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MACROECONOMICS AND FISCAL POLICY:

PAUL A. SAMUELSON AND MODERN ECONOMICS

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Chapter : Macroeconomics and Fiscal Policy

by James Tobin

The Young Keynesian at Harvard

When the Keynesian Revolution burst upon Cambridge, Massachusetts in 1936 Paul Samuelson, all of twenty years old, had been a graduate student at Havard for less than a year. Ten years later he recalled the invasion [1946, II, 114, p. 1517].[/]

> I have always considered it a priceless advantage to have been born as an economist prior to 1936 and to have received a thorough grounding in classical economics. It is quite impossible for modern students to realize the full effect of ..."The Keynesian Revolution" upon those of us brought up in the orthodox tradition ... To have been born as an economist before 1936 was a boon--yes. But not to have been born too long before!
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> Bliss was it in that dawn to be alive
> But to be young was very heaven!

I was born a year too late, alas. I began studying economics as a Harvard sophomore in 1936, and my tutor Spencer Pollard blithely suggested we start by reading this new book from England. Unlike Paul, who as an undergraduate at Chicago studied under Simons, Knight, Viner, Director and company and consorted with graduate students named Stigler, Wallis, Hart and Friedman, I didn't really know what I was rebelling against.

/. Citations of Samuelson's Collected Scientific Papers give year of original publication, volume in roman numerals, chapter, and sometimes specific pages.

But maybe the classically educated old-timers like Paul didn't either, for later he often said and wrote that there was no clear explicit classical macro model prior to the Keynesian challenge. Anyway the virus that, as he recounts, so rapidly conquered the young economists of Cambridge they in turn transmitted to us undergraduates in classes, seminars, tutorials, and common rooms. And so, though he was never formally my teacher, I began learning from Paul Samuelson in those exciting years, and I'm still at it.

Samuelson's program at Harvard was not conventional graduate study. He had anticipated much of that at Chicago, and at Harvard he was soon liberated from requirements by appointment to the Society of Fellows. He undertook the ambitious and searching formal investigation of economic theory ultimately compiled in his Foundations. A theorist so gifted in the calculus of optimization and market-clearing and so fascinated by the elegance of neoclassical equilibrium and welfare results might have been immune to the Keynesian virus. As many general equilibrium theorists have done then and since, he might have thrown up his hands at the messy problems and untidy techniques of macroeconomics. Samuelson chose to work both sides of the street.

A big reason was certainly Cambridge itself, the American scene of intense debate over the world economic crisis and the crisis of world economics. Haberler, Hansen, Harris, Schumpeter, and Williams were in the thick of battles fought in an unceasing sequence of classes, seminars, forums, papers, and conversations. So was an unparalleled band of

eager talented junior faculty and graduate students, among them the Sweezys, the Salants, Metzler, Goodwin, Galbraith, R. A. Gordon. Academic economics seemed terribly important, both for understanding the Depression and for overcoming it.[1]

In this setting Samuelson became a Keynesian as well as a Walrasian, though he says [1946, II, 114] it took him and everyone else at least eighteen months and help from the equations of Hicks, Lange, Meade, and Harrod to understand the General Theory. A brash enfant terrible, Paul amazed and delighted his contemporaries and us youngsters by puncturing the classical fallacies of senior professors and unwary visitors or exposing their shaky grasp of new truth.

What if Paul had stayed at Chicago? What if he had gone to Columbia, as his Chicago mentors urged? Would he have eschewed macroeconomics? Would he have become a monetarist? Probably even he cannot be sure. My own guess is that he would sooner or later have come to terms with Keynesian macroeconomics in much the same way he in fact did. Given his voracious appetite for all economics, given his real-world curiosities and concerns, he was bound to give Keynes most serious attention. As a microeconomist, he was never so bewitched by the miracle of the Invisible Hand as to regard market failure as per se implausible. Moreover, his early articles display

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1/. Samuelson's own reminisences are in [1972, IV, 278].

a general interest in stability of equilibrium and a generous admiration for the pragmatic pre-Keynesian dynamic models of Frisch and other European mathematical economists.

But only at Harvard could he have become friends with Alvin Hansen, the major personal association and example attracting Samuelson to Keynes and to macroeconomics. Hansen's integrity, shown by his public 180° change of mind about the General Theory at age 50, his evident conviction and seriousness of purpose, his lack of pretension, and his collegial treatment of students and junior faculty -- all earned him affection, admiration, and influence among young scholars. Samuelson expresses these feelings in several tributes [1959, II, 84; 1975, IV, 287; 1976, IV, 285]. From his young friend Samuelson, Hansen asked and received theoretical and technical help and collaboration, including the famous accelerator-multiplier model, Paul's first published contribution to macroeconomics [1939, II, 82].

The Coverage of This Chapter

In this appreciation of Paul Samuelson as macro-economist I shall concentrate on his contributions to the methodology and substance of macro model-building and to the positive and normative theory of stabilization, with emphasis on fiscal policy. This was Samuelson's own emphasis in his first twenty-five years, both in his pathbreaking early papers on multiplier statics and dynamics and in his crystallization of the neoclassical synthesis after the second world war. But at no stage was Samuelson a "fiscalist," and I shall point out the important role

money and monetary policy played in his macroeconomics from the beginning. More thorough reviews of his contributions to the theory of money and finance are provided by Don Patinkin and Robert Merton elsewhere in this volume.

There are several other overlaps, reflecting connections of Samuelson's macro-economics to his many other interests and fields of contribution. This chapter concerns income determination in the short run and stabilization policy, but these topics necessarily intersect Samuelson's work on capital theory and long-run economic growth, treated in Robert Solow's chapter. Likewise Samuelson was a student of public finance theory in general, not just fiscal macro-economics, as will be evident both here and in Cary Brown's review.

Samuelson's model of inter-generational consumption loans [1958, I, 21] is treated elsewhere in this book. It has turned out to be an amazingly insightful construct, with implications for basic monetary and macro-economic theory that have only recently begun to be fully exploited. Its overlapping-generations set-up is the simplest major competitor to the classical simplifying assumption that economic agents have infinite horizons. On the difference between infinite and finite horizons turn such issues as the elasticity of the economy's ultimate demand for wealth, the absorption of saving by government deficits financed by interest-bearing debt, the displacement of capital by money, public debt, and unfunded social insurance, the long run neutrality of inflation and monetary growth, and the optimality of monetary saturation. As both

Keynes and Samuelson understood, that savers and investors acquire assets that last longer than they do is a crucial macro-economic fact. I do not expatiate here on these fruits of a paper written 23 years ago. I simply marvel at the prescience and genius they confirm.

I cannot do justice to several well known unusual aspects of Samuelson's voluminous writings. His feeling for economics as an evolving science with history and tradition is rare, all too rare, among modern economists. In every field he wrote about he learned the history of doctrine and wrote perceptively about the major contributions and contributors of the past. Notable for macro-economics are his essays on Keynes and Hansen cited above, and on Wicksell [1959, II, 120]; Harris [1975, IV, 284]; Schumpeter [1951, II, 116]; and Lerner [1963, II, 183] - - all marvelous examples of intellectual and personal biography. His substantive papers are full of illuminating reference to the histories of their subjects, placing his own results in perspective for the less learned reader.

What other high-powered mathematical theorist except Irving Fisher has written a running commentary on the events, outlooks, and policies of his years? As I read again a sequence of Samuelson's pieces in this genre, I saw how the Wunderkind from Gary added wisdom to logic, fortunately never sacrificing brashness to maturity. Samuelson has always been a voracious consumer and efficient distiller of the profession's research output, whether theory, empirical findings, or big-model fore-

forecasts. To a far-reaching network of informants within the profession he added over the years contacts in business, finance, and government throughout the world. His comments on current events and issues make good use of inputs from all sources. I have not tried to assess Samuelson's forecasting success, and I suspect he has been too canny to leave an easily tested record. There is the danger that inspection would reveal him to be another Sumner Slichter who often figures in Samuelson's writings as an economist reputed for successful forecasting but by undisclosed and unreplicable methods.

A final and somewhat personal introductory comment. As a member of the Kennedy economic team, I knew, as my colleagues did, that our analysis and strategy were not nearly as "new economics" as the media label suggested. I did not know, more charitably did not remember, how much of our doctrine, as expounded for example in the 1962 Economic Report, Samuelson had written down long before. To mention only two examples, Samuelson coined the concepts of potential output and its growth in [1953, II, 99] and stated then that the objective of counter-cyclical policy was not just to smooth fluctuation and stabilize employment and output but to minimize departures from full employment equilibrium and the trend of potential output. Other long-standing Samuelson contributions to our "new economics" will be clear in my review below of the neoclassical synthesis. By 1961 these ideas had become second nature to us, the public domain of our intellectual heritage. Samuelson was a member, one might better say coach, of that team. But

he certainly didn't remind us that ideas we were so excitedly developing and propagating appeared in his writings ten or fifteen years earlier.

The Statics and Dynamics of Income Determination

In Cambridge in the late 1930s and early 1940s Paul Samuelson undertook a fundamental inquiry into the sources of operationally meaningful propositions in economic theory. By happy chance this inquiry coincided with the ferment triggered by Keynes's General Theory. By still happier chance the new macro-economics was grist for Samuelson's mill; it was the natural subject matter for developing many of the methodological points he sought to make. These concerned the properties of whole systems: the meaning of equilibrium and disequilibrium; statics, stationarity, and dynamics; stability and instability; hysteresis. According to the young Samuelson in [1941, I, 40], it was Ragnar Frisch who had a decade earlier engineered a "revolution of thought" in economics, one comparable to "the transition from classical to quantum mechanics." This was a shift from "statical to dynamical modes" of analysis.

It may seem paradoxical that Samuelson, given this methodological stance, found Keynesian macro-economics a fertile field to plow. The General Theory itself was thoroughly in the statical mode. So were those formalizations by Hicks and others that alone, according to Sam-

uelson's own testimony, made the book comprehensible. The paradox is, of course, resolved by his celebrated and controversial Correspondence Principle, summarized in his dictum "One interested only in fruitful statics must study dynamics." [Foundations, p. 5]

Samuelson found two sources of meaningful propositions in economic theory. One is that relations among observable variables reflect agents' solutions of optimization problems like maximization of utility or profits or wealth. First and second order conditions could then restrict signs and magnitudes in comparative static analyses, for example of the effects of variations of taste, technology, or taxes. However, Samuelson was definitely not sanguine about the power of this principle for relations aggregated over many agents. He was therefore skeptical of its usefulness in generating system-wide propositions. Given the inevitable differences among agents, anything could happen in aggregate and still be consistent with individual optimizations. This modesty, which foreshadows much later rigorous proofs of similar negative results by Sonnenschein, McFadden, Mantel and others, contrasts with a popular current fashion among macro-economic theorists, who achieve the appearance of rigor by assuming away troublesome heterogeneities among agents. In any case, it led Samuelson to emphasize his second theoretical source of meaningful propositions, the correspondence principle.

According to the principle, a general hypothesis of dynamic stability restricts the parameters of a system of relationships [Foundations, p. 5].

With and only with these restrictions can meaningful comparative static propositions about the equilibrium position or motion of the system be obtained. A famous and simple example concerns the Keynesian multiplier: if and only if the marginal propensity to spend is less than one is the equilibrium stable and the multiplier formula usable for predicting the ultimate effect of an exogenous change in investment or government purchases. Initially Samuelson seemed prepared to assert stability as an empirical hypothesis, and thus in the example to say that the marginal propensity to spend must be less than one because otherwise the system would be unstable. After all, he said, unstable systems don't generate many observations -- "How many times has the reader seen an egg standing upon its end?" [Foundations, p. 5]. I recall Joseph Schumpeter's rebuke to this line of reasoning, "Who could ever claim that capitalism is stable?"

Later, after prodding by Donald F. Gordon in 1955, Samuelson retreated, admitting that observations might be generated by a process different from the proposed model under analysis, even by a slowly divergent dynamic system, so that the quantitative information about particular parameters implied by his principle was seriously limited [1955, II, 128]. Moreover, the same static equations may be the equilibrium of a host of dynamic models, so that the stability restrictions are themselves ambiguous. The canon of consistency for theorists of course survives: Don't do comparative statics with dynamically unstable systems.

In [1941, I, 38] Samuelson illustrated the Correspondence Principle

by applying it to several simple models. One of them was a Keynesian IS-LM model with three endogenous variables, income, interest, and investment, and three exogenous parameters for consumption, investment, and money. Like the other examples, this one was methodologically instructive. But the ambiguities in the results -- even when several behavioral partial derivatives were signed a priori -- also show the limitations of the method.

The young Samuelson's belief that the future of economic theory lay in Frisch's footsteps, in explicit dynamical models and in comparative dynamics as well as in proper comparative statics, has not been confirmed in quite the way and the degree that he anticipated. For one thing, such systems easily become too complicated for closed analytical results. This is especially true of non-linear systems, and Samuelson was too optimistic, he would admit, about the usefulness of linear models. Moreover, without and probably also with the restraints of optimizing assumptions, dynamic specifications of behavior equations contain an embarrassing abundance of free parameters, on whose values the model-builder has few clues. Distributed lag structures are a good example. Of course, modern computers permit a great deal of numerical analysis and simulation. Macro-econometric models are nonlinear dynamic systems, and comparative dynamics is their routine stock in trade. But for better or worse their parameter restrictions do not come from theory but are squeezed from data by econometric estimation or are imposed by model-builders' intuitions. Whether the new dynamic economics connected with rational expectations, replacing past initial conditions with future terminal conditions, will realize the Frischian revolution remains an open question. _/

_/. On the methodological issues of this paragraph see Robert E. Lucas, Jr., "Methods and Problems in Business Cycle Theory," Rational Expectations, A Seminar Sponsored by the American Enterprise Institute for Public Policy Research, Journal of Money, Credit and Banking, Nov. 1980, Part 2, 696-715.

As the years wore on, Samuelson himself tended to use the "statical mode" and keep the associated dynamics and stability analysis implicit. Even with respect to the multiplier, he found that the most important lessons came from Keynes's static version rather than from sequential processes of the Kahn, Robertson, or Swedish types. His neoclassical synthesis of macro-economic theory, discussed below, is essentially a comparative static analysis of the equilibrium effects of policy variations.

In any event, Samuelson taught a generation of economists about difference equations, dynamic process analysis, and stability conditions, and immensely clarified their conceptions of equilibrium, disequilibrium, and comparative statics. Most of this brilliant instruction was in the context of macro-economics. Armed with his metatheoretical methodology, Samuelson produced a remarkable series of papers [II, 82, 83, 85, 86, 90, 91; I, 41] ringing all the changes on investment and fiscal multipliers and laying the formal basis for Keynesian fiscal theory. He cut through the confusions of the day regarding: sequential processes v. equilibrium outcomes; saving-investment identities, schedules, and equilibrium equalities: exogenous tax variations v. endogenous responses of revenues; one-shot v. continued multiplicands; pump-priming v. stable multiplier scenarios. He showed that with any linear lagged spending function the ultimate multiplier for a permanent unit injection is the same as the cumulative sum of income increases due to a single unit injection. He offered as a

theorem, quite relevant today, that fiscal stimulus could not pay for itself in augmented tax revenues (thus overlooking the classroom curiosum that this can happen in a stable model if some spending, presumably for investment is induced by before-tax rather than after-tax income). The balanced budget multiplier escaped Samuelson's notice at first, and by his own report he was initially skeptical [1943, II, 108, p. 1446]. Nevertheless, he must be counted as one of the several independent discoverers of this celebrated, probably over-celebrated, theorem, a history of which he gives in [1975, IV, 274].

Perhaps more remarkable for early multiplier papers, Samuelson did not neglect other macroeconomic effects. He explained how monetary, interest, and price responses could affect the parameters, processes, and outcomes. One paper shows how interest rates will evolve during fiscal stimulus, depending on the proportions in which the additional deficit is financed by public debt, low-powered money, and high-powered money. Clarity about stocks and flows was of course characteristic of all his writings, worth noting only because of the confusions in other discussions at the time.

The accelerator-multiplier model, an analysis suggested by Hansen in connection with the 1937-38 recession, was pathbreaking in substance and methodology. Of course it was not the first mathematical

business cycle model, but it was more closely and directly tied to current macro-economic concepts and literary theory than earlier exercises of Frisch and others. It was the progenitor of Metzler's classic inventory cycle models; inventories were more suitable for the acceleration principle than fixed capital. The Hansen-Samuelson model suffered from relating induced investment to movements of consumption rather than total output, a misspecification easy to remedy. All models are parables, and Samuelson always made their morals explicit. Here the lesson was that various literary cycle theorists were mistaken to believe that non-linearities were necessary to explain upper and lower turning points. Samuelson did not recognize at the time the defect of linear models as cycle theories, namely that if the model parameters imply cyclical fluctuations at all they either explode or die out except for singular values of the parameters. Evidently Samuelson sided with Keynes in thinking that exogenous investment shocks rather than intrinsic mechanisms were responsible for the persistence of fluctuations. He rather discounted the durable importance of accelerator-induced investment, because it would eventually have no effect on the capital stock, compared with the more basic determinants of demand for capital emphasized by Keynes and Hansen.

These exercises in the determination of output by effective demand were carried out by a neoclassical price theorist, but he found unproblematic the failure of prices, wages, and interest rates to eliminate excess supplies. Introducing a second and more thoughtful discussion of the accelerator-multiplier model than the original version [1939, II, 83], Samuelson simply refers to frictions and imperfections as evident justifications for proceeding. Indeed Samuelson never found excess supply disequilibrium in the labor market a surprising departure from Walrasian equilibrium worthy of defense or of theoretical investigation. Looking for the essential Keynesian contribution ten years after the General Theory [II, 114], he singled out not nominal wage stickiness but Keynes's insight that capital markets would not be cleared by interest rates, asset valuations, and other financial adjustments without movements of real income.

Probably for similar reasons, Samuelson could never muster much enthusiasm for the controversy about the Pigou or real balance effect, the riposte to the claim of the General Theory that involuntary unemployment could characterize a true equilibrium in the classical sense [1963, II, 115]. Evidently Samuelson agreed all along that in principle competitive markets could not be in Walrasian market-clearing equilibrium with excess supplies of labor. He has been much interested, as a matter of pure theory and the logic of Walrasian

systems, in the issues raised by Patinkin concerning the neutrality of outside money -- or moneys, including government debts -- and the classical dichotomy [1968, III, 176]. Samuelson certainly recognized a wealth effect on demand, emphasizing very early the link from asset revaluation to consumption as a more powerful effect of monetary policy than that of interest rates on investment. But he cites Pigou and quotes a 1935-36 remark of Leontief -- "If wages are low enough, this dime in my hand will employ everyone in the nation" -- more as curious examples of a principle carried to uninteresting extreme than as serious macro-economic argument [II, 115, p. 1536].

Samuelson did not regard the actual economy as perfectly competitive. He thought frictions and imperfections made automatic market adjustment slower than the volatile fluctuations of investment demand associated with Keynes's "state of long-term expectation." He commented, again long before expected price inflation or deflation was so central a theoretical issue and practical concern, that such expectations are quite possibly more important determinants of aggregate real demand than are price levels [1940, II, 88].

From early post-war years on, Samuelson was skeptical that full employment and price stability were compatible objectives in the absence of good luck or wage and price controls. _/ It did not occur

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_/. An early example is [1953, II, 99, pp. 1294-5, 1307].

to him to define full employment by the unemployment rate consistent with price or inflation stability. He certainly regarded Keynesian fiscal policies, and monetary policies too, as two-sided weapons, to be used against excess demand as well as excess supply. His article with Solow [1960, II, 102], suggesting that Phillips curves represent tradeoffs for policymakers, has been much maligned, cited as the prototypical example of Keynesian error of the 1960s. Actually it is quite guarded and sophisticated in distinguishing long run effects from short run and worrying about expectations induced by policies and experience. It certainly does not say that expansion of monetary demand can purchase any desired rate of employment and capacity utilization indefinitely at finite cost in inflation.

Samuelson's early macro-economic writings concern the demand side of fiscal policy. Many of his later writings concern the supply side, and therefore have particular relevance today. His contributions to public finance are reviewed elsewhere in this volume. Therefore, I shall simply note that in the 1950s and 1960s Samuelson clearly analyzed the effects of accelerated depreciation, investment tax credits, preferential treatment of capital gains, and deductibility of interest. A 1964 paper [III, 179] proves the neutrality of proportional taxation on accrual of true economic income to capital, with respect to rates of return. Regarding concessions going beyond such neutrality he said, "If we

call spades spades, let's call bribes bribes," even if we decide as a matter of national policy to offer them. He could repeat much earlier testimony to this effect verbatim in 1981.

The Neo-Classical Synthesis

Paul Samuelson's greatest contribution to macro-economics was the "neo-classical synthesis," of which he was the principal architect [1951, II, 98; 1953, II, 99; 1955, II, 100; 1963, II, 115]. This Weltanschauung reconciled the classical and Keynesian strands of his thinking and that of many of his contemporaries. It became orthodox doctrine for a generation of economists and for many of their students. Certainly in the profession it was the mainstream Keynesian tradition in North America.

Of course there has always been strong dissent in both directions. From the older Cambridge, Mrs. Robinson and her colleagues and disciples attacked the synthesis as a heretical perversion of Keynes's true message. American post-Keynesians echo the charge. This battle is intimately entangled with the war of two Cambridges over capital and growth theory, reviewed in Chapter _____ by Robert Solow.

On the other side of Samuelson's middle ground, Walrasians have always questioned the basic consistency of the market failures assumed or alleged in Keynesian theory with rational behavior. Recently this challenge has dramatically regained professional attention and support

from the "new classical macro-economics" and the theory of rational expectations. Robert Lucas, the leader of this counter-revolution, pays Samuelson and his partners in crime the high compliment of making the neoclassical synthesis the heresy become orthodoxy that Lucas is rebelling against._/

As I interpret it, Samuelson's exposition of the neo-classical synthesis contains both positive and normative propositions. The positive propositions, baldly stated, are as follows:

Market-clearing equilibrium provides a tolerably good description of long-term trends. Market adjustments and counter-cyclical policies will over the decades keep macro-economic outcomes close to full employment on average; anyway there will be no tendency for relative margins of under-utilization to rise secularly. In this sense, long-run growth tracks equilibrium supplies of labor, capital, natural resources, and -- most decisive for labor productivity and living standards in Samuelson's view -- knowledge.

These tracks are fairly smooth and cannot account for observed short-run volatility in economic performance. Fluctuations about the trends reflect mainly shocks to aggregate effective demand, to which prices, wages, and interest rates cannot and do not respond rapidly

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_/. "Methods and Problems in Business Cycle Theory," loc. cit.

enough to preserve equilibrium. Movements of output and income are therefore intrinsic to the economy's responses to shocks, and in the absence of stabilizing policies the mechanisms of quantity adjustment can produce cumulative swings of large amplitude.

At bottom these short-run disequilibria reflect adjustment costs and lags, market imperfections, and discrepancies of information and expectation. The shocks that generate cyclical fluctuations may be governmental in origin, but there are many other sources as well. As noted above, Samuelson accepted Keynes' view that investment, dependent on business expectations and confidence regarding a long and uncertain future, was naturally erratic. For this combination of reasons, there is plenty of room for fiscal and monetary measures of stabilization to hold the economy closer to its equilibrium path.

The neo-classical synthesis cleansed Keynesian economics of some mistakes of content, context, and emphasis, mistakes not so much intrinsic to the General Theory as Depression-bound simplifications and extrapolations by Keynes's followers in the 'thirties and 'forties. Among these were: the view that consumption demand would inevitably become weaker with the advance of productivity and the secular-stagnation pessimism to which it led -- Samuelson anticipated in [1943, II, 108] the agonizing post-war reappraisal of the consumption function, arguing that upward shifts in the short-run function would

prevent secular decline of the average propensity to consume: the view that monetary policy was inconsequential because of very high interest elasticity of demand for money or very low interest elasticity of investment; the connected view, certainly not Keynes's own but inherited from the accelerator and perpetuated by Harrod-Domar growth theory, that capital-output ratios are frozen -- Samuelson was at pains to disavow both this extreme and the "implicit 'classical' axiom that motivated investment is indefinitely expansible or contractable so that whatever people try to save will always be fully invested" [1946, II, 114, p. 1523]: the exclusive stress on government purchases, like public works, as vehicles of fiscal stimulus -- of course Samuelson had long recognized tax and transfer multipliers; the assumption of textbook convenience that nominal prices or wage rates or both would remain constant in the face of fluctuations of aggregate demand -- all that is really needed is that they are not perfectly flexible.

The normative and policy propositions follow easily, and in Samuelson's mind they were the most important part of the message. After all, as much as he relished all aspects of economics, he loved welfare economics most of all. Neo-classical welfare calculus, he found, far from being rendered irrelevant by Keynesian economics, applies not only to resource allocation in equilibrium but also to the choice of measures to restore and maintain full employment. Essentially resources are scarce even when some are temporarily un-

employed. There are always socially valuable ways to employ them; make-work projects -- like Keynes's burying coins for treasure-seekers to dig up -- are always unnecessary and wasteful.

The size of government, the amount of public consumptions and investments, should be in principle determined by equating their returns in social utility on the margin with the values of the private uses of resources they displace. Fiscal and monetary policy can always generate the private purchasing power to re-employ the resources in private consumption and investment, which thus become the opportunity cost of exhaustive public expenditures. This principle -- he called it the "new look" [II, 100] -- is consistent with the use of fiscal policy, discretionary or built-in, for stabilization, because stimulus can be provided or withdrawn by adjusting taxes and transfers as well as purchases. Samuelson was careful to point out [II, 98], taking issue with a number of proposed formulas for counter-cyclical policy, that the principle does not imply that government purchases should be cyclically constant at their optimal levels for an economy in sustained macro-equilibrium. If recession or depression reflects weakening of the marginal efficiency of private investment or of the marginal utility of current private consumption, then it is a proper social response to channel some of the released resources into public programs whose marginal social values remain high. The reverse would be true in booms.

Furthermore, Samuelson argued, monetary and fiscal measures are within wide limits substitute techniques of stabilization. Their

mixture can be adjusted to achieve socially desired allocations of output as between consumption and investment. Rational stabilization policy does not consist, as many Keynesian enthusiasts continued to believe even after the Depression, in throwing all instruments together into high gear or reverse. It consists in choosing, among those combinations that achieve stabilization objectives, one that also meets social criteria of allocational efficiency. If these criteria dictate, as they appeared to in 1961 and again in 1981, shifting the composition of output in favor of capital formation, this can be achieved without changing overall macro-economic balance by combining tighter fiscal policy with easier monetary policy. In the 1960s application of this recipe was largely inhibited by interest rate floors designed to stem gold outflows. In the 1980s it is inhibited by official dedication to monetarist and supply-side nostrums.

It is relevant to the 1981 bandwagon rush to offer tax concessions to encourage private saving and business investment that Samuelson added distributional equity to the goals of stabilization and allocation that could be achieved by judicious choice of fiscal and monetary measures. We don't have to suffer extremes of inequality in order to achieve full employment and high capital intensity. Neither does prosperity require that we channel purchasing power to workers and to the poor, as under-consumptionists before and after Keynes contended,

In summary, Samuelson told Congress [II, 100, p. 1330]

> A community can have full employment, can at the same time have the rate of capital formation it wants, and can accomplish all this compatibly with the degree of income-redistributing taxation it ethically desires.

The one goal which fiscal and monetary policies may be unable, probably are unable permanently, to marry with full employment is, Samuelson consistently recognized, price stability. Even so, he surely overstated the case. In a more elaborate exposition Samuelson would recognize the limits on substitutions among policy instruments imposed by economic behavior and by other constraints or goals such as international trade and capital movement.

To my mind his optimism is nevertheless much closer to the truth than the reverse doctrines popular in 1981, that prosperity and progress are impossible without smaller government and greater inequality. But then I am a partner in crime, so dubbed in a cherished inscription by PAS on the flyleaf of Volume I, and I think the neo-classical synthesis was the great achievement of post-war macro-economic theorizing.