

used as a measure of the consensus value of an asset. The term dates back to at least James Dolley, who used it in his March 1938 *American Economic Review* article to measure discontinuity in stock trading on the New York Stock Exchange, although the concept was probably in use before then.

The intuitive reason for the existence of a bid-ask spread is that there is disagreement among market participants as to the value of a security. However, there are other reasons for a bid-ask spread. For example, because buyers and sellers need not arrive simultaneously, market makers stand ready to buy securities from sellers and sell securities to buyers; the bid-ask compensates these market makers for the cost of holding inventory. Other causes could include the existence of an order-processing cost, or market makers might have to adjust their prices to protect themselves against the risk of trading with better informed agents; this is the *adverse selection cost*.

One problem with the use of the bid-ask spread is that the market might lack depth—that is, the ability of a trader to trade a large number of shares at the quoted price. Consequently, for average-sized trades, the bid-ask spread might not indicate expected transaction costs. Furthermore, if the potential price impact is asymmetric, the average of the bid-ask spread may not be useful as a measure of the current consensus value of the asset, either.

Alternate measures of liquidity have been suggested. Some of these are: (1) net trading range—that is, the difference between the high and low price less the change in price during a given trading period; (2) the effective bid-ask spread—that is, the distance between the average of the quoted bid-ask spread and the price at which the deal transacts; (3) turnover; and (4) the ratio of absolute returns to trading volume.

Empirically, bid-ask spreads have been linked to various factors such as the volume of trade, the cost of holding inventory, the degree of information asymmetry, and tick size. The first three factors follow immediately from the discussion above. The notion of tick size as a determining factor has acquired more prominence since the introduction of decimalization in secondary equity markets. Decimalization has led to smaller quoted and effective bid-ask spreads for most stocks. However, concomitantly, there have been more small trades and fewer large trades, and the depth of the market has suffered, exacerbating the problems listed above with the use of the bid-ask spread as a measure of liquidity.

SEE ALSO *Spreads*

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SPYING

SEE *Hoover, J. Edgar*.

SRAFFA, PIERO

1898–1983

Piero Sraffa was born in Turin, Italy, on August 5, 1898. His father, Angelo Sraffa, was a well-known professor of commercial law and then rector of Bocconi University. Sraffa studied law in Turin and graduated with a dissertation titled “Monetary Inflation in Italy during and after the War,” written under the supervision of future Italian president Luigi Einaudi.

INVOLVEMENT WITH KEYNES

During a stay as a research student at the London School of Economics from 1921 to 1922, Sraffa was introduced to the eminent University of Cambridge economist John Maynard Keynes, who was deeply impressed by the young Italian scholar. Keynes invited him to write an article on the Italian banking system for the *Manchester Guardian*. Upon receipt Keynes decided to publish the piece, titled “The Bank Crisis in Italy,” in the *Economic Journal* and asked Sraffa to prepare a shorter version for the *Guardian*. Provoked by the article, Benito Mussolini asked Sraffa’s father to make his son recant the opinion expressed in it, a request that was rejected. In 1923 Sraffa was appointed to a lectureship in political economy and public finance at the University of Perugia. In 1925 he published the influential paper “Sulle relazioni fra costo e quantità prodotta” (in *Annali di Economia*), which contains an analysis of the foundations of decreasing, constant, and increasing returns in the English economist Alfred Marshall’s theory and a devastating criticism of the partial equilibrium method. Not least because of this essay, Sraffa obtained a full professorship in political economy at the University of Cagliari (Sardinia), a post he held in absentia to the end of

his life. The English economist Francis Y. Edgeworth's high opinion of the essay led to an invitation to publish a related version in the *Economic Journal* in 1926 titled "The Laws of Returns under Competitive Conditions." The paper triggered a debate on monopolistic competition.

In 1927 Keynes arranged for a lectureship for Sraffa at Cambridge. Sraffa began teaching in 1928 on advanced theory of value. He also in the late 1920s began his interpretative and reconstructive work on the classical economists and his criticism of marginalist theory, which finally materialized in his 1960 book, *Production of Commodities by Means of Commodities*. His breakthrough, in the winter of 1927 to 1928, in regard to his novel interpretation of the classical theory of value and distribution, rendered the task of lecturing increasingly difficult for him. He resigned as lecturer and in 1931 was appointed to the position of librarian of the Marshall Library. In addition he was also placed in charge of the Cambridge program of graduate studies in economics. He gave up lecturing on value theory for good. The only lectures he was to give were devoted to continental banking in 1930 and to industry starting in 1942. In 1939 he joined Trinity College. He was on friendly terms with the Austrian-born British philosopher Ludwig Wittgenstein, who acknowledged to have been deeply influenced by Sraffa.

EDITORSHIP OF RICARDO PROJECT

In 1930 Sraffa was appointed to the editorship of *The Works and Correspondence of David Ricardo* on behalf of the Royal Economic Society. The project turned out to be much more difficult than Sraffa thought it would be when he assumed the task, not least because a well-known Ricardo scholar, Jacob H. Hollander, effectively boycotted the project for a while. Hollander did not disclose that several "Ricardiana" were in his possession, and when Sraffa proved that they must be, Hollander refused to show them to Sraffa (Gehrke and Kurz 2002). In preparing the edition, the first volumes of which were finally published in 1951, Sraffa was assisted by his friend Maurice H. Dobb. The last volume of the eleven-volume work, containing the general index, was not published until 1973. Sraffa's introduction to the first volume contains his novel, *surplus*-based interpretation of the classical approach to the theory of value and distribution. Sraffa held that the classical approach is fundamentally different from the marginalist, demand and supply one and cannot be interpreted as an early version of it. The Ricardo work is widely acknowledged to be a scholarly masterpiece. Interestingly, in 1961, long before the project's completion, the Swedish Royal Academy honored Sraffa for his work on the project by awarding him a Söderström gold medal in economics, an award that is considered to be a

precursor of the award commonly called the Nobel Prize in economics.

In the early 1930s Sraffa was also involved in the so-called Cambridge Circus discussing Keynes's 1930 work, *A Treatise on Money*, and his 1936 work, *The General Theory of Employment, Interest, and Money*. In his paper "Dr. Hayek on Money and Capital," published in the *Economic Journal* in 1932, Sraffa managed to effectively ward off an attack on Keynes's project by the Austrian-born economist Friedrich August von Hayek.

CRITICISM OF MARGINALIST THEORY

From an early time onward Sraffa was particularly critical of two closely related elements of contemporary economic theory. His critical attitude reflects the objectivist or materialist point of view he had developed in discussions with the Italian philosopher and politician Antonio Gramsci and during his intensive reading about recent breakthroughs in the sciences, especially quantum physics (Kurz and Salvadori 2005). The first element concerned the question of whether the parts should be seen as constitutive of the whole, or vice versa. Marginalist economics, starting from methodological individualism, advocated the former view. Sraffa implicitly rejected this position by developing his analysis not from given individual agents but a given "system of production." To take the whole as constitutive of the parts was also advocated by contemporary scientists, including the English mathematician and philosopher Alfred North Whitehead. Second, Sraffa was critical of the subjectivist element permeating contemporary economic theory and the corresponding concept of "real," that is, "psychic," cost (as advocated by Marshall). Sraffa deliberately sought to elaborate an *objectivist* alternative to marginalist theory revolving around the twin concepts of *physical real cost* and *social surplus* within the framework of an analysis that conceives of production as a *circular flow*.

Sraffa related his reconstructive work explicitly to the works of the English economist William Petty (1623–1687) and the French economist François Quesnay (1694–1774). In his *Political Arithmetick* (1690), Petty had insisted on expressing himself only "in Terms of Number, Weight or Measure; to use only Arguments of Sense, and to consider only such Causes, as have visible Foundations in Nature" (Petty 1986, p. 244). With the *Tableau économique* (1758), Quesnay had for the first time put forward a view of the processes of production and distribution of the economic system as a whole. Initially, Sraffa was highly critical of the labor theory of value, as advocated by Ricardo and Karl Marx, because in his view it involved a "corruption" of the earlier concept of *physical real cost* (Petty's "food"). It was only after Sraffa had

turned to the case of an economic system with a surplus that is partly distributed to workers in proportion to the time worked that he realized he needed a concept of labor and that in very special conditions relative prices are proportional to labor values. This did not mean, however, that the labor theory of value played any constructive part in his analysis. On the basis of purely objective data (including the share of wages in net income), Sraffa showed that the general rate of profits, the rents of land, and the necessary prices corresponding to the given distribution of the product could be determined. This was an important finding in itself, which at the same time served as the basis for a critique of the alternative marginalist conceptualization. In particular, Sraffa showed that the rate of profits cannot generally be conceived of as determined by the “marginal productivity” of a given “quantity of capital.”

In the second half of the 1950s Sraffa eventually found time to put together, revise, and complete his notes on the classical approach to the theory of value and distribution and publish them as *Production of Commodities by Means of Commodities* (1960). This book became one of the most often cited books in economics and was translated into several languages. Its findings played an important role in the so-called Cambridge controversies in the theory of capital. The importance of Sraffa's contribution lies in the fact that he pointed out the dark spots in the marginalist theory of value and distribution and elaborated an alternative to it rooted in the analyses of the classical authors.

Sraffa died on September 3, 1983, in Cambridge. An edition of Sraffa's hitherto unpublished papers is currently in preparation on behalf of Cambridge University Press.

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Heinz D. Kurz

SRAFFIAN ECONOMICS

SEE *Economics, Neo-Ricardian*.

ST. PETERSBURG PARADOX

SEE *Expectations; Utility, Von Neumann-Morgenstern*.

STABILITY, POLITICAL

Political stability can be defined as the reproduction of the status quo in political life. The term and its mirror image—*political instability*—have a decidedly behavioral connotation in most contemporary social science research. As seen by many scholars, political stability is the outcome of interactions by relevant political actors that reproduce the status quo in political life. Conversely, political insta-