</sup>. It may thus be the case that by the time the impact of a policy switch is felt, the economy has already moved on to a new cycle phase destabilizing rather than stabilizing economic activity.
2. FP has an *expansionary bias*. The cyclical nature of economic activity would require that governments pursue contractionary (surplus) policies following deficit spending (reflationary) ones. Politicians though who have been responsible for the economic policies chosen have been reluctant to cut government expenditures and raise taxes since this mix would drastically decrease their popularity and put their reelection chances at risk. Deficit spending has been the norm and as a result many governments have accumulated huge public (national) debts which in some cases are borderline unsustainable. These huge public debts and their consequences had forced governments to practice fiscal restraint i.e. policies of trimming expenditures and raising tax revenues. (Note that EU governments that wished to participate in the single European currency have agreed in 1992 to lower government deficits to less than 3% of GDP and national debts to below 60% of GDP; these are two of the 5 Maastricht Treaty convergence criteria; the logic of the "Stability Pact"<sup>30</sup> is (was?) the same)
3. Deficit spending may end up '*crowding-out*' private investment and thus be less effective. If the Government chooses to finance the deficit by issuing bonds and selling them to the non-bank private sector, the fact that it will now be competing for a fixed pool of loanable funds will drive interest rates up and as a result private investment will decrease (and so will consumption expenditures). If this decrease in

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<sup>27</sup> Defined as the time between the moment an economic change occurs to the moment authorities realize it.

<sup>28</sup> Defined as the time necessary for the appropriate policy response to be formulated and administered.

<sup>29</sup> Defined as the time necessary for the new policy to affect the variables of interest

<sup>30</sup> The intellectually curious are invited to also 'google' search this term.

private spending matches the increased government spending, the crowding-out is said to be complete and fiscal policy is totally ineffective.<sup>31</sup>

4. The long run effects of crowding out are even more serious and damaging since the stock of capital of the economy does not expand as fast (or may not even be as quickly renewed) and thus growth is retarded. Of course, the actual effect also depends on the type of government expenditures financed. If these are mostly capital (investment) expenditures on say ports, roads and improved communications (improving the infrastructure of the economy) then, given that these government investments create substantial positive external economies of scale, the end result may not at all hamper growth but may even accelerate it. This is an especially valid argument for developing countries where improved *infrastructure* is much needed and is considered *complementary* to market forces. Returning to our original argument, if what is mostly financed are current government expenditures such as public sector salaries, then the damage is the greatest.
5. If selling bonds to the banking sector finances the deficit then the money supply increases and this may lead to inflation. The extent of inflation, given the increase (rightward shift) of AD, depends on the steepness of AS. Thus, the closer the economy is to its potential output (the closer to capacity, to full employment), the more vertical AS will be and consequently the greater the rise in the general price level.
6. Balance of Payments problems may be an undesirable side effect of FP whether it raises real incomes (since more imports will be absorbed) or whether it proves inflationary (since exports will become less competitive abroad).
7. FP is ineffective under a flexible exchange rate system (to be explained later)
8. Contractionary FP is difficult not only because of reluctant politicians but also because certain public expenditures are considered inelastic by society: cutting down on health or education or social security may be considered socially unacceptable; defense expenditures are also often a touchy area to mess around with. On the other hand, increasing taxation beyond a point will adversely affect incentives.

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<sup>31</sup> An alternative explanation of the crowding out effect is the following: assume that expansionary (reflationary) fiscal policy is successful and does indeed raise national income (Y) through the operation of the multiplier effect. The increased level of national income (Y) will lead to an increase in the demand for money for transaction purposes (check out next section of this set of notes). Given a constant money supply the interest rate will rise leading to a decrease in private investment and consumption. See our Mankiw text for this pp. 768 – 771.

## Money and Monetary Policy

Money is defined as anything generally acceptable as a means of payment. If nothing serves this function, then we have a *barter* economy, one where goods are exchanged for goods. Barter requires double coincidence of wants and implies extremely high transaction costs for individuals who will thus prefer to avoid specialization in order to minimize dependency on exchange. Introducing money permits specialization to take place expanding dramatically production possibilities in both a static and dynamic sense.

### *Functions of Money:*

- Medium of exchange, i.e. it is acceptable as a means of payment in market transactions.
- Unit of account, i.e. it serves as a yardstick, with which values can be measured, expressed and compared.<sup>32</sup>
- Store of value; a way that people may hold their wealth through time ('money at rest').
- Standard of deferred payments: money allows inter-temporal contracts; it serves as a link between the past, present and future.

### *Properties of 'money':*

- Scarcity
- Durability
- Divisibility
- Portability

## The Banking System

The modern banking system is known as a 'two-tier' system since it comprises of commercial banks and a central bank.

### *The Role of a Central Bank*

The role of importance of Central Banks has evolved a lot and their importance has changed. We will focus here on the traditional role of a Central Bank, for example, the Bank of England.

A Central Bank (CB) is considered as the banker to the government and the banker of commercial banks:

1. It is the sole note issuing authority in a country. Note though that the supply of notes is a small percentage of the money supply.
2. It issues and redeems government bonds.
3. It manages the governments banking account.

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<sup>32</sup> " money acts to place a price on all goods and services traded, and this includes putting a value on *time* - the rate of interest on *riskless investment* indicates how much people are prepared to accept in future compensation for going without their money now"; the interest rate can be thought of as the price of money itself

4. It carries out *monetary policy* by influencing interest rates and bank lending practices. For many economists, the single most important duty of a CB is to ensure price stability through monetary policy.
5. It has the responsibility of exchange rate policy.
6. It is the ‘lender of last resort’; it stands ready to provide any required liquidity to the banking system in case of an emergency (a ‘credit crunch’).
7. It regulates and supervises commercial banks to ensure that bank lending is prudent and that banks are sufficiently liquid to meet their obligations to depositors.

“The central bank holds the bank account of the government (it loans and borrows money for the government, amongst others); acts as a banker to all the commercial banks (they all keep their own accounts at the central bank); is responsible for setting the rules and regulations in all financial trade; and is charged with conducting the government’s *monetary policy* within the economy (and internationally).”

#### *Commercial Banks*

They are profit maximizing firms specializing in bringing borrowers and lenders together. They belong to the larger class of so-called financial intermediaries. These firms accept people’s money and lend to those wishing to invest. They pay interest to savers and are paid interest from borrowers. Their profitability to a large extent depends on the ‘spread’ between the two interest rates. It is important to understand that lending is performed by the stroke of a pen. Nowadays, it’s actually more like a computer entry. The bank issues a loan to a business by opening up a checking account for the business. Note though that for every \$1.00 cash deposited by a customer in a bank, credit can be extended by a multiple which is greater, the smaller the ‘cash drainage’ (the use of cash) in the economy. This is known as a ‘fractional reserve system’: commercial banks need only to keep as reserves (in their vaults or in their deposits at the central bank) a *fraction* of the total value of loans (of ‘credit’) they have issued. This is because at any point in time *only some* customers will require to be paid in cash (to ‘cash’ their checks); most transactions (in terms of value) involve the transfer of checks, the computer crediting of one account and the debiting of another.

“ The size of the credit multiplier is a function of the stability and spending habits of the community involved. For politically unstable or economically underdeveloped societies the credit multiplier may be as low as one - that is, every \$1.00 loan is backed by \$1.00 cash, ready to be withdrawn at a moment’s notice. Highly sophisticated financial communities, on the other hand, may have very little need for cash. Billions and billions of transactions may change hands daily with an infinitesimally small fraction ever being converted into cash.”

## **The Definition of Money and Tools of Monetary Policy**

It should be clear that money in our times is *not* just cash. As a matter of fact, cash is an *extremely small* percentage of whatever is considered to be an economy's money supply. The money supply is thus not exogenous (to economic activity) but endogenous. It is to an extent determined by the level of economic activity, since the latter determines the level of lending activities. In an economy without any interaction with the rest of the world and in which commercial banks are the only financial intermediaries that create money by issuing loans, the central bank can theoretically control money supply by varying the economy's *cash base*, since the expansion of credit via the credit multiplier process described above depends on it. It can do that through 'open market operations' which is defined as the buying / selling of bonds by the central bank in the open market. If the central bank sells bonds to the public the latter will pay by checks drawn on commercial banks. When the central bank cashes these checks, the reserves of commercial banks will drop by that amount which implies that they will have to call in (decrease) a multiple amount of loans. If it had bought bonds then reserves of commercial banks would have increased and they in turn could increase lending activities by a multiple. Instead of OMO's a central bank can freeze a certain percentage of commercial bank deposits or can demand some reserve (cash) ratio and then alter its level. If the central bank manages to curtail the money supply, the price (the interest rate) of money, which is now scarcer, will rise. It could therefore instead increase the discount rate (defined as the interest rate it charges commercial banks when it extends credit to them) and thus affect upwards all interest rates. *In any case, changes in money supply and/or the interest rate (and credit conditions more generally) constitutes what is known as **monetary policy**.* Through monetary policy (*a demand management policy*) the central bank aims at affecting aggregate demand (consumer and business spending) and consequently the level of economic activity and of inflation. The top priority of central banks in many nations is to maintain price stability. The problem is that no economy in the 90's is an island (isolated) economy thanks to the advances in telecommunications, the deregulation of financial activities, the innovations in the financial sector and the increased competition. This means "central banks are no longer monopolies of the money supplies in their own isolated economies". The cross border flows of money are enormous. It is estimated that the world's *daily* volume of foreign exchange dealing is at \$1 trillion.

### **Demand for Money: the concept**

The term money demand refers to the case where an agent has a choice to hold bonds (interest bearing assets) and money (non-interest bearing assets: cash and checking accounts). One can thus realize that there is no reason to hold money (say, cash, checks) and sacrifice interest unless there is a desire to purchase goods / services. According to Keynes there are three (3) motives for holding money (he termed this 'liquidity preference', demand to be liquid, to hold cash): the 'transactions' motive (to buy goods: a positive function of national income), the precautionary demand (to meet unexpected expenses; again positively related to income) and the speculative motive (an inverse function of the interest rate since the opportunity cost of holding cash rises as interest rates rise and thus agents will prefer to hold bonds; better still, if interest rates are high

agents will expect them to decrease i.e they will expect the value (price) of outstanding bonds to rise so they will prefer to hold bonds to enjoy these capital gains)

### **Problems of Monetary Policy**

1. Even before the globalization of financial activities, monetary policy was problematical because of the long and especially *variable* time lags that characterized it. This uncertainty meant that it was potentially destabilizing ('too blunt of a tool').
2. In today's financial environment with "so many different financial institutions holding varied portfolios of income earning financial assets", it has become *impossible to even define* what constitutes the money supply.
3. Even if somehow a subset of financial assets is defined as money and the central banks tries to restrict their circulation this will just "prompt the expansion of *other* financial instruments to take their place. If instruments on government bills and bonds rise, then a whole chain of substitutions may take place as dealers adjust their holdings of these as opposed to other assets." This is known as *Goodhart's Law*: "whichever measure seems best to represent the money supply will cease to function as such as soon as the central bank tries to regulate it."
4. The institutional changes that have taken place in the financial industry have made implementation of monetary policy more difficult. "With cross-border restrictions falling, subsidiaries of foreign, international banks have poured into every small financial center around the world; and, most important of all, many large, national and multinational companies have now entered into the competition as well". Assume, for example that a central bank wishes to pursue a *tight* monetary policy to curb inflation. Transnational corporations and large national companies "can raise funds by borrowing *internationally*" through the sale of their own bonds (commercial paper); or, more simply, "local businesses may pull in cheaper foreign loans". Thus, the Central Bank "efforts may have little impact on the *real* economy if business activity and expectations are operating in a contrary direction".<sup>33</sup>
5. Note though that if the above scenario takes place under a *flexible* exchange rate system then the exchange rate will appreciate raising the price of exportables and hurting the export sector that will thus bear the brunt of the thus implemented contractionary (tight) monetary policy. It is through the contraction of mostly the export sector and through the squeezed consumer demand that tight monetary policy is nowadays implemented. Firms producing import substitutes will also hurt since price of importables will drop. The trade balance will thus also worsen.
6. With flexible exchange rates a central bank can pursue either an exchange rate policy or a monetary policy, but not both.
7. Under a fixed exchange rate system monetary policy is ineffective. Interest rate changes have to be used in such a way that the exchange rate remains fixed.

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<sup>33</sup> Note that these institutional changes may imply that increased interest rates as a result of 'crowding out' may not after all be that important in an economy, an argument used by Bush advisors.

## Supply-side Policies

Keynesian demand management policies were unable to provide solutions to the problems western economies faced in the 1970's namely the climbing rates of both inflation and unemployment<sup>34</sup>. The 1980's saw, both in Britain and the US, the ascendancy of conservative governments. Both Thatcher and Reagan decided to break away from orthodox theory and to espouse an extreme pro market vision which became known as supply-side economics and which was an evolutionary heir to the Classical and monetarist tradition. Supply-siders believed that well-intentioned interventionist policies resulted in inefficiency and waste because of

- government monopolies and excessive regulation
- rigid labor markets unable to respond to changing world market requirements
- an excessively generous welfare system and powerful labor unions
- An onerous tax burden that lowered work, saving and investing incentives.

In addition, deficits and the resulting debts were proving inflationary contributing to a loss of international competitiveness that stymied growth and thus employment. Succinctly put, interventionism led to massive government failure. On the other hand, supply-side policies recommended a shrinking role for the government and an increased reliance on markets. Supply-side policies imply focusing on the supply-side of the economy and aiming at increasing competition, improving incentives and eliminating distortions. They can be distinguished into policies that aim at deregulating and privatizing economic activity in product and capital markets, policies that aim at improving flexibility in labor markets and policies that aim at improving incentives.

Supply Side Policies (policies that aim at increasing AS / that try to make the economy more competitive / more flexible / more responsive to changing national and international conditions / policies that try to change the productive structure of the economy) include:

- labor market policies that make labor market more flexible (e.g.: abolishing min. wage, decreasing power of trade unions, reducing U benefits, reducing non-wage labor costs to employers such as national insurance contributions (IKA), making hiring & firing of workers easier, making pension plans transferable across occupations etc)
- increasing competition in markets (deregulation, opening up trade, privatization etc)
- improving incentives to work, save, invest (by decreasing tax rates)
- investing in human capital (i.e. in education)
- improving the economy's infrastructure (υποδομή) i.e. roads, ports, airports, telecommunications of the economy

Overall, the benefits expected by adopting / implementing SSP's are a result of:

- increased levels of competition

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<sup>34</sup> Interestingly, the sum of the inflation and unemployment rates was termed the 'misery' index!

- enhanced efficiency
- fewer distortions to the price mechanism
- greater incentives (fewer disincentives)
- increased flexibility in factor and product markets
- improved human capital / productivity

On the other hand supply side policies can be criticized on the following grounds:

- they are long run policies, in other words they take a long time to have results
- the increased incentives of supply – side inspired tax cuts do not necessarily materialize; for example, a tax cut may instead induce more leisure and less labor hours being supplied, being thus more of a gift to the well-off segments of the population
- at least in the short run privatization may lead to increased (structural) unemployment
- deregulation may be unsuccessful in raising competition and lowering prices. The relatively recent *energy (power) crisis in California* is a clear example of the dangers that ill-designed deregulation of utility companies may bring along<sup>35</sup>
- the smaller safety net that results (from, say, stricter / lower unemployment benefits) may marginalize segments of the population.

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<sup>35</sup> Check out Paul Krugman's (unofficial) site for plenty of easy to understand articles on Enron and this crisis more generally.

## Inflation

Inflation exists when prices increase through time. The inflation rate is the percentage by which prices on the average have risen between two periods<sup>36</sup>.

The average level of prices is measured with the help of a price index. The most commonly used price index is the Retail Price Index (RPI; or the Consumer Price Index 'CPI' in the U.S.; in Greece it's the Δείκτης Τιμών Καταναλωτή). The RPI (check out the new UK measure → re-write section) considers only the prices that the typical consumer faces and monitors movements in that set. Through surveys the basket of goods and services the typical household purchases is determined. The cost of purchasing that basket is recorded in every year (or more generally, period) and then it is expressed in index number form. This simply means that some year is chosen (using statistical criteria; basically it needs to be a 'normal' year) to be the 'base' year (or, in other words, the 'reference' year) and all other years are expressed as a percentage of it. It follows that the RPI for the base year will be equal to 100. By expressing a variable in index number form we rid ourselves of units of measurement and thus facilitate comparisons through time.

### *Problems of the CPI (or, RPI)*

The Consumer Price Index (or Retail Price Index) measures the cost of purchasing a *fixed* market basket of goods and services. Based on surveys of households from some base period, the index sets weights (expenditure shares) for different goods and services. The weights reflect average or representative shares for the groups surveyed. Keeping these weights fixed through time, the CPI is then calculated by attempting to measure changes from one month to the next in prices of the same, or quite closely related, goods and services.

*But* through time consumption baskets change, in part because of changes in the relative prices of goods and services, and therefore the weights from the base period no longer reflect what consumers are actually purchasing. Representative purchases also change as discount coupons, buyers' clubs and other marketing devices determine the best value and alter buying patterns. This failure to adjust for the changes in consumer behavior in response to relative price changes is called *substitution bias*. It is a necessary result of keeping the market basket fixed. Because the market basket is updated only every decade or so, as we get further away from the base period, there is more opportunity for relative prices to diverge from what they were in the base period, and for consumption baskets to change substantially.

Just as there are changes in what consumers purchase, there are also trends and changes in where purchases are made. In recent years, there has been a transformation of retailing. Superstores, discount stores and the like now comprise a large and growing fraction of sales relative to a decade or two ago. As important as keeping up with the basket of goods that consumers actually purchase is keeping up with the outlets where they actually

<sup>36</sup> Note that a decrease in the inflation rate signifies a *slower increase* of the price level *and not that prices are declining* (→ a point often asked in data response question!)

purchase them, so that the prices paid are accurately recorded. The current methodology suffers from an *outlet substitution bias*, which insufficiently takes into account the shift to discount outlets.

Many of the products sold today are dramatic improvements over their counterparts from years ago. They may be more durable and subject to less need for repair; more energy efficient; lighter; safer; etc. Sometimes, at least initially, a better quality product replacing its counterpart may cost more. Separating out how much of the price increase is due to quality change rather than actual inflation in the price of a standardized product is far from simple, but is necessary to obtain an accurate measure of the true increase in the cost of living. To the extent quality change is measured inaccurately or not at all, there is a *quality change bias* in the CPI.

The same is true with the introduction of new products, which have substantial value in and of themselves -- not many of us would like to surrender our microwave ovens, radial tires, and DVD's -- as well as the value of greater choice and opportunities opened up by the new products. To the extent new products are not included in the market basket, or included only with a long lag, there is a *new product bias* in the CPI<sup>37</sup>.

Hence, the CPI problems include the:

- *Substitution bias*
- *Outlet Substitution bias*
- *Quality Change bias*
- *New Product bias*

### **Costs of Inflation**

**I.** Inflation leads to a haphazard redistribution of income. More specifically, we can distinguish the following cases where this happens:

- Fixed income earners (pensioners, salaried individuals) suffer a reduction in the real purchasing power of their income: you can buy less and less through time if your money income is fixed and prices of goods and services are rising.
- The debtor - creditor relationship becomes distorted: if there is an unanticipated rise in inflation (or, better, if actual inflation exceeds expected inflation) then debtors gain at the expense of creditors since they will have borrowed at a lower interest cost than originally agreed. It is worth noting here that the 'real' interest rate is equal to the nominal interest rate minus expected inflation.
- The Government may benefit from inflation since individuals will creep up into higher income tax brackets which means that, given a progressive income tax system, the government will enjoy greater real tax revenues. Also, the *real* value of the national debt may be thus decreased. This makes sense only if the

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<sup>37</sup> This section is taken *verbatim* from the Boskin Report  
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government would engineer an unexpected, one-off rise in the price level. Otherwise, if financial markets expect this behavior on the part of the government then they would demand higher nominal interest rates on government bonds (expected inflation would have risen) which would automatically increase the nominal amount of the debt and make it explosive.

- Inflation, in general and on the average, redistributes national income from the poor to the well off since the former have fewer choices to hedge against inflation and, in addition, they can not borrow. The wealthy can borrow from the banking system and proceed to invest in assets whose value is expected to rise faster than inflation.

**II.** Inflation distorts the ‘*signaling*’ power of prices undermining the efficient allocative properties of the free market price mechanism. Inflation can be thought of as ‘*noise*’ that confuses decision making of both consumers and producers. For example, a consumer in an inflationary environment that witnesses an increase in the price of a product he usually purchases, will not know whether the rise is purely inflationary or whether it is the *relative* price of this good. In the latter case, a chain of substitutions would have been the rational response. A producer, in a similar situation with respect to inputs will face the same problem. The ‘information’ that relative price changes carry diminishes in value and allocation of resources will not anymore be efficient. The long run implications of this are, according to monetarists (or, supply-sider; more generally, to free market aficionados) very disturbing since the resulting inefficiency retards growth and thus slows down the process of generating new jobs. In other words, because of inflation, unemployment is higher than it need be. Conversely, according to this group of economists, the best way to decrease unemployment in the long run is by decreasing and preferably eliminating inflation.

**III.** Inflation, especially when the rate is volatile, increases the uncertainty surrounding business investment decisions. It becomes much more difficult to estimate future sales, costs, and interest-rates when there is inflation in an economy. Business confidence decreases. As a result investment spending especially on long term (capacity expanding) business projects decreases. Growth is hurt and so are employment prospects of the economy.

**IV.** Inflation reduces the international competitiveness of an economy. Exports become less competitive in foreign markets and imports more attractive. Balance of Payments problems ensue which may require devaluation of the currency.

#### *Causes of Inflation*

Through the AD/AS diagram it is clearly realized that any factor that increases Aggregate Demand will lead to an increasing price level i.e. to inflation, as well as any factor causing an adverse shift (a decrease) of Aggregate Supply. Even though once an inflationary process begins it is difficult in practice to distinguish between the two, it may be

instructive to mention that the former is known as demand-pull and the latter as cost-push inflation.

In the case of *demand-pull* inflation the extent of the inflationary effect depends on the steepness of the AS curve i.e. on how close to capacity the economy is operating. In the long run, when AS is thought to be vertical at the full employment (potential) level of output, any rise in AD will be inflationary. This analysis though is inherently static and inflation is by nature a dynamic phenomenon; it is thus more true to say that demand - pull inflation is the outcome of Aggregate Demand in an economy increasing through time at a faster rate than Aggregate Supply, i.e. than its capacity to produce.

The increasing level of AD can be the result of:

- expansionary government policies (budget deficits, easy monetary policy)
- buoyant consumer confidence
- a depreciating exchange rate which makes imports more expensive and can fuel increasing production costs and thus a spiral of cost push - demand pull inflation (or, because of increased demand for exports whose price will have dropped with production bottlenecks existing in the export industries)
- inflationary expectations themselves

Monetarists held that inflation is always and everywhere a purely monetary phenomenon. Friedman characteristically writes that inflation can be defined as “too much money chasing after too few goods”. This belief rests on the Quantity Theory of Money, a pillar of the Classical School (the intellectual fathers of monetarism). To explain the QToM we need to introduce a truism (a tautology), the Equation of Exchange. It states that the value of transactions during a period of time is (of course) equal to the product of the amount of money in circulation times the average number of times money changed hands during the period.

More formally,

$MV = PY_r$  (= nominal income), where,

M is the money supply,

V is the velocity of circulation

P is the average price level, and

$Y_r$  is the level of real output

The QToM follows once the level of real output is assumed fixed and once V is considered constant. The former was an integral belief of the Classical School - that the economy would operate at its full employment level, and the latter resulted from a belief that institutional factors only, such as the frequency of payments and receipts, were the determining factors of V. Now, any rise in the money supply is ‘translated’ to a (proportional) rise in the price level i.e. is purely inflationary! Friedman had even proposed that the Federal Reserve (the US Central Bank) should be constitutionally committed to an

annual increase of the money supply equal to the long run real rate of growth of the US economy!

While all would agree that excessive increases of the money supply will prove inflationary, most will argue that any other factor that is responsible for AD rising faster than AS can also lead to inflation. Still, for inflation to be sustained, it has to be fueled by increased money supply, it has to be ‘validated’ (see Lipsey & Harbury in our library for a nice analysis of the concept of validation).

On the other hand, *cost-push* inflation requires some *adverse supply shock*. Supply shocks may include any of the following:

- Powerful trade unions achieving wage increases greater than any productivity rise.
- Increased import prices of raw materials, especially of energy sources (oil), in economies with high marginal propensity to import caused by a depreciating exchange rate or any other reason (e.g. the OPEC 1973 oil price quadrupling)<sup>38</sup>
- An increase in indirect taxation
- A productivity slow-down etc. etc.

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<sup>38</sup> It may be interesting to note here that the recent quadrupling of the price of a barrel of oil (\$10 in 1998 – over \$40 in 2004) is not having such an adverse effect on the advanced economies (US, EU, Japan). The reason has to do with the changing structure of these economies: In the mid 70’s the manufacturing sector was much more significant than it is now when services have grown much faster (de-industrialization; sectoral change of output and the Fisher – Clark thesis: see our development Smith & Rees text). This means that a dollars worth of GDP now requires much less oil to be produced than a dollars worth of output in the 70’s.

## Unemployment

A person is unemployed if he/she is looking for a job and can't find one. Even though there thus seems to be a clear cut distinction of who should and who shouldn't be considered unemployed we will see that measuring the unemployment rate is very tricky business. First of all the unemployment rate is defined as the ratio of the number of unemployed over the size of the workforce (or labor force, or working population<sup>39</sup>) times 100. The workforce is defined as those employed and those unemployed; in the UK for example the workforce includes persons over 16 who work for pay or register themselves as available for such work *and* meanwhile claim benefits. It includes employees, employers, self-employed, those registered as unemployed, and claiming benefits, members of the military and those in government training schemes. The unemployment rate may underestimate and/or overestimate the true level of unemployment in a country. It is a highly visible economic statistic and thus governments are very sensitive to its path. It may be the case that it overestimates true unemployment when individuals register as unemployed and may even be claiming benefits but they do work in the shadow economy. A teacher that is out of work in the summer and registers himself to claim benefits while she is working as a private tutor could serve as an example. In Spain it is suspected that the true level of unemployment is much lower than the published rate, which has been very high, reaching 25.6% in 1994 (see TC p.153). On the other hand, the opposite is suspected for the UK where to count as unemployed you need not only to be officially registered but also to be eligible for benefits. In the U.K., males over 60 are excluded as well as school-leavers and those in government training schemes. Note that if you got laid off from a full time job and now you have accepted a part time occupation you are considered employed (i.e. no distinction is made between full timers / part timers).

### *Costs of Unemployment*

#### *Private costs:*

The single most important cost an unemployed individual incurs is the lost income. Of more long-run importance is the possible loss of up to date skills. Being unemployed increases the chances of remaining unemployed since employers prefer to hire an individual that is elsewhere currently employed to an unemployed worker. The loss of self esteem that often results has to be also mentioned as a possible private cost as well as the increased probability that the person will resort to alcohol and drugs.

#### *Social Costs:*

Given that the so-called 'economic problem' is scarcity, it becomes evident that the greatest cost of unemployment is the lost (forever) output that could have been produced. The economy operates inside its PPF. Next we could mention the lost tax revenues because of the lower incomes and spending as well as the increased government

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<sup>39</sup> Note that the working age population includes all individuals between 16 and 65; it thus also includes those in full time education, those in early retirement, housewives as well as those seeking a job but not claiming benefits.

expenditures because of the unemployment benefits and the increased number of training and retraining programs the government finances. If unemployment is high and prolonged, society may experience higher levels of drug and alcohol abuse and hence negative externalities as well as increased incidences of violence etc. If unemployment is concentrated in regions and/or in age groups these problems may become even more pronounced.

There may be some benefits arising from some unemployment. Some quote that union power weakens and thus there is reduced cost inflation pressure and greater labor market flexibility. Increased geographical and occupational mobility is also mentioned as a possible positive side effect of unemployment.

## **Types of Unemployment**

### *· Seasonal Unemployment*

Construction workers get laid off in the winter. This type of unemployment is expected and there is nothing the government can do about it. Unemployment statistics though are often corrected ('seasonally adjusted') so that one can determine true changes in unemployment, not those due to the changing seasons.

### *· Frictional Unemployment*

This is of a short-term nature and is unavoidable in a dynamic economy since people will always voluntarily switch jobs (searching for better ones, relocating etc.). If labor market related information was better and flowed faster then frictional unemployment would be lower. It follows that the government can minimize frictional unemployment by ensuring that job vacancies as well as the profiles of those available for work become known wider and faster.

### *· Structural Unemployment*

This is the most serious type of unemployment since it is of a long-term nature. It represents those remaining unemployed long after recovery is under way. It is present when there is a 'mismatch' between available skills of the unemployed and available jobs. It is the result of the evolving structure of an economy because of rapid technological advancement, changing comparative advantages and the natural product cycle that many industries follow. One can argue that if there was perfect geographical and occupational mobility and if there were no built-in institutional disincentives then structural unemployment would not exist. It follows that increasing the flexibility of a labor market, i.e. making it adjust faster to a changing environment, and removing institutional disincentives will lower structural unemployment. Policies that attempt to deal with structural unemployment are of a *microeconomic* nature and belong to the broader class of supply-side policies. They include training and retraining seminars, changing school curricula, reducing the power of trade unions, reducing the so-called replacement ratio (the ratio of benefits to salary), reducing the length of benefits, tying eligibility to enrolling

in seminars, making eligibility requirements in general more difficult and monitoring it more strictly, restructuring minimum wage laws, reducing non-wage labor costs (such as national insurance contributions) to employers, providing incentives to firm to hire the long term unemployed on a preferential basis etc. It is worth noting here that Keynesian style reflationary demand management policies are ineffective to deal with structural unemployment (as we will shortly see any resulting decrease in unemployment will be temporary and at the cost of higher inflation).

· *Cyclical (or Keynesian, or demand deficient) Unemployment*

This is directly related to the trade cycle downswing. A recession will be accompanied necessarily by higher unemployment because of the lower level of economic activity. A decrease in aggregate demand will force some businesses to shrink and others to close down. People will unavoidably be laid off. Reflationary policies can help as for example a decrease in interest rates or a tax cut, both of which will boost consumer spending.

*Some Labor Market Analytics*<sup>40</sup>

The labor demand (LD) curve shows how much labor firms are prepared to hire at each level of the real wage rate, which is defined as the money (nominal) wage divided by a price index (such as the RPI). The labor force includes all those at work and those registered unemployed. The LF curve slopes upwards since more people will join the labor force as the real wage rate increases. The AJ (accept jobs) curve shows the number of people actually accepting jobs as the real wage rate rises. As  $w_r$  rises, more will accept jobs, as more will have joined the LF. In addition AJ gets closer to LF since for any given level of unemployment benefits the number of people likely to accept jobs will be greater, the higher the real wage relative to the level of benefits (the lower the 'replacement ratio'). The horizontal distance between the AJ and LF curves reflects the number of individuals unemployed because they are unwilling to accept jobs at the going real wage rate level though they are members of the LF (they are registered as seeking employment); they are seeking perhaps for better prospects. This distance represents Voluntary Unemployment. Note that if the working age population increases, both LF and AJ will shift to the right, whereas if unemployment benefits rise then AJ alone will shift left. At the intersection of LD and AJ labor market equilibrium will occur. This is known as the Full Employment equilibrium since all those willing to accept a job can find one; at the full employment equilibrium registered unemployment is not zero. The Natural Rate of Unemployment (NRU) is defined as the percentage of the labor force that is unemployed when the labor market is in equilibrium. At any real wage rate above the equilibrium rate some individuals are involuntarily unemployed; these individuals that would have been willing to accept a job but are unable to find one. This NRU reflects structural and frictional unemployment. It also referred to as NAIRU (non-accelerating inflation rate of unemployment) since its level is closely related to the inflation rate. It represents the lowest sustainable rate of unemployment without accelerating inflation; or, equivalently, the rate of unemployment consistent with constant (non-accelerating) inflation. The NRU

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<sup>40</sup> This section is from the Dornbusch, Fisher and Begg introductory text found in our library.

thus corresponds to the economy's potential (capacity, full employment) level of output (income).

*Is the NRU fixed?*

The answer is no. It's level depends on a number of factors which all relate to the so-called flexibility of the labor market. In general it is believed that the more flexible the labor market is (or the less rigid it is) the lower the NRU. Remember that flexibility is defined as the ability (speed) of adjustment to change. The extent to which the real wage adjusts to changing demand / supply factors is of paramount importance. Periods of high unemployment (slack labor markets) should lead to decreases in the real wage rate (see the differences between the US and several EU economies in Cleaver pp. 152 -156). In this light minimum wage laws as well as militant labor unions are considered as causes of unemployment. Similarly, the extent (and speed) to which labor can move between regions and occupations is crucial in determining the NRU. The greater the geographical and occupational mobility of labor the lower the NRU. Lastly, other institutional factors, such as the level and length of unemployment benefits, the ease with which one can qualify for them, the proportion of non-wage labor costs that burden employers, the ease with which they can hire and fire labor etc. determine labor market flexibility and thus the NRU. Note that the UK did not sign the Social Chapter of the Maastricht Treaty fearing that it reduces flexibility and would thus cause higher rates of unemployment. Also note how the Clinton administration in the US continued to stimulate the US economy despite the unemployment rate falling to record low levels in realization that changes in the structure of the US economy (dot com explosion etc) had lowered the NRU and thus acceleration of inflation was not to be feared.

### **Labor Market Rigidities:**

a flexible labor market is one that is able to *quickly adjust to changing labor market conditions*:

Rigidities (ακαμψίες) may result from:

- wage rate rigidities ( usually because of powerful *trade unions* or *minimum wage legislation* or *collective bargaining wage determination*)
- from the supply side: structural reasons à occupational or geographical immobilities, ageing population, disincentives built into the welfare system (such as high unemployment benefits, or unemployment benefits that are handed out for long time periods, or non-transferability of pension plans between occupations)
- from the demand side: high non-wage labor costs (employer contributions to national insurance schemes – IKA), laws making it difficult for firms to fire workers etc

A rigid labor market is responsible for high structural unemployment rates. Thus, to lower structural unemployment, governments may have to make the labor market more flexible (remove above rigidities): pursue supply side policies.

Costs of more flexible labor markets:

- in the long run, greater income inequality may result
- the lower degree of job security may have an adverse effect on labor productivity etc

### **The short run and long run Phillips Curve**

In 1958 A.W. Phillips noticed a striking inverse relationship between the British unemployment and inflation rates. This empirical observation became known as the Phillips curve and gave rise to the idea that there was an exploitable trade off between inflation and unemployment. Policy makers could achieve a lower unemployment rate but only at the expense of a higher inflation rate or could attain less inflation but at the cost of higher unemployment. The Phillips curve presented policy makers with a menu of choices!

The theoretical justification of the PC was on the surface quite straightforward. When unemployment was relatively low firms found it hard to hire workers and thus tended to bid up wages whereas in slack labor markets there was less upward pressure. If prices are a mark-up on wages (costs), there is a direct connection between the unemployment and inflation rates, i.e. the observed (short run) Phillips Curve. Or simply, given normally sloping AD / AS, any reflationary policy instigated rise in AD will succeed in raising output and thus lowering unemployment albeit with rising inflation. This was seen as a confirmation of Keynesian inspired demand management policies and an affirmation of interventionism.

Phelps and Friedman argued that a stable and permanent trade-off between unemployment and inflation was an illusion. In the long run (i.e. when expectations have fully adjusted) only one rate of unemployment (the 'natural') was possible to sustain without experiencing an acceleration (or deceleration) of inflation. The long run Phillips Curve was thus vertical at the natural level of unemployment. As Friedman argued in his American Economic Association Presidential Address there is no stable relationship between inflation and unemployment, only one between unanticipated inflation and unemployment. At the beginning of an inflationary period, workers are slower than firms to recognize the full extent of the inflation and therefore they think that the higher money wages being offered are actually higher real wages. With this apparent higher real wage rate, workers offer more labor services, people accept jobs rather than keep searching for better ones, and the unemployment rate falls. When workers realize that they have misjudged the actual inflation rate some workers will quit their jobs and the unemployment rate will return to its previous (natural) level<sup>41</sup>. Since the real wage rate is unchanged, labor demanded and supplied will equal the initial level.

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<sup>41</sup> Alternatively you can think of the process in the following equivalent terms: A policy expansion increases the demand for goods, causing a general rise in prices. Nominal wages are slow to respond and as a result, real wages fall, inducing firms to hire more workers; they accept since their expectations on

According to Friedman, there is a short run trade-off between unemployment and inflation only because expectations of inflation are slow to adjust; since people can not be fooled forever, there is no long run relationship the two. If monetary authorities wish to keep the unemployment rate below its natural rate they can do so by forcing the actual inflation rate to exceed the public's expected rate; in the long run this can only be accomplished by accelerating inflation. Unemployment can be brought down below the NRU through reflationary policies but only temporarily and at the expense of permanently higher inflation. On the other hand, unemployment will have to exceed the natural rate for a period of time in order to reduce inflation.

Since the existence of the SRPC rests on expectations of inflation adjusting sluggishly (or, in other words, on the existence of 'money illusion'), it follows that if expectations adjusted instantaneously (if expectations were 'rational') even the short run trade-off would disappear. The curvature (or, steepness) of the SRPC in other words depends on how fast expectations adjust and, in turn, determine the opportunity cost in terms of increased unemployment of decreasing inflation (of disinflating) in an economy. The steeper the SRPC the lower the 'sacrifice ratio' (which is defined as the cumulative loss of output per percentage point decrease of inflation). Economic agents are fooled less, the more consistent with their announced goals policymakers are. This is one reason why credibility of policymakers is so much valued by markets. The example of the German Central Bank (the Bundesbank) in the pre-euro period is illustrative.

### **The inflation - unemployment trade-off and other conflicts of policy objectives**

Achieving non-inflationary, sustainable, equitable, and satisfactory growth is a very difficult task whatever the economic persuasion of the policymakers in charge. Very often, there is a very real opportunity cost involved in achieving some objective that refers to the sacrifice of some other objective. Most economists will agree that the at least a short run trade-off exists between inflation and unemployment. Tight (deflationary) demand management policies aiming at reducing inflation lead to higher unemployment. Or, fiscal (or, monetary) expansion to reduce cyclical unemployment carries the risk of inducing inflation. If we consider supply-side prescriptions to increase employment, then experience shows that a worsening of the distribution of income results. Economies with balance of trade problems in a fixed exchange rate regime need to pursue corrective deflationary policies, which though lead to higher unemployment. If growth is pursued aggressively both inflationary pressures may surface and environmental degradation may ensue; while if more equitable redistribution policies are actively pursued many will argue that unemployment will rise and that growth will be slow down.

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future inflation is backward looking ("adaptive expectations"). Unemployment falls. Once it is recognized that real wages are down, some workers will quit or higher wages will be demanded and thus the SRAS shifts left, returning employment and output to the original level but at the new higher inflation rate.

### Keynesians and Monetarists, some initial notes:

- Monetarists are the intellectual heirs of the Classical School of thought. The Classical School believed in the efficiency of free markets. They considered government intervention unnecessary and even damaging.
- According to the Classical school, an economy would always produce whatever it could produce, given its resources and the technology available (importance of aggregate supply! / AS was, in other words, considered by them vertical at the full employment level of output) . ‘Supply creates its own demand’ (à Say’s Law), and the possibility of overproduction was ruled out since, in such a case, prices would drop, re-establishing equilibrium!
- Unemployment was also ruled out, because even if there was an excess supply of labor, the wage rate would decrease so that equilibrium would be re-established.
- Thus, the flexibility of prices and wages, together with Say’s Law, would guarantee equilibrium at full employment!
- Another important characteristic of the Classical and Monetarist schools, is the importance of the QUANTITY THEORY OF MONEY (QtoM) (read notes). This states that any increase in the money supply will lead to a *proportional* increase in the price level, i.e. to inflation. It (QTM) is based on the Equation of Exchange ( $MV = PY_T$ ), where  $V$  &  $Y_T$  were considered as constant, so any rise in  $M$  (money supply) will lead to an equal rise in the price level  $P$ .
- Keynes, because of the experience of the Great Depression (1929 à ), wrote *The General Theory* (1936) as an attack to the Classical School ideas. He switched things around: according to him, aggregate demand, and not AS, was of paramount importance: it was demand that created supply in an economy. As a result, aggregate demand could prove insufficient to generate full employment! For example, if for whatever reasons consumer and business confidence decreased and, as a result, consumers and firms lowered their spending, then incomes and output would start to decrease.
- Also, unemployment could persist, since Keynes considered wages rigid (not flexible, sticky downwards).
- Since total private sector (C+I) spending could be insufficient. the Government could increase its own spending (G) and/or decrease taxation to raise AD to sufficient levels to generate full employment. The use of G and T as a means to affect AD and thus output, employment and price level is known as fiscal policy. Keynesian economists believed that through FP they could even “*fine tune*” the economy!
- Early (extreme) Keynesian economists did not believe in the usefulness of monetary policy as a way to pull an economy out of a recession! This is the «liquidity trap» case: in a depressed economy, interest rates may be so low that the government can not lower them any more to stimulate extra spending: all extra

money it pumps into the economy is «hoarded» (= kept and not spent!) (if interest rates are very-very low, *all* expect them to rise  $\bar{a}$  i.e. they expect the value (price) of outstanding bonds to drop: no one will thus buy bonds with the extra money the government pumps into the economy so, interest rates do not drop any further to stimulate extra spending)

- Monetarists considered fiscal policy ineffective and even potentially destabilizing because on the one hand it led to the «crowding out» effect
- Later, monetarists considered MP as being too powerful and thus also potentially destabilizing, so at the end they believed that the government should use NEITHER FP nor MP to affect AD. INSTEAD, the government should try to use Supply side policies (SSP's), i.e. to try to increase the capacity of the economy to produce, to increase the extent of competition and to decrease any institutional disincentives.
- In general, Keynesian economists believe more in an active role of the government, especially through Fiscal (and monetary) policy to control Aggregate demand, whereas Monetarists consider expansionary fiscal / monetary as ineffective, or even dangerous, and prefer to focus on the supply side, i.e prefer measures that make the economy more competitive, measures that make markets more flexible, measures that reduce built-in disincentives etc.
- also, one should mention the SRPC and LRPC analysis as an extra illustration of how on the one hand the Keynesians once believed in the possibility of even 'fine-tuning', and on the other hand the Monetarist position with the natural rate of unemployment ( also known as 'equilibrium unemployment') in center stage.