

## TOBIN'S KEYNESIANISM

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### Introduction

In September 1936, when James Tobin was an eighteen year-old sophomore taking principles of economics (Ec A) at Harvard, his tutor Spencer Pollard (a graduate student who was also the instructor of Tobin's Ec A section) "decided that for tutorial he and I, mainly I, should read 'this new book from England. They say it may be important.' So I plunged in, being too young and ignorant to know that I was too young and ignorant" to begin the study of economics by reading Keynes's *General Theory of Employment, Interest and Money* (Tobin 1988, 662). Pollard was right: the book did turn out to be important, not least for its lasting role in shaping Tobin's intellectual development. Tobin (1992, 1993) remained proud to call himself an "Old Keynesian" in contrast to New Keynesian, New Classical, and Post Keynesian economics, and, when Harcourt and Riach (1997) edited *A "Second Edition" of the General Theory* it was fitting that they invited Tobin (1997) to contribute the overview chapter, with the first part of the chapter

written “as J. M. Keynes.”<sup>1</sup> Although Sir John Hicks (1935, 1937, 1939) and Irving Fisher also influenced Tobin<sup>2</sup>, his approach to economics was always most deeply shaped by Keynes and by the experience of growing up in the Great Depression of the 1930s.

Throughout his career, Tobin was concerned with developing macroeconomic theory that would be relevant for stabilization policy, to prevent another depression and to improve people’s lives by promoting growth and stability, rather than with analytical problem-solving for its own sake. The Great Depression was associated with the breakdown of the US banking system and with Keynes’s argument that depression due to inadequate effective demand was a distinctive problem of a monetary economy as opposed to a barter economy. More than any of the other leading American Keynesians of his generation – Paul Samuelson, Robert Solow, or Franco Modigliani, James Tobin concerned himself with the functioning and malfunctioning of monetary system, telling David Colander (1999, 121) “I differed from that group [American Keynesians in the 1950s] in that I taught that monetary policy was a possible tool of macroeconomic policy and that to neglect it was a mistake.” Tobin set himself apart from Keynes’s disciples at Cambridge University (such as Joan Robinson, Richard Kahn, and Nicholas Kaldor) and their Post Keynesian allies in the United States because he objected to “throwing away the insights of neoclassical economics” (in Colander 1999, 121). Even his late-career mellowing towards the British side of the Cambridge capital controversies was subtitled “A Neoclassical Kaldor-Robinson Exercise” (Tobin 1989b). But he also stood aside from

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<sup>1</sup> Because a snowstorm closed airports on the US East Coast during the American Economic Association meetings in San Francisco in January 1996, keeping Tobin in Connecticut, I found myself presenting a paper by Tobin writing as Keynes to the AEA session marking the 60<sup>th</sup> anniversary of *The General Theory*.

<sup>2</sup> Tobin was a consulting editor for Fisher (1997), and a contributor to Dimand and Geanakoplos (2005), the proceedings of a Yale conference on Fisher co-organized by Tobin. His earlier articles on Fisher are also reprinted in the conference volume.

New Keynesians: “If it means people like Greg Mankiw, I don’t regard them as Keynesians. I don’t think they have involuntary unemployment or absence of market clearing” (Tobin in Colander 1999, 124). Tobin thus staked a distinctive claim to Keynes’s contested heritage. He reiterated this claim, using Keynes’s term “liquidity preference” in the title of his article on demand for money as an asset (Tobin 1958), linking the proposed Tobin tax to restrain international currency speculation to Keynes’s proposed turnover tax to curb stock market speculation (Keynes 1936, Tobin 1984), and building his theory of investment around Tobin’s  $q$  (Brainard and Tobin 1968, Tobin and Brainard 1977), a concept closely related the  $Q$  of Keynes’s *Treatise on Money* (1930)<sup>3</sup>, notation that Keynes had chosen because of Alfred Marshall’s quasi-rents.

### **The Central Propositions of *The General Theory* According to Tobin**

In “How Dead is Keynes?” Tobin (1977) summarized the central message of Keynes’s *General Theory* in four propositions and argued that reports of the death of Keynes, like those of the demise of Mark Twain, were much exaggerated: “none of the four central Keynesian propositions is inconsistent with the contemporary economic scene here or in other advanced democratic capitalist countries. At least the first three fit the facts extremely well. Indeed the middle 70s follow the Keynesian script better than any post-war period except the early 60s. It hardly seems the time for a funeral” (1977, 460).

Tobin’s first central Keynesian proposition was that “In modern industrial capitalist societies, wages respond slowly to excess demand or supply, especially slowly to excess supply” so that over “a long short run” fluctuations in aggregate demand affect real

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<sup>3</sup> Tobin’s  $q$  is the ratio of the market value of equity to the replacement cost of capital, while, on one of two interpretations given in the *Treatise*, Keynes’s  $Q$  is the difference between the two (see Dimand 1988).

output, not just prices. A corollary of this was the second proposition, “the vulnerability of economies like ours to lengthy bouts of involuntary unemployment.” The only distinctively Keynesian aspect of Tobin’s first two central Keynesian propositions was the insistence on the phenomenon of involuntary unemployment, an excess supply of labour in a non-clearing labour market. Replace “involuntary unemployment” with “high unemployment” in the second proposition, and the two propositions would be acceptable to David Hume in 1752, Henry Thornton in 1802, Alfred Marshall in 1887, or Milton Friedman (1968). Tobin (1977, 459-60) pointed to the high unemployment since 1974 as supporting evidence, insisting that the increased unemployment was indeed involuntary: “People willing to work at or below prevailing real wages cannot find jobs. They have no effective way to signal their availability.” In contrast, in Friedman (1968) with adaptive expectations and the expectations-augmented Phillips curve and in Lucas (1981a) with the monetary-misperceptions version of New Classical economics, the labour market clears, but the labour demand curve shifts as workers are fooled by monetary shocks into misperceiving the real wage. Tobin’s first two Keynesian propositions summarized widely-shared views (although New Classical economists would be troubled by the very idea of involuntary behaviour), and came to textbook Keynesianism from Chapter 2 of Keynes (1936), in which Keynes discussed the two classical postulates of the labour market. Keynes accepted the first classical postulate, that the real wage is equal to the marginal product of labour (that is, the economy is competitive and on the labour demand curve), but rejected the second one, that the utility of the real wage is equal to the marginal disutility of labour (that is, the economy is on the labour supply curve). Although Keynes’s Chapter 2 provided an account of why staggered contracts and

concern of workers with relative wages could make nominal wages sticky downwards without any money illusion (a precursor of the more formal modeling of Taylor 1980<sup>4</sup>), the textbook version and Tobin's first two Keynesian propositions were consistent with the claim that Keynesian analysis, however practically important, was theoretically trivial: just a classical system with a sticky nominal wage rate. Emphasizing slow adjustment of prices and money wages implied viewing Keynesian unemployment as a disequilibrium situation, a short-run phenomenon of transition periods, rather than accepting Keynes's claim to have shown the possibility of equilibrium with involuntary unemployment (excess supply of labour).

“Writing as J. M. Keynes” for *A ‘Second Edition’ of The General Theory*, Tobin (1997, 7) held that Keynes (1936, Chapter 2) “leaned too far to the classical side, as I learned shortly after the book was published, thanks to the empirical studies of [John] Dunlop and [Lorie] Tarshis. If the first classical postulate were correct, then we would expect real wages – measured in terms of labour's product rather than workers' consumption – to move counter-cyclically. However, Dunlop and Tarshis found that product-wages were, if anything, pro-cyclical. This is not a fatal flaw in the general theory; quite the contrary: my essential propositions remain unscathed. ... If increases in aggregate demand can raise employment and output without diminishing real wages, so much the better! ... Nothing is lost by recognizing that imperfect competition and sluggish price adjustment may result in departures from marginal cost pricing, especially

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<sup>4</sup> Tobin expressed a high opinion of Taylor's work on staggered contracts and relative wages when Tobin and Taylor jointly taught graduate money and finance while Taylor was a visiting professor at Yale in 1979-80. Later, Tobin took a sympathetic interest in the research of his Cowles Foundation colleague Truman Bewley (1999), formerly an abstract mathematical economist, who (like Blinder 1991) took the daring methodological step of asking employers why they didn't cut wages in recessions: given staggered contracts and that workers care about relative wages, money wage cuts reduce morale and productivity.

in short runs” (see articles by Dunlop, Tarshis, Keynes, and Ruggles reprinted, together with Tobin 1941, in Dimand 2002, Volume VIII).

Tobin’s third central Keynesian proposition was that “Capital formation depends on long run appraisals of profit expectations and risks and on business attitudes toward bearing the risks. These are not simple predictable functions of current and recent economic events. Variations of the marginal efficiency of capital contain, for all practical purposes, important elements of autonomy and exogeneity” (1977, 460, cf. Keynes 1936, Chapter 12, “The State of Long-Term Expectation”). This emphasis on autonomous shifts of long-period expectations (Keynes’s “animal spirits”) rejected the rational expectations hypothesis introduced into macroeconomics in the 1970s by Robert Lucas (1981a), Thomas Sargent, and Neil Wallace, as well as the endogenous, adaptive expectations of Friedman (1968). Tobin’s emphasis on fluctuations in long-period expectations of future profits fitted with a view that the Wall Street crash of October 1929 mattered for investment and the Great Depression (the market value of equity, the numerator of Tobin’s  $q$ , is the present discounted value of expected future after-tax net earnings), in contrast to Friedman and Schwartz (1963), who reinterpreted the Great Depression as a Great Contraction of the money supply resulting from mistaken Federal Reserve policy. Tobin’s third central Keynesian proposition also undermined attempts (for instance by Minsky 1981 and Crotty 1990) to contrast an allegedly neoclassical Tobin’s  $q$ , supposedly based on a known probability distribution of underlying fundamental variables, with a more truly Keynesian approach that recognized fundamental uncertainty and exogenous shifts in long-period expectations (see Dimand 2004b).

The fourth central Keynesian proposition in Tobin (1977), following Chapter 19 of *The General Theory*, held that “Even if money wages and prices were responsive to market excess demands and supplies, their flexibility would not necessarily stabilize monetary economies subject to demand and supply shocks.” This proposition, advanced vigorously by Tobin (1975, 1980, 1992, 1993), placed the Keynesian challenge to what Keynes termed “classical economics” on a level of core theory. Keynesianism, as interpreted by Tobin, could not be dismissed as nothing more than the empirical observation (or arbitrary assumption) that money wage rates are sticky downwards. Even if prices and money wages responded promptly, the economy might fail to automatically re-adjust to potential output after a large negative demand shock and might require government intervention to restore full employment. Making money wages more flexible by eliminating trade unions, minimum wage laws, and the dole might just make things worse. Tobin’s fourth Keynesian proposition, and the emphasis on Chapter 19 as crucial to understanding the message of Keynes’s *General Theory*, were central to Tobin’s Keynesianism: involuntary unemployment might be a disequilibrium phenomenon, but the system might not have any mechanism to move it back to the full-employment equilibrium after a sufficiently large negative demand shock. Tobin (1977, 460) endorsed “Keynes’s challenge to accepted doctrine that market mechanisms are inherently self-correcting and stabilizing.” Unlike his first three central Keynesian propositions, Tobin did not claim empirical support for the fourth proposition: since money wages and prices did not in fact respond rapidly to excess demands and supplies, there could not be much direct evidence of what would happen in that counterfactual situation. The case for the fourth proposition had to be made, as in Tobin (1975), at a theoretical level. It was a case

that he only made explicitly and formally from the 1970s onwards, when Keynesianism was under challenge from natural rate theories, first the monetarism of Friedman (1968) and then the New Classical economics of Lucas (1981a), which claimed the demand stimulus could increase employment and output only by tricking workers into accepting a lower real wage that they thought were getting. Unfortunately Robert Lucas (1981b), in his review article about Tobin (1980), ignored Tobin's first lecture about disequilibrium dynamics, stability, and failure of self-adjustment, to concentrate on protesting against the description in Tobin's second lecture of Lucas's New Classical approach as "Monetarism, Mark II," just Friedman's natural rate hypothesis and expectations-adjustment Phillips curve with rational expectations in place of adaptive expectations.

"Writing as J. M. Keynes," Tobin (1997, 4) stated that "The central questions before economists of our generation are: 'Does our market capitalist economy, left to itself, without government intervention, utilize fully its labour force and other productive resources? Does it systematically return, reasonably swiftly, to a full employment state whenever displaced from it?' The faith of the classical economists assures us 'yes'. The answer of *The General Theory* is 'no'. ... Fortunately, it appears that the remedies lie in government fiscal and monetary policies and leave intact the basic political, economic and social institutions of democracy and capitalism" (contrary to the faith of the young Marxists who, to Keynes's dismay, were prominent in the Cambridge Apostles in the 1930s). Writing as himself, Tobin (1997, 27) concluded "Classical faith that demand-deficient economies will recover on their own failed theoretical and empirical challenge in Keynes's day. It fails now again, more than half a century later."

## **Microeconomic Foundations for IS-LM**

Tobin was present at the creation of Alvin Hansen's one-good version of the IS-LM model of goods market and money market equilibrium that became the mainstay of American Keynesian teaching. Tobin, then a junior member of Harvard's Society of Fellows, and Seymour Harris, as editor of the Economic Handbook Series, were the only people thanked in the preface to Hansen (1949, vi) for reading and commenting on the manuscript, and Hansen (1949, 168n), when citing Tobin (1947-48), declared "I have relied heavily upon his analysis." Tobin (1947-48) had used the IS and LM curves, and the small system of simultaneous equations underlying them, to show that the preference of pioneer monetarist Clark Warburton (1945) for monetary policy rather than fiscal policy rested on an unstated assumption that the demand for money was insensitive to changes in the interest rate.

Post Keynesians rejected the IS-LM model as underplaying the importance of fundamental, uninsurable uncertainty (as distinct from insurable risk), and because Keynes would never have countenanced representing his theory by a system of simultaneous equations – although it turns out that a four-equation IS-LM model first appears in a lecture by Keynes in December 1933, attended by David Champernowne and Brian Reddaway, who later published the first models equivalent to IS-LM (Dimand 2007). Monetarists such as Milton Friedman also shunned the IS-LM diagram as being drawn for a given price level (e.g. the critiques of the "Yale school" by Brunner 1971 and Meltzer 1989), except when Friedman used it in Gordon (1974) in an attempt to communicate with his Keynesian critics – an instance later cited by some Post Keynesians as evidence that mainstream American Keynesian users of IS-LM were really

classical rather than Keynesian. Tobin (1980, Lecture I) responded to this monetarist objection to IS-LM by using IS-LM diagrams with the interest rate and price level on the axes to analyze situations of full employment, drawing the curves for given output. Tobin continued to find the IS-LM framework useful, but devoted his career to extending it and providing richer and deeper microeconomic foundations for its investment, consumption, money demand, and money supply components, particularly with regard to a full range of assets and to stock-flow consistency (Dimand 2004a). Tobin (1980, 73) began the third and last of his Yrjö Jahnsson Lectures by saying that he would “be particularly concerned with the Keynesian model and the famous IS/LM formalization by Sir John Hicks [1937]. . . . I shall consider critically its possible interpretations, some objections to them raised by others, and some of my own. Yet I want to begin by saying that I do not think the apparatus is discredited. I still believe that, carefully used and taught, it is a powerful instrument for understanding our economies and the impacts of policies upon them.” Tobin (1980, 94) ended that lecture with “one major general conclusion, namely the robustness of the standard results of Hicksian IS/LM analysis. They survive in these models in which time, flows, and stocks are more precisely and satisfactorily modeled, in which time is allowed for flows to affect the stocks of government liabilities and of other assets too, in which the menu of distinct assets is as large as desired.” Many of the extensions that Tobin made to the asset market side of the IS-LM framework pioneered by Hicks (1937) were in the spirit of Hicks (1935), where Hicks had argued for treating the theory of money as an application of general economic theory to portfolio choice<sup>5</sup>. Tobin (in Gordon 1974, 77n) observed that “The synthesis of the last twenty-five years

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<sup>5</sup> Tobin always emphasized his respect for Hicks, for instance traveling to Glendon College of York University, Toronto, in the summer of 1987, when Hicks, by then elderly and frail, was visiting there.

certainly contains many elements not in the *General Theory* (Keynes 1936). Perhaps it should be called Hicksian, since it derives not only from his IS-LM article but, more importantly, from his classic paper on money (Hicks 1935).”

Tobin’s doctoral dissertation was on consumption and saving, introducing wealth as well as income as an argument in the consumption function. Tobin’s q theory of investment dealt with the other part of the IS (investment/saving) goods market equilibrium condition. Tobin offered microeconomic foundations for both the liquidity preference (money demand) and the money supply components of the LM money market equilibrium condition, making it just of many asset market clearing conditions. He developed a model of the optimizing commercial banking firm and used it to study how, in a world of many assets that are imperfectly substitutable for each other, the endogenous money supply is affected by changes in the monetary base, a choice variable controlled by the monetary authority (Tobin with Golub 1998), since endogeneity of the money supply does not by itself imply a horizontal LM curve (in contrast to Moore 1988).

Keynes (1936) was the first to write money demand as a function of income and the interest rate, although others had come close before, with Irving Fisher stating the marginal opportunity cost of holding real cash balances in 1930. Tobin sought to ground such a demand function for non-interest-bearing, fiat money in the decisions of rational, optimizing individuals. Tobin (1956), like William Baumol (1952) and Maurice Allais (1947) (see Baumol and Tobin 1989 on Allais’s priority), derived the square root rule for the inventory-theoretic approach to the transactions demand for money from minimization of the total costs of cash management, consisting of the transaction cost

incurred whenever interest-bearing assets were converted into means of payment, plus the interest foregone by holding part of one's wealth as money.

Tobin's "Liquidity Preference as Behavior towards Risk" (1958) considered the demand for money as an asset that risk-averse investors held in portfolios even though its expected return of zero was strictly less than the expected return on risky assets, because holding money was riskless in nominal terms. Keynes (1936) had assumed that agents held a fixed expectation of what the interest rate would be in the future, but Tobin, as he told Shiller (1999, 885), "wanted to have an explanation for the demand for money that didn't depend on there being a different interest rate from the one which the model produced. That's perfectly good rational expectations methodology ... that's what that article was all about. It wasn't about creating the CAPM model or the separation theorem. The separation theorem just came out naturally from the way I was modeling this thing."

Tobin developed a multi-asset framework, in which money was an imperfect substitute for other assets, with asset demands linked across markets by the adding-up constraint that asset demands have to sum to wealth, and with flows of saving and investment changing the stocks of assets over time. The adding-up constraint (or, in other models, Walras's Law summing individual budget constraints) makes one asset market clearing condition redundant, but Brainard and Tobin (1968) warned about the pitfall of implausible implied elasticities for the omitted demand function. Brunner and Meltzer (1993) also developed a multi-asset model, but Tobin expressed amazement that "at the same time they have multiasset substitutable assets and yet, in the end, they come to a monetarist result which seems to be inconsistent with the assumed substitutability among assets, including the substitutability of some assets for money proper" (Colander 1999,

124). While incorporating wealth as an adding-up constraint, stock-flow consistency, and optimization in models of specific functions such as money demand, Tobin refused to think of markets as linked by the budget constraint of an optimizing representative agent (see Geweke 1985, Kirman, 1992, and Hartley 1997 on representative agent models). Tobin held that representative agent models were totally unsuited to analyzing the macroeconomic coordination problem posed by Keynes (Dimand 2004a). Tobin objected strongly to claims that overlapping generations (OLG) models, dependent on the very strong assumptions that money is the only asset and that the number of successive generations is infinite, provide rigorous microeconomic foundations for the existence and positive value of fiat money (see his comments in Karekan and Wallace 1980 and in Colander 1999). While Tobin emphatically did not consider OLG models a satisfactory explanation for the positive value of fiat money, he found them useful for analyzing intertemporal consumption choice. Willem Buiter (2003, F590-F591) observes that “During the 1960s, 1970s, and 1980s, Tobin made a number of key contributions to the theory and empirics of the life-cycle model, putting it in an Allais-Samuelson overlapping generations (OLG) setting ... The empirical methodology employed is an early example of simulation using calibration. With only a modicum of hyperbole, one could describe Tobin as the methodological Godfather of the RBC [real business cycle] school and methodology of Kydland and Prescott!”<sup>6</sup>

### **Tobin’s $q$ and the Post Keynesians**

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<sup>6</sup> However, when Colander (1999) asked Tobin “How about real business-cycle theorists?” Tobin replied “Well, that’s just the enemy.”

Tobin's relationship with Post Keynesians was complicated (see Dimand 2004b). Geoffrey Harcourt saw Tobin as an ally defending Keynesian demand management against monetarist and New Classical challenges, and invited Tobin to write the overview chapter of Harcourt and Riach (1997). Tobin (1960) satirized Nicholas Kaldor's theory of distribution, but later Tobin invited Kaldor to give the first series of Arthur Okun Lectures at Yale in 1983 and contributed to a journal issue honoring Kaldor (Tobin 1989b). Paul Davidson (1997), advocate of an international currency union under which currencies subject to speculative attack would have only one-way convertibility, nevertheless insists that a "Tobin tax" on currency trades (Tobin 1978) of even a few basis points would disrupt trade and long-term capital flows but would, even if a few percentage points, be insufficient to curb short-term flows of "hot money."

Hyman Minsky (1981, 1986), like Tobin an admirer of Keynes (1936, Chapter 19) and of Fisher (1933), like Tobin supervised by Joseph Schumpeter and Wassily Leontief as a student at Harvard (both Minsky and Tobin were there from 1946 to 1949), dismissed Tobin as being at heart neoclassical rather than Keynesian. Tobin (1989a, 75) protested that Minsky (1986, 5n, 133-38) "accuses the misguided Keynesians of embracing the Pigou-Patinkin real balance effect as a proof that flexibility of wages and prices ensures full employment so that governmental macroeconomic interventions are not needed. This is just not true. I, for example, say the opposite in publications that Minsky knows and actually cites" – such as Tobin (1975, 1980). Tobin (1989a, 73), reviewing Minsky (1986), declared that "this 'post-Keynesian' theory is not convincingly linked to the central message of the book, the financial theory of business cycles. Minsky's excellent

account of asset pricing and investment decisions is separable from his theory of prices, wages and profit. It sounds like ‘q’ theory to me.”

James Crotty (1990) also contrasted a Keynesian Minsky with a neoclassical Tobin. Tobin and Brainard (1990, 66-67) responded by insisting on their agreement with Keynes’s “stress in Chapter 12 of the *General Theory* on the inevitable role of non-rational attitudes – optimism and confidence or their opposites – in forming estimates of the marginal efficiency of capital. ... Nothing excuses [Crotty’s] charge that ‘Tobin places Keynes’s stamp of approval on the rational expectations, efficient-markets general equilibrium models that are the modern extensions of the classical theory Keynes so vehemently opposed’.” Tobin and Brainard (1990, 71) also took umbrage at Crotty’s remark about “Tobin’s stable and efficient financial markets”, protesting that “We did not use the word ‘stable.’ Our word ‘efficient’ referred only to technical market-clearing efficiency. We did not say or mean that stock markets come up continuously with fundamental valuations. In this 1977 article, which Crotty cites, and in others on ‘q’, we followed Keynes in believing that speculation makes prices diverge from fundamental values. Again putting his own word in Tobin’s mouth, Crotty says in his footnote 9 that in his 1984 article, ‘Tobin appears to recant his belief in the valuation efficiency of financial markets’. The term ‘valuation efficiency’ does not appear in our 1977 article, and no other writing of ours, individual or joint, asserts such a belief. Tobin had nothing to recant” (see also Tobin and Brainard 1977, Tobin 1984, Shiller 1989). Tobin (interviewed by Shiller 1999, 887-88) firmly distinguished his and Brainard’s q, an observable market variable taken as a datum by agents, from the neoclassical q of Fumio Hayashi (1982), a shadow price that solves an optimization problem.

### **Is the Economic System Self-Adjusting?**

The fourth central Keynesian proposition identified by Tobin (1977) was that even if money wages and prices were flexible, their flexibility would not necessarily ensure stability. According to Keizo Nagatani (1981, 117), “The stability question to which Keynes addressed himself in the *General Theory* and that Tobin (1975) discussed is now interpreted as the question whether or not the sequence of temporary equilibria will converge to a short-run equilibrium. This, I believe, is the fundamental problem in macroeconomics. But this is also a very complex problem, to which only a partial answer can be given” (see also Driskill and Sheffrin 1986, De Long and Summers 1986, and Chadha 1989 as examples of the debate ignited by Tobin 1975).

Tobin (1975) presented what he called a Walras-Keynes-Phillips model in which, even if the model had a unique equilibrium at potential output  $Y^*$  (which Tobin emphasized was not in fact his opinion), output might continue to diverge further from potential output after a negative demand shock, despite incorporating the Pigou-Haberler real balance effect in the model. The resulting unemployment would be a phenomenon of disequilibrium dynamics, but if there was no convergence to the full-employment equilibrium, it did not matter that the system described by the model lacked an unemployment equilibrium. The stabilizing Pigou-Haberler real balance effect of a *lower* price level (implying a larger real value of outside money, hence higher wealth, hence more consumption) could be swamped by the destabilizing effects of a *falling* price level. Expectations of falling prices reduce the opportunity cost of holding real money balances, and hence increase the demand for real money balances, a leftward shift of the LM curve.

Tobin (1980, Lecture I), like Minsky (1975), also invoked the debt-deflation process described by Irving Fisher (1933): the rising real value of inside debt denominated in nominal terms does not wash out, because the increased risk of bankruptcy raises risk premiums on loans and because the transfer of real wealth from borrowers to lenders depresses spending, since they presumably were sorted into borrowers and lenders by their different propensities to spend. The volume of inside debt far exceeds the quantity of outside money on which the real balance effect acts. Don Patinkin (1965), like A. C. Pigou, had concluded that the real balance effect proved in theory that wage flexibility could restore full employment after a negative demand shock even if the nominal interest rate could not decline (e.g. if it had fallen to zero), even if in practice expansion of aggregate demand would be a faster route to full employment than wage cutting. Tobin (1975) argued that Pigou's case against Keynes was not established even in theory. Clower (1984) and Leijonhufvud (1968, 1981) had also interpreted Keynes as challenging classical economics on theory, not just policy, but on the grounds that Walras's Law did not hold for quantity-constrained demands (the amount of labour that an unemployed worker cannot sell multiplied by the prevailing wage that the worker is not receiving should not count in the worker's budget constraint), rather than the dynamics of adjustment. Tobin told Colander (1999) that he had nothing against the Clower-Leijonhufvud approach, but did not feel that he had been much instructed by it.

Tobin (1997, 12-13) had "Keynes" write in a supposed second edition, "In Chapter 19 I emphasized the negative effects of increasing debt burdens, and Professor Fisher has made a convincing case that debt burdens augmented by deflation exacerbated the Great Depression in the United States. I also agree with Professor Fisher that, whatever may be

the effects of lowering the level of money-wages and prices, the process of moving to a lower level is counterproductive. Expectations of deflation are equivalent to an increase in interest rates. For these reasons, I do not regard Professor Pigou's counterthrust as a refutation of the general theory on an abstract theoretical plane, *a fortiori* on the plane of practical policy. Indeed, I remain of the opinion that a fairly stable money-wage will result in less volatility both of output and employment and of prices."

Tobin (1975) stated the crucial necessary condition for stability in his model, but did not present the derivation. The necessary and sufficient conditions for stability in Tobin's 1975 Walras-Keynes-Phillips model are derived in Bruno and Dimand (2007), where it is shown that Tobin's 1975 WKP model possesses a corridor of stability, such as Leijonhufvud called for in 1973 (reprinted in Leijonhufvud 1981, 103-129). That is, the model is self-adjusting for small shocks, but can be pushed outside the corridor of stability by a sufficiently large negative demand shock, so that it then moves even further away from potential output. This feature of the model captures the intuition that Great Depressions happen only occasionally: most of the time, markets adjust. The reason for the corridor of stability is that one of the stabilizing forces, the so-called Keynes effect by which a lower price level increases the real money supply and so lowers the interest rate, weakens and then vanishes as the nominal interest rate falls towards zero.

### **Conclusion: "An Old Keynesian Counterattacks"**

Tobin remained proud to call himself an "Old Keynesian" (see Purvis 1982 and Buiter 2003 on the full range of his contributions to economics). His disequilibrium dynamic interpretation of Keynes, making Chapter 19 central to *The General Theory*, set Tobin

apart both from Keynes's opponents and from the defenders of Keynesian unemployment equilibrium. Tobin (1975, 1977, 1980, 1992, 1993, 1997) developed and expounded this disequilibrium dynamic version of Keynes as a counterattack against natural rate theories, showing that even if there was a unique natural rate equilibrium, the system need not be self-adjusting in the absence of governmental stabilization after a sufficiently large negative demand shock. Chapter 19 of Keynes's *General Theory* first appeared as central to Tobin's interpretation of Keynes in 1975, joined by Fisher (1933) in 1980. Too neoclassical for many Post Keynesians, Tobin grounded asset demand functions (including money demand) and consumption decisions in the optimizing behavior of rational individuals, and emphasized adding-up constraints and stock-flow consistency, but he rejected representative agent models with continuous labour market-clearing as useless for understanding the macroeconomic coordination problem. His approach, strongly influenced by Hicks (1935) and Fisher (1933) as well as by Keynes (1936, Chapters 12 and 19), was recognizably distinct from the rest of the American Keynesian mainstream, which paid less attention to the monetary system, to multi-asset modeling, and to disequilibrium dynamics.

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