G.H.E.S Gabinete de História Económica e Social

Texto Didático

• • • •

Teaching Text

TD05

History of Economic Thought

Nuno Valério

ISEG Lisbon School of Economics & Management Universidade de Lisboa

CSG Investigação em Ciências Sociais & Gestão

U LISBOA | Universidade de Lisboa

fct Fundação para a Ciência e a Tecnologia

Texto Didático/Teaching Text 05

History of Economic Thought

Nuno Valério

GHES

Gabinete de História Económica e Social

2024

History of Economic Thought

— an undergraduate course

Plan

List of figures

Introduction – What is the course about ?

Between the 15th and the 19th centuries, the economy of the World underwent significant transformations:

• all relatively self-sufficient spaces that existed at the beginning became interdependent and formed a true world economy;

• capitalist organization and market functioning spread to new sectors and regions, while traditional modes of organization and functioning receded.

Since the late 19th century the contemporary world economy also underwent significant transformations:

• the market capitalist economic system was challenged by the development of centrally planned socialist economies;

• the peaceful coexistence of nations and civilizations and the sustainability of the natural environment were put in question.

These features of the evolution of the economy of the World were the subject of consideration by:

• economic science, which attempted to study the evolution of economic life as it unfolded;

• economic doctrines, which attempted to formulate ideals about what the evolution of economic life should be.

The evolution of economic science and economic doctrines is the subject of this course on the history of economic thought.

Economic science and economic doctrines changed as economic life changed itself, raising new questions to be studied by economic science and presenting new realities to be judged by economic doctrines. It is possible to organize the study of their evolution as an inquiry into five questions as follows:

• Can capitalism work ? — This question was raised by the spread of capitalist organization and market functioning to new sectors and regions between the 15th and 19th centuries and the answer was the identification of market mechanisms, which economic science was able to perform during the same period, leading to the development of economic doctrines that supported the dominance of market capitalism in economic life.

• Can capitalism survive ? — This question was raised mainly by dissatisfaction with market capitalism institutions in the 19th century and by wars and crises in the 20th century, leading to the attempt to develop alternatives to market capitalism on the basis on fresh developments of economic doctrines and to change market capitalist institutions on the basis of fresh developments of economic science.

• Can socialism work ? — The main alternative to market capitalism put forward during the 19th and 20th centuries was central planning socialism. However, the question of the viability of such an alternative to market capitalism and its practical implementing raised new problems to economic science and policy.

• Can socialism survive ? — The practical implementing of central planning socialism as a more or less pervasive economic system during a significant part of the 20th century did not solve the question of the sustainability of this alternative to market capitalism on the long run, which raised new problems to economic science and policy.

• Can mankind survive ? — The vindication of market capitalism as the dominant economic system in late 20th century did not prevent the raising of new questions related to the relations of human societies with the natural environment and to the relations among human civilizations. These challenges seem to be the crucial topics for economic science and economic doctrines in the early 21st century.

Part I – Can capitalism work ?

1 – The contribution of the forerunners and founders of economic science

As explained in the introduction, one of the main transformations of economic life between the 15th and the 19th centuries was the spread of capitalist organization and market functioning to new sectors and regions, while traditional modes of organization and functioning receded.

These changes of economic life raised the questions of the viability of market mechanisms as the main economic system and the adequate relation of government action with economic life. Debates on these questions gradually led to:

• the development of economic science as the study of market mechanisms;

• the development of the doctrine of economic liberalism, that is to say, the doctrine of minimization of government intervention in economic life.

Mercantilists and physiocrats

At first, several authors, later grouped under the name of mercantilists, tended to identify wealth with the plenty of precious metals and to suggest different ways of government intervention to ensure such plenty. Identification of wealth with the plenty of precious metals is an example of a common logic error: the fallacy of composition. The fallacy of composition is the belief that what is true for an individual is also necessarily true for a human society as a whole, disregarding the relative character of many social phenomena. In this case, if an individual owns more money than another individual, it is true he is able to command a larger amount of goods and services, but if a national economy has a larger money supply than another, this does not imply it is able to produce and consume a larger amount of goods and services; it only means it tends to have a higher price level. Suggestions of government intervention to ensure the plenty of precious metals were quite heterogeneous, often just reflecting private interests.

The fallacy of identifying wealth and the plenty of precious metals was gradually understood leading to the correct identification of national wealth with the abundance of goods and services in general and to the idea that the best way to promote the prosperity and development of national economies was the absence of government intervention in economic life. A group of mid-18th century French authors that called themselves ‘économistes’ [economists] and are usually called physiocrats (from the Greek words φυσικη = nature and κρατος = government), summarized these developments

in an attempt to describe the economic relations among the different social groups, presented by their leading figure, François Quesnay (France, 1694-1774) in what he called the Tableau Économique [Economic table] and in the motto 'laisser faire, laisser passer' [let (people) produce, let (people) trade]).

Synthesis of the contributions of the forerunners and founders of economic science

The synthesis of the contributions of the forerunners and founders of economic science was made during the second half of the 18th century mainly by two authors:

• Robert Turgot (France, 1727-1781) in his 1766 book Réflexions sur la formation et la distribution des richesses [Reflections on the formation and distribution of wealth]);

• Adam Smith (Great Britain, 1723-1790) in his 1776 book An Inquiry into the Nature and Causes of the Wealth of Nations.

Basic market mechanisms

By then, two basic market mechanisms had been identified:

• the budget restriction of each economic unit or economic agent — expenditure cannot exceed revenue (with due account to credit mechanisms);

• the prices resulting from supply and demand of sellers and buyers in the market of each commodity.

Explanation of prices or values

The explanation of prices or values of commodities was attempted in two ways:

• value is explained by utility;

• value is explained by the cost of production.

Both raise difficult problems:

• explanation of value by utility raises the problem of the paradox of value — there are very useful commodities, such as water, which have low relative value, and there are not very useful commodities, such as precious metals, which have high relative value;

• explanation of value by the cost of production raises the problems of the existence of heterogeneous means of production — land, labour and capital — and circularity of explanation if the value of these means of production is explained in the same way as the value of other commodities.

*

The solution of the problem of heterogeneous means of production was systematically presented by Turgot as follows:

• capital is the result of the use of land and labour, which are the two original means of production;

• there is an equivalence between land and labour — the land equivalent of a certain amount of labour is the land needed to feed it; the labour equivalent of a certain amount of land is the people it is able to feed.

Thus, it is theoretically possible to explain the value of any commodity in terms of one of these original means of production. Turgot himself, as the physiocrats, favoured the presentation of the value of commodities in terms of land, but Adam Smith, and later the classical authors, favoured the presentation of the value of commodities in terms of labour.

*

Adam Smith summarized the problem of value as follows:

• value in use (= utility) is a condition for value in exchange (= price), but does not explain it;

• long-term value in exchange is explained by cost of production (expressed in units of labour as just explained);

• current prices fluctuate around long-term value according to short-term fluctuations of demand and supply.

In practice:

• if the quantity demanded of a certain commodity at a certain moment exceeded the quantity supplied, the current price would exceed the long-term value (and profits would exceed average profits and there would be a tendency for an increase of the production of the commodity);

• if the quantity demanded of a certain commodity at a certain moment coincided with the quantity supplied, the current price would coincide with the long-term value (and profits would coincide with average profits and there would be a tendency for stability of the production of the commodity);

• if the quantity demanded of a certain commodity at a certain moment fell short of the quantity supplied, the current price would fell short of the long-term value (and profits would fell short of average profits and there would be a tendency for a decrease of the production of the commodity).

Moreover, Adam Smith argued that a market capitalist economy is viable and beneficial using the metaphor of the invisible hand:

“[…] the annual revenue of every society is always precisely equal to the exchangeable value of the whole annual produce of its industry […]. As every individual, therefore, endeavours as much as

he can […] to employ his capital […] so […] that its produce may be of the greatest value, every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. […] by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was not part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good."

(Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations, 1776, Book IV, Chapter II, paragraph IX)

However, Adam Smith was clearly aware of the possible failures of the market mechanisms and devoted a significant part of his work to the topic of the tasks, expenditures and revenue of the sovereign or commonwealth. He identified three main tasks that the sovereign or commonwealth should perform: (i) defence; (ii) justice; (iii) public works.

2 – The contribution of the classical school

Adam Smith's book remained the standard economics textbook until the mid-19th century. During this period, the analysis of market mechanisms was mainly developed by what is usually called the classical school, whose main authors were:

• Thomas Malthus (Great Britain, 1766-1834), whose 1798 book Essay on the Principle of Population may be considered the starting point of demographic studies;

• Jean-Baptiste Say (France, 1767-1832), the first author to discuss the role of the entrepreneur in his Traité d'Économie Politique [Treaty of political economy], published in 1803;

• David Ricardo (Great Britain, 1772-1823), the first author to discuss the economic effects of taxation and to develop the theory of international trade in his book Principles of Political Economy and Taxation, first published in 1817, but which had a new revised edition in 1821;

• Nassau Senior (Great Britain, 1790-1864), the holder of the first university chair on Political Economy, created at the University of Oxford in the 1830s, who published in 1838 a textbook, Outline of the Science of Political Economy, where he attempted to develop an axiomatic formulation of economic science.

• John Stuart Mill (Great Britain, 1806-1873), whose Principles of Political Economy, published in 1848, may be considered the synthesis of the contributions of the classical school.

Classical theory of value

The main novelty of the classical theory of value was the consideration of abstinence or waiting as a qualification to the previous standard theory of value. The previous standard theory of value stated it depends on direct and indirect labour used in the production of commodities (taking into account the contribution of all factors of production, as explained before by Robert Turgot and Adam Smith). The qualification was that the different length of various productive processes must be taken into account so that the capital invested receives the same rate of return in similar periods of time. In this context, abstinence or waiting was conceived as the time needed to complete the production process, taking into account that part of the produced means of production – instruments and equipments in a broad sense – are used for several cycles of production.

Taxation

Ricardo's discussion of the economic effects of taxation pointed out that taxes do not necessarily fall on formal taxpayers, who are often able to shift the tax burden to other economic agents.

This discussion opened an extensive field of research on the economic effects of taxation (and of recommendations about the best design of tax rules) that remained alive until now, but it is impossible to develop in this text.

International trade

Ricardo's discussion of the theory of international trade pointed out that

• if capital flows freely among firms (what he called industrial competition and he supposed to exist in the domestic market), profits in general and the absolute and relative costs of production of each commodity tend to equalize;

• if there are obstacles to the free flow capital (what he called commercial competition and he supposed to exist in the international market), profits may be different and the absolute and relative costs of production of each commodity may also be different.

Common sense suggests that it is advantageous that supply comes from the countries where absolute costs of a commodity are lower (what is called absolute advantage). However, Ricardo showed that it is advantageous for all, in terms of higher availability of the commodity, that supply comes from the countries where relative costs of a commodity are lower, not necessarily from the countries where absolute costs are lower (what is called relative or comparative advantage, as distinct from absolute advantage).

This discussion opened an extensive field of research on the economic effects of international trade that remained alive until now, but it is impossible to develop in this text. This involved debates about the choice between protection of domestic production against foreign competition, which is supposed to stimulate national activity and prosperity, and free trade, that is to say absence of protection of domestic production against foreign competition, which is supposed to provide larger and cheaper supplies to consumers and domestic activities. These debates also remained alive until now.

An attempt at axiomatic formulation of economic science

Senior's attempt to develop an axiomatic formulation of economic science led him to formulate the following four postulates:

1. That every man desires to obtain additional Wealth with as little sacrifice as possible.
2. That the Population of the world, or, in other words, the number of persons inhabiting it, is limited only by moral or physical evil, or by fear of a deficiency of those articles of wealth which the habits of the individuals of each class of its inhabitants lead them to require.
3. That the powers of Labour, and of the other instruments which produce wealth, may be indefinitely increased by using their Products as the means of further Production.
4. That agricultural skill remaining the same, additional Labour employed on the land within a given district produces in general a less proportionate return, or, in other words, that though, with every increase of the labour bestowed, the aggregate return is increased, the increase of the return is not in proportion to the increase of the Labour.

(Nassau Senior, Outline of the Science of Political Economy, 1838, Section 3.1)

The first postulate states that human wants are insatiable.

The second postulate summarizes the theory of population: population tends to increase unless natural catastrophes (famines, diseases, wars) or voluntary action (Senior distinguishes morally acceptable and morally unacceptable ways) prevent such increase.

The third postulate acknowledges that the accumulation of produced means of production provides an indefinite increase of productive capacity.

The fourth postulate acknowledges that the scarcity of natural resources implies that the increase of production resulting from accumulation of produced means of production is less than proportional to the size of accumulation.

Using these postulates, it is possible to discuss the theories of the classical school on value, taxes, international trade, etc. and to develop an analysis of the long-term trends of a capitalist economy. This analysis was presented mainly in the work of John Stuart Mill. It will be considered in Section 6 below.

3 – The contribution of the early neoclassicals

By the mid-19th century, a fresh approach to the understanding of market mechanisms was presented by two authors:

• Augustin Cournot (France, 1801-1877), who published in 1838 an analysis of demand, supply and markets in his book Recherches sur les principes mathématiques de la théorie des richesses [Researches on the mathematical principles of the theory of wealth].

• Heinrich Gossen (Germany, 1810-1858), who presented the solution of the paradox of value in a book published in 1854, Die Entwickelung der Gesetze des menschlichen Verkhers und der daraus fließenden Regeln für menschliches Handeln [Development of the laws of human actions and the rules for human trade thereof].

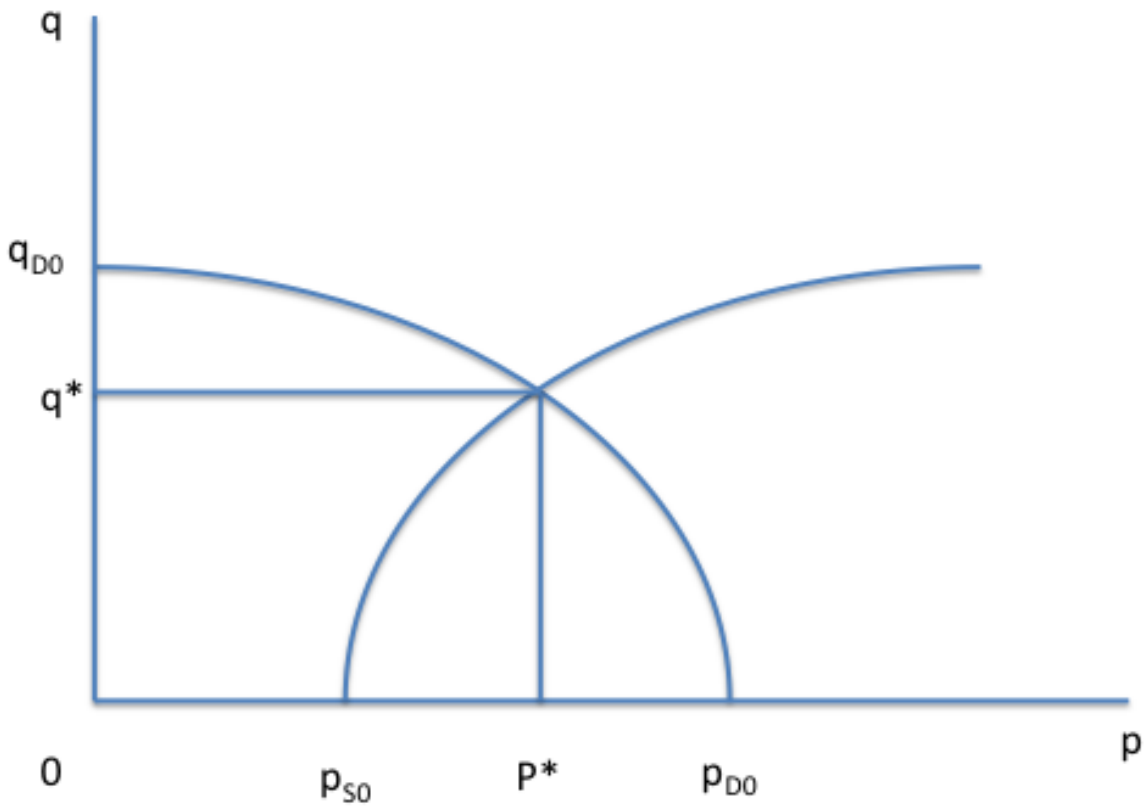
Demand, supply and markets

Cournot's contributions may be summarized as follows:

• Demand and supply are functions of price that simultaneously determine equilibrium quantity and equilibrium price. This was presented graphically in what became known as the Cournot-Marshall diagram.

• Firms are maximizers of profit in the context of markets that may assume three different types: monopoly, oligopoly (in practice Cournot only analysed duopoly), or competition.

Figure 1 – Cournot's version of the Cournot-Marshall diagram



In Cournot's version of the Cournot-Marshall diagram, commonly used by early neoclassicals in the mid-19th century, price (the independent variable) is represented in the horizontal axis and quantity (the dependent variable) is represented in the vertical axis. If price is null, demand will be q_{D0}, which may be considered a satiating consumption. If price increases, demand will diminish, until, when price reaches p_{D0}, demand becomes null. For prices below p_{S0}, supply will be null. Above that price level, supply will increase, supposedly at a less than proportional rate. If $p_{D0} < p_{S0}$, there will be no production and no market transactions. If $p_{D0} > p_{S0}$, supply and demand curves will intersect at a point (p, q*), whose coordinates will be the market equilibrium.*

It is interesting to present a summary of Cournot's analysis of the three different types of markets.

In general:

Profit of the firm [P] = revenue of the firm [r] – costs incurred by the firm [c] = price prevailing in the market [p] X quantity produced and sold by the firm [q] – costs incurred by the firm [c]

or

$P = r - c = p \times q - c$

Price is related to the quantity produced and sold by all firms Q, but, of course, the firm determines only the quantity it produces and solds. To maximize profits, it must be $dP/dq = 0$ and $d^2P/dq^2<0$ (only the first-order condition is analysed below). Thus:

$dP/dq = p \cdot dq/dq + dp/dq \cdot q - dc/dq = p + dp/dQ \cdot dQ/dq \cdot q - dc/dq$

with $dp/dQ < 0$ (according to the demand function), $dc/dq > 0$ (to increase production, costs increase) and dQ/dq (influence of production of the firm on production of all firms) depending on the type of market.

In the case of monopoly, $Q = q \Rightarrow dQ/dq = 1$.

Thus:

$dP/dq = p + dp/dQ \cdot Q - dc/dq$

$p + dp/dQ \cdot Q - dc/dq = 0 \Leftrightarrow p = dc/dq - dp/dQ \cdot Q$

As a consequence, in the case of monopoly, price exceeds marginal costs ($p > dc/dq$, because $dp/dQ <0$) and profits tend to be positive, depending on the derivative of the demand function and the quantity produced and sold by the firm, which coincides with the total production to be sold in the market.

In the case of oligopoly, $Q = Q_0 + q$, where Q_0 is the production of competitors, which Cournot supposed constant (this is called null conjectural reaction hypothesis). Thus, $dQ/dq = 1$.

Thus:

$dP/dq = p + dp/dQ \cdot q - dc/dq$

$p + dp/dQ \cdot Q - dc/dq = 0 \Leftrightarrow p = dc/dq - dp/dQ \cdot q$

As a consequence, in the case of oligopoly, price also exceeds marginal costs ($p > dc/dq$, because $dp/dQ <0$) and profits tend to be positive, depending on the derivative of the demand function

and the quantity produced and sold by the firm, which is only part of the production to be sold in the market.

In the case of competition: q is very small in relative terms, thus $Q \approx Q_0$ or, in the limit, $Q = Q_0$ => $dQ/dq = 0$

Thus:

$dP/dq = p - dc/dq$

$p - dc/dq = 0 <=> p = dc/dq$

As a consequence, in the case of competition, price is equal to the marginal cost, which tends to be the same in all firms, and profits tend to be null.

The Cournot analysis of monopoly and competition became part of standard neoclassical analysis.

The Cournot analysis of oligopoly was found defective, because of the null conjectural reaction hypothesis.

Further developments of the theory of oligopoly (and imperfect competition in general) came mainly in the 20th century (see below Section 9).

The solution of the paradox of value

The solution of the paradox of value presented by Heinrich Gossen may be summarized as the idea that value depends on the utility of the last unit consumed (called marginal utility), not on total utility, which led to what Gossen presented as the two main laws of consumption:

• First law of consumption – For each consumer, the marginal utility of a good diminishes as the quantity consumed increases.

• Second law of consumption – Each individual must consume each good so that the marginal utility derived from the satisfaction of different needs is equal.

Gossen's contribution also became part of the standard neoclassical analysis.

Neoclassical schools

The contributions of the early neoclassicals were developed in the late 19th century separately by three schools:

• the Austrian or Vienna school;

• the English or Cambridge school;

• the Franco-Italian or Lausanne school.

In the early 20th century these developments were merged in what may be called the first neoclassical synthesis.

The following remarks focus mainly on the contributions of the authors of the Cambridge and Lausanne schools and the first neoclassical synthesis.

4 – The contribution of the Cambridge school

The main authors of the Cambridge school were:

• Francis Edgeworth (Great Britain, 1845-1926), who, in his Mathematical Psychics (1881), presented the concepts of indifference curves and contract curve.

• Alfred Marshall (Great Britain, 1842-1924), who, in his Principles of Economics (first published 1890; last edition revised by the author published in 1920), developed what is now called partial analysis, meaning the separate analysis of the market of each commodity using supply and demand functions and the Cournot-Marshall diagram.

Indifference curves and the box diagram

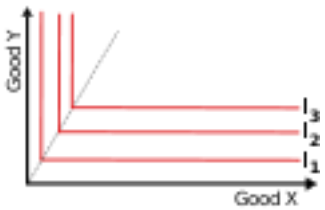
In Gossen's analysis, the utility of the various goods was analysed separately, meaning that the total utility from the consumption of a bundle of goods was always considered to be the sum of the utility derived from the consumption of each good. However, it is clear that there are goods whose simultaneous consumption is needed to improve or even to ensure the utility of each one (complementary goods) and goods whose consumption satisfy the same wants (rival goods). Francis Edgeworth generalized this kind of analysis by stating that the utility of a bundle of goods is not, in general, the sum of the utilities of separate goods and by devising a graphic presentation of this fact, the indifference map, consisting of indifference curves, which correspond to different bundles of goods with the same utility.

Figure 2 – Edgeworth's indifference maps

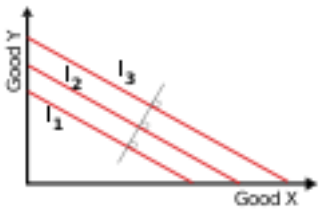
Source: https://en.wikipedia.org/wiki/Indifference_curve

Independent goods

Complementary goods



Rival goods



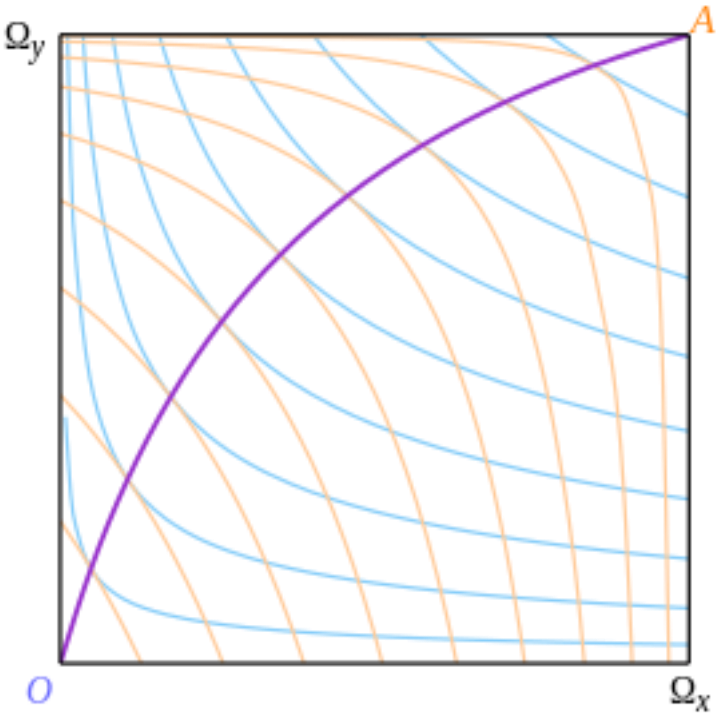
In Edgeworth's indifference maps the amounts of two different commodities (good X and good Y) are represented in the axes and indifference curves (technically, level curves of a two-variable utility function) are drawn representing the geometrical loci of bundles that afford the same utility level. In the case of independent goods, the indifference curves are negatively sloped but not linear as a rule (meaning the utility from the joint consumption of both goods is different from the sum of the utilities derived from the separate consumption of each good). In the case of complementary goods, the indifference curves are L-shaped and the vertices of the right angles follow a straight line that

corresponds to the ideal proportion of the consumption of the two goods (additional consumption of each good not corresponding to the ideal proportion affords no additional satisfaction). In the case of rival goods, the indifference curves are negatively sloped straight lines (meaning the consumption of each good may be replaced by the consumption of the other in a given proportion).

Moreover, he analysed the possible exchange of goods between two economic agents that have an initial amount of each good and given preferences, using a diagram in which the given amounts of goods and the preferences of the two economic agents are represented, usually known as a box diagram.

Figure 3 – Edgeworth's box diagram

Source: https://en.wikipedia.org/wiki/Edgeworth_box



Edgeworth's box diagram represents the indifference maps of two different economic agents, A and O, and the initial amounts of two goods, Ω_X and Ω_Y. If the initial situation is one in which the indifference curves of the economic agents are tangent to each other, there is no incentive to exchange. Otherwise, there are possible exchanges that improve the satisfaction of one or both agents. The geometric locus of the tangency points is called the contract curve. The contract curve (OA) coincides with the set of efficient situations later identified by Vilfredo Pareto (see below section 5).

Partial analysis

Although focused on the relation between the price of some commodity and its own demand and supply schedules, Marshall's partial analysis acknowledged the existence of complementary and rival goods and the influence of their prices and of income on demand and supply schedules. Such influence was supposed to be taken into account when drawing demand and supply schedules by assuming all these other factors were stable, a hypothesis labelled with the Latin expression *cæteris paribus* = other things equal.

Marshall also developed further elements of what became standard microeconomics, namely the distinction between:

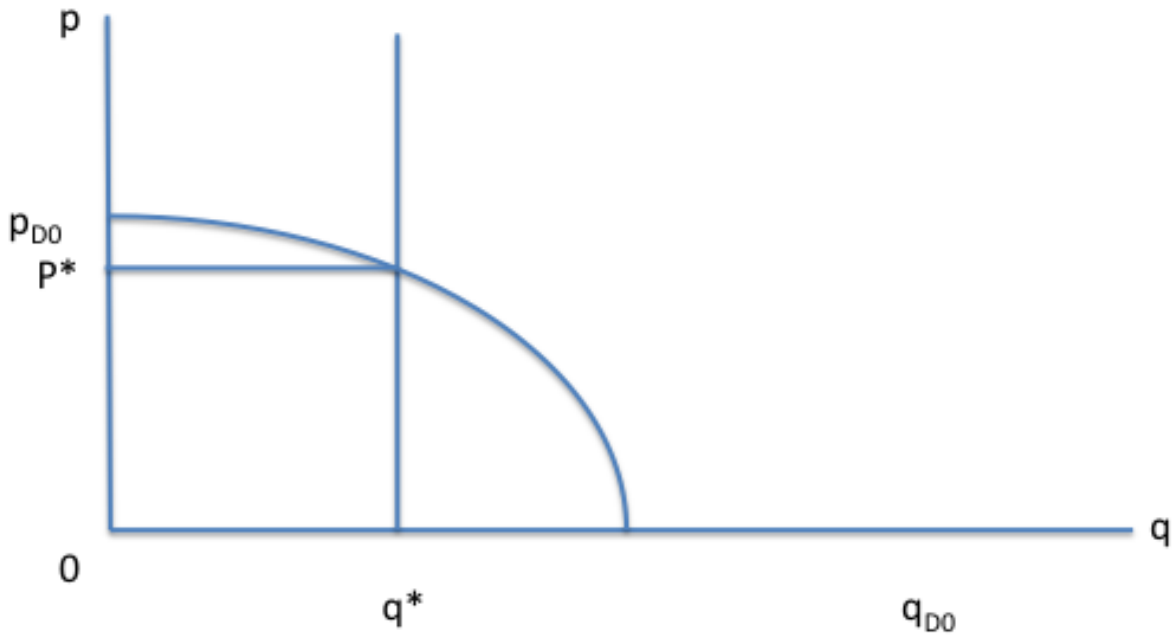
• Market period — This is the period during which no further production can reach the market. As a consequence, the supply curve is vertical and the price will vary along the downward sloping demand curve.

• Short-term period — This is the period during which it is possible to bring new production to the market, but it is impossible to adjust the productive capacity. As a consequence, the existence of fixed costs implies that the average cost of production to increase the quantity brought to the market will rise and the supply curve will have an upward slope.

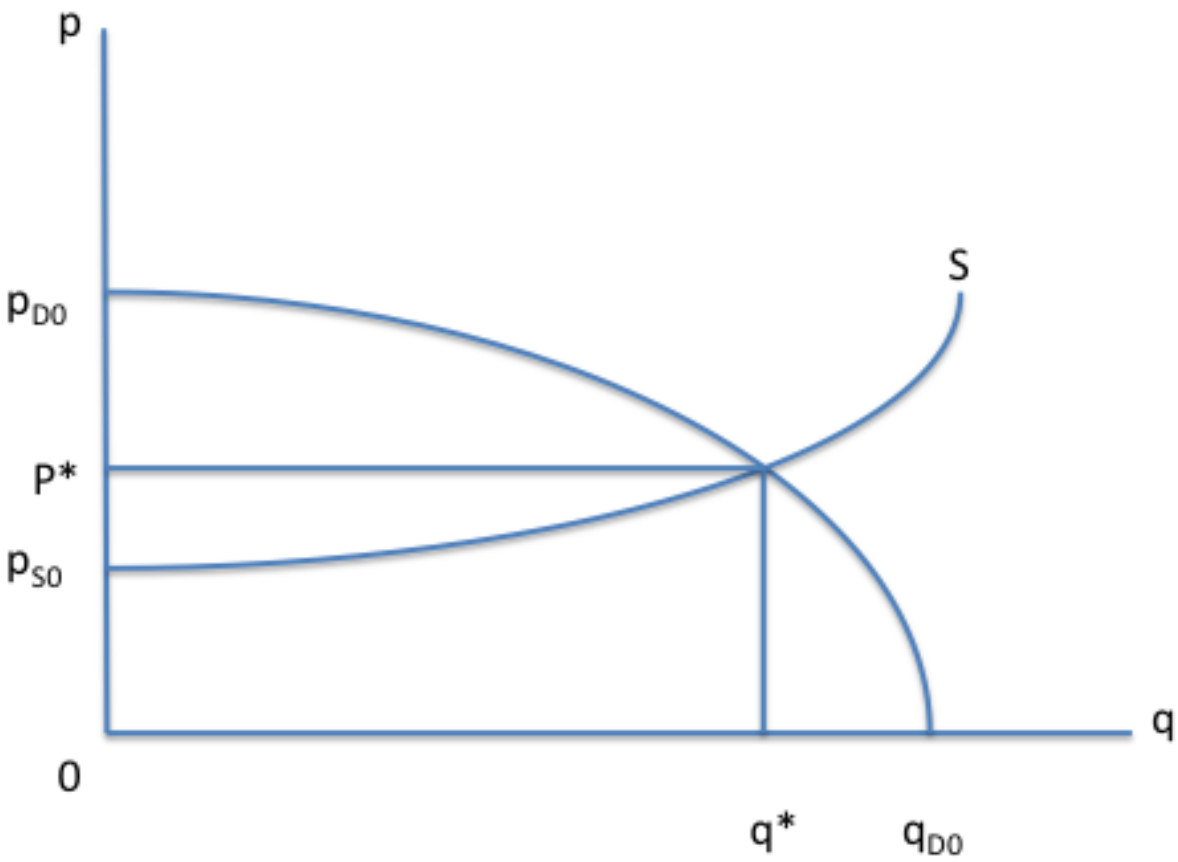
• Long-term period — This is the period during which it is possible to adjust the productive capacity. As a consequence, the absence of fixed costs implies that the cost of production will be adjusted to the minimum compatible with each level of production. This may imply decreasing, constant or increasing costs and a downward sloping, horizontal, or upward sloping supply curve, according to returns to scale.

Figure 4 – Price determination in the market period and the short-term period according to Marshall

Market period



Short-term period



Notice that in Marshall's version of the Cournot-Marshall diagram prices are now represented in the vertical axis and quantities in the horizontal axis.

Return to scale

Returns to scale may be:

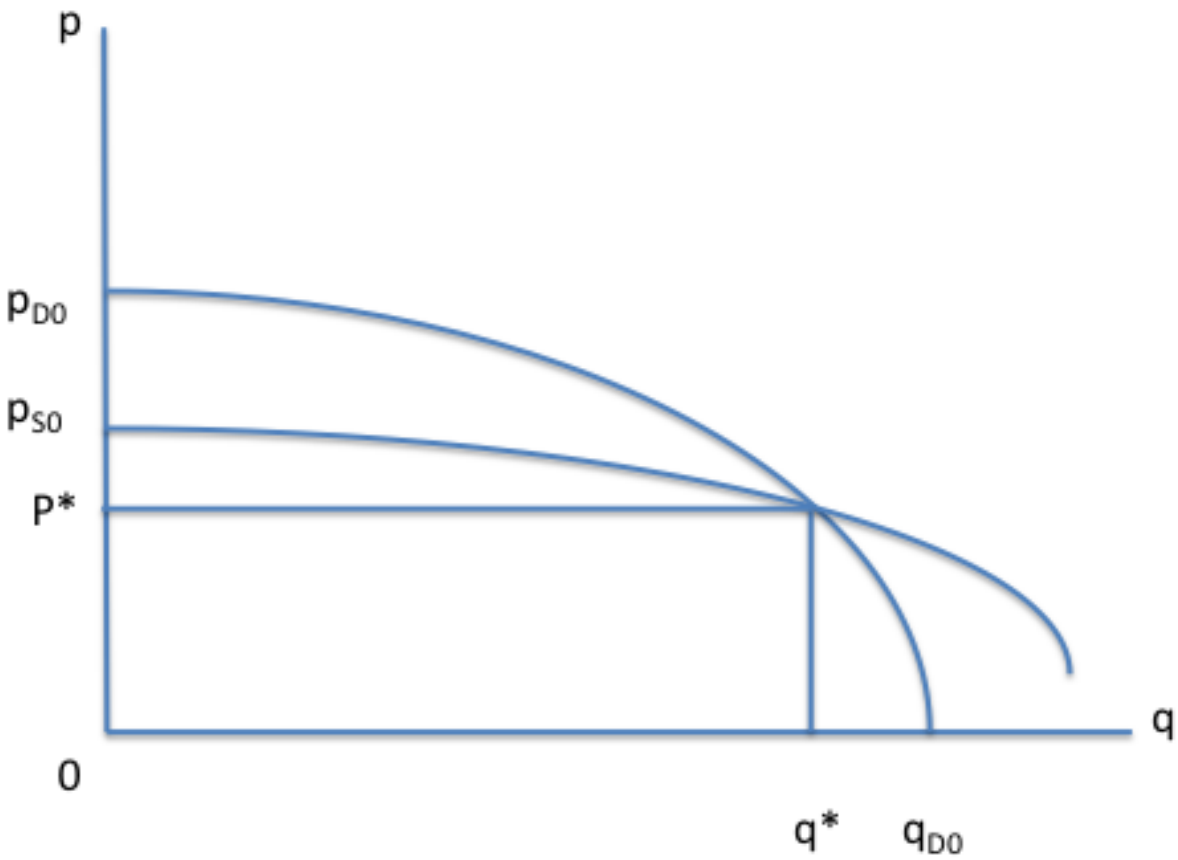
• increasing — meaning there are scale economies, the average cost of production will decrease when the level of production increases and the long-term supply curve will have a downward slope;

• constant — meaning there are neither scale economies, nor scale diseconomies, the average cost of production will remain the same when the level of production increases and the long-term supply curve will be horizontal;

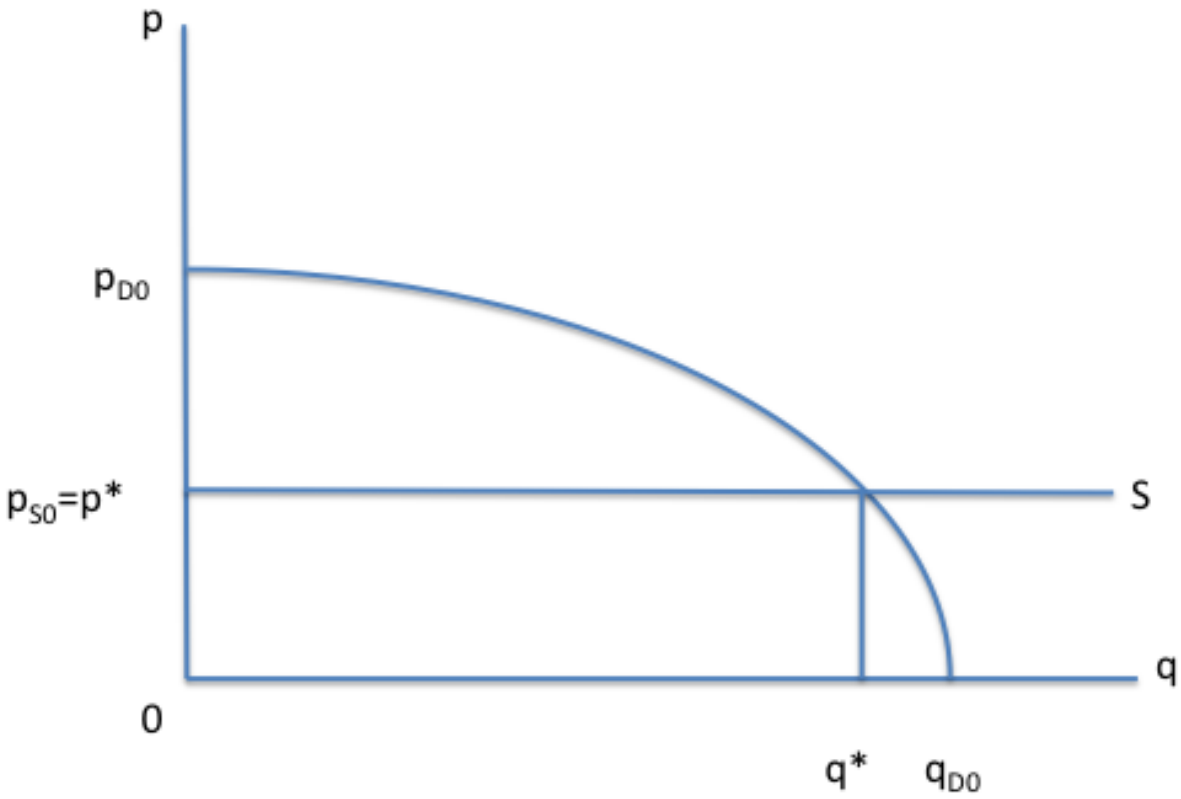
• decreasing — meaning there are scale diseconomies, the average cost of production will increase when the level of production increases and the long-term supply curve will have an upward slope.

Figure 5 – Returns to scale and long-term market situation according to Marshall

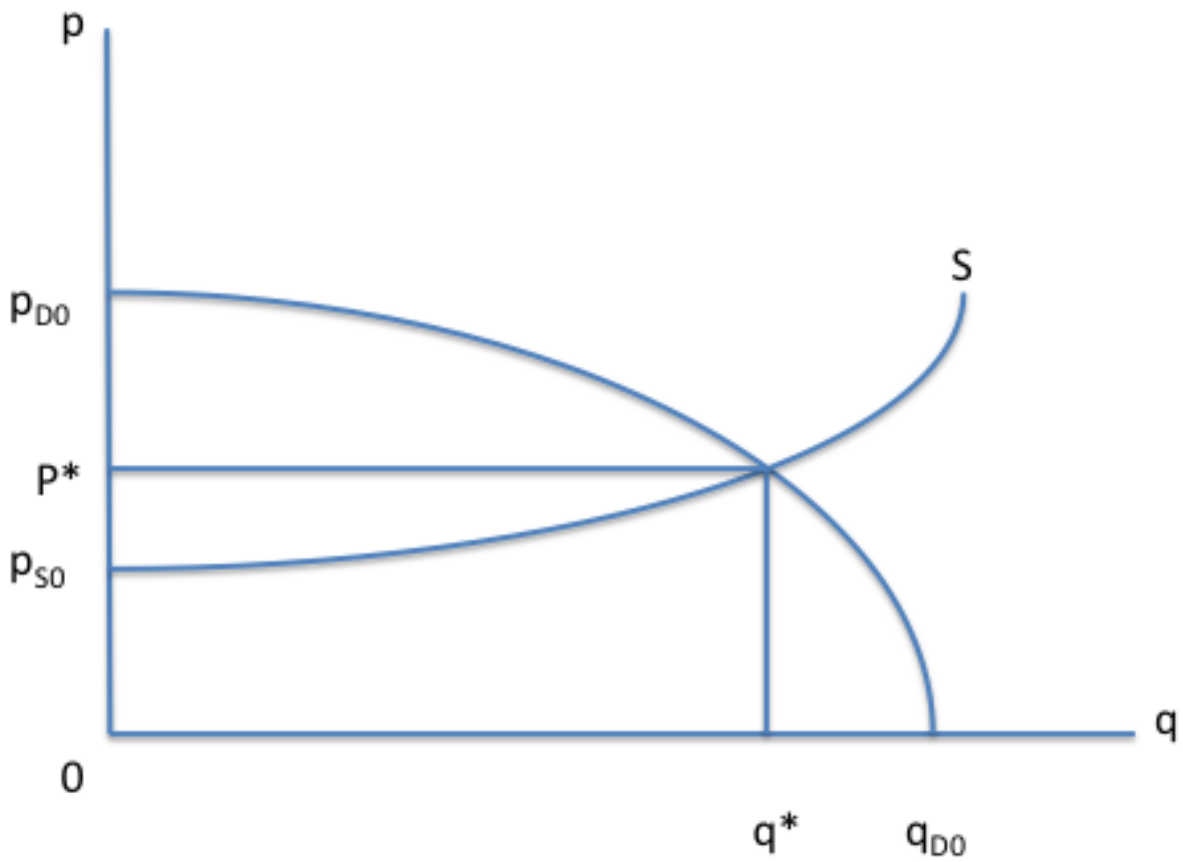
Increasing returns to scale



Constant returns to scale



Decreasing returns to scale



Marshall also pointed out the possibility of external effects, meaning the existence of returns (positive external effects) or costs (negative external effects) that are not paid in the market. Examples of positive external effects are those provided by publicly accessible infrastructures. Examples of negative external effects are those provided by pollution caused by production waste.

A note on the name of the discipline

At first, economic science was usually called political economy, an expression that combines two Ancient Greek words:

• economy, from οικονομος = management (literally 'law of the house'), which gradually became the name for all social activities related to the use of scarce resources to satisfy human wants;

• political, from πολις = city-state, which was combined with economy to denote the study of economic life at a social level (and not at the level of management of economic units).

It was Alfred Marshall who contributed decisively to change the current name of the discipline to ‘economics’. As market had clearly become more important than state management of the economic life, the change of the name avoided the suggestion that its subject matter was mainly economic policy.

5 – The contribution of the Lausanne school and the first neoclassical synthesis

The main authors of the Lausanne school were:

• Léon Walras (France, later Switzerland, 1834-1910), who, in his Éléments d'Économie Politique Pure [Elements of pure political economy] (first published between 1874 and 1877; last edition revised by the author published in 1902), developed what is now called general equilibrium analysis, meaning the simultaneous analysis of the markets for all commodities using supply and demand functions.

• Vilfredo Pareto (Italy, later Switzerland, 1848-1923), who published in 1897 his Cours d'Économie Politique [Course of political economy] and in 1906 his Manuale de Economia Politica [Handbook of political economy], introducing the concepts of ordinal utility and efficiency.

General equilibrium

The general equilibrium analysis proposed by Léon Walras is a model of a market economy in which:

• demand and supply of each commodity (including all final goods and services and the use of all kinds of natural, human and produced resources) depend on all prices;

• demand and supply must be equal for each commodity.

Thus, we get a system of n equations (demand = supply for each of n commodities) with n unknowns (the n prices of the commodities).

Notice that general equilibrium analysis dispenses with the *cæteris paribus* hypothesis to deal with the prices of complementary and rival (and other) goods. The influence of income cannot be disregarded, but is taken into account by the simultaneous consideration of all economic agents, although, technically, this needs an additional hypothesis: zero degree homogeneity of the demand and supply functions, that is to say, the hypothesis that multiplying all prices (and incomes) by the same factor does not change the demand and supply functions (something Walras assumed as normal).

In practice, if prevailing prices lead to excess demand or excess supply, increases of prices of commodities in excess demand and decreases of prices of commodities in excess supply, should lead

to the discovery of the equilibrium prices. This process is usually called, according to Walras' original terminology, *tâtonnement* = groping.

Some suggested this might be achieved by what was called a Walras' auctioneer: an entity that proposed prices, registered intended demand and supply and corrected proposed prices until the equilibrium prices were found. This idea was not accepted by Walras himself, who always conceived *tâtonnement* as an automatic process collectively performed by economic agents in the market.

Ordinal utility and efficiency

The main contributions of Vilfredo Pareto were:

• to free utility analysis from any reference to cardinal values;

• to introduce a formal definition of efficiency.

Pareto showed that to explain demand curves it is not necessary to suppose utility may be measured cardinally and only subjective ordinal utility (he called ophelimity) is needed. This contribution overcame one of the main critiques made to neoclassical economics until then and became part of the standard neoclassical theory of utility and demand.

He also defined an efficient situation as one in which it is impossible to improve anyone's satisfaction without decreasing someone else's satisfaction. This prolonged, in some sense, Edgeworth's analysis because the set of efficient situations coincides with Edgeworth's contract curve. In spite of some later critiques, it is possible to say that this also became part of the standard neoclassical theory.

Some of the critiques to Pareto's concept of efficiency focused on its potential normative character, as it involved what is commonly considered a favourable characteristic of a situation. This was enhanced by the fact that Pareto also proved that a competitive equilibrium is efficient according to his definition of efficiency. However, this kind of critique must be dismissed: it must be stressed that no positive definition (positive in the sense of an objective way to decide whether a situation fulfils some condition), even of a seemingly positive concept (positive in the sense that it has some favourable characteristic), may entail any definitive value judgement on the desirability of the situation. In other words, value judgements pertain to the doctrinal domain and cannot be proved by objective scientific assessments. It is even possible (and sensible) to say that they cannot be proven at all, only accepted or rejected on a subjective basis.

The first neoclassical synthesis

The merger of the contributions of the different neoclassical schools, especially of the Cambridge school and the Lausanne school, into the first neoclassical synthesis may be considered the final answer to the question = *can capitalism work* ? = raised since the early modern era, although

the partial and general equilibrium analysis of the first neoclassical synthesis discussed only the relations among economic agents – what is now called microeconomics – and lacked what is now called macroeconomics. In fact, the only aggregate analysis of the first neoclassical synthesis was monetary analysis, summarized in the equation of exchanges, also called Fisher's equation, by Irving Fisher (USA, 1867-1947):

amount of money in circulation X velocity of circulation = total value of transactions X price level

This allowed the discussion of the relation between the amount of money in circulation and the price level in the framework both of commodity monetary systems and conventional monetary systems.

Commodity monetary systems are characterized by the definition of the monetary unit as a certain amount of a given commodity, typically gold, and full convertibility of the means of payment into the same commodity. Thus, money supply is determined by automatic factors and the price level is just the inverse of the relative price of the monetary commodity. Notice that the monetary systems of the main economic powers were commodity monetary systems based on gold (gold standard) until the First World War.

Conventional monetary systems are characterized by a purely conventional definition of the monetary unit and a purely conventional value of the means of payment, the money supply being exogenously determined by the monetary authorities. This may trigger inflationary pressures, but does not affect the equilibrium level of economic activity, given a normal functioning of the price mechanism (see below in Section 6 the discussion of economic crises). Notice that the monetary systems of the main economic powers gradually became conventional monetary systems after the First World War.

*

Of course, economic science went on developing the study of market capitalism and other economic systems. And it must be stressed that no judgement on the desirability of the market capitalist system can be inferred from the positive answer to the question = *can capitalism work ?* = (for the reasons presented above about the relation between positive and normative statements). However, no further doubts might remain that market capitalism was a viable economic system, both in practice and from a theoretical point of view.

Part II – Can capitalism survive ?

6 – Liberalism, crises and the stationary state

In spite of all caveats presented at the end of Part I, it cannot come as a surprise that the understanding of market mechanisms was used to provide support to liberalism, the doctrine that claimed that economic life should be organized and function according to the market capitalist system, with minimal intervention from the government, only to provide indispensable public goods (and to finance them by means of taxes, as neutral to market mechanisms as possible).

As stated above in Section 1, this doctrine of economic liberalism had been summarized already in the 18th century in the famous moto

= laissez faire, laissez passer [let (people) produce, let [people] trade] =

However, in the first half 19th century, two problems were raised concerning the good functioning and favourable results of a market capitalist economic system: economic crises and the threat of a stationary state.

Economic crises

Economic crises were undoubted and rather frequent (during the 19th century, roughly once every decade the level of economic activity declined and unemployment rose significantly), but proved short-term problems. Every time a crisis occurred, the situation returned to normal after a relatively short period. Thus, the standard explanation accepted by classical and neoclassical economists was that crises were the result of temporary mismatches between demand and supply at sector level. This meant that automatic market mechanisms (namely, decline of prices in the markets of the commodities whose supply exceeded demand, and rise of prices in the markets of the commodities whose demand exceeded supply) were able to solve the problem within a tolerable delay.

Stationary state

Doubts about the possibility of long-term survival of market capitalism on the basis of what was called the trend of market capitalism towards a stationary state were another matter. The reasons to believe that such a trend existed were deeply analysed by John Stuart Mill in his Principles of Political

Economy, published in 1848. A summary presentation of Mill's analysis may start from Senior's postulates presented in Section 2.

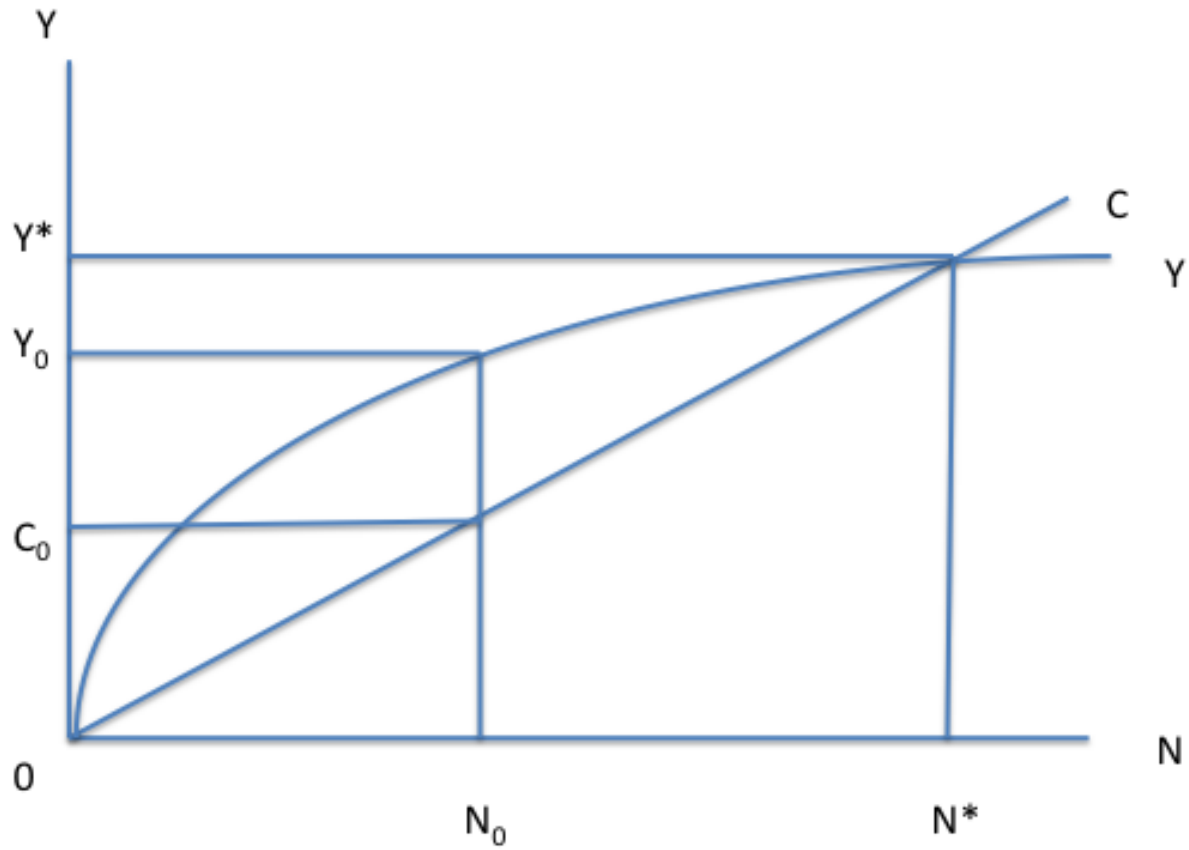
If there is a surplus of the available production in a country (or any region) over what is needed to satisfy what Senior described as "those articles of wealth which the habits of the individuals of each class of its inhabitants lead them to require", the first and second postulates imply that such surplus may be used:

• either to increase the standard of living of the population through consumption,

• or to increase the productive capacity through an increase of population and accumulation of productive resources.

The third postulate implies that accumulation of productive resources may proceed indefinitely, but the fourth postulate implies that the resulting increase in production is less than proportional to the increase in population. However, the increase in population implies a proportional increase of the consumption demanded by social habits. Thus, sooner or later, the increase of production will become insufficient to satisfy the additional wants and the economy will reach what was called the stationary state, in which there is no longer a surplus of the available production over the necessary consumption.

Figure 6 – Graphic presentation of the dynamics towards the stationary state



In the horizontal axis, the variable population (N) may be considered a proxy for resources except natural resources, because it may be assumed that produced resources are accumulated at the same rate as population grows. In the vertical axis, the variable production (Y) may be considered a proxy for what is now called gross domestic product, although the concept did not exist at the time (see Section 9 below). When population reaches level N_0, production reaches level Y_0, comsumption reaches level C_0 and there is a surplus Y_0-C_0. Population growth and accumulation of produced resources provide a growing trend for the economy. However, natural resources do not grow (by definition of natural resources), and this implies the existence of decreasing returns to scale of the other resources. As decreasing returns face constant needs per head of additional population, the economy is led into the stationary state with population N and production Y* equal to necessary consumption.*

Stuart Mill believed that such stationary state did not imply the end of qualitative progress and even might be an opportunity to improve the equitable distribution of income and wealth among the members of the society.

Anyway, in practical historical evolution, no kind of stationary state ever seemed to disturb the long-term growth of the contemporary world economy, and the average standard of living in the world even improved, although some parts of the world did not share such positive trend. This seems to disprove the stationary state theory. However, it is important to be careful. Maybe the explanation for such fact is not an intrinsic error of the argument presented, but the existence of some disturbing factor. The topic is considered again below in Section 9, in connection with growth and development theories.

7 – The challenge of socialism

While market capitalism developed spontaneously and only later was subject to scientific analysis and doctrinal support, socialism developed first as a doctrinal alternative to market capitalism and only later was subject to scientific analysis of its viability and practical attempts to build socialist societies.

Dissatisfaction with market capitalism developed when it became the dominant economic system especially because of the so-called social question.

The social question appeared as a concern for the low standards of living of the urban industrial workers in the early phases of the process of modern economic growth.

It is a debatable point if the standards of living of urban industrial workers in the early phases of the process of modern economic growth were really lower than those of contemporary rural workers in the same countries, let alone of people living in previous epochs or in countries that did not experience modern economic growth. Anyway, it is possible to accept that:

(i) These standards of living were certainly low by later (and, of course, today's) standards.

(ii) Urban industrial workers were prone to hazards such as disease, disability, old age, and especially unemployment, with less safety mechanisms than workers in other social contexts.

(iii) The differences of living standards among social classes certainly contrasted with the egalitarian principles already dominant at least in the most radical proclamations of political life.

(iv) Urban concentration (and maybe even higher levels of income) made collective action of the industrial workers easier when compared with the rural workers of the same countries and epoch (and, of course, of people living in previous epochs or in countries that did not experience modern economic growth).

Dissatisfaction with market capitalism on the basis of the social question led to the development of the socialist ideals: a new, more egalitarian and less hazardous, social organization.

Early socialism

The earliest statements of socialist ideas were made in late 18th century and early 19th century by several authors that proposed changes in the existing economic system.

The most significant cases were those of:

• Claude Saint-Simon (France, 1760-1825) – who proposed the organization of society on the basis of professions;

• Robert Owen (Great Britain, 1771-1858) – who proposed the organization of society on the basis of production and consumption cooperatives;

• Simonde de Sismondi (Switzerland, 1773-1842) – who supported government intervention to create social security schemes;

• Pierre Proudhon (France, 1809-1865) – who proposed the organization of society on the basis of the association of producers.

They were later called (a bit unjustly) utopian socialists (on the basis that they had ideals, but not proposals on how to reach them). Of course, it is possible to consider their proposals unfeasible, but it must be acknowledged that they suggested ways to make effective the changes they supported.

Trade unions and socialist parties

During the late 18th century and the first half of the 19th century, workers associations began to develop, either as trade unions or political organizations, although often banned by law.

In 1864, socialist organizations of different countries created the International Workingmen's Association, usually known as the First International.

The life of the First International was disturbed by the clash between two currents:

• the social democrats, who advocated the takeover of political power and its use to build a socialist society;

• the anarchists, who supported the immediate abolition of any form of government after the overthrow of the bourgeois state.

As a consequence, the First International disappeared by 1873.

Theoretical work

In 1848, Karl Marx (Germany, later Great Britain, 1818-1883) and Friedrich Engels (Germany, later Great Britain, 1820-1895) attempted to define the program of the socialist movement in the Manifest der Kommunistischen Partei [Manifesto of the Communist Party].

Karl Marx published later Das Kapital [The Capital] (1st volume, 1867; 2nd volume, posthumous, organized by Friedrich Engels, 1885; 3rd volume, posthumous, organized by Friedrich Engels, 1893-1894).

He attempted to create a general theory of human societies, which may be summarized in the following sketch:

• Human societies, also called social formations, include an economic basis, also called infrastructure, or the mode of production, and political and cultural superstructures.

• The mode of production includes productive forces (human and material resources) and the relations of production.

• There are three laws of social development:

1) There is a tendency for productive forces to progress.

2) The relations of production are determined in the last instance by the productive forces.

3) The social formation is determined in the last instance by the mode of production.

• As a consequence of the progress of productive forces, the changes of the relations of production such progress implied and the changes of the social formation that the changes of the mode of production (= productive forces + relations of production) imply, it is possible to find the following phases in the development of human societies:

1) Primitive communism

2) Slavery

3) Feudalism

4) Capitalism

Karl Marx analysed contemporary capitalist society using classical economic theory (especially the contributions of David Ricardo) and concluded that the very development of productive forces promoted by capitalism itself would imply changes in the relations of production and in the social formation, leading to the replacement of the capitalist economic system by what he called developed communism (with socialism as a transition stage between capitalism and developed communism).

Marx's contribution was the main basis of the development of socialist theory and doctrine in the following decades.

New Socialist International

A new Socialist International (usually called the Second International) was created in 1889.

It witnessed a division between:

• reformists, who believed it would be possible to take power by electoral processes in democratic countries and build socialism without a violent break with the previous legal framework;

• revolutionaries, who believed takeover had always to be violent and the building of a socialist society based on what they called the dictatorship of the proletariat.

The trend was for the reformist current to become the majority in most national parties (especially in highly developed countries) and in the Socialist International. Thus, the label of social democrats, which at the beginning applied to all socialists that were not anarchists, began to apply specifically to them.

In spite of the divergences, reformists and revolutionaries remained together in the Socialist International until the First World War. Then, while reformists supported their national war efforts, revolutionaries proclaimed socialists should not become involved in a capitalist conflict. As a consequence, the Socialist International collapsed.

After the war, the Socialist International was revived, but only with reformist parties. The revolutionary groups created separate parties and a separate Communist International (Third International).

The Socialist International collapsed again because of the Second World War. The Communist International was dissolved in 1943 by the initiative of the USSR (as a tactical move, to ease relations with non-communist allies, mainly the USA and Great-Britain, in the war context).

The Socialist International was revived again after the Second World War (and still exists today). The Communist International was not re-established and was replaced by meetings of communist parties aligned with the USSR.

Further consideration of debates about the building of socialist societies and practical attempts to do so will be made in Part III and Part IV below.

8 – The challenge of the World Wars and the Great Depression and Keynesianism

The First World War and war economy

The First World War called for massive mobilization of resources to the war effort, which did not seem expeditious or even possible using market mechanisms. Thus, governments implemented a command economy and partial planning of economic activity. This was called war economy (war socialism in the parlance of critics).

After the war there was an attempt to ‘return to normalcy’ (British slogan of the time). As a consequence, the bulk of government intervention in the economy was dismantled, but the need of reconstruction from war devastations and the existence of war debts and reparations to be paid among countries that had participated in the war prevented the return to the low level of government intervention in economic life of pre-war times. Moreover, there were attempts to build socialist societies, to be considered below (Section 12).

The Great Depression, John Keynes and short-term anti-cyclical policy

From 1929 and until the outbreak of the Second World War, the contemporary world economy witnessed the most severe economic depression of its history, which became known as the Great Depression.

This challenged the confidence that market mechanisms were able to overcome crises automatically.

As a consequence, short-term anti-cyclical economic policies began to be implemented. Their theoretical background was presented in 1936 by John Keynes (Great Britain, 1883-1946) in his book The General Theory of Employment, Interest and Money, and later further developed by the so-called Keynesian school.

In a certain sense, Keynes and the Keynesians created a new branch of economics: macroeconomics. While the partial and general equilibrium analysis of the first neoclassical synthesis, from then on called microeconomics, discussed the relations among economic agents, the new branch discussed the relations among aggregate economic variables, related to three aggregate markets – the real market, the money market and the labour market – to which external transactions need to be added.

The real market

The real market relates aggregate demand and aggregate supply of goods and services.

Equilibrium in this market implies equality of aggregate demand of goods and services (consumption + investment in the absence of external transactions) and aggregate supply of goods and services (domestic production of goods, once more in the absence of external transactions). As the aggregate supply of goods and services corresponds to aggregate income, which is generated by its selling, and aggregate income must be spent as consumption or saved, this is equivalent to balancing investment and savings.

Investment is supposed to depend on the interest rate, because investment projects are expected to be profitable if and only if their internal return rate, that is to say, the interest rate that equalizes the present discounted value of the expected returns of the investment project and its cost, is higher than the prevailing interest rate. This means that, if the interest rate rises, fewer investment projects will be deemed profitable.

Savings are supposed to depend on income, according to a propensity to save, which is positive and lower than 1 (notice that the arithmetic complement of the propensity to save is the propensity to consume, also supposed to be positive and lower than 1).

Thus, the Keynesian analysis of the real market determined a full range of equilibrium situations relating the level of economic activity and the interest rate in an inverse relation.

Notice that, according to the earlier neoclassical authors, both investment and savings (and consumption) would depend on the interest rate, and the equality between investment and savings would correspond to a single equilibrium interest rate (without influencing income or the level of economic activity).

The money market

The money market relates money demand and money supply.

Money demand is supposed to depend simultaneously on the level of economic activity and on the interest rate. Money demand is supposed to depend on the level of economic activity because of the so-called transactions motive – higher levels of economic activity need larger amounts of money to perform transactions. Money demand is supposed to depend on the interest rate because of the so-called speculation motive – higher levels of the interest rate make assets other than money more attractive and monetary assets less attractive.

Money supply is supposed to be exogenously determined by automatic factors in commodity monetary systems or by the monetary authorities in conventional monetary systems, as explained above in Section 5.

Thus, the Keynesian analysis of the money market determined a full range of equilibrium situations relating the level of economic activity and the interest rate in a direct relation.

Notice that, according to the earlier neoclassical authors, money demand was related only to the level of economic activity, according to the quantitative theory of money, mentioned above in Section 5. As the level of economic activity tended to full employment of available resources, as also explained above in Section 6, this implied no interaction with the interest rate that determined the equilibrium in the real market.

Interaction between the real market and the money market

Combining

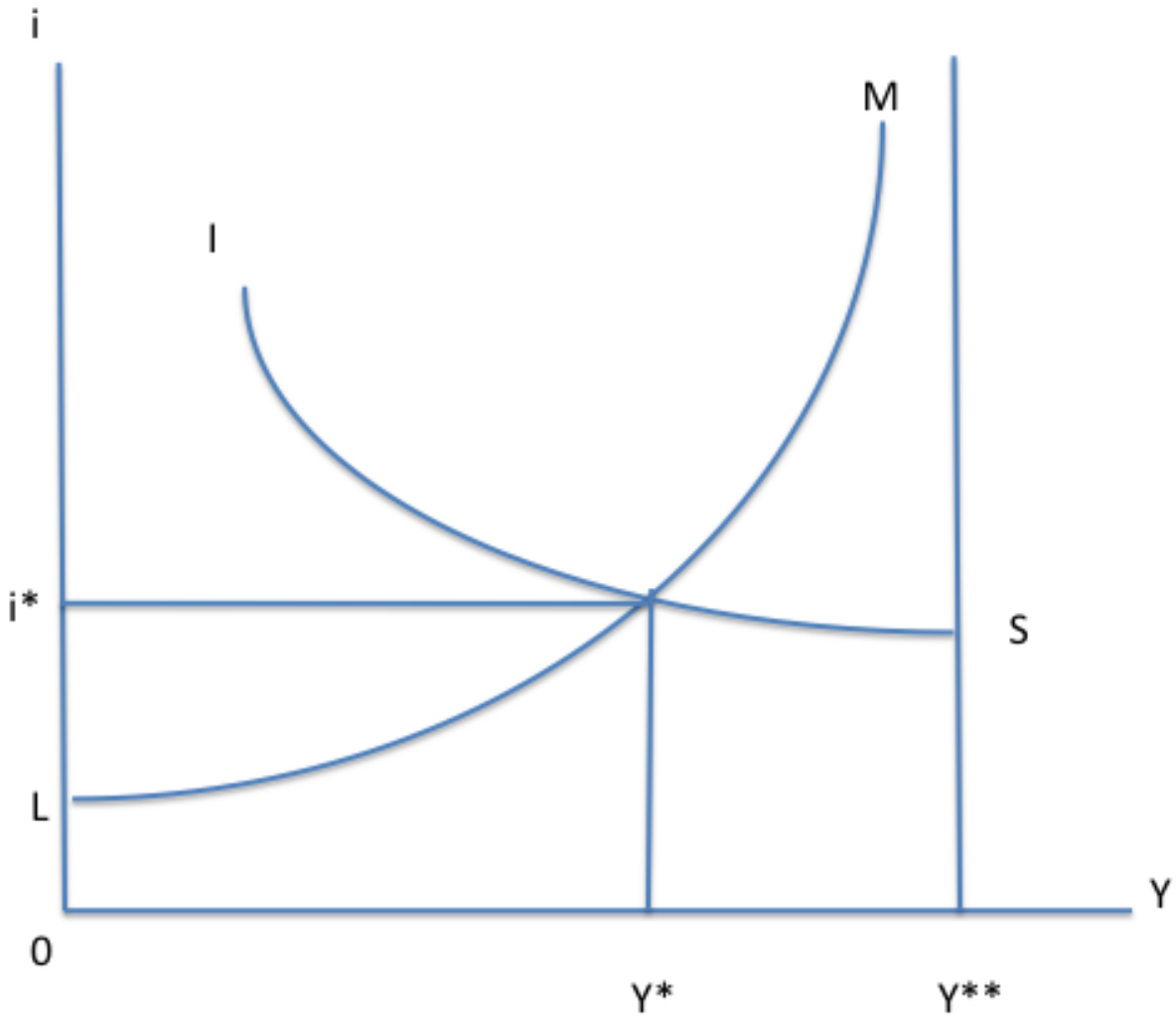
• the inverse relation between the level of economic activity and the interest rate determined in the real market,

• and the direct relation between the level of economic activity and the interest rate determined in the money market,

it is possible to determine a single equilibrium situation for both the level of economic activity and the interest rate.

John Hicks (Great Britain, 1904-1989; Nobel Prize in Economics 1972) and Alvin Hansen (USA, 1887-1975) proposed (separately) to summarize this analysis in what became known as the Hicks-Hansen diagram (or IS-LM diagram).

Figure 7 – Hicks-Hansen (IS-LM) diagram



• The level of economic activity (Y) is represented in the horizontal axis; the interest rate (i) is represented in the vertical axis.

• In the real market, savings (which depend on income) and investment (which depends on the interest rate) must be equal (downward sloping Investment = Savings or IS curve).

• In the money market, demand for money (which depends positively on income and negatively on the rate of interest) must coincide with the money supply (which is determined by automatic mechanisms in commodity monetary systems and by the monetary authorities in conventional monetary systems) (upward sloping Liquidity demand = Money supply or LM curve).

• The intersection of the IS and LM curves determines the equilibrium income (= level of economic activity) and the interest rate (Y, i*).*

• *Both the IS and the LM curves face the barrier of the level of economic activity corresponding to full employment of resources (Y**; usually represented by the interruption of the IS curve and a vertical asymptote of the LM curve.*

The labour market

The labour market relates aggregate labour demand and aggregate labour supply.

Labour demand is supposed to depend on the level of economic activity; of course, higher levels of economic activity imply higher levels of labour demand.

Labour supply is supposed to be exogenously determined by demographic and social factors.

Thus, it is possible that the amount of labour demand implied by the level of economic activity falls short of the amount of labour supply implied by demographic and social factors. If this is the case, no downward variation of the average wage rate will be able to restore full employment of the labour force, which can only be reached as a consequence of an increase of the level of economic activity.

Notice that, according to the earlier neoclassical authors, the average wage rate (to be precise, the different wage rates of different types of labour) would be determined as the equilibrium price, tending to clear the labour market (to be precise, the markets for different types of labour) towards full employment.

Short-term anti-cyclical economic policy

Situations, as the one prevailing at the epoch of the Great Depression, in which the level of economic activity resulting from the equilibrium in the real and money markets was unable to ensure full employment of resources, especially labour, called for government intervention in the shape of short-term anti-cyclical policy. This could be done using two main instruments:

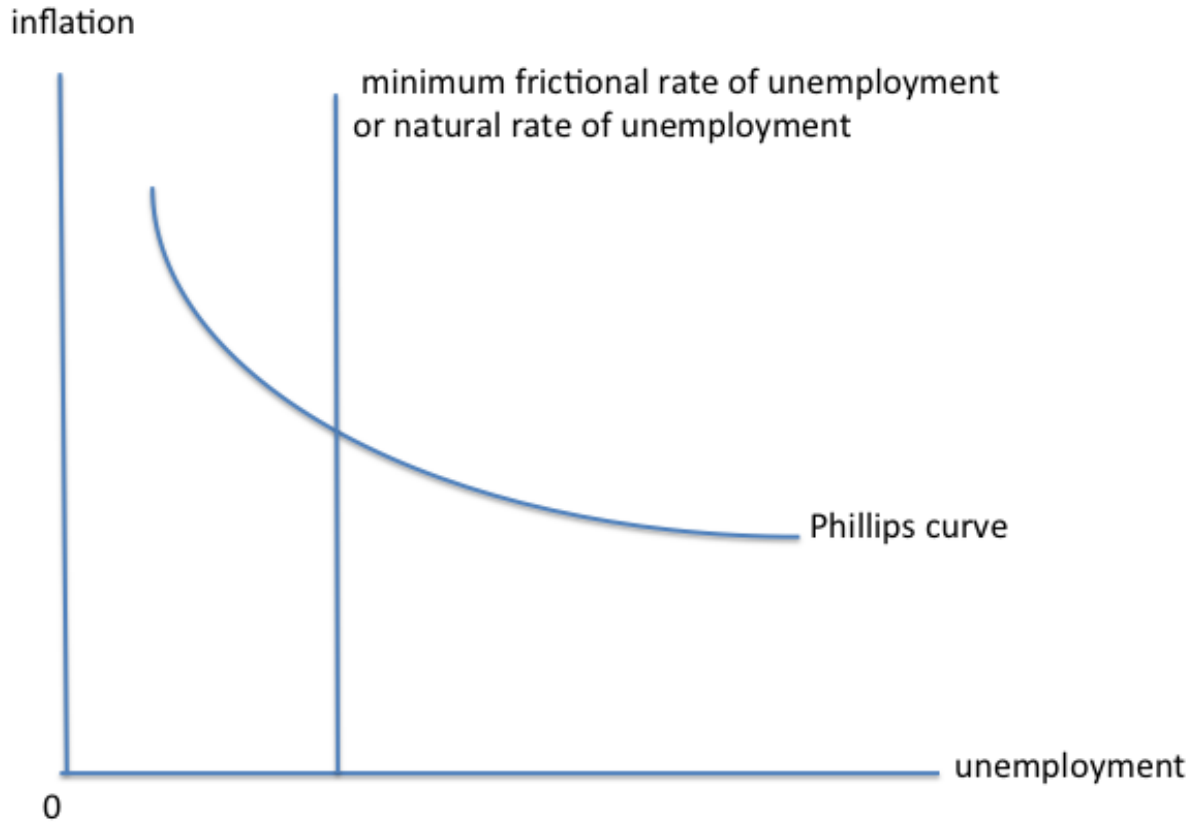
• the fiscal instrument, which acts through the real market – increased public expenditure is able to stimulate economic activity, directly as demand for goods and indirectly by means of higher available income; decreased tax collection is also able to stimulate economic activity indirectly by means of higher available income (in the Hicks-Hansen diagram the IS curve shifts upward to the right);

• the monetary instrument, which acts through the money market – increased money supply is able to stimulate economic activity, by means of the availability of credit and reduction of the interest rate (in the Hicks-Hansen diagram the LM curve shifts downwards to the right).

Of course, the level of real economic activity cannot exceed the level corresponding to the full employment of resources. This raises the danger of excessive stimulus to economic activity, leading to price increases (usually called inflation) without increasing economic activity.

The relation between unemployment and inflation was later presented in a different way by William Phillips (New Zealand, 1914-1975) in the Phillips diagram, which stated an inverse relation between the inflation rate and the unemployment rate.

Figure 8 – Phillips diagram



• *Earlier Keynesian analysis implicitly suggested an L-shaped relation between the rate of unemployment (determined by the level of economic activity) and the inflation rate (determined by the supply of money, once the situation of full employment of resources was reached). Ideally, this L-shaped relation would coincide with the coordinated axes (that is to say, there would be either no inflation or no unemployment) and the goal of short-term anti-cyclical economic policy should be the absence of both, corresponding to the origin. (Of course, it was acknowledged that the real world is not as clear-cut as that).*

• *Phillips analysis suggested a downward sloping relation between the two variables, instead of a simple alternative between two situations.*

• *Later analysis draw the attention to further details, such as the existence of a permanent minimum frictional unemployment rate, or suggested other features of economic evolution, such as a long-term natural unemployment rate (see below Section 10).*

Foreign economic relations

It must also be acknowledged that there is a further factor to be taken into account resulting from the balance of foreign transactions. Exports are part of aggregate demand; imports are part of aggregate supply; both involve the use of international (usually foreign) means of payment, which are also involved in international capital movements and international public and private transfers. The resulting international payments must balance or be compensated by international loans. Of course, these international movements may raise restrictions to the short-term anticyclical economic policies.

The difficulties related to the compatibility between domestic stability and the balance of foreign transaction were later summarized by Robert Mundell (1932-2021; Nobel Prize in Economics 1999) in the so-called Mundell trilemna: only two out of the three following goals can be ensured simultaneously by economic policy (of course, it is possible to enjoy the bliss of the three goals, but only as the result of pure luck, not of deliberate economic policy):

• stable exchange rates (avoiding both the problem of imported inflation created by the international depreciation of the monetary unit and of the loss of competitivity created by the international appreciation of the monetary unit);

• free international capital movements (avoiding the bureaucratic cost and the economic inefficiency of controls);

• domestic full employment (which is, of course, usually the most important goal).

Structural changes in market capitalism

As a consequence of the influence of socialist doctrines, of the impact of the First World War and its medium-term consequences, of the attempts to build socialist, or at least transitional, economic systems in the inter-war period (see Section 12 below) and of the gradual adoption of short-term anti-cyclical economic policies in response to the Great Depression, on the eve of the Second World War market capitalism was already quite different from what it had been until the First World War. It is possible to summarize these structural changes into three items:

• development of social security systems;

• implementing of short-term anti-cyclical economic policies;

• state control of some key sectors of the economy and large firms.

The trend towards these structural changes continued after the Second World War.

9 – The second neoclassical synthesis and the challenge of stagflation

The Second World War ensured the complete overcoming of the Great Depression at the cost, besides the war itself, of course, of problems related to the mobilization of resources and government intervention in the economy quite similar to those that had occurred during the First World War. Fears that the second post-war years would repeat the dismal performance of the inter-war period did not materialize. For roughly a quarter of century after the war, until the early 1970s, the world economy witnessed the highest growth rates ever registered, without any serious economic recession. At the time, this was considered the result of the success, in the market capitalist part of the world economy (on the situation of the centrally-planned part of the world economy see below Section 13), of what became known as the second neoclassical synthesis in economic theory: the merger of the microeconomics of the first neoclassical synthesis (which explained how the capitalist market system ensured efficient use of resources) and the macroeconomics of the Keynesian contribution (which guided sort-term anti-cyclical economic policy to ensure full employment of resources).

The idea that economics had came to a mature stable situation, comparable to the situation of physical and biological sciences, led to the creation of the Nobel Prize in Economics from 1969 on. A list of the economists who were awarded the Nobel Prize in Economics with a brief quotation of the Nobel Prize Committee justification is presented in the appendix.

However, this bliss period came to an end in 1973 with the stagflation crisis. There followed a revival of radical economic liberalism (often called neoliberalism) and renewed pressure for fresh developments of economic analysis.

The second neoclassical synthesis

As stated above, the main elements of the second neoclassical synthesis, which dominated economics between the second post-war years and the early 1970s, were microeconomics from the first neoclassical synthesis and macroeconomics from the Keynesian contribution. The 1947 textbook Economics by Paul Samuelson (USA, 1915-2009; Nobel Prize in Economics 1970) may be considered a symbol of the epoch. Its last 19th edition was published in 2009, with co-authorship by William Nordhaus (USA, born 1941; Nobel Prize in Economics 2018).

Anyway, some other contributions became relevant parts of the second neoclassical synthesis, namely:

- further developments of general equilibrium analysis;
- theories of imperfect competition;
- input-output analysis;
- theories of growth and development.

General equilibrium analysis

Kenneth Arrow (USA, 1921-2017; Nobel Prize in Economics 1972) and Gérard Debreu (France, later USA, 1921-2004; Nobel Prize in Economics 1983) presented further developments of general equilibrium analysis, namely about the properties that preferences, market structures and market relations must have to ensure the existence of an equilibrium situation (possibly several equlibria in certain circumstances), which has the efficiency properties defined by Vilfredo Pareto (as explained in Section 5 above).

Theories of imperfect competition

The inter-war years witnessed fresh developments on the study of market structures, namely:

• the definition of imperfect competition, especially from the seller's perspective (monopsony and oligopsony) by Joan Robinson (Great Britain, 1903-1983);

• the definition of monopolistic competition by means of product differentiation by Edward Chamberlin (USA, 1899-1967);

• an alternative model of competition by quantity in oligopoly by Heinrich von Stackelberg (Germany, 1905-1946) discarding Cournot's null conjectural reaction hypothesis.

The main later contributions to the theory of oligopoly were the result of developments on game theory starting with the 1944 book Theory of Games and Economic Behaviour by John von Neumann (Hungary, later USA, 1903-1957) and Oskar Morgenstern (Germany, later USA, 1902-1977).

Input-output analysis

Input-output analysis was first developed by Wassily Leontief (Russia, later USA, 1905-1999; Nobel Prize in Economics 1973) as a sector analysis of economic life, which allowed, using linear algebra, to compute the resources needed to satisfy any level and structure of final demand. It became a decisive auxiliary tool in the formulation of economic policy and in attempts to develop imperative or indicative planning of economic activity.

Theories of growth and development

The classical approach to long-term economic evolution was based on the stationary state theory presented in Section 6 above. As also pointed out there, the theory seemed quite far away from the reality of accelerated modern economic growth of the second half of the 19th century, the early 20th century and even the dismal inter-war period.

This led several authors to present new ideas about long-term economic evolution. Among these authors, special reference is due to the proposals of:

• Joseph Schumpeter (Austria, later USA, 1883-1950), centred on the distinction between growth and development and on a common explanation for economic development and economic cycles, namely innovation;

• Roy Harrod (Great Britain, 1900-1978) and Evsey Domar (Russia, later USA, 1914-1977), who stressed the relation between capital accumulation, or savings, and the rate of growth;

• Robert Solow (USA, born 1924; Nobel Prize in Economics 1987) and Trevor Swan (Australia, 1918-1989), who attempted to build a flexible model of economic growth based on the production function introduced by Charles Cobb (USA, 1875-1949) and Paul Douglas (USA, 1892-1976).

Schumpeter: growth, development and cycles

Joseph Schumpeter introduced the crucial distinction between growth and development. According to him, growth is an increase of actual or potential output and income that results from the accumulation of resources, while development is an increase of actual or potential output and income that results from innovations.

As a consequence, growth is subject to the limits presented in the framework of the discussion of the stationary state, while development is not subject to such limits. Thus, innovations are a likely candidate for the disturbing factor, which explains that, although the stationary state mechanisms are at work, the evolution of the contemporary world economy does not show any trend towards stagnation (or even the stagnation of the average standards of living). In other words, the stationary state mechanisms have been at work, but they have been clearly superseded by the very important flow of innovations that increased the efficiency of the use of all resources in the contemporary world economy.

Schumpeter listed several types of innovations, namely:

• technological innovations, which change the production functions;

• institutional and organizational innovations, which change the organization of markets and productive units;

• geographical innovations, which change the accessibility of the various regions as supply and selling markets of different commodities.

Of course, different types of innovations come in mixed packages in the real world. For instance, a new means of transportation, such as railroads or air transportation, which were technological innovations, also made some regions of the world more accessible and called for new ways of organizing markets and productive units. However, the distinction is analytically useful.

Schumpeter also suggested that innovations are not only the impulse behind development (and the antidote to the stationary state), but also the main cause of business cycles, because they disturb

the prevailing market equilibrium. A successful innovation (that is to say an innovation that brings exceptional profits to the entrepreneur that introduces it; notice that Schumpeter uses the term entrepreneur only for those who introduce an innovation and carefully distinguishes the economic role of the entrepreneur from the one of the capitalist that finances the innovation and the manager that leads the productive unit) is likely to be copied. This diffusion triggers a period of exceptionally favourable economic situation. However, this diffusion is also likely to loose momentum as a satiation level for the novelty introduced is approached. This fading out triggers a period of exceptionally unfavourable economic situation, which may bring the failure of initiatives unable to survive except in the boom situation. After this process is over, the economy returns to an equilibrium state, only to be disturbed again by fresh innovations.

Of course, innovations have different scope and different impact in the economy. Radical innovations, such as the railroad, electricity, or the personal computer brought radical changes and, according to Schumpeter, significant long-term waves in economic activity. Incremental innovations, such as a new type of locomotive, a new type of electric bulb, or a new type of smartphone brought less pronounced changes and less pronounced fluctuations in economic activity.

In spite of its ambition, the approach to growth, development and cycles proposed by Joseph Schumpeter did not become a standard part of the second neoclassical synthesis, being superseded by the much simpler models proposed, first by Roy Harrod and Evsey Domar, later by Robert Solow and Trevor Swan. Anyway, it remained a reference, especially to the evolutionist school of economists to be mentioned below (see Section 10).

The Harrod-Domar model

The models separately proposed by Roy Harrod and Evsey Domar were concerned with the relation between:

• the capital / output ratio, that is to say the average relation between the capital stock and output, or the marginal capital / output ratio, that is to say the relation between investment (= additional capital stock) and additional output;

• savings, which were supposed to be a part of income and to finance investment;

• the rate of growth of the economy.

If the capital / output ratio (λ) and the savings rate (σ), that is to say the ratio between savings and income, which is an accounting counterpart of output, are supposed constant, the rate of growth of income or output (g) must be the ratio of the savings rate and the capital output ratio ($g = \sigma/\lambda$).

This approach underlined a very important relation, but lacked any flexibility to accommodate variations of labour force (and demographic variables in general). As a matter of fact, in what was considered a typically Keynesian approach, employment was just the result of the prevailing level of

economic activity, and the capital / labour ratio (K/L) and the productivity level (Y/L) were determined by the capital / output ratio.

The Solow-Swan model

The rigidity of the Harrod-Domar model was overcome by the model separately proposed by Robert Solow and Trevor Swan, which avoided a constant capital / output ratio by using the production function formerly introduced by Charles Cobb and Paul Douglas in which the output (Y) depends on the amounts of labour (L) and capital (K) according to the formula $Y = AK^{\alpha}L^{\beta}$ (A, α and β being constants, often with the restriction $\alpha + \beta = 1$, that it is to say assuming the production function is homogenous of degree 0 in the K and L variables).

As a consequence, in this model, the capital / output ratio, the capital / labour ratio and the productivity level may vary, as a function of the parameters A, α and β. For instance, with the hypothesis of homogeneity of degree 0 of the production function, both the capital / output ratio and productivity depend on the capital / labour ratio according to the formulas $K/Y = (1/A) (K/L)^{1-\alpha}$ and $Y/L = A (K/L)^{\alpha}$. Especially important is the role of parameter A, which embodies the potential increase of productivity resulting from innovations.

Development policies

The theoretical developments just presented and the decolonization of many countries with a low level of development led to the attempt to formulate long-term development economic policies. It is true that this period witnessed the highest growth rates ever experienced almost everywhere in the world. However, it is also true that the development policies did not meet the same success than short-term anti-cyclical policies, and most countries remained in a clear low level of development during the period (and to this day).

Anyway, studies related to growth and development went on. The contributions of Theodore Schultz (USA, 1902-1998; Nobel Prize in Economics 1979) and Arthur Lewis (British West Indies [Santa Lucia], later USA, 1915-1991; Nobel Prize in Economics 1979) concerning the design of development policies, of Gunnar Myrdal (Sweden, 1898-1987; Nobel Prize in Economics 1974), Amartya Sen (India, later Great Britain, born 1933; Nobel Prize in Economics 1998) and Angus Deaton (Great Britain, later USA, born 1945; Nobel Prize in Economics 2015) concerning the question of welfare and poverty, and of Paul Romer (USA, born 1955; Nobel Prize in Economics 2018) concerning the way technology is considered in growth models should be mentioned.

Measurement

Of course, theoretical developments, and especially practical application of all these developments in economic policy, pressed for an improvement of statistical knowledge of the level of economic activity, which led to the development of the concepts linked to national accounts.

Among the economists that contributed to the development of these concepts mention should be made of Simon Kuznets (Russia, later USA, 1901-1985; Nobel Prize in Economics 1971), who also made important contributions to the empirical study of growth and development, and Richard Stone (Great Britain, 1913-1991; Nobel Prize in Economics 1984), who also made important contributions to the development of input-output analysis.

Econometrics

The availability of empirical statistical material stimulated its use to apply analytical statistics to the estimation of economic variables and economic relations, the branch of economic studies that became known as econometrics.

Ragnar Frisch (Norway, 1895-1973) and Jan Tinbergen (Netherlands, 1903-1994), who were awarded the first Nobel Prize in Economics in 1969, may be mentioned as the pioneers of these techniques.

Further developments of econometrics were often recognized later with the award of the Nobel Prize in Economics. It was the case of Lawrence Klein (USA, 1920-2013; Nobel Prize in Economics 1980), Trygve Haavelmo (Norway, 1911-1999; Nobel Prize in Economics 1989), James Heckman (USA, born 1944; Nobel Prize in Economics 2000), Daniel McFadden (USA, born 1937; Nobel Prize in Economics 2000), Robert Engle (USA, born 1942; Nobel Prize in Economics 2003), Clive Granger (Great Britain, later USA, 1934-2009; Nobel Prize in Economics 2003), Joshua Angrist (USA, later Israel, born 1960; Nobel Prize in Economics 2021) and Guido Imbens (Netherlands, later USA, born 1963; Nobel Prize in Economics 2021).

Structural changes in market capitalism

The post-Second World War years witnessed a deepening of the structural changes of market capitalist societies already noticed in the inter-war period, namely:

• development of social security systems;

• implementing of short-term anti-cyclical economic policies (to which long-term development policies tended to be added);

• state control of some key sectors and large firms;

• imperative planning of the nationalized sector and indicative planning of the whole economy.

As a consequence, some authors began to talk about what might be called a mixed capitalist economy and no longer a pure market capitalist economy.

Stagflation

By the mid-1970s, a period of deep recession accompanied by a significant rise of the price level – stagnation combined with inflation, hence the neologism stagflation – plagued the world economy (in the short run this situation was triggered by the first oil shock, a significant and sudden rise of oil prices that occurred in late 1973, a a consequence of the combined action of the main oil producers in a market with quite rigid demand; the structural roots of the crisis are a matter of debate that cannot be discussed here). As such situation was not foreseen as even a likely possibility in the framework of the Keynesian macroeconomics of the second neoclassical synthesis, the hegemony and even the credibility of the second neoclassical synthesis was put in question.

From a doctrinal perspective, this brought a revival of liberalism (with some changes), better called neo-liberalism.

From a theoretical point of view, this brought a quite lively debate in the domain of macroeconomics. These developments will be dealt with in Section 10 below.

The revival of liberalism (or neo-liberalism ?)

In a certain sense, neo-liberalism is just a revival of traditional liberalism, that is to say, the doctrine that the market capitalist system is desirable because of its efficiency and government intervention in economic life should be restricted to the provision of indispensable public goods and its financing by taxes, as neutral as possible to market mechanisms.

However, the structural changes of market capitalism already noticed for the inter-war and post-Second World War periods, together with the success of socialist ideals to be dealt with in Part III and Part IV below, and the perceived need for long-term development policies in less developed countries, implied that the revival of liberalism occurred against a quite different background from the one that had witnessed the rise of liberalism in the 18th and 19th centuries. On one hand, it was not a question of promoting a new economic system against traditional economic systems; it was the promotion of an old (in the sense of already experienced) economic system against more recent novelties. On the other hand, while criticism of government intervention in economic life resulting from short-term situations such as wars, or doctrinal novelties such as socialism, was easily argued (and accepted), rejection of social security systems, short-term anti-cyclical policies or long-term development policies was not as easily argued (and accepted). This gave the revival of liberalism (or neoliberalism) a radical feature and a limited success when compared to traditional economic liberalism.

10 – Recent developments of economic science

Besides the development of traditional fields of theoretical and applied economics, recent developments of economic science involved:

• new debates in the domain of macroeconomics;

• proposals of theoretical and methodological innovations.

Concerning the debates in the domain of macroeconomics, it is important to consider four different currents:

• the neo-Austrian school;

• the new classical school;

• monetarism;

• neo-Keynesianism.

Concerning theoretical and methodological innovations, it is important to consider five different proposals:

• new microeconomics;

• evolutionism;

• neo-institutionalism;

• experimental economics;

• behavioural economics.

Macroeconomics debates: the neo-Austrian school

The most radical reaction to the challenge raised by the stagflation crisis was the rejection of the whole Keynesian macroeconomics as a wrong path into which economic science had been driven (hopefully only for a while, in the perspective of the authors that follow this line of thought).

According to them, this should bring back macroeconomics to the state of the first neoclassical synthesis (see Section 5 above): the only relevant macroeconomic variable is the money stock, the only legitimate macroeconomic field is monetary economics.

The main author that started this current was Friedrich von Hayek (Austria, later USA and Great Britain, 1899-1992; Nobel Prize of Economics 1974). It must be stressed that he was a thorough critic of Keynes and the Keynesian authors ever since the 1930s and that this current (called neo-Austrian because of the nationality and intellectual heritage of von Hayek, a disciple of the neoclassical Austrian or Vienna school; see Section 3 above) never became a dominant one, although it retained a significant voice in economics to this day.

Macroeconomics debates: the new classical school

A less radical approach, but nevertheless also critical of key points of the Keynesian approach, is what became known as the new classical school.

The authors of the new classical school do not reject the existence of macroeconomic variables and of valid macroeconomic reasoning distinct from microeconomics or monetary economics. However, they reject propositions about macroeconomic variables that are not based on microeconomic assumptions. Thus, for instance, the relations about macroeconomic variables presented above (Section 9) as the core of the Hicks-Hansen diagram cannot be accepted as valid, because, as sensible as they may seem, they are not the result of aggregation of microeconomic variables and economic agents behaviour.

The main author of this current is Robert Lucas (USA, 1937-2023; Nobel Prize in Economics 1995). He is best known for the formulation of what is called the rational expectations hypothesis, which deserves some additional consideration.

The main idea of the rational expectations hypothesis is that economic agents develop approximate, but workable, practical models of the functioning of the economic system of the society in which they live. Of course, they may make mistakes, and there is a learning period to take into account any exogenous changes that may occur in the economic framework. Anyway, on average and in the medium term, all economic agents will be able to forecast with a minimum of efficiency what will happen and to take adequate decisions based on these forecasts.

This has significant consequences, especially for economic policy. The impact of any economic policy decision may be thwarted by the ability of economic agents to forecast the decision and adequately react taking into account the possible consequences of policy. Thus, surprise may be the key factor for economic policy success.

It is possible to suggest that the new classical approach became the dominant, but far from exclusive, school in macroeconomic thought in the recent decades. This is suggested by the fact that Nobel Prize in Economics awards related to macroeconomics clearly favoured this approach. Besides Lucas, this was the case of Finn Kydland (Norway, later USA, born 1943; Nobel Prize in Economics 2004), Edward Prescott (USA, 1940-2022; Nobel Prize in Economics 2004), Thomas Sargent (USA, born 1943; Nobel Prize in Economics 2011) and Christopher Sims (USA, born 1942; Nobel Prize in Economics 2011).

Macroeconomics debates: monetarism

Doubts about the capacity of traditional economic policy, especially short-term anti-cyclical economic policy, to change economic evolution had already been raised by what became known as the monetarist school.

From a methodological perspective, monetarists do not differ significantly from standard Keynesians. They believe in valid macroeconomic reasoning distinct from microeconomics or monetary economics and they do not require propositions about macroeconomic variables to be based on microeconomic assumptions. However, they do not agree with the bulk of the assumptions of standard Keynesian macroeconomics. Above all, they do not believe it is possible to promote full employment using fiscal measures, because of compensating mechanisms, such as crowding out of private investment by the rise of public investment, or the existence of barriers such as permanent minimum frictional unemployment, or other suggested features of economic evolution, such as a long-term natural unemployment rate (see above Figure 8). Monetary measures are another matter: they may be efficient in the short-run (hence the name usually attached to the school). However, market mechanisms will tend to cancel real effects in the medium-term: in the equation of exchanges (see Section 5 above)

amount of money in circulation X velocity of circulation = total value of transactions X price level

an increase of the amount of money in circulation (or money stock) may stimulate the total value of transactions (or the real level of economic activity) in the short-run, but the effect tends to fade out and the impact to concentrate on the price level in the medium term.

The main author to develop this kind of macroeconomics along Keynesian lines, but with different conclusions, was Milton Friedman (1912-2006; Nobel Prize in Economics 1976).

In the recent decades the trend was for monetarist authors to adopt the perspectives of the new classical school on macroeconomics, contributing to the dominance of the school in the macroeconomic field.

Macroeconomics debates: neo-Keynesianism

There were also attempts to understand the stagflation phenomenon in the framework of a more traditional Keynesian perspective, leading to the development of what became known as the neo-Keynesian school.

Neo-Keynesian analysis stressed mainly the imperfection and rigidity of markets and eventual idiosyncrasy of economic agents. Thus, the existence of monopoly, oligopoly and other non-perfect competition markets, the resistance of workers to changes of nominal wages and the heterogeneity of the preferences of economic agents relating to portfolio composition are used to explain why neither the classical assumption of automatic solution of crises by market mechanisms, nor the traditional Keynesian dichotomy between unemployment situations without inflation and potentially inflationary full employment situations present an adequate model of real macroeconomic possibilities.

The main author to develop this kind of macroeconomics along Keynesian lines, but introducing the consideration of disturbing factors such as those mentioned was Edmund Phelps (USA, born 1933; Nobel Prize in Economics 2006).

Theoretical and methodological innovations: new microeconomics

Strictly speaking, new microeconomics lies outside the traditional discipline domain of economics. It applies economic techniques, especially microeconomic techniques, to non-economic problems.

These non-economic problems may, of course, belong to any theoretical or applied domain. Law enforcement, social discrimination (by race, gender, etc.) or social processes (such as finding a marriage mate) are examples of problems that have been analysed by new microeconomics.

The main early promoter of this type of analysis was Gary Becker (1930-2014; Nobel Prize in Economics 1992).

As an important example of his studies, it is possible to summarize his analysis of law enforcement. Crime is supposed to be profitable to the criminal (otherwise it would not be undertaken) and detrimental to the society (otherwise it would not be forbidden). This involves from the start a qualitative evaluation of the balance, possibly a quantitative evaluation of the individual profits of the criminal and the collective costs for the society (this quantitative evaluation may face difficulties, similar to those discussed in Sections 3 to 5 concerning neoclassical analysis of utility). Furthermore, it must be supposed that the costs of crime to the society are high enough to justify its formal definition, the formal enactment of penalties and the creation of an apparatus (police, courts, prisons, etc.) to dissuade potential criminals and to punish actual criminals. This apparatus also has a cost, corresponding to the resources allocated to its functioning. Traditional discussion of crime and punishment focus on the dissuasion (potential criminals will be deterred from crime by the threat of punishment) and retribution (actual criminals should suffer a punishment equivalent to the harm caused to the society) arguments for the police and judicial apparatus. New microeconomics introduces a new perspective: from the criminal point of view, to compare the profit from the crime to its expected penalty, which is the product of the probability to be caught (which depends on the efficiency of the repression apparatus) and the cost of the announced punishment; from the society point of view, to compare the gain from the reduction of the cost resulting from the crime to the effective cost of maintaining the police and judicial apparatus. Needless to say, the rational criminal will commit the crime if the profit exceeds the expected penalty; and the rational public manager will finance the dissuasion and punishment apparatus till its cost will exceed the gain from the reduction of crime it ensures.

Theoretical and methodological innovations: neo-institutionalism

No one ever denied that institutions are a crucial element of economic life. However, the study of institutions and mainstream economics went diverging paths for most of the evolution of the discipline.

Integration of theory of institutions with the second neoclassical synthesis and further developments of economics is the goal of what may be called neo-institutionalism.

The earliest step of this approach was the discussion of the choice between internal production and outsourcing by Ronald Coase (1910-2013; Nobel Prize in Economics 1991).

Division of labour was considered a very important factor to improve productivity, especially since this relation was pointed out by Adam Smith. However, the distinction between division of labour among different production units or regions and division of labour among sections or workers within a productive unit was sometimes blurred and, above all, not really explained.

Ronald Coase overcame this situation analysing the decision to produce internally or to outsource a given activity as the result of comparison of administration costs, that is to say costs to organize internal production and pay for the resources to be used, and transaction costs, that is to say costs, not only to pay the outsourced commodity or service in the market, but also to ensure and control the flow and quality of the supply of the outsourced activities.

Further important developments on this topic were presented by Oliver Williamson (USA, 1932-2020; Nobel Prize in Economics 2009).

Examples of other topics studied by neo-institutionalist authors are:

• decision-making within organizations — the main contribution on this topic was presented by Herbert Simon (USA, 1916-2001; Nobel Prize in Economics 1978)

• the constitutional bases for economic and political decision-making – the main contribution on this topic was presented by James Buchanan (USA, 1919-2013; Nobel Prize in Economics 1986);

• contract theory – the main contributions on this topic were presented by Oliver Hart (Great Britain, later USA, 1948; Nobel Prize in Economics 2016) and Bengt Holmström (Finland, later USA, 1949; Nobel Prize in Economics 2016).

Theoretical and methodological innovations: evolutionism

Once more, it is possible to say that no one ever denied that economies changed along time and that the study of economic history is an important field. However, the study of economic epochs and mainstream economics went diverging paths for most of the evolution of the discipline, although some authors believed the identification of relevant economic epochs should be the most important task of economic science, and others attempted to merge the identification of relevant economic epochs and mainstream analysis of the current economic system (the most important case, Karl Marx,

has been already mentioned in Section 7 above; it is easy to understand how the association of his theories with socialism hindered their acceptance in later mainstream economics).

Integration of economic history with the second neoclassical synthesis and further developments of economics is the goal of what may be called evolutionism. As noted above (Section 9), the work of Joseph Schumpeter may be pointed out as a very important inspiration to this current of economic thought.

Robert Fogel (USA, 1927-2013; Nobel Prize in Economics 1992) and Douglass North (USA, 1920-2015; Nobel Prize in Economics 1992) may be mentioned as the leading figures of the contemporary effort to link economic history and mainstream economics.

Theoretical and methodological innovations: experimental economics

As already pointed out above, economics used from its beginnings (the times when it was usually called political economy) two methodologies:

• deduction, that is to say the attempt to build economic reasoning in the model of mathematics, starting from postulates, which are supposed to summarize relevant regularities of reality, and deducting from them the main features to be expected to be found in economic life – the main example presented above is Nassau Senior's attempt to deduct all political economy from his four postulates (see Section 2 for the postulates and Section 6 for their use to discuss the question of the stationary state);

• induction, that is to say, the attempt to identify regularities in economic phenomena based in the comparison of empirical, usually mainly historical, material – the main example presented above is Karl Marx's attempt to identify the main regularities of historical economic evolution and epochs of economic development (see Section 7).

In this framework, it was traditionally believed that laboratory experiments were outside the possibilities of economics, because, unlike what happened with most physical sciences, it was impossible to design these experiments without unacceptable disturbing factors.

This perspective has been challanged by the methodological current usually called experimental economics. These authors believe it is possible to perform induction on the basis, not of historical material, but of performances in playing roles in experiments, usually designed and interpreted in the framework of game theory. The main promoter of such work was Vernon Smith (USA, born 1927; Nobel Prize in Economics 2002).

Experimental economics was linked with mechanism design in the work of Leonid Hurwicz (Russia, later USA, 1917-2008; Nobel Prize in Economics 2007), Eric Maskin (USA, born 1950; Nobel Prize in Economics 2007) and Roger Myerson (USA, born 1951; Nobel Prize in Economics 2007).

Experimental economics was linked to the study of development in the work of Abhijit Baneyee (India, later USA, 1961; Nobel Prize in Economics 2019), Esther Duflo (France, later USA, 1972; Nobel Prize in Economics 2019) and Michel Kramer (USA, 1964; Nobel Prize in Economics 2019).

Theoretical and methodological innovations: behavioural economics

No one ever denied it is necessary to take into account the effects of psychological factors in economic behaviour. However, the traditional view about the separation of disciplinary fields sustained a clear distinction between the two domains. To sum up, economists had to consider psychological factors, but psychology was not their disciplinary domain, it was the field of different specialists.

This separation has been put in question in recent decades, and efforts were made to merge the study of economics and of psychological factors that influence economic behaviour. Daniel Kahneman (Palestine, later USA, 1934; Nobel Prize in Economics 2002) and Richard Thaler (USA, 1945; Nobel Prize in Economics 2017) may be mentioned as the main authors in this endeavour.

Behavioural economics calls attention mainly to two questions:

• Incomplete or asymmetric information – Economic agents do not possess full information about goods and services, prices, markets, etc.. As a consequence, decisions may differ from what a traditional neoclassical model assuming perfect information would suggest. Consideration of this question goes back to the work of James A. Mirrlees (Great Britain, 1936-2018; Nobel Prize in Economics 1996), William Vickrey (Canada, later USA, 1914-1996; Nobel Prize in Economics 1996), George A. Akerlof (USA, 1940; Nobel Prize in Economics 2001), A. Michael Spence (USA, 1943; Nobel Prize in Economics 2001) and Joseph E. Stiglitz (USA, 1943; Nobel Prize in Economics 2001).

• Bounded rationality – Economic agents are constrained by their knowledge, experience, cultural background, etc.. As a consequence, decisions may differ from what a traditional neoclassical model assuming perfect rationality would suggest.

It may be noticed that this second critique to traditional models may miss a bit the point. Traditional neoclassical models assume that, given some preferences and restrictions resulting mainly from budget constraints, consumers will choose the most preferred of the feasible situations. In a certain sense, this is a tautology: if a consumer makes a choice among feasible situations, it may be inferred this was the preferred situation. Explanation of preferences was outside the domain of economics. In other words, preferences have nothing to do with rationality and they should be explained by psychology (not economics) on the basis of knowledge, experience, cultural background, etc. of the economic agent. Only ignorance of restrictions and possibilities (which may be included in the concept of incomplete information) might be considered lack of rationality in a traditional framework.

In practical terms, behavioural economics suggested new ways to organize economic procedures, often in the framework of game theory. The contributions of Alvin Roth (USA, 1951; Nobel

Prize in Economics 2012), Lloyd Shapley (USA, 1923; Nobel Prize in Economics 2012), Paul Milgrom (USA, 1948; Nobel Prize in Economics 2020) and Robert Wilson (USA, 1937; Nobel Prize in Economics 2020) may be underlined in this context.

Traditional fields of theoretical and applied economics

Developments in traditional fields of theoretical and applied economics focused mainly in:

• Financial markets — either from a macroeconomic perspective with James Tobin (USA, 1918-2002; Nobel Prize in Economics 1981) and Franco Modigliani (Italy, later USA, 1918-2003; Nobel Prize in Economics 1985); from a market perspective with Harry Markowitz (USA, 1927-2023; Nobel Prize in Economics 1990), Merton Miller (USA, 1923-2000; Nobel Prize in Economics 1990), William Sharpe (USA, born 1934; Nobel Prize in Economics 1990), Robert Merton (USA, 1944-2003; Nobel Prize in Economics 1997), Myron Scholes (Canada, later USA, born 1941; Nobel Prize in Economics 1997), Eugene Fama (USA, born 1939; Nobel Prize in Economics 2013), Lars Peter Hansen (USA, born 1952; Nobel Prize in Economics 2013), Robert Shiller (USA, born 1946; Nobel Prize in Economics 2013), Paul Milgrom (USA, born 1948; Nobel Prize in Economics 2020) and Robert Wilson (USA, born 1937; Nobel Prize in Economics 2020); or from a banking perspective with Ben Bernanke (USA, born 1953; Nobel Prize in Economics 2022), Douglas Diamond (USA, born 1953; Nobel Prize in Economics 2022) and Philip Dybvig (USA, born 1955; Nobel Prize in Economics 2022).

• Market functioning and resource allocation — with Tjalling Koopmans (Netherlands, later USA, 1910-1985; Nobel Prize in Economics 1975), George Stigler (USA, 1911-1991; Nobel Prize in Economics 1982), Maurice Allais (France, 1911-2010; Nobel Prize in Economics 1988), Peter Diamond (USA, born 1940; Nobel Prize in Economics 2010), Dale Mortensen (USA, 1939-2014; Nobel Prize in Economics 2010), Christopher Pissarides (Cyprus, later Great Britain, born 1948; Nobel Prize in Economics 2010), Jean Tirole (France, born 1953; Nobel Prize in Economics 2014) and Claudia Goldin (USA, born 1946; Nobel Prize in Economics 2023).

• International trade — with Bertil Ohlin (Sweden, 1899-1979; Nobel Prize in Economics 1977), James Meade (Great Britain, 1907-1995; Nobel Prize in Economics 1977) and Paul Krugman (USA; New York, born 1953; Nobel Prize in Economics 2008).

Part III – Can socialism work ?

11 — Debates about the feasibility of socialism in the early 20th century

The early 20th century witnessed a debate on the possibility of a socialist (meaning centrally planned) economy work. The debate took place in the framework of the first neoclassical synthesis.

Two main different perspectives were presented on the subject.

• Enrico Barone argued that central planning was possible given two conditions:

1) the central planning office should act as a Walras' auctioneer (that is to say an entity that announces prices and checks if the demand and supply of each commodity are equal, adjusting the prices until such balancing condition is fulfilled; see Section 5 above);

2) the management of the (state owned) firms should proceed as if in the context of a competitive market (that is to say disregarding concrete situations of monopoly or oligopoly) to ensure maximum efficiency by making prices and marginal costs equal (see Cournot's analysis of markets in Section 3 above).

• Ludwig von Mises argued that central planning was not possible, because of bureaucratic overwhelming of the central planning office.

Enrico Barone's argument stressed that the theoretical apparatus of the first neoclassical synthesis was, in a certain sense, universal; that is to say, that prices, the interest rate, etc. are not a particularity of market capitalism, they are needed to understand the functioning and to ensure efficiency in all economic systems (at least modern, complex, economic systems). Of course, the distribution of property may change (thus, land and the produced means of production may be nationalized as socialists claimed) and the distribution of income may change (thus, profits may no longer accrue to private capitalists, but be at the disposal of the government and be used to improve the standard of living of the working masses). However, good management rules do not change. Barone especially stressed that investment to accumulate produced resources at least at the same rate as population increases must be a concern of the central planners.

Ludwig von Mises' argument stressed the costs involved in the planning process (and its unfeasibility, in spite of the progress of bureaucratic procedures; of course, today's means of computation and communication were not even a dream at the time).

Although, of course, more sympathetic to Enrico Barone's argument than to Ludwig von Mises' argument, socialists at the time preferred to stress the possibilities a new economic system, based on the collective ownership of the means of production and the central planning of economic activity

opened to avoid poverty and the cyclical fluctuations of economic activity that were inherent to the anarchic functioning of market capitalism. Notice that, in this context, anarchy means the absence of a central authority, not the absence of order. It was clear, from all that was presented in Part I, that market capitalism led to some kind of order, even if it was an undesirable one from the socialist viewpoint (and, of course, as an ideological argument, it was often unduly suggested that market capitalism anarchy meant chaos, that is to say the absence of order).

As pointed out above (Section 8), the First World War provided a glimpse of what extensive planning of economic activity might look like. Of course, neither the planners of the sectors of the economy linked to the military effort wanted to promote a test of the viability of socialism, nor socialists wanted the experiment to be considered a preview of what a socialist economy would be. However, the spread of state intervention in economic life was not completely reversed in the post-war years (for reasons already pointed out above; see Section 8) and, as in the wake of the First World War socialists came for the first time to power for significant periods, the moment had come to put socialist proposals to the test of the real world.

12 — Attempts to build socialist societies during the interwar period

The practical programs that, on one hand, reformist or social democrat socialists, and, on the other hand, revolutionary or communist socialists (for the distinction, see Section 7 above) tried to implement when confronted with the challenges of power in the inter-war period were quite different.

Reformist socialism in the interwar period

In the inter-war period, reformist socialists participated in the government in several countries (among them some of the main European capitalist powers – Germany, Great Britain and France).

The programs of the governments of reformist socialist parties included, as a rule, attempts to put in practice:

• redistribution of income and wealth mainly by means of progressive taxation;

• protection against the hazards of unemployment, disease and handicaps and implementing of a system of retirement pensions mainly by means of social security systems;

• state control of key sectors of the economy and big firms mainly by means of nationalizations;

• imperative planning of the nationalized sector of the economy and indicative planning of the whole economy.

According to their principles, the governments of reformist socialist parties respected democratic mechanisms. As a consequence, transformations brought about by the governments of

reformist socialist parties seemed always to be threatened by a possible change of government as a consequence of election results. However, in the long run these transformations tended to become permanent and gradually changed structural features of capitalist societies.

Revolutionary socialism in the interwar period

In the inter-war period, revolutionary socialists took power permanently only in Russia, that became the Union of Socialist Soviet Republics (USSR or Soviet Union) in 1922.

According to their principles, they implemented the dictatorship of the proletariat. This meant that there was no possibility of change of government as a consequence of election results.

However, Russia was not a highly developed country. As it was stated in classical socialist theory that socialism was only possible as a transformation of highly advanced capitalist societies, there followed a dilemma:

• should the communist government promote capitalist development, so that building of a socialist society might become possible later ?

• or was it possible to use socialism as an instrument to develop the country ?

The dilemma led to fierce debates and political hesitations during the 1920s. In the late 1920s, the political answer was favourable to the idea that socialism might be used as development instrument. In practice:

• all physical means of production (land and capital) were nationalized;

• all economic activity was formally subject to central planning;

• investment, the heavy industry sectors and the production of key raw materials and intermediate goods was given priority over consumption, the light industry and agriculture sectors and the production of final consumption goods as the way to develop the economy.

Thus, socialism came to be used an instrument of development (against the expectations of classical socialists), at the cost of some immediate sacrifice of the standards of living (a sacrifice that was expected to be transitory, of course).

The task of planning proved feasible (against Ludwig von Mises expectations), but did not take the shape suggested by Enrico Barone. It took the form of material balances, that is to say lists of supply sources and consumer outlets for each commodity, which were supposed to balance in physical terms.

In practice, these material balances were drawn with detail for important commodities (main raw materials and intermediate and investment goods) and somewhat roughly for other commodities.

The working of the economy was supported by market mechanisms, with prices established by the central planning authorities, at the level of the distribution of consumer goods.

The whole process was simplified by the priority given to investment and to sectors that produced key raw materials and intermediate and capital goods.

It is possible to say that this attempt to use socialism (or, at least, state ownership of the means of production and central planning of the economy) as a development tool was a success. The Soviet Union gradually became an industrialized and no longer a predominantly agricultural country, as Russia had been before the First World War. These new capacities were demonstrated during the Second World War, when the Soviet Union was able to resist to the German invasion and contribute to the defeat of Germany (although it is fair to say it received a crucial support in economic terms from its allies, especially the United States of America).

Part IV – Can socialism survive ?

13 — Evolution of socialism in the post-Second World War period

In the post-Second World War period, reformist socialism continued to thrive and contributed to what was called at the epoch the mixed capitalist economic system (see above Section 9).

On the other hand, revolutionary socialism went from expansion (mainly in the 1940s) to collapse (in the 1980s).

Reformist socialism in the post-Second World War period

The practical efforts and results of reformist socialists in the post-Second World War period were very similar to what was presented above for the interwar period. In a certain sense, the main difference was the spread of eventual presence of reformist socialist parties in power to almost all democratic countries, with the conspicuous exception of the United States of America.

It is possible to say that some socialist proposals, such as progressive taxation and social security systems, became an almost essential part of the mixed capitalist economies that developed, especially in Europe, in the post-Second World War years; and even the existence of a significant productive public sector in the economy and some degree of planning as a background to economic policy became for a while widely present (and perfectly respectable in doctrinal terms) as an complement to market capitalism.

The impact of neo-liberalism

Things changed from the 1980s on, as neo-liberalism (see Section 9 above) came to challenge all socialist elements embedded in mixed capitalist economies. In practice, progressive taxation and social security systems survived the challenge, but significant productive public sectors and planning schemes were dismantled almost everywhere.

Expansion of revolutionary socialism in the post-Second World War period

Governments of revolutionary socialist, or communist, parties also spread, especially in the wake of the Second World War. Expansion in the 1940s took place mainly in Eastern Europe, as a result of the advance of the Soviet army to countries formerly occupied by Germany, and in China, as a result of a civil war against the nationalist government that had contributed to the defeat of Japan (the nationalist government was able to retain the control of Taiwan). North Korea, North Vietnam, later the whole of Vietnam, Cambodia and Cuba also became by then or in the following decades centrally planned economies with political regimes of dictatorship of the proletariat fully controlled by communist parties. Other countries, especially in Africa, Asia and Latin America, especially in the wake of decolonization, also experimented similar economic and political regimes, at least for some periods.

It is interesting to notice that most of these countries were not medium developed economies, let alone highly developed economies (exceptions existed only in Eastern Europe, the most significant being Czechoslovakia and Eastern Germany). This means that this extension of revolutionary socialism did not follow the classical blueprint of socialism as a result of capitalist development, but the Soviet interwar blueprint of socialism as a way to development. As might be expected, there followed attempts to repeat Soviet experiment of socialism as an instrument of development in most of the countries where communist governments came to power (according to a Chinese slogan of the time, “Soviets are the best teachers; we must attend their school”). It may be added that success was similar, although hopes of very quick industrialization in the less developed countries were usually deceived.

However, both the fact that some of the countries where communist governments came to power were already at least medium developed and the very success of the development policy pursued in Soviet Union and other communist countries raised new problems: planning in advanced socialist economies (supposedly heading now to communism, that is to say, able to profit from previous development, already non-capitalist, to provide high standards of life to their populations) was not as simple as planning to take-off industrialization processes.

This led to theoretical debates and political hesitations mainly during the late 1950s and early 1960s:

• On one side, some advocated the switch to some kind of market economic calculation as a planning instrument (in a certain sense, putting in practice what had been already suggested by Enrico Barone in the early 20th century, as explained in Section 11 above).

• On the other side, some advocated improvements in planning techniques based in theoretical (especially input-output analysis) and technological (especially computation) novelties. Among the

economists that contributed to this approach, mention should be made of Leonid Kantorovich (Russia / USSR, 1912-1986; Nobel Prize in Economics 1975).

At first, reforms following the switch to market economic calculation seemed to win the ground. However, from the mid-1960s on, the practical answer favoured the theoretical and technological novelties and, for a while (until the late 1970s), it seemed to be a success. Especially important was the fact that socialist centrally planned economies avoided the difficulties of stagflation in the mid-1970s.

Collapse of revolutionary socialism

However, success did not last. In the late 1970s and early 1980s, unfavourable comparisons with the performance of mixed capitalist economies began to appear, critical appraisals of the policies followed, proposals to reform the socialist system and to soften the communist dictatorship of the proletariat proliferated. In the USSR, proposals to reform the socialist system were called ‘perestroika’ and proposals to soften the communist dictatorship of the proletariat were called ‘glasnost’; there were attempts to put ‘perestroika’ and ‘glasnost’ to test, but they completely failed. From the late 1980s on, centrally planned economies and political regimes controlled by communist parties collapsed in Eastern Europe and the USSR, which also collapsed itself and was divided into the republics formerly confederated in the Soviet Union.

China underwent a different evolution. During the 1980s, the country was divided into a bulk of regions with centrally planned economy and some special economic areas with market capitalist economies, in an attempt to experiment with both ways into development already proposed in USSR in the 1920s (see Section 12 above; according to the new slogan of the time, “It doesn’t matter whether a cat is black or white, as long as it catches mice”). This ‘one country, two systems’ policy completely failed and was abandoned (although the slogan was retained to describe the autonomy granted to the ex-British colony of Hong Kong and the ex-Portuguese colony of Macao when they came back by agreement to Chinese administration in the late 1990s; it was hoped that it would also provide the scheme for the peaceful reunification with Taiwan, but this move did not materialize until this day, 2024). From the early 1990s on, reforms led to a true capitalist economy, although highly controlled by the (still communist) government.

Other countries with centrally planned economies and political regimes of dictatorship of the proletariat fully controlled by communist parties followed either the Eastern European or the Chinese path, with the conspicuous exception of North Korea, which retained the centrally planned economy and the political regime of dictatorship of the proletariat fully controlled by the communist party to this day (2024).

14 — The end of history ?

Thus, when the 20th century (and the second millennium) were coming to an end, the collapse of centrally planned economies and political regimes controlled by communist parties and the rise of neo-liberalism seemed to herald the end of socialism and the complete triumph of market capitalism. This led some authors to come up with the idea that history (in the sense of changes resulting from opposite views on what the economy and society should be) had come to an end and mankind had entered a new era of peace and prosperity under a market capitalist economy of world scope.

Other authors tried to rescue reformist socialism putting forward what became known as the third way proposals, that is to say, attempts to devise an economic system mid way between collapsing centrally planned economies and reviving market capitalism without much intervention of the government (and, at least in paper, not just the survival of what had become the mixed capitalism of post-Second World War years).

The result of these debates and attempts at structural changes are still in the making. And it is important to stress that they face new intellectual and practical challenges, as the ecological imbalances and the clash of civilizations rise as the fundamental problems of today's world.

Part V – Can mankind survive ?

Doctrinal debates seem less alive in the early 21st century. Market capitalism seems clearly established as the economic system of the world economy and central planning socialism seems clearly rejected as an inefficient economic system.

However, two problems remain crucial for the future of mankind:

• ecological disequilibria;

• the clash of civilizations.

What can economics say about them ?

15 — Ecological disequilibria

The economic questions raised by the ecological disequilibria that characterize today's world result mainly from the fact that these ecological disequilibria are the consequence of market failures, that is to say, of situations in which market mechanisms are unable to produce an efficient economic outcome.

The existence of such situations is not a novelty in economic analysis. To remind the main steps considered above, it was already acknowledged by Adam Smith, as explained in Section 1; it was explained by Alfred Marshall as a result of external effects, as explained in Section 4; and it was examined in the framework of Vilfredo Pareto's definition of efficiency, as explained in Section 5. Today's novelty is the importance of the impact of market failures specifically related to ecological disequilibria in human life at large.

This impact raises at least two important problems:

• a measurement problem – how to ascertain quantitatively the economic impact of these disequilibria;

• a remedy problem – how to design economic mechanisms to solve these disequilibria.

Measurement of the economic impact of ecological disequilibria led some authors to call for the replacement of standard national accounting, because it is considered unable to tackle this task. This may be a wrong way to deal with the problem. The right conceptual framework may be the distinction between gross and net product or income, a conceptual distinction clearly presented in classical national accounting, but often disregarded because of the difficulty of a rigorous measurement of depreciation, that is to say, the difference between gross and net product or income. Gross product (or income) is important because it measures the level of economic activity, and the level of economic activity has important consequences, such as the level of employment of resources, especially labour (as pointed out by the contribution of Keynes; see Section 8). Net income (or product) is important,

because it measures the amount of resources that may be consumed or newly invested without hindering the amount of remaining available resources and the level of future economic activity. Depreciation of produced resources and (what is mainly at stake when dealing with ecological disequilibria) depreciation of natural resources must be deducted from gross product or income to obtain net product or income. As a market evaluation of depreciation is usually difficult or impossible to obtain, it is often ignored. However, it is crucial to have an assessment of the economic impact of ecological disequilibria (and of the results of possible solutions). Evaluation or computation difficulties cannot be an excuse to renounce the task.

To design economic mechanisms that solve these disequilibria may be even more difficult. Pure market mechanisms are certainly not the answer, because of the very nature of the problem: market failure resulting from negative external effects. Pure traditional routine or command mechanisms may also be inefficient, because of their inability to cope with innovation and bureaucratic complexity. Internalization of the external costs, that is to say, some mixed mechanism implying the payment by economic agents of the impact of their activity that is not automatically paid in the market may be a hint at the solution.

Among the authors that attempted to develop the links between economic and ecological questions, mention should be made of Elinor Ostrom (USA; 1933-2012; Nobel Prize in Economics 2009) and William Nordhaus (USA, 1941; Nobel Prize in Economics 2018).

Up to economists of the future to continue this theoretical and practical effort.

16 — The clash of civilizations

The economic questions raised by the potential clash of civilizations that characterize today's world may be understood in the framework of the contribution of game theory, already mentioned in Section 9 above, especially the theory of non-cooperative games developed by John Harsanyi (Hungary, later USA, 1920-2000; Nobel Prize in Economics 1994), John Nash (USA, 1928-2015; Nobel Prize in Economics 1994), Reinhard Selten (Germany [Poland], later USA, 1930-2016; Nobel Prize in Economics 1994), Robert Aumann (Germany, later Israel, born 1930; Nobel Prize in Economics 2005) and Thomas Schelling (USA, 1921-2016; Nobel Prize in Economics 2005).

As already pointed out in the introduction, the contemporary world economy was the result of the merger of several former self-sufficient economic spaces. This merger, and later deepening of economic links among different regions in the contemporary world economy (what is often called globalization), implied also the deepening of the relations among former societies in non-economic aspects of social life. At first, the fact that the merger of economic (and non-economic) spaces was not symmetrical, but quite unbalanced, because the formation of the contemporary world economy was mainly the spread of the trade and production networks of the Euro-Atlantic (often called Western) economy, implied a Western political and cultural hegemony in the world. However, things are

changing, and nowadays other countries and civilizations are claiming equal political and cultural influence (or even the reversal of Western hegemony and its replacement by their own supremacy).

The crucial question may be formulated as follows: will the contemporary world society find a peaceful balance among different polities and cultures, or will it be plagued by a clash of civilizations that will harm, not only the peaceful development of all peoples, but also the most needed cooperation among them to solve common problems, such as the ecological disequilibria mentioned above ?

In economic (and mathematical) terms, this may be interpreted as an instance of a game in which players must choose between cooperative and non-cooperative strategies, non-cooperative strategies giving better results for each of the players if all the other follow a cooperative strategy, but general non-cooperation leading to collective disaster.

It is, of course, the action of the peoples of the world that will determine the outcome of this existential game. And it is the economist's task to enlighten the choices to be made.

Bibliographical suggestions

Elementary textbook — Robert Ekelund, Robert Hébert, *A History of Economic Theory and Method*, McGraw-Hill (6th edition, 2013).

Intermediate textbook — Roger Backhouse, *The Penguin History of Economics*, Penguin (2002).

On transitions to capitalism — Ana Bela Nunes, Nuno Valério. "Three paths to capitalism: an agenda for research" in Charles Clark and Janina Rosicka (editors) – Economic transition in historical perspective. Lessons from the history of economics – Ashgate, 2001, pages 101-113.

On crises — Ana Bela Nunes, Nuno Valério. "Five ways out of depression: 19th-20th centuries experience and 21st century prospects" in Claude Diebolt e Jean-Louis Escudier (editors) – La croissance économique dans le long terme – formes historiques et prospective – Harmattan, Paris, 2002, pages 129-144.

On problems of economic growth — Joseph Schumpeter. “Theoretical Problems of Economic Growth”, in The Journal of Economic History, volume 7, 1947, pages 1-9.

On ecological questions — Ana Bela Nunes; Nuno Valério. “Ecology versus market capitalism: a threat for the 21st century ?” in Gilles Rasselet (editor) – Dynamique et transformations du capitalisme – L’Harmattan, Paris, 2007, pages 247-266.

Appendix — The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel

1969 — Ragnar Frisch (Norway, 1895-1973) and Jan Tinbergen (Netherlands, 1903-1994) "for having developed and applied dynamic models for the analysis of economic processes".

1970 — Paul Samuelson (USA, 1915-2009) "for the scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economic science".

1971 — Simon Kuznets (Russia [Belarus], later USA, 1901-1985) "for his empirically founded interpretation of economic growth which has led to new and deepened insight into the economic and social structure and process of development".

1972 — John Hicks (Great Britain, 1904-1989) and Kenneth Arrow (USA, 1921-2017) "for their pioneering contributions to general economic equilibrium theory and welfare theory".

1973 — Wassily Leontief (Russia, later USA, 1906-1999) "for the development of the input-output method and for its application to important economic problems".

1974 — Gunnar Myrdal (Sweden, 1898-1987) and Friedrich von Hayek (Austria, later USA and Great Britain, 1899-1992) "for their pioneering work in the theory of money and economic fluctuations and for their penetrating analysis of the interdependence of economic, social and institutional phenomena".

1975 — Leonid Kantorovich (Russia / USSR, 1912-1986) and Tjalling Koopmans (Netherlands, later USA, 1910-1985) "for their contributions to the theory of optimum allocation of resources".

1976 — Milton Friedman (USA, 1912-2006) "for his achievements in the fields of consumption analysis, monetary history and theory and for his demonstration of the complexity of stabilization policy".

1977 — Bertil Ohlin (Sweden, 1899-1979) and James Meade (Great Britain, 1907-1995) "for their pathbreaking contribution to the theory of international trade and international capital movements".

1978 — Herbert Simon (USA, 1916-2001) "for his pioneering research into the decision-making process within economic organizations".

1979 — Theodore Schultz (USA, 1902-1998) and Arthur Lewis (British West Indies [Santa Lucia], later USA, 1915-1991) "for their pioneering research into economic development research with particular consideration of the problems of developing countries".

1980 — Lawrence Klein (USA, 1920-2013) "for the creation of econometric models and the application to the analysis of economic fluctuations and economic policies".

1981 — James Tobin (USA, 1918-2002) "for his analysis of financial markets and their relations to expenditure decisions, employment, production and prices".

1982 — George Stigler (USA, 1911-1991) "for his seminal studies of industrial structures, functioning of markets and causes and effects of public regulation".

1983 — Gerard Debreu (France, later USA, 1921-2004) "for having incorporated new analytical methods into economic theory and for his rigorous reformulation of the theory of general equilibrium".

1984 — Richard Stone (Great Britain, 1913-1991) "for having made fundamental contributions to the development of systems of national accounts and hence greatly improved the basis for empirical economic analysis".

1985 — Franco Modigliani (Italy, later USA, 1918-2003) "for his pioneering analyses of saving and of financial markets".

1986 — James Buchanan (USA, 1919-2013) "for his development of the contractual and constitutional bases for the theory of economic and political decision-making".

1987 — Robert Solow (USA, born 1924) "for his contributions to the theory of economic growth".

1988 — Maurice Allais (France, 1911-2010) "for his pioneering contributions to the theory of markets and efficient utilization of resources".

1989 — Trygve Haavelmo (Norway, 1911-1999) "for his clarification of the probability theory foundations of econometrics and his analyses of simultaneous economic structures".

1990 — Harry Markowitz (USA, 1927-2023), Merton Miller (USA, 1923-2000) and William Sharpe (USA, 1934) "for their pioneering work in the theory of financial economics".

1991 — Ronald Coase (Great Britain, later USA, 1910-2013) "for his discovery and clarification of the significance of transaction costs and property rights for the institutional structure and functioning of the economy".

1992 — Gary Becker (USA, 1930-2014) "for having extended the domain of microeconomic analysis to a wide range of human behaviour and interaction, including nonmarket behaviour".

1993 — Robert Fogel (USA, 1927-2013) and Douglass North (USA, 1920-2015) "for having renewed research in economic history by applying economic theory and quantitative methods in order to explain economic and institutional change".

1994 — John Harsanyi (Hungary, later USA, 1920-2000), John Nash (USA, 1928-2015) and Reinhard Selten (Germany [Poland], 1930-2016) "for their pioneering analysis of equilibria in the theory of non-cooperative games".

1995 — Robert Lucas (USA, 1937-2023) "for having developed and applied the hypothesis of rational expectations, and thereby having transformed macroeconomic analysis and deepened our understanding of economic policy".

1996 — James Mirrlees (Great Britain, 1936-2018) and William Vickrey (Canada, later USA, 1914-1996) "for their fundamental contributions to the economic theory of incentives under asymmetric information".

1997 — Robert Merton (USA, 1944-2003) and Myron Scholes (Canada, later USA, born 1941) "for a new method to determine the value of derivatives".

1998 — Amartya Sen (India, later Great Britain, born 1933) "for his contributions to welfare economics".

1999 — Robert Mundell (Canada, later USA, 1932-2021) "for his analysis of monetary and fiscal policy under different exchange rate regimes and his analysis of optimum currency areas".

2000 — James Heckman (USA, born 1944) "for his development of theory and methods for analyzing selective samples" and Daniel McFadden (USA, born 1937) "for his development of theory and methods for analyzing discrete choice".

2001 — George Akerlof (USA, born 1940), Michael Spence (USA, born 1943) and Joseph Stiglitz (USA, born 1943) "for their analyses of markets with asymmetric information".

2002 — Daniel Kahneman (Palestine [Israel], later USA, born 1934) "for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty" and Vernon Smith (USA, born 1927) "for having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms".

2003 — Robert Engle (USA, born 1942) "for methods of analyzing economic time series with time-varying volatility (ARCH)" and Clive Granger (Great Britain, later USA, 1934-2009) "for methods of analyzing economic time series with common trends (cointegration)".

2004 — Finn Kydland (Norway, later USA, born 1943) and Edward Prescott (USA, 1940-2022) "for their contributions to dynamic macroeconomics: the time consistency of economic policy and the driving forces behind business cycles".

2005 — Robert Aumann (Germany, later Israel, born 1930) and Thomas Schelling (USA, 1921-2016) "for having enhanced our understanding of conflict and cooperation through game-theory analysis".

2006 — Edmund Phelps (USA, born 1933) "for his analysis of intertemporal tradeoffs in macroeconomic policy".

2007 — Leonid Hurwicz (Russia, later USA, 1917-2008), Eric Maskin (USA, born 1950) and Roger Myerson (USA, born 1951) "for having laid the foundations of mechanism design theory".

2008 — Paul Krugman (USA; New York, born 1953) "for his analysis of trade patterns and location of economic activity".

2009 — Elinor Ostrom (USA, 1933-2012) "for her analysis of economic governance, especially the commons" and Oliver Williamson (USA, 1932-2020) "for his analysis of economic governance, especially the boundaries of the firm".

2010 — Peter Diamond (USA, born 1940), Dale Mortensen (USA, 1939-2014) and Christopher Pissarides (Cyprus, later Great Britain, born 1948) "for their analysis of markets with search frictions".

2011 — Thomas Sargent (USA, born 1943) and Christopher Sims (USA, born 1942) "for their empirical research on cause and effect in the macroeconomy".

2012 — Alvin Roth (USA, born 1951) and Lloyd Shapley (USA, 1923-2016) "for the theory of stable allocations and the practice of market design".

2013 — Eugene Fama (USA, born 1939), Lars Peter Hansen (USA, born 1952) and Robert Shiller (USA, born 1946) “for their empirical analysis of asset prices”.

2014 — Jean Tirole (France, born 1953) “for his analysis of market power and regulation”.

2015 — Angus Deaton (Great Britain, later USA, born 1945) "for his analysis of consumption, poverty, and welfare".

2016 — Oliver Hart (Great Britain, later USA, born 1948) and Bengt Holmström (Finland, later USA, born 1949) “for their contribution to contract theory”.

2017 — Richard Thaler (USA, born 1945) “for his contribution to behavioural economics”.

2018 — William Nordhaus (USA, born 1941) “for integrating climatic change into long run macroeconomic analysis” and Paul Romer (USA, born 1955) “for integrating technological innovation into long run macroeconomic analysis”.

2019 — Abhijit Baneyee (India, later USA, born 1961), Esther Duflo (France, later USA, born 1972) and Michel Kramer (USA, born 1964) “for their experimental approach to alleviating global poverty”.

2020 — Paul Milgrom (USA, born 1948) and Robert Wilson (USA, born 1937) “for improvement to auction theory and inventions of new auction formats”.

2021 — David Card (Canada, later USA, born 1956) “for his empirical contributions to labour economics” and Joshua Angrist (USA, later Israel, born 1960) and Guido Imbens (Netherlands, later USA, born 1963) “for their methodological contributions to the analysis of causal relationships”.

2022 — Ben Bernanke (USA, born 1953), Douglas Diamond (USA, born 1953) and Philip Dybvig (USA, born 1955) “for research on banks and financial crises”.

2023 — Claudia Goldin (USA, born 1946) “for having advanced our understanding of women’s labour market outcomes”.