Chapter 1. Defining the economy

I. Substantive and Formal Definitions of Economics

II. Markets, Prices, Money

1. *Economics* and *Economy*

The two preceding definitions can apply to any economy: that of Robinson Crusoe, that of a non-market community, of a planned society, of a capitalist market economy. These are *economies* as they exist at all periods of history. Both definitions can apply without reference to prices, money, or markets. One can speak of prices in rational choice theory, but this is not necessary: Robinson Crusoe can choose without prices. A community can choose without prices.

Conversely, one can define economics as a discipline by the will to study a particular type of society: economies regulated by prices. Non-market economies have existed, and still exist very rarely. The discipline (= *economics*) was developed at the same time as the market economy was developed = an economy regulated by prices.

Two types of economists focus on this characteristic: Marx; Arrow and Hahn.

2. Marx, *Capital*, Book I, 1867: Commodities and Labour

i) Commodity and Labour

In Marxian value theory, the commodity appears as something two-faced:

- It is value in use (VU): it satisfies needs for consumption or production. It is useful.
- It is value in exchange value (VE): it exchanges in a determined proportion against other commodities.

Yet VU are incommensurable for Marx: VU comes from the physical qualities of the good. There is exchange only because these qualities differ. VU are qualitatively different: they have no common element. One can say that two apples are twice one apple, just as one can say that a distance of 2 meters between two objects is twice a distance of 1 meter between two other objects. But one cannot establish a quantitative relationship between 1 apple and 1 lemon, just as one cannot say what the distance is between an apple and the letter A. The apple and the letter A do not belong to the same space. The apple and the lemon do not have the same characteristics. They are incomparable.

At the opposite, VE differ only quantitatively. If a lemon exchanges for 2 apples, it is worth 2 apples. Their qualitative differences disappear from the standpoint of their VE. Only a quantitative difference remains.

This characteristic of commodities is also found in labour. Marx follows in the tradition of classical thought, where the exchange value of commodities is explained by the quantity of labour necessary to produce them. But he introduces a notion absent from the classical economists: abstract labour, distinct from concrete labour.

- Just as commodities have a VU, labour is concrete. Concrete labour is that which is actually done. Concrete forms of labour (producing apples or lectures) are qualitatively different and, therefore, incomparable. If producing an apple takes twice preparing a lecture, we do not know whether the apple is worth double, because we cannot compare these labour times, which are of a different nature.
- Just as commodities have a VE, there exists abstract labour, which is qualitatively homogeneous, whose only differences are quantitative. If the apple contains twice abstract labour as the lecture, then indeed its VE will be twice of the lecture.

ii) Social Division of Labour Based on Exchange

The classical economists discussed this. Ricardo speaks about labours of different qualities, which require different skills, and speaks about a cale of wages. Marx draws attention to a characteristic neither Smith nor Ricardo mention: abstract labour corresponds to a particular economic organization. To have abstract labour, and therefore VE, there must be, first, a social division of labour, and second, this social division must be based on exchange, must be a social division in a market economy.

- **Social division of labour**

In every society, there are different VU, and different useful, concrete forms of labour. Except for Robinson Crusoe, there is a social division of labour. The social division is not the technical division of the pin factory (the two can coexist). It is the specialization of economic agents in the production of a good. This is Smith's example of the baker and the butcher. Each needs the other's production for their own consumption. The circulation of VUs can take place without exchange.

Marx gives 3 examples of social division without exchange, i.e., non-market division.

a) The old Indian community: there is a social division of labour (for example, by gender) without exchange or private property. All goods are collectively appropriated and distributed according to custom. They have no VE.

b) The manufactory, in fact technical division of labour: labour is technically divided, each worker specialized in one or a few tasks. But they do not exchange their individual products: the worker at the end of the line does not buy from those who preceded him the product of their labour.

c) The rustic and patriarchal industry of a peasant family that produces for its own needs: livestock, wheat, cloth, linen, clothing, etc. These objects appear to the family as the

various products of its labour and not as commodities exchanged with one another. The family has its own division of labour, according to differences of age and sex. The head of the family assigns each member a different role in production and allocates to each the goods they may consume.

- **Exchange-based social division**

  Exchange-based division is a type of social division: concrete labour is performed not only for oneself but mainly for others.

  The difference from other forms of social division is that labour is private and independent of the labour of others.

  Private: it is carried out without social agreement. The worker does not obey orders does not check that his labour is socially approved. To work, one must have the resources necessary for work. One must have private ownership of the means of production. Not all workers can produce private labour, for lack of means of production. Only market agents (capitalists or self-employed) can. Wage-earners are not private workers.

  Independent: the decision to produce a good is made independently of others. Each produces in ignorance of what others are doing. There is no ex ante approval of decisions. It is the VE that indicates whether this private (concrete) labour becomes social (abstract) labour. If the commodity does not sell, i.e. if its VE is zero, concrete labour is not converted into socially recognized abstract labour. To study economics as an economic science is to study this type of society. The central concept of economics is VE.

  A similar analysis is found in a very different theory, general equilibrium theory, which underlies both microeconomics and a large part of contemporary macroeconomics, including part of Keynesian macroeconomics.

3. Arrow and Hahn: *General Competitive Analysis*, 1971. The Coordination of a Decentralized Economy

i) Questioning the Assumptions of Microeconomics

> Most of this book is concerned with the analysis of an idealized, decentralized economy. In particular, it is supposed that there is perfect competition, and the choices of economic agents can be deduced from certain axioms of rationality.

Why do microeconomists make these assumptions?

> It is natural and proper to ask whether an enquiry into an economy apparently so abstracted relative to the world is worthwhile.

- General (insufficient) answer: the need to simplify.

> We may answer in the usual way by drawing attention to the enormously complex nature of the material that economists study, and accordingly to the urgent need for simplification and so abstraction. This, however, leaves open the question of why the particular simplifications here used should be the appropriate ones. Our answer is somewhat different. (…)

- Answer through the history of economic science: an economy regulated by prices.

  Since Smith, economists have had an intuition: a decentralized economy, motivated by individual self-interest and guided by prices, leads to a desirable allocation of resources. That is, agents who pursue their own interest and make decisions based on prices can reach an optimal equilibrium. For Arrow and Hahn, the challenge of economic theory is to explore this idea, to establish the conditions of its validity.

ii) The Question of Chaos

This is an abstract inquiry into an imaginary (idealized) economy. We assume agents who each decide on their own, independently of the others. Can we say that the decisions they make are coherent?

• Coherent Decisions = Coordinated Decisions

Coherence is defined by its opposite: absence of coherence.

Incoherent decisions are decisions that do not allow for the survival and reproduction of society. For example, suppose that inputs are used to produce outputs, which are divided into two sets: production goods and consumption goods. Producing too many production goods, relative to resources and consumption needs, creates the risk that the production of consumption goods will not ensure the population's subsistence, which is not sustainable.

Producing only consumption goods without worrying about the replacement of production goods, is not sustainable for the future survival of society.

Many crisis situations can be understood as the result of incoherent, i.e. uncoordinated, economic decisions. Examples:

- The fall of the USSR in 1989 was not only a political matter (aspiration for freedoms) but also an economic one: priority was given to the production of production goods (the military and space program, for example), which harmed the population's consumption needs. This priority was incoherent given the population's needs.
- The mass unemployment of the 1930s: the (involuntary) unemployed wished to work in order to satisfy their consumption needs. They were prevented from doing so. This is a waste of resources: labour not used on a given day cannot be stored for the next. It is lost.

- The climate crisis: our production and consumption decisions threaten future survival. They are incoherent given our future needs.

The incoherence of decisions (i.e., badly coordinated decisions) is at best a waste, at worst a threat to survival. The coherence of economic decisions is therefore a crucial issue for any society. This question arises differently depending on whether one is in a centralized or a decentralized economy.

• Centralized or Decentralized Economy

Coherence (= coordination) is relatively easy to achieve in a centralized economy, i.e., one in which there is a single decision-making center. It only requires minimal rationality of the decision maker

This decision-maker can be an individual.

- Robinson Crusoe, if he is somewhat rational, makes the decisions that ensure his survival. If his production does not ensure his survival, it is because of poor natural conditions, not because of the incoherence of his decisions.
- The father of the peasant family will also make decisions that ensure the family's survival. Decisions that may be unequal but are not incoherent.
- The head of a firm who divides labour among employees: assigns each to a task so that it is coherent for producing the good. Not all employees are assigned to the same task.

The decision-maker can be a collective.

- A self-managed firm: decisions are made jointly, then carried out so that each person's tasks are compatible with those of others.
- Planned economies (USSR): despite the priority given to certain kinds of production, the planning office ensured that production allowed essential needs to be fulfilled. Avoiding complete incoherence.

All these economies are centralized economies: there is a decision-maker (individual or collective) assumed to have a minimum of rationality. It necessarily makes coherent decisions (or ones that avoid complete incoherence). Decisions are carried out only after their coherence has been verified.

There is another type of economic organization, the one studied by all economic theories: the decentralized organization.

- This assumes several decision-makers. At least 2, and possibly very many. In the limit, each individual can be a decision-maker.
- These decision-makers decide in isolation, independently of one another, without previous coordination.

This is the economy of general equilibrium theory (GET), which is an idealization of market society: many agents make decisions independently of one another. Producers produce without orders from consumers. Consumers demand without checking whether their demands are compatible with the economy's available resources and the needs of other consumers.

• **Chaos**

Can production decisions in a decentralized economy be coherent? i.e., can a decentralized economy survive? No one guarantees this coherence. If each producer chooses alone, there is a risk that too many producers will choose to produce a given good, which will be in excessive quantity relative to needs: a situation of waste. Above all, there is a risk that a good necessary for present or future survival will be underproduced.

Arrow and Hahn say: the immediate common-sense answer is that this economy leads to chaos. There is a strong risk that production, decided anarchically, will not guarantee the survival of society.

The paradox is that economic theory since Smith says the opposite of this common-sense answer. The coherence of decisions in a decentralized economy is not only possible. It is even the best possible. This is a surprise.

> It is important to understand how surprising this claim must appear to anyone not steeped in this tradition.

After the surprise, one must ask whether this idea can be correct. The question is theoretical. It is not yet a matter of knowing whether this idea is actually true, i.e., whether real decentralized economies, market economies, lead to an optimal equilibrium. But whether one can imagine a decentralized economy that leads to an optimal equilibrium.

> It is important not only to know whether it is true, but also whether it could be true. A good deal of what follows is concerned this last question.

iii) The Foundation of Coordination in a Decentralized Economy: Prices

• **Prices, Instruments of Coordination Without Intention**

The idea, in GET (as in most other theories), is that prices are the means of coordination: it is through prices that economic decisions enter into relation with one another, indirectly.

This is why price theory — or value theory — structures all other parts of economic theories. It is prices that ensure the coherence of decisions, that is, ultimately, the possibility of a decentralized economy.

Prices are assumed to be determined by a mechanism, that is, independently of any will, individual or collective. The coherence of decisions is ensured despite the absence of any will, or intention, to coordinate.

- It does not result from individual will: agents do not seek to make their decisions coherent with those of others: producers do not act in order to satisfy consumers' needs; consumers do not demand goods in order to provide a sale for producers, nor do they reduce their demand to allow other consumers to satisfy their needs. Agents are assumed to be motivated only by their own self-interest: no one takes in charge the need to coordinate decisions.
- It does not result from a collective will, such as that embodied by the State. In the elementary microeconomic model, there is no State. The State can be introduced, in micro- or macroeconomics, to improve insufficient coordination. But the question is whether there are circumstances in which this coordination can occur without a State.

  In a market economy, even with a State, the State does not take charge of coordinating all decisions. It leaves part of this coordination to the market, i.e., to prices.

• The Existence Result for General Equilibrium: Arrow and Debreu (1954)

The coherence of decisions is expressed by the equality between aggregate supply and demand for each good. Decisions are coherent when, for each good, the sum of supplies equals the sum of demands. General equilibrium, defined by the equality between aggregate supply and aggregate demand for each good, is the economic expression of coherent decisions, coordinated decisions.

Aggregate supplies and demands result from the choices of economic agents (consumers and producers). Each agent's choice results from a rational calculation that takes into account their characteristics (resources, called endowments, and preferences for consumers; production techniques for producers) and prices.

The theoretical question of the existence of an equilibrium is as follows: does there exist (at least) one set (= one vector) of prices (one price for each economic good) such that decisions are coherent, i.e., such that aggregate supply and aggregate demand are equal for each good?

The general equilibrium existence theorem states the conditions under which the answer is positive. When these assumptions hold, at least one equilibrium exists.

For Arrow and Hahn, as for Marx, to study economics is to study a particular type of economy, one sharing a characteristic with market economies: a decentralized economy. It is also to study it through price theory.