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Irving Fisher and Modern Macroeconomics

By ROBERT W. DIMAND*

No other American economist before Paul Samuelson and Milton Friedman has had anything close to the influence that Irving Fisher has had on later economics. James Tobin (1985 pp. 29–30) reports that Fisher led his contemporaries Wesley Clair Mitchell, J. B. Clark, and Frank W. Taussig in column inches in the *Social Sciences Citation Index* for 1976–1980 by the ratio 9:3:1:1 (with Fisher's lead growing over time) and "Much more than the others, moreover, Fisher is cited for substance rather than for history of thought." After being the most-cited economist in the monetary and fluctuations literature in the 1920's, Fisher vanished from citation lists by the 1940's as John Maynard Keynes captured the profession's attention, yet contemporary macroeconomics builds largely upon Fisher's foundations (Dimand, 1995, 1997). Once remembered primarily for his spectacular misprediction of stock prices in October 1929 and for eccentric crusades, Fisher emerges in retrospect as a major figure in the development of economics—and not least for those innovations his contemporaries found most ludicrous, such as building a model to simulate income and spending flows and price levels.

I. What Were Fisher's Contributions?

The two-period intertemporal-optimization diagram of Fisher's *The Rate of Interest* [1907] (1997 Vol. 3 p. 409) and *The Theory of Interest* [1930] (1997 Vol. 9) is the basis for permanent-income and life-cycle consumption theories, with the simple Keynesian absolute-income hypothesis restricted to cash-flow-constrained consumers in imperfect credit markets. Fisher's rate of return over costs, developed in the same books, was rec-

ognized by Keynes as his marginal efficiency of capital (Jan A. Kregel, 1988; Dimand, 1995), so modern theories of investment, saving, and consumption all have roots in Fisher's analysis of impatience and investment opportunity (brilliantly anticipated in 1834 by John Rae). While Fisher worked with velocity of circulation rather than a money demand function, Bennett T. McCallum and Marvin S. Goodfriend's (1987) *New Palgrave* article on money demand credits Fisher's *Theory of Interest* [1930] (1997 Vol. 9 p. 216) with the first correct and unambiguous account of the marginal opportunity cost of holding money.

Fisher's American Economic Association monograph, *Appreciation and Interest* [1896] (1997 Vol. 1), is the classic presentation of expected inflation as the difference between real and nominal interest rates. Fisher is often misremembered as asserting that real interest is independent of inflation and monetary shocks. That was true only for comparison of equilibria; his theory of economic fluctuations stressed the effect of monetary shocks on real interest during transition periods. His correlation of nominal interest rates with distributed lags of inflation was a pioneering use of adaptive expectations and a landmark in macroeconometrics.

Fisher's compensated-dollar proposal for stabilizing the cost of a basket of commodities, advanced in *The Purchasing Power of Money* [1911] (1997 Vol. 4) and *Stabilizing the Dollar* [1920] (1997 Vol. 6), advocated a rule (varying the dollar price of gold to target a commodity price index, not a monetary aggregate) instead of discretion, at a time when advocacy of monetary rules (other than the gold standard) was unusual, as was his preference for internal stabilization over exchange stability.

Fisher's monetary theory of economic fluctuations anticipated later developments such as Phillips curves and adaptive expectations. Fisher's argument, contrary to W. Stanley Jevons, Mitchell, William H. Beveridge,

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Henry L. Moore, and Nikolai Kondrate'ev, that economic fluctuations reflect the summation of truly periodic cycles has carried the field so completely that "business cycles" as the name of a field no longer implies that fluctuations are cyclical—even though David F. Hendry and Mary S. Morgan (1995 pp. 45–48) find that Fisher erred in claiming that his own monthly data for U.S. trade for 1915–1923 showed no cyclical tendencies. Like Friedman and Anna Schwartz, Fisher attributed the onset and severity of the Great Depression to a contraction of the money supply that the Federal Reserve could have prevented (Frank G. Steindl, 1996). Going beyond such a monetary theory of fluctuations, Fisher [1932, 1933] (1997 Vol. 10) developed a debt-deflation theory of depressions, stressing the consequences for stability of changes in the real value of nominal-valued inside debt that had not been anticipated when the debts were incurred. This analysis, which influenced Hyman Minsky's theory of financial-system fragility, is only now being absorbed by the mainstream (Mervyn King, 1994; Dimand, 1997).

Fisher's dissertation, *Mathematical Investigations in the Theory of Value and Prices* [1892] (1997 Vol. 1) introduced general-equilibrium analysis into American economics (with some unnecessary originality, as he wrote much of the thesis before discovering Léon Walras and Francis Y. Edgeworth) and presented his hydraulic model to simulate price determination. Though that machine was destroyed in transit to the Columbian Exhibition in Chicago, it and a later version by Fisher were ancestors of computer simulation models of economies. They reflected Fisher's commitment to making his theory empirically meaningful. This commitment led to *The Purchasing Power of Money's* attempted statistical verification of the quantity theory, to annual articles in the *American Economic Review* [1911–1919] on the equation of exchange, to his massive *The Making of Index Numbers* [1922] (1997 Vol. 7), and to Fisher's Index Number Institute, whose weekly commodity price index was accompanied by weekly articles by Fisher. His exhaustive test approach to index numbers, searching for the formula that best satisfied a set of sta-

tistical tests, has borne belated fruit: in 1995, the U.S. Department of Commerce switched to a chain-weighted index as advocated by Fisher. A reliable price index was crucial for Fisher's proposed monetary-policy rule, for his campaign to educate the public against *The Money Illusion* [1928] (1997 Vol. 8), and for his proposal to index transactions against monetary instability. Fisher persuaded Remington Rand to issue the first indexed bonds in the 1920's; the U.S. Government followed only in 1996 (preceded by Canada in 1991). Fisher was notorious for an empirical failure, excessive optimism in 1929, but Kathryn Dominguez et al. (1988) argue that the Depression was not forecastable.

II. Conclusions

These contributions had a breadth unmatched by Fisher's contemporaries. John Bates Clark, paired with Fisher in Tobin's article on the American Economic Association centenary, is remembered primarily as a favorite straw man of the Cambridge capital controversies. Fisher's contributions closely parallel much of modern macroeconomics, yet his role was long neglected. References to Fisher vanished from macroeconomics in the early 1940's. The "Mark I monetarism" of Friedman and his students had many Fisherian features: the quantity theory of money, a monetary-policy rule, domestic price stability rather than fixed exchange rates, adaptive expectations, the permanent-income consumption function, and Federal Reserve responsibility for the Depression. Nonetheless, Friedman placed less emphasis on links with Fisher than with Chicago oral tradition.

Tobin (1985 pp. 36–37) concluded that Fisher's "insights contain the makings of a theory of the determination of economic activity, prices, and interest rates in short and medium runs. Moreover, in his neo-classical writings on capital and interest Fisher had laid the basis for the investment and saving equations central to modern macroeconomic models. Had Fisher pulled these strands together into a coherent theory, he could have been an American Keynes." Fisher never pulled the strands of his economics together in a grand synthesis. His monetary economics, from the

equation of exchange through index numbers to the compensated dollar, was united by a concern with the consequences of imperfectly expected monetary shocks but was not set in the context of either the general-equilibrium analysis of his dissertation or his capital theory. Above all, Fisher did not deal with the macroeconomic coordination problem that Keynes and Friedrich von Hayek tackled in very different ways. He offered no explanation of how a drop in nominal income and spending led to mass unemployment in the 1930's. Because of that lack, and amid the wreckage of his reputation and finances by his misjudgment of stock prices, Fisher found no contemporary audience for his debt-deflation theory of depressions, his explanation of the spending collapse. Even his monetary theory of economic fluctuations was forgotten as introductory textbooks attached his name to a constant-velocity, constant-output quantity theory. With historical perspective, however, Fisher can now be recognized among the most fruitful builders of modern macroeconomics.

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