The Economics of Edward Alsworth Ross

By William E. Spellman *

Abstract. *Edward Alsworth Ross* gained fame as a founding father of *American sociology;* however, he was trained as an economist by *Richard T. Ely* and made significant contributions in *economics* before he moved into sociology. Ross was the John Kennneth Galbraith of the *populist-progressive era.* The similarity in background, methodology, *Weltanschauung,* and controversial academic and political styles of these men is discussed. Ross became a *cause célébre* after his dismissal from Stanford University in 1900 which became a major *academic freedom case.* Although he was a professional economist for only six years, Ross made original contributions in the areas of *taxation, debt management, value theory, uncertainty,* and *location theory.* The discussion of uncertainty as a factor in production precedes *Knight's concept of risk and uncertainty* and challenges neoclassical policy conclusions in a dynamic environment. His treatment of location theory includes a discussion of agglomeration, externalities, regional dualism, factor endowment, and comparative advantage to explain economic mobility.

I

PLACE IN HISTORY

Edward Alsworth Ross was the John Kenneth Galbraith of the populist-progressive era. The similarity between these men begins with their Scottish origins. Ross notes that, "The Rosses came from Scotland where many of the clan were hanged for being Covenanters" (1). Both scholars were influenced by their rural backgrounds and developed the independence to challenge the doctrines of the day. Their physical characteristics are also similar as Ross was a strapping six foot five inches, which is but three inches short of Galbraith's physical stature.

Both men sustained a position of dissent and controversy within and outside the economics profession. Galbraith served as president of Americans for Democratic Action and Ross was president of the American Civil Liberties Union. Thorstein Veblen had a significant influence on the intellectual thought of both Ross and Galbraith. Both scholars objected to the narrow scope of economics as a "scientific,"

* The author expresses appreciation to Keith Hall and Ann Santos for their research assistance at the Coe College Archives and the Wisconsin State Historical Society, and to Richard Doyle for his editorial improvements of earlier drafts of this paper.

American Journal of Economics and Sociology, Vol. 38, No. 2 (April, 1979).
0002-9246/79/020129-12$00.75/0

value-free discipline with deductive reasoning as the proper method of inquiry. Their advocacy of the qualitative evaluation of social welfare was to challenge the policy conclusions of laissez-faire capitalism. Both scholars were concerned with the industrial structure and the effect of a corporate society on economic and political freedom. This consistent point, that competition as the automatic regulator of the economy was now lacking, underlies the economic writings of both Ross and Galbraith.

Both Galbraith and Ross directly influenced Presidents: the former with Kennedy and Ross with Theodore Roosevelt and Woodrow Wilson. Likewise they have written of their foreign experiences. Galbraith wrote about his experiences as Ambassador to India and Ross wrote extensively of his travels to China, Russia and India. They were both accused of having popular appeal only because of their "offensively clear" writing styles; and because of the extent of their contributions to the popular press. This talent was annoying to many economists, as noted by Seymour Harris in regard to Galbraith, "others reason that anyone with that kind of rapprochement with the general public just has to be a lousy economist." Ross had similar problems with economists and later sociologists due to his wide readership; his writing talents were once described as "a refreshing oasis with ever-bubbling springs in the arid desert of sociological literature" (2). Ross and Galbraith were among the most widely read scholars of their times. This prolific output has been attributed to their Calvinistic training (3).

With the possible exception of Veblen, these scholars have coined more new terms that have been incorporated into scientific terminology and lay phraseology than any other scholars. Galbraith is noted for coining "countervailing power," "technostructure," "dependence effect," and "conventional wisdom." Ross is recognized for coining the following terms: "race suicide," "equalitarianism," "industrial dualism," and "social control." Simon Patten utilized Ross's concept of social control in his thesis on abundance; Ross incorporated the thesis into his writings, and Galbraith developed it to its modern conclusion (4). These worldly philosophers both advocated the return to the great tradition of the study of political economy as the study of the way society responds to economic forces. Their philosophy of intellectual thought and inquiry was summarized by Ross's conclusion, "How idle in our new situation to intone the old litanies" (5).

II

ROSS—THE PERSON (6)

ROSS WAS ORPHANED at age eight and raised in rural Iowa by family friends. He received his bachelor's degree from Coe College in 1886 and taught high school for two years "in a tight intellectual world bounded by Presbyterianism, Republicanism, protectionism, and capitalism" (7). A bootlegged copy of Henry George's *Progress and Poverty* challenged these tenets and inspired Ross to pursue academic training. This "demon" of the passion to know rather than ambition was to be the driving force for Ross throughout his academic life. Ross used a small inheritance to travel through Europe and to study at the University of Berlin in 1888 since that was the "loftiest thing on the educational horizon" (8). Upon his return he decided not to study law because the "New Economics" of Ely, Patten, and Seligman was more exciting than philosophy or law.

In 1890, he enrolled at Johns Hopkins to study under Richard T. Ely and completed the Ph.D. in 16 months. His class included John R. Commons, Newton Baker, David Kinley, Frederic C. Howe, and other economists who would gain fame. In his Ph.D. oral exam he responded to the classical economist Simon Newcomb's question of the identity of railroad stockholders with the endearing remark, "If we are to believe the railroad attorneys, virtually all are widows and orphans" (9).

In 1891, he received his degree from Johns Hopkins and married the niece of the pioneer sociologist Lester Frank Ward. The close relationship with Ward influenced Ross to join the fledgling ranks of sociologists (10). This decision was also greatly influenced by the internal struggle between the old and new economists in the American Economic Association (11). The intellectual climate in economics was not conducive to critics of the classical theory as Veblen was to find in his academic odyssey, and as numerous economists, including Ross, were to discover.

Ross's first academic appointment was at the University of Indiana. He was there for only one year. Cornell offered Ross an associate professorship in 1892 and he accepted. During the year at Cornell, Ross was elected secretary of the American Economic Association to succeed Richard Ely. He resigned after only one year due to illness and the heavy burdens of the office. The prolific publication rate and his regional speaking circuit greatly enhanced his fame, but he "was not altogether happy in economics, for human values which appealed to me strongly had to be left out" (12).

In 1893, Ross was appointed to a chair in economics at Stanford by David Starr Jordan, who had earlier recruited him at Indiana. The seven years at Stanford were indeed controversial and culminated in one of the most famous academic freedom disputes. Ross made a conscious challenge for academic freedom on the premise that his stature in the profession would offset any smear techniques that could be used to discredit him. This attempt to speak out was to encourage other economists to shape public policy and opinion, and it made Ross a *cause célèbre* (13). The initial conflict at Stanford resulted from Ross's liberal speeches and public lectures that supported Eugene V. Debs in the 1894 Pullman Strike, his opposition to the conservative municipal charter in San Francisco, and his advocacy of public ownership and regulation of municipal utilities. These issues were a source of irritation to Jane Lathrop Stanford who controlled the university.

Ross's speeches in support of bimetallism and the free coinage of silver in 1895 were printed by the Democratic National Committee as a pamphlet entitled *Honest Dollars* and resulted in his being put on probationary status in 1897 at Stanford. This sanction included a reassignment from economics to a Professorship of Sociology. The "downgrading" was the result of Jordan's attempt to pacify Mrs. Stanford and to prevent an academic scandal at Stanford. This involuntary transfer to sociology was intellectually a retroactive move as Ross notes, "the virus of sociology was in my veins, in the autumn of 1894, I kept looking for the linchpins which hold society together" (14).

Ross took a sabbatical to Europe in 1897 and the tension diminished. By 1900, however, Mrs. Stanford demanded Ross's resignation because of his advocacy of restrictive immigration policies as well as his alleged references to the later Senator Stanford's business and political philosophies. The national uproar far exceeded the earlier academic freedom controversies and the public support for Ross enhanced his reputation after the dismissal occurred. The "Stanford Case" was to be a key impetus to the formation of the American Association of University Professors in 1913 to sanction institutions that restrict academic freedom.

Ross went to Nebraska in 1901 as a full professor of sociology, and he did not teach economics thereafter; he continued, however, his vigorous lectures on social problems. In 1905, Ross helped organize the American Sociological Association and was later elected president for two consecutive terms.

In 1906, Ely invited Ross to the University of Wisconsin for a new chair of sociology. A separate department of sociology was subsequently established with Ross as chairman. Ross remained at Wisconsin until he retired in 1937 and built one of the premier sociology departments in the nation.

In 1910, Ross was again involved in a controversy over academic freedom that threatened his position. Emma Goldman, the anarchist, visited Madison to give public lectures and Ross informed his students of her presence in Madison. Even though Ross did not attend any of her lectures, and denounced her philosophical anarchism in class, the regents voted to censure Ross for his indiscretions; however, President Van Hise prevented his dismissal (15). In 1935, he was criticized by a Wisconsin Senate Investigating Committee for alleged tolerance in the classroom of communistic teaching, but no formal sanctions were invoked.

After his retirement, Ross continued to publish in popular journals and to travel extensively. In 1940, he was unanimously elected to the national chairmanship of the American Civil Liberties Union. Ross and David Starr Jordan were on the ACLU National Committee for several decades when few academicians would risk being associated with the organization (16). Ross assumed the chairmanship after an internal split over the rejection of Elizabeth Gurley Flynn from the committee for communist sympathies. Ross held this position for ten years until 1950. He died in 1951 at the age of eighty-five.

III
ROSS'S ECONOMIC CONTRIBUTIONS

Ross's DISSERTATION at Johns Hopkins was reprinted by the American Economic Association (17). The thesis is a financial history of England and the United States. In it, he concludes that the proper policy to extinguish the public debt differs with the stage of economic development. A terminal annuity to pay a portion of the debt and interest annually may be necessary for a young, debtor nation, but the inflexibility of this system is a hinderance to public finance. With established credit, a nation should not utilize the sinking fund of mandated payments of debt and interest at a specific rate as it often requires the government to borrow at a high rate of interest to amortize debt incurred at a low rate of interest. A permanent appropriation of surpluses to pay the debt should be in the direction of a unity of administration rather than a specific sinking fund to amortize each debt (18).

"Since finance is politics, as well as science" (19), the statesman must convince the public that net revenues for public expenditures must be exacted after amortizing the public debt. The Gallatin Plan of 1802 combined this sinking fund liability aspect to guarantee amortization without binding the taxing and spending policies rigidly to a specific appropriation to reduce each debt item. Ross deemed this "rolling over" of debt as designed by Gallatin to be the best method of amortization yet discovered (20). He also discussed the various theories of how to amortize the public debt. This explicit analysis of the advantages and disadvantages of debt management policies was at the time the premier work on the subject of debt management.

Ross's interest in the silver question led to three articles (21). He attacked the gold standard on the basis of economic justice using John Stuart Mill's canon of economic justice—"all fair exchange is but the exchange of equal services or of the products of equal quantities of labor" (22). The long wave of falling prices since the 1870s had indeed put a burden on the debtor classes. Ross notes the effect of falling prices on farm mortgages in four western states between 1880 and 1890; it represented a transfer from debtors to creditors of $23 million dollars every year (23). Ross used the Austrian theory of interest and Jevon's utility theory to establish that a just system of deferred payments requires a stable price level. Ross was not an inflationist, but he recognized that increased productivity relative to the money supply would cause deflation and an economic injustice on debtors because of income redistribution.

Ross emphasized that the labor theory of value is used by the orthodox economists to justify a falling price level due to the adherence to the gold standard. He accused these economists of showing a consistency of sympathies, but not of doctrine, by opposing anti-monopoly laws (24). Since part of the value of monopolized goods rests on their utility to the consumer rather than only on their costs to the producer, to defend the justice of monopoly values is inconsistent with the labor theory of value used to defend monometallism (25).

The theoretical justification of a stable price level was developed and extended by Ross (26). He discussed with clarity the marginal utility explanations of the Water-Diamond paradox and the Austrian paradox of value that underlie modern consumer behavior theory. In response to a critique of his earlier article on deferred payments, Ross utilized a consumer surplus model to show that utility is the standard to which money should conform to do justice as a standard for deferred payments (27).

Ross also noted the importance of the dependence effect on interpersonal utility comparisons which were later developed extensively by Veblen and Galbraith. He argues that income, wealth, and tastes change the utility of certain goods over time as the standard of living of different social classes change. This argument is best described as,

> I believe, that the total well-being we derive from goods depends partly on the positive satisfaction experienced in use or consumption and partly on the social satisfactions that flow to us in consequence, the latter largely determined by the relation of our consumption to that of our neighbors (28).

Ross's next contribution was an orthodox development of a principle of taxation (29). He used the classical argument and method for justification of taxing monopoly profit. His new canon of taxation was "a tax for purposes of revenue should have the least possible prohibitive effect" (30). A productive tax compels citizens to pay when they do what they would prefer and a prohibitive tax prevents certain actions by increasing the cost of such activity. The first loss is balanced by a corresponding gain, but the second is a dead weight loss. Since any tax has fiscal as well as social effects, fiscal reasons must justify fiscal effects and social reasons justify social effects. An optimal fiscal tax should have small prohibitive effects so that the social satisfaction and resource allocation is disturbed the least. This canon incorporates the comparative advantage maxim of the theory of macroeconomic policy developed by Robert Mundell (31).

To achieve adequate revenue with the least disturbance of consumer choice, taxation must rest on a broad base and not on specific activities. This objective can be achieved with direct taxes on property, a progressive income tax, and a progressive death or inheritance tax. Ross does advocate a specific tax whenever monopoly profit exists as the tax would not alter resource allocation; although the analysis would indicate a form of excess profits tax, he does not propose either an instrument or specific system based on the producer's rent due to monopoly power. A monopoly profit tax would also have a desirable social effect in terms of income distribution as well as raise revenue without prohibitive effects. Social taxes are to prohibit or reduce undesirable activities, such as gambling, alcohol, and smoking, and to redistribute income with an excise tax on luxury items. Although Ross did not discuss transfer payments as a negative tax, he did emphasize the social and distributional effects of public goods established with the revenue from taxation. Ross emphasizes the incidence of the tax and the effect on the market solution as a major consideration in tax policy. He concluded the study with the classical maxim that those that wish to limit free enterprise must show cause; this demands that the productive and prohibitive effects must be separated.

Ross's lengthy review (32) of Edwin R. A. Seligman's pioneering work on taxation is a concise summary of the principles of taxation. Seligman credits the review with providing a new light on his work: "Professor Ross, in his account of the first edition of this work, brought together the various principles laid down therein but scattered through the different chapters. In so doing, he has greatly clarified the whole exposition" (33).

In retrospect, Ross made his most original contribution to economics with his work on uncertainty theory. Although Frank Knight does cite the work of Ross (34), he does not indicate the original contributions by Ross. Ross, like Knight, differentiates risk from uncertainty in the following statement: "Variability is an objective fact, uncertainty is a state of mind, and as such is the parent of extensive derangements of Economic Production" (35). This subjectiveness is derived "from the confusion of judgment arising from the experience of unforeseen variations issued hesitating estimate, influenced largely by temperament, feeling, or accident" (36). The existence of uncertainty also operates through the St. Petersburg Paradox to affect the subjective estimate of decision makers "depending on the value of money to different individuals which generates a psychological segregation of men in their investment behavior" (37).

The reason for this subjective uncertainty is the dynamic process by which equilibrium is reached in a market. Theoretical analysis implies "an impossible fluidity of capital and labor" (38) which cannot be isolated in an objective manner to insure against uncertainty. This uncertainty is a result of variable demand factors which cannot be objectively isolated as risks, and the inflexibility of production as measured by the elasticity of the market supply curve. This relationship is best described by the price instability in agriculture. Ross noted that "the irregularities of crop become irregularities of supply, which in the face of an inelastic demand cause great unsteadiness of price" (39). He concluded that the elasticities of the supply and demand curves as well as the difficulty of predicting wants in a dynamic economy were the source of uncertainty that must be rewarded with profit. This exposition of supply and demand elasticities as the source of agricultural price and income fluctuations is more explicit than that of any earlier economist.

The social consequences of uncertainty would be twofold. The first effect is a Schumpeterian view that uncertainty would reduce the growth rate because of the continuing use of inferior technology due to "the possible Best blocking the feasible Better" (40). The second effect would be to encourage the growth of the corporation which can diversify the negative effects of uncertainty, bear the loss if incurred, and attempt to control the market. This conclusion and the social results have been the central focus of Galbraith's work.

Ross was preparing the production chapters for a two-volume treatise on political economy with Ely and John R. Commons, but he became interested in sociology and the book was never completed. The article on uncertainty and one on location (41) were salvaged from the aborted project. Ross established the economic factors that determine the location and migration of industries. The classical factors of resource base, transportation costs, and consumer market are analyzed, and Ross also discussed the agglomeration and central limits theses connected with these factors. He explained the importance of externalities—influences from outside the market—on the location decision in the following manner: "an industry may be acted upon repellantly rather than attractively" (42). He gave concrete examples of positive and negative interactions that would change the cost structure of firms due to the decisions and actions of others.

Ross also pioneered the work on regional dualism which was later developed by Gunnar Myrdal. Although he agreed with the classical concept of equilibrium between regions in the long run, he stated:

> It is a general law that interchange of products between two peoples precedes interchange of population, of scientific knowledge, systems of education, technical methods, and industrial standards; the reason being that the former requires relatively slight modifications of an economic system from without, while the latter implies a deep-seated inward change, remaking national character (43).

Labor is the inert resource and does not move to equalize net advantages. Capital is the active resource, but it also is mobile out of the region that is underdeveloped. Ross argues that the long-run flexibility of the market abolishes specialization not based on natural differences in localities, but "there are lasting diversities of endowment that will affect the location of the superior manufactures, demanding high technical and artistic skill in the operative" (44). "The matrix of forces that determine location decisions will inevitably alter the comparative advantages of places and lead to a relocation of industries" (45). This combined factor endowment and comparative advantage explanation of location theory would be fully developed by Bertil Ohlin in the 1930s.

IV
ROSS'S SHIFT TO SOCIOLOGY

Ross DECIDED in 1896 to shift to sociology, but his sociological writings were greatly influenced by his economic training and background. He was not content to remain in the "new economics" or institutional camp of economists, but he felt compelled to join the ranks of infant sociology because he could be more effective in bringing reform. His scope and method were similar to that of Ely, Commons, Veblen, and Patten in the institutional approach. Ross was an integral part of the Wisconsin School with Ely and Commons that provided the academic support for the social experiments of the La Follette reform wing of the Progressive Movement.

The "Abraham Lincoln of sociology" (46) was the last of the American system builders in sociology. His main impact on the intellectual thought of the United States is well stated in the following: "All scientific activity is telic in its purposes; this is its *raison' d être,* its role justification, and its ultimate function" (47). Ross was a social critic and an intellectual heretic who challenged orthodoxy in search of reform; however, his original contributions in economics were indeed to become the orthodox view of later generations. It is indeed ironic that economics has slighted the contributions of this pioneer due to his success as a founder of the new science of sociology. His prolific output and his creative insights in the five years he was a professional economist should indeed be recognized as pioneering.

Coe College
Cedar Rapids, Ia. 52402

1. Edward Alsworth Ross, *Seventy Years of It* (New York: Appleton-Century Company, 1936), p. 1. Galbraith's autobiographical reference is *The Scotch* (Cambridge, Mass., Riverside Press, 1964), and a biographical sketch in Charles

H. Hession, *John Kenneth Galbraith and His Critics* (New York; New American Library, 1972), pp. 17–30.

2. Joyce O. Hertzler, "Edward Alsworth Ross: Sociological Pioneer and Interpreter," *American Sociological Review,* Vol. 16, No. 5 (October 1951), p. 608.

3. John S. Gambs, *John Kenneth Galbraith* (New York: St. Martin's Press, 1975), p. 23. The disciplined family life and agricultural isolation of both men made them critical observers of the society they attempted to analyze.

4. A superb account of the work of Patten and its impact on Galbraith is in Daniel M. Fox, *The Discovery of Abundance: Simon Patten and the Transformation of Social Theory* (Ithaca: Cornell Univ. Press, 1967).

5. Henry Steele Commager, *The American Mind* (New Haven: Yale Univ. Press, 1971), p. 50.

6. Ross has left an excellent account of his career as a sociologist in his autobiography *Seventy Years of It.* Also the following tributes trace his development and impact: John Lewis Gillin, "The Personality of Edward Alsworth Ross," *American Journal of Sociology,* Vol. 42, No. 4 (Jan. 1937), pp. 534–42; J. O. Hertzler, "Edward Alsworth Ross: Sociological Pioneer and Interpreter," *American Sociological Review,* Vol. 16, No. 5 (Oct. 1951), pp. 597–614; John L. Gillin, "Edward A. Ross: A Tribute," *Sociology and Social Research* (Jan.–Feb., 1952), pp. 147–49; Howard W. Odum, "Edward Alsworth Ross, 1866–1951," *Journal of Social Forces,* Vol. 30, No. 1 (Oct., 1951), pp. 126–27.

7. *Seventy Years of It,* p. 15.

8. *Ibid.,* p. 25.

9. *Ibid.,* p. 45.

10. This relationship is documented by Bernhard J. Stein, "The Ward-Ross Correspondence," *American Sociological Review,* Vol. 3 (June, 1938), pp. 362–401; Vol. 11 (Oct., 1946), pp. 593–605; Vol. 11 (Dec., 1946), pp. 734–748; Vol. 12 (Dec., 1947), pp. 703–720; and Vol. 13 (Feb., 1948), pp. 82–94.

11. This struggle is well documented in Joseph Dorfman, *The Economic Mind in American Civilization* (New York: Viking Press, 1959) Vol. 3; Sidney Fine, *Laissez-Faire and the General Welfare State* (Ann Arbor: Univ. of Michigan Press, 1956); A. W. Coats, "The First Two Decades of the American Economic Association," *American Economic Review,* Vol. 50, No. 4 (Sept., 1960), pp. 555–74, and C. W. A. Veditz, "Organization of American Sociological Society," *American Journal of Sociology,* Vol. 11 (Jan., 1906), pp. 555–63.

12. *Seventy Years of It,* p. 50.

13. The events and results of this controversy are well documented in the following sources: Edward McNall Burns, *David Starr Jordan: Prophet of Freedom* (Palo Alto: Stanford Univ. Press, 1953); Orin Leslie Elliot, *Stanford University: The First Twenty-Five Years* (Palo Alto; Stanford University Press, 1937); "The Dismissal of Professor Ross-Report of the Committee on Economics," *American Economic Review,* Vol. 9 (March, 1901), pp. 132–36; E. R. A. Seligman, *et al.,* "The Case of Professor Ross," *Science,* Vol. 13, No. 323 (March 8, 1901), pp. 361–70; and Richard Hofstader and Walter P. Metzger, *The Development of Academic Freedom in the United States* (New York: Columbia Univ. Press, 1955).

14. *Seventy Years of It,* p. 56.

15. More complete accounts of this controversy are found in the following: Jules Weinburg, *Edward Alsworth Ross: An Intellectual Biography* (unpublished dissertation, University of Michigan, 1963); *Seventy Years of It;* Theodore Herfurth, *Sifting and Winnowing: A Chapter in the History of Academic Freedom at Wisconsin* (Garden City, N.Y.: Doubleday & Co., 1949); and Merle Curti and Vernon Cartensen, *The University of Wisconsin: A History, 1848–1925,* Vol. II (Madison: Wisconsin Univ. Press, 1949).

16. Paul L. Murphy, *The Meaning of Freedom of Speech* (Westport, Conn.: Greenwood Press, 1972), pp. 126–27.

17. Edward A. Ross, *Sinking Funds* (Publications of the American Economic Association), Vol. 7, Sept. 1892.

18. *Ibid.,* p. 103.

19. *Ibid.,* p. 94.

20. *Ibid.,* p. 106.
21. "Standard of Deferred Payments," *Annals of the American Academy,* Vol. 3 (November, 1892), pp. 293–305; "Total Utility Standard of Deferred Payments," *ibid.,* Vol. 4 (November, 1893), pp. 425–41; and "Our Financial Policy," *Review of Reviews,* (January, 1897) pp. 126–27.
22. "Standard of Deferred Payments," p. 297.
23 *Ibid.,* p. 294.
24. Ross further develops the history of value theory in "Tendency of Natural Values," *Yale Review,* Vol. 2 (August, 1893), pp. 173–93. The central argument is that there is a tendency of natural values to diverge from social values due to increased monopoly power in the economy.
25. "Standard of Deferred Payment," p. 299.
26. E. A. Ross, "Total Utility Standard of Deferred Payments," *Annals,* Vol. 4 (November, 1893), pp. 425–41.
27. In *Seventy Years of It,* p. 41, Ross notes that "Jevon's marginal utility theory so fascinated me that I worked out a geometry based on curves for utility, demand, and supply. I devised thirty odd economic theorems with proof, but never did anything with them." Ross never mentions Marshall or his work in this area, but he must have been aware of it since Marshall has an article in the same issue. Ross was an exception among the "new economists" to praise the abstract concept that Jevons discovered.
28. "Total Utility as a Standard of Deferred Payment," p. 440.
29. Edward A. Ross, "A New Canon of Taxation," *Political Science Quarterly,* Vol. 7, No. 4 (December, 1892), pp. 585–97.
30. *Ibid.,* p. 597.
31. Robert A. Mundell, "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability," *International Monetary Fund Staff Papers,* Vol. 9, 1962, pp. 70–79.
32. Edward A. Ross, "Seligman's Shifting and Incidence of Taxation," *Annals of the American Academy,* Vol. 3 (November, 1893), pp. 444–63.
33. E. R. A. Seligman, *The Shifting and Incidence of Taxation* (New York: Columbia Univ. Press, 1921), p. 253.
34. Frank Knight, *Risk, Uncertainty, and Profit* (New York: Hart, Schaffner, and Marx, 1921).
35. Edward A. Ross, "Uncertainty as a Factor of Production," *Annals of the American Academy,* Vol. 3 (November, 1893), p. 323.
36. *Ibid.,* p. 324.
37. *Ibid.,* p. 330.
38. *Ibid.,* p. 322.
39. *Ibid.,* p. 311.
40. *Ibid.,* p. 327.
41. Edward A. Ross, "The Location of Industries," *Quarterly Journal of Economics,* Vol. 10 (April, 1896), pp. 247–68.
42. *Ibid.,* p. 256.
43. *Ibid.,* p. 261.
44. *Ibid.,* p. 262.
45. *Ibid.,* p. 268.
46. Gilman, p. 542.
47. Hertzler, p. 608.