

neoclassical synthesis

The term ‘neoclassical synthesis’ appears to have been coined by Paul Samuelson to denote the consensus view of macroeconomics which emerged in the mid-1950s in the United States. This synthesis remained the dominant paradigm for another 20 years, in which most of the important contributions, by Hicks, Modigliani, Solow, Tobin and others, fit quite naturally. The synthesis had, however, suffered from the start from schizophrenia in its relation to microeconomics, which eventually led to a serious crisis from which it is only now re-emerging. I describe the initial synthesis, the mature synthesis, the crisis and the new emerging synthesis.

The term ‘neoclassical synthesis’ appears to have been coined by Paul Samuelson to denote the consensus view of macroeconomics which emerged in the mid-1950s in the United States. In the third edition of *Economics* (1955, p. 212), he wrote:

In recent years 90 per cent of American Economists have stopped being ‘Keynesian economists’ or ‘anti-Keynesian economists’. Instead they have worked toward a synthesis of whatever is valuable in older economics and in modern theories of income determination. The result might be called neo-classical economics and is accepted in its broad outlines by all but about 5 per cent of extreme left wing and right wing writers.

Unlike the old neoclassical economics, the new synthesis did not expect full employment to occur under laissez-faire; it believed, however, that, by proper use of monetary and fiscal policy, the old classical truths would come back into relevance.

This synthesis was to remain the dominant paradigm for another 20 years, in which most of the important contributions, by Hicks, Modigliani, Solow, Tobin and others, were to fit quite naturally. Its apotheosis was probably the large econometric models, in particular the MPS model developed by Modigliani and his collaborators, which incorporated most of these contributions in an empirically based and mathematically coherent model of the US economy. The synthesis had, however, suffered from the start from schizophrenia in its relation to microeconomics. This schizophrenia was eventually to lead to a serious crisis from which it is only now re-emerging. I describe in turn the initial synthesis, the mature synthesis, the crisis and the new emerging synthesis.

The initial synthesis

The post-war consensus was a consensus about two main beliefs. The first was that the decisions of firms and of individuals were largely rational, and as such amenable to study using standard methods from microeconomics. Modigliani, in the introduction to his collected papers, stated it strongly:

[One of the] basic themes that has dominated my scientific concern [has been to integrate] the main building blocks of the General Theory with the more established methodology of economics, which rests on the basic postulate of rational maximizing behavior on the part of economic agents...’ (1980, p. xi)

The faith in rationality was far from blind: animal spirits were perceived as the main source of movements in aggregate demand through investment. For example, the possibility that corporate saving was too high and not offset by personal saving was considered a serious issue, and discussed on empirical rather than theoretical grounds.

This faith in rationality did not, however, extend to a belief in the efficient functioning of markets. The second main belief was indeed that prices and wages did not adjust very quickly to clear markets. There was broad agreement that markets could not be seen as competitive. But, somewhat surprisingly given the popularity of imperfect competition theories at the time, there was no attempt to think in terms of theories of price and wage setting, with explicit agents setting prices and wages. Instead, the prevailing mode of thinking was in terms of *tâtonnement*, with prices adjusting to excess supply or demand, along the lines of the dynamic processes of adjustment studied by Samuelson in his *Foundations of Economic Analysis*. The Phillips curve, imported to the United States by Samuelson and Solow in 1960, was in that context both a blessing and a curse. It gave strong empirical support to a *tâtonnement*-like relation between the rate of change of nominal wages and the level of unemployment, but it also made less urgent the need for better microeconomic underpinnings of market adjustment. Given the existence of a reliable empirical relation and the perceived difficulty of the theoretical task, it made good sense to work on other and more urgent topics, where the marginal return was higher.

These twin beliefs had strong implications for the research agenda as well as for policy. Because prices and wages eventually adjusted to clear markets, and because policy could avoid prolonged disequilibrium anyway, macroeconomic research could progress along two separate lines. One could study long-run movements in output, employment and capital, ignoring business cycle fluctuations as epiphenomena along the path and using the standard tools of equilibrium analysis: 'Solving the vital problems of monetary and fiscal policy by the tools of income analysis will validate and bring back into relevance the classical verities' (Samuelson, 1955, p. 360). Or one could instead study short-run fluctuations around that trend, ignoring the trend itself. This is indeed where most of the breakthroughs had been made by the mid-1950s. Work by Hicks (1937) and Hansen (1949), attempting to formalize the major elements of Keynes's informal model, had led to the IS-LM model. Modigliani (1944) had made clear the role played by nominal wage rigidity in the Keynesian model. Metzler (1951) had shown the importance of wealth effects, and the role of government debt. Patinkin (1956) had clarified the structure of the macroeconomic model, and the relation between the demands for goods, money and bonds, in the case of flexible prices and wages. There was general agreement that, except in unlikely and exotic cases, the IS curve was downward sloping and the LM curve upward sloping. Post-war interest rates were high enough – compared with pre-war rates – to make the liquidity trap less of an issue. There was still, however, considerable uncertainty about the effect of interest rates on investment, and thus about the slope of the IS relation. The assumption of fixed nominal wages made by Keynes and early Keynesian models had been relaxed in favour of slow adjustment of prices and wages to market conditions. This was not seen, however, as modifying substantially earlier conclusions. The 'Pigou effect' (so dubbed by Patinkin in 1948), according to which low enough prices would increase real money and wealth, was not considered to be of much practical significance. Only activist policy could avoid large fluctuations in economic activity.

Refinements of the model were not taken as implying that the case for policy activism was any less strong than Keynes had suggested. Because prices and wages did not adjust fast enough, active countercyclical policy was needed to keep the economy close to full employment. Because prices and wages, or policies themselves, eventually got the economy to remain not far from its growth path, standard microeconomic principles of fiscal policy should be used to choose the exact mix of fiscal measures at any point in time. The potential conflict between their relative efficacy in terms of demand management, and their effect on the efficiency of economic allocation, were considered an issue but not a major problem. Nor was the fact that the market failure which led to short-run fluctuations in the first place was not fully understood or even identified.

The ground rules for cyclical fiscal policy were laid in particular by Samuelson in a series of contributions (1951, for example). Countercyclical fiscal policy was to use both taxes and spending; in a depression, the best way to increase demand was to increase both public investment and private investment through tax breaks, so as to equalize social marginal rates of return on both. Where the synthesis stood on monetary policy is less clear. While the potential of monetary policy to smooth fluctuations was generally acknowledged, one feels that fiscal policy was still the instrument of predilection, that policy was thought of as fiscal policy in the lead with accommodating monetary policy in tow.

The mature synthesis

For the next 20 years the initial synthesis was to supply a framework in which most macroeconomists felt at home and in which contributions fitted naturally. As Lucas remarks in his critique of the synthesis, ‘those economists, like Milton Friedman, who made no use of the framework, were treated with some impatience by its proponents’ (1980, p. 702). The research programme was largely implied by the initial synthesis, the emphasis on the behavioural components of IS–LM and its agnostic approach to price and wage adjustment; to quote Modigliani, ‘the Keynesian system rests on four basic blocks: the consumption function, the investment function, the demand and the supply of money, and the mechanisms determining prices and wages’ (1980, p. xii). Progress on many of these fronts was extraordinary; I summarize it briefly as these developments are reviewed in more depth elsewhere in this dictionary.

The failure of the widely predicted post-war over-saving to materialize had led to a reassessment of consumption theory. The theory of intertemporal utility maximization progressively emerged as the main contender. It was developed independently by Friedman (1957) as the ‘permanent income hypothesis’ and Modigliani and collaborators (1954 in particular) as the ‘life cycle hypothesis’. The life-cycle formulation, modified to allow for imperfect financial markets and liquidity constraints, was, however, to dominate most of empirical research. Part of the reason was that it emphasized more explicitly the role of wealth in consumption, and, through wealth, the role of interest rates. Neither wealth effects nor interest rate effects on consumption had figured prominently in the initial synthesis.

Research on the investment function was less successful. Part of the difficulty arose from the complexity of the empirical task, the heterogeneity of capital, and the possibility of substituting factors *ex ante* but not *ex post*. Many of the conceptual issues were clarified by work on growth, but empirical implementation was harder. Part of the difficulty, however, came

from the ambiguity of neoclassical theory about price behaviour, about whether firms could be thought of as setting prices or whether the slow adjustment of prices implied that firms were in fact output constrained. The ‘neoclassical theory of investment’ developed by Jorgenson and collaborators (for example, Hall and Jorgenson, 1967) was ambiguous in this respect, assuming implicitly that price is equal to marginal cost, but estimating empirical functions with output rather than real wages.

Research on the demand for and supply of money was extended to include all assets. Solid foundations for the demand for money were given by Tobin (1956) and Baumol (1952), and the theory of finance provided a theory of the demand for all assets (Tobin, 1958). The expectations hypothesis, which alleviated the need to estimate full demand and supply models of financial markets, was thoroughly tested and widely accepted as an approximation to reality.

In keeping with the initial synthesis, work on prices and wages was much less grounded in theory than work on the other components of the Keynesian model. While research on the microeconomic foundations of wage and price behaviour was proceeding (Phelps, 1972 in particular), it was poorly integrated in empirical wage and price equations. To a large extent, this block of the Keynesian synthesis remained throughout the period the ad hoc but empirically successful Phillips curve, respecified through time to allow for a progressively larger effect of past inflation on current wage inflation.

All these blocks, together with work on growth theory, were largely developed in relation with and then combined in macroeconomic models, starting with the models estimated by Klein (for example, Goldberger and Klein, 1955). The most important model was probably the MPS–FMP model developed by Modigliani and collaborators. This model, while maintaining the initial IS–LM Phillips curve structure of its ancestors, showed the richness of the channels through which shocks and policy could affect the economy. It could be used to derive optimal policy, show the effects of structural changes in financial markets, and so on. By the early 1970s the synthesis appeared to have been highly successful and the research programme laid down after the war to have been mostly completed. Only a few years later, however, the synthesis was in crisis and fighting for survival.

The crisis and the reconstruction

The initial trigger for the crisis was the failure of the synthesis to explain events. The scientific success of the synthesis had been largely due to its empirical success, especially during the Kennedy and the first phase of the Johnson administrations in the United States. As inflation increased in the late 1960s, the empirical success and, in turn, the theoretical foundations of the synthesis were more and more widely questioned. The more serious blow was, however, the stagflation of the mid-1970s in response to the increases in the price of oil: it was clear that policy was not able to maintain steady growth and low inflation. In a clarion call against the neoclassical synthesis, Lucas and Sargent (1978) judged its predictions to have been an ‘econometric failure on a grand scale’.

One cannot, however, condemn a theory for failing to anticipate the shape and the effects of shocks which have not been observed before; few theories would pass such a test and, as long as the events can be explained after the fact, there is no particular cause for concern. In fact, soon thereafter models were expanded to allow for supply shocks such as changes in the price of oil. It became clear, however, that while the models could indeed be adjusted *ex*

post, there was a more serious problem behind the failure to predict the events of the 1970s. To quote again from the polemical article by Sargent and Lucas, 'That the doctrine on which [these predictions] were made is fundamentally flawed is simply a matter of fact' (1978, p. 49). The 'fundamental flaw' was the asymmetric treatment of agents as being highly rational and of markets as being inefficient in adjusting wages and prices to their appropriate levels. The tension between the treatment of rational agents and that of myopic impersonal markets had been made more obvious by the developments of the 1960s, and the representation of consumers and firms as highly rational intertemporal decision makers. It was further highlighted by the research on fixed price equilibria, which went to the extreme of taking prices as unexplained and solving for macroeconomic equilibrium under non-market clearing. That research made clear, in a negative way, that progress could be made only if one understood why markets did not clear, why prices and wages did not adjust.

The solution proposed by Lucas and others in the 'new classical synthesis' was thoroughly unappealing to economists trained in the neoclassical synthesis. It was to formalize the economy as if markets were competitive and clearing instantaneously. The 'as if' assumption seemed objectionable on a priori grounds, in that direct evidence on labour and goods markets suggested important departure from competition; it also appeared to many to be an unpromising approach if the goal was to explain economic fluctuations and unemployment. Soon papers by Fischer (1977) and Taylor (1980) showed that one could replace the Phillips curve by a model of explicit nominal price and wage setting and still retain most of the traditional results of the neoclassical synthesis. These papers led the way to a major overhaul and reconstruction, and by the mid-1990s a new synthesis had emerged, a synthesis now dubbed the 'new neoclassical synthesis' (Goodfriend and King, 1997) or the 'new Keynesian synthesis' (for example, Clarida, Gali and Gertler, 1999).

This new synthesis is described in more detail elsewhere in this dictionary, and I shall limit myself to a few remarks and comparisons between the old and the new. Like the old synthesis, the new synthesis has two major features: on the one hand, optimizing behaviour by firms, consumers and workers; on the other, the presence of distortions, most importantly nominal rigidities. In contrast to the old synthesis, however, the distortions are introduced explicitly, and price and wage behaviour is derived from optimizing behaviour by price and wage setters. These distortions imply that, as in the old synthesis, monetary policy and fiscal policy have a major role to play.

Like the old synthesis, the new synthesis is derived from microfoundations, utility maximization by consumers, and profit maximization by firms. But, while models in the old synthesis used theory as a loose guide to empirical specifications and allowed the data to determine the ultimate specification, models in the new synthesis remain much closer to their microfoundations. Dynamics are derived from the model itself, and the implied behavioural equations, rather than being estimated, are typically derived from assumptions about underlying technological and utility parameters. These more explicit microfoundations allow for a more careful welfare analysis of the implications of policy than was possible with the old models.

The models in the new synthesis are referred to as 'dynamic stochastic general equilibrium', or DSGE, models. Because they are typically difficult to solve, even the larger models are smaller than the models of the old synthesis, and their formalization of markets such as those for goods and labour remains primitive compared with the spirit of the formalizations in the old models. Improvements both in the formalization of these markets and in

numerical techniques are, however, allowing for steadily richer and larger models.

To parallel the quotation from Samuelson given at the beginning, it is fair to say that the new neoclassical synthesis is attracting wide support, although less so than the old one. Some researchers, particularly those in the ‘real business cycle’ tradition, are sceptical about the importance of nominal rigidities in fluctuations. Others find the rationality assumptions embodied in the new synthesis to be too strong, and the methodology too constraining to capture the complexity present in the data.

Nevertheless, DSGE models are increasingly used to guide policy. Many challenges remain, for example in capturing the relevant distortions in goods, labour, financial, and credit markets, or in using econometrics to assess the fit of both the specific components and the overall model to reality. Progress is rapid, however. When I wrote the first version of this contribution in 1991, the emergence of a new synthesis appeared uncertain, and at best far in the future. In updating this contribution, I am struck by the progress that has taken place since then, and by the speed at which progress continues to be made today.

Olivier Blanchard

See also

< xref = xyxyxy > Friedman, Milton;
 < xref = xyxyxy > Klein, Lawrence R.;
 < xref = xyxyxy > Hicks, John Richard;
 < xref = xyxyxy > Lucas, Robert;
 < xref = M000380 > microfoundations;
 < xref = xyxyxy > Modigliani, Franco;
 < xref = D000243 > Patinkin, Don;
 < xref = xyxyxy > Phillips curve (new views);
 < xref = xyxyxy > Samuelson, Paul Anthony;
 < xref = T000069 > Tobin, James.

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Index terms

aggregate demand
 animal spirits
 consumption function
 countercyclical fiscal policy
 dynamic stochastic general equilibrium (DSGE) models
 econometrics
 excess demand and supply
 Hicks, J.
 imperfect competition
 imperfect financial markets
 interest rates
 intertemporal utility maximization
 investment function
 IS–LM model
 Keynesianism
 life-cycle hypothesis
 liquidity constraints
 Lucas, R.
 market clearing
 microfoundations
 Modigliani, F.
 monetary policy
 MPS–FMP model
 neoclassical synthesis
 neoclassical theory of investment
 new classical synthesis
 new Keynesian synthesis
 new neoclassical synthesis
 nominal rigidities

permanent-income hypothesis
Phillips curve
Pigou effect
price and wage adjustment
public debt
rational behaviour
real business cycles
Samuelson, P.
stagflation
 tâtonnement
wage rigidity
wealth effects

Index terms not found:

excess demand and supply
Keynesianism
life-cycle hypothesis
new neoclassical synthesis
permanent-income hypothesis
public debt
rational behaviour