

tion paper. Brevity notwithstanding, its scope and probity raise the *Essai* to the level of a theoretical treatise.

When the economist William Stanley Jevons (1835–1882) rediscovered Cantillon's *Essai* in 1880, he called it the “cradle of political economy” and “the first treatise on economics.” The English translator of the *Essai*, Henry Higgs (1864–1940), wrote that Cantillon was “the economist's economist.” Joseph Schumpeter (1883–1950) labeled the *Essai* the first “bird's-eye view of economic life” Schumpeter (1954, p. 222), and Murray Rothbard (1926–1995) dubbed Cantillon “the founding father of modern economics.” Antoin Murphy concluded that the *Essai* has “stood the test of time and is of increasing interest to modern-day economists.”

Cantillon's contributions to economics include critical aspects of methodology, such as the use of *ceteris paribus*, price and wage determination, the crucial role of the entrepreneur, the circular-flow nature of the economy, the price-specie flow mechanism, the function of money, and the problems of inflation. He showed that wealth was determined not by money but by the ability to consume, and that the source of wealth was land and productive labor. He demonstrated that saving and investment were critical to productivity and higher wages, and he maintained that in the absence of government intervention, markets—including the market for loans—would be regulated by competition. He also analyzed the forces that cause business cycles and stock market bubbles. It has been asserted that Cantillon's puzzling use of the term *intrinsic value* now represents the discovery, 140 years prior to its conventional dating, of the concept of opportunity cost, by means of which the economist analyzes not just the ticket price of a good, but the full cost to the decision maker, including his or her time.

Despite its relative obscurity, Cantillon's *Essai* was very influential. It provided a major stimulus to the founding of the physiocrat school in 1757. There is now strong evidence that it influenced David Hume's (1711–1776) economics. Adam Smith (1723–1790) referred to Cantillon in the *Wealth of Nations* (1776), where even the *invisible hand* is evocative of Cantillon. There are also strong parallels between Cantillon and Charles Louis Montesquieu (1689–1755), Étienne Bonnot de Condillac (1715–1780), Anne Robert Jacques Turgot (1721–1781), and Jean-Baptiste Say (1767–1832). Thus, Cantillon foreshadowed the physiocrat and classical schools of economics and the economics of the French Enlightenment.

SEE ALSO *Economics; Economics, Classical; Hume, David; Inflation; Laissez Faire; Law, John; Money; Physiocracy; Scottish Moralists; Smith, Adam; South Sea Bubble; Value*

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CAPACITY, FULL

SEE *Full Capacity*.

CAPITAL

Capital can mean many things, including a sum of money, an invested fund, a set of produced means of production, or human skills (“human capital”). In the theory of production, distribution, value, and growth, the term *capital* refers to capital goods or investment goods and skills. In this perspective, capital is an accumulable factor of production, as opposed to land and simple labor, which are not. The means of production encompass raw materials, tools, and instruments of production, and in the writings of some earlier authors also the means of subsistence enabling workers to perform their tasks. To the extent that natural resources, such as land, first have to be brought into a form that can be used productively, the investment in these resources and the resources themselves become amalgamated into what Karl Marx (1818–1883) referred to as “la terre-capital” (land-capital).

Capital in the sense of capital goods is typically grouped in broad categories, including the following. *Circulating* or *working* capital refers to capital goods advanced at the beginning of the period of production that contribute exclusively to the period's output: they “disappear” from the scene at the same time as their value is transferred to the product. *Fixed* capital, in contrast, refers to capital goods that are long-lived and cannot be traced on a given unit of output. In their case, the idea of a material-cum-value transmigration into the product seems to lose any foundation. However, as was suggested already at the time of the classical economists and was rigorously shown by the mathematician John von Neumann (1903–1957) and the economist Piero Sraffa (1898–1983), a coherent treatment is possible using a joint-products framework: a fixed capital item that enters production at the beginning of the production period is considered a different commodity from the item that exits

at its end. In this way, fixed capital can be reduced to circulating capital.

In Marx we find the distinction between *constant* and *variable* capital: the latter refers to raw materials, tools, and instruments of production and represents *dead labor*; the former refers to wage goods spent in employing living labor, which, according to Marx, is the sole creator of value. American economist John Bates Clark (1847–1938) distinguished between *capital* and *capital goods*, the former being a fund of value earning its owner a return, interest, which equals the *marginal productivity of capital*.

As these examples show, a main issue in capital theory is whether capital is “productive” in the sense that it explains the existence of *profits* or *interest*. Critical reviews of early profit theories were put forward by Marx (1905–1910) and the Austrian economist Eugen von Böhm-Bawerk (1884). These authors developed their own approaches against the background of the earlier literature. At the cost of severe simplification, the various traditions in the theory of capital and distribution may be divided into two principal groups, one rooted in the surplus approach of the classical economists, the other in the demand and supply approach of the marginalist authors. Both traditions developed their arguments essentially within a long-period general framework of the analysis centered on the concept of a uniform rate of profit (or interest) and the corresponding set of normal prices.

The classical authors explained profits in terms of the *surplus product* left after the means of production used up in the course of production of given outputs in the system as a whole and the means of subsistence in the support of workers had been deducted from these outputs. Given wages are thus a characteristic feature of the early classical economists’ approach. (The level of wages was then discussed in another part of the theory, typically by taking into account, for example, whether the society was “improving” or stagnant.) Production was conceived as a *circular flow* involving a strong degree of interconnectedness of the different industries of the economy. The rate of profits, expressed in material terms, is the ratio between the social surplus and social capital, that is, two aggregates of heterogeneous commodities. A comparison of these two vectors necessitated the development of a theory of value. The classical economists tried to tackle this problem typically by first identifying an “ultimate measure of value,” which was designed to render heterogeneous commodities homogeneous. Several authors, including David Ricardo (1772–1823) and Marx, then reached the conclusion that “labor” was the sought standard and therefore advocated some version of the labor theory of value. By means of this theory, some of these authors, in a first step, determined the rate of profits and afterward, in a second

step, used their finding to determine normal competitive prices. Ladislaus von Bortkiewicz (1868–1931) aptly called this approach *successivist*.

Yet, as Sraffa showed, the successivist approach cannot generally be sustained: “the distribution of the surplus must be determined through the same mechanism and at the same time as are the prices of commodities” (1960, p. 6), that is, simultaneously. The classical authors did not have the instrument of simultaneous equations and the mathematics needed in order to solve them at their disposal. This helps to explain why they had recourse to the labor theory of value. This landed them, in the case of Marx, in the (in)famous problem of the “transformation” of labor values in prices of production. Commodities were produced by means of commodities and there was no way to circumnavigate simultaneous equations. Sraffa showed that a coherent formulation of the classical approach that was independent of the labor theory of value was possible: The rate of profits and competitive prices could be determined consistently in terms of the givens of the problem under consideration: (1) the system of production in use, characterized by the dominant methods of production employed to produce given gross outputs; and (2) the ruling real wage rate(s), or the share of wages.

The alternative marginalist explanation traced profits back to the productivity-enhancing effect of the use of capital goods. It consisted essentially of a generalization of the principle of intensive diminishing returns in agriculture indiscriminately to all industries and all factors of production alike. The older marginalist authors, with the exception of the French economist Léon Walras (1834–1910), were aware of the fact that in order to be consistent with the concept of a long-period equilibrium, the capital endowment of the economy could not be conceived as a set of given physical quantities of heterogeneous capital goods, but had to be expressed as a value magnitude: its commodity composition was seen to be a part and parcel of the equilibrium solution, determined by (1) preferences, (2) the technical alternatives from which cost-minimizing producers can choose, and (3) initial endowments of the economy of labor, land, and “value capital.” The formidable problem for the marginalist approach consisted in the necessity of establishing the concept of a *quantity of capital*, which could be expressed independently of the *price of its service*, or the rate of profits, and whose relative scarcity then determined that rate. If such a concept could be shown to exist, profits could be explained analogously to intensive rent on homogeneous land, and a theoretical edifice could be erected on the universal applicability of the principle of demand and supply.

Doubts as to the sustainability of this concept had already surfaced at an early time, and had prompted some authors such as Friedrich August von Hayek (1899–

1992), Erik Lindahl (1891–1960), and John R. Hicks (1904–1989) in the late 1920s and early 1930s to abandon the long-period method and adopt instead temporary and intertemporal equilibrium methods (Garegnani 1976). Yet it was only during the so-called Cambridge controversies in the theory of capital in the 1960s and 1970s that the concept was conclusively shown to be untenable in general (see Garegnani 1970; Kurz and Salvadori 1995, chap. 14). The concept can only be used in exceedingly special cases, and it is ironic to see that these are precisely those cases in which the labor theory of value applies. Despite these findings, the concept is still widely employed, in much of macrotheory, for example, with its reliance on the (infamous) aggregate production function. In more recent times, temporary and intertemporal models have also come under attack (see the contributions by Pierangelo Garegnani and Bertram Schefold in Kurz [2000]).

With the process of globalization going on, there is a tendency toward an internationalization of capital and the worldwide equalization of the rate of profits. An analysis of the factors affecting this rate is an important task in contemporary accumulation and growth theory.

SEE ALSO *Cambridge Capital Controversy; Equity Markets; Hedging; Liquidity Premium; Marx, Karl; Physical Capital; Psychological Capital; Social Capital*

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CAPITAL, HUMAN

SEE *Human Capital*.

CAPITAL, PHYSICAL

SEE *Physical Capital*.

CAPITAL, PSYCHOLOGICAL

SEE *Psychological Capital*.

CAPITAL, SOCIAL

SEE *Social Capital*.

CAPITAL ACCOUNT

SEE *Balance of Payments; Currency Appreciation and Depreciation*.

CAPITAL ACCUMULATION

SEE *Accumulation of Capital*.

CAPITAL ASSET PRICING MODEL

SEE *Finance*.

CAPITAL CONTROLS

Capital controls are the legal and quasi-legal regulations that govern the movement of capital (money, credit and