

THE NEW CLASSICAL COUNTER-REVOLUTION: FALSE PATH OR ILLUMINATING COMPLEMENT?

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INTRODUCTION

In his recent interesting paper in this journal, Laurence Seidman [2005] argues that the 'new classical counter-revolution that began in the 1970s has been a false path for macroeconomics.' Professor Seidman's argument is based on five main points, namely:

1. in their critique of Keynesian economics, Lucas and Sargent [1978] highlighted the failure of Keynesian models to explain the stagflation of the 1970s but failed even to mention the OPEC oil shock in their discussion; in contrast, once Keynesian economists had adapted the AD-AS framework to take into account the OPEC oil shock induced shifts of the AS curve, not only could Keynesian economics explain US economic history between 1960-73, it could also provide a plausible explanation of the 'stagflation' experience of the post 1973 period (see Blinder [2002]);
2. 'the only place that the new classical counter-revolution succeeded was in academia', it had little impact during either the Volker or Greenspan eras, during which time practical macroeconomic policymaking remained 'thoroughly Keynesian, continuously practicing countercyclical monetary policy to combat both inflation and recession,' furthermore, new classical economics did not have any influence in the wider business community;
3. the predictions of the new classical monetary models were refuted by the experience of the 1982 recession in the US, and both real business cycle theory, and the Ricardian equivalence hypothesis do not stand up to empirical scrutiny;
4. 'undergraduate textbooks that dominate the market continue to use a Keynesian framework;'
5. the attraction of new classical economics within academia has been driven mainly by the 'new set of mathematical models that it provided for new PhD candidates and assistant professors.'

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In this paper I provide a critique of Professor Seidman's arguments especially with respect to point 2 above.

OIL AND THE STAGFLATION OF THE 1970S

Seidman correctly points out that once Keynesian models were suitably modified during the 1970s they performed remarkably well. The work of Robert Gordon, Edmund Phelps and Alan Blinder was important in creating the necessary groundwork that allowed the Keynesian model to adapt and evolve in a way which enabled monetarist and supply-side influences to be absorbed *within* the existing Keynesian framework [Snowdon and Vane, 2005]. Given these constructive developments in Keynesian economics, Seidman is critical of Lucas and Sargent [1978] for ignoring the impact of the OPEC oil shocks in their famous critique of Keynesian economics. There are two important points to be made relating to Seidman's criticism. First, Lucas and Sargent's contribution should, at least in part, be viewed as a brilliant and provocative exercise in the use of anti-Keynesian rhetoric [Backhouse, 1997]. While many economists did not accept that the case against Keynesian economics had been made conclusively, Lucas and Sargent argued that the flaws in Keynesian economics were 'fatal' and that such models were subject to 'econometric failure on a grand scale.' However, the models that Lucas and Sargent were referring to were the 1960s-style Keynesian macroeconomic 'system of equation' models, for example, those constructed by Ando and Modigliani, and Klein and Goldberger. In an interview [Snowdon and Vane, 1998], Lucas, commented on his 1978 paper as follows:

Sargent and I were talking about a particular set of [1960s Keynesian] models which we were completely clear about...If a completely different class of models comes up which people like to call Keynesian, of course our criticisms can't apply. You can't write a paper in 1978 criticising work done in 1988.

Second, while the contribution of the oil supply-shock to stagflation receives support from several notable economists, including Alan Blinder, James Tobin, and Robert Solow, it is important to note that this issue remains highly controversial since there are a variety of explanations of how the 'Great Peacetime Inflation' of the 1970s was ignited. These explanations range from the policy errors (referred to by Seidman) made during the Kennedy-Johnson years [Tobin, 1987]; the use of the wrong model (stable Phillips curve) for policy purposes [Taylor, 1992, 1997a; Mayer, 1999; Sargent, 1999; Romer and Romer, 1997; Romer, 2005]; the 'monetary policy neglect hypothesis' [Nelson, 2004; Nelson and Nikolov, 2004]; excessive demand due to overoptimistic estimates of the output gap originating with the productivity slowdown beginning in the late 1960s and early 1970s [Orphanides, 2003]; and DeLong's [1997] hypothesis that the 'Great Peacetime Inflation' was an inevitable result of what he calls the 'Shadow of the Great Depression.'

It is now generally recognised that during Arthur Burns's tenure as Chairman at the Fed (February 1970 – January 1978), monetary policy was excessively expansionary

compared to the Volker-Greenspan era [Clarida, Gali and Gertler, 1999, 2000]. Lucas and Sargent's failure to consider the 1970s Keynesian developments with respect to supply-shocks is, therefore, entirely understandable given that Lucas regards the 'direct impact of the OPEC shock' as 'minor', and that a (rational) expectations-augmented Phillips curve framework, combined with Keynesian neglect of monetary influences, offer a much more convincing explanation of the origins of the 'Great Inflation' from a new classical perspective [Snowdon and Vane, 1998]. Indeed, Lucas [1981] regards the Friedman-Phelps model, and the verification of its predictions as providing 'as clear cut an experimental distinction as macroeconomics is ever likely to see.'

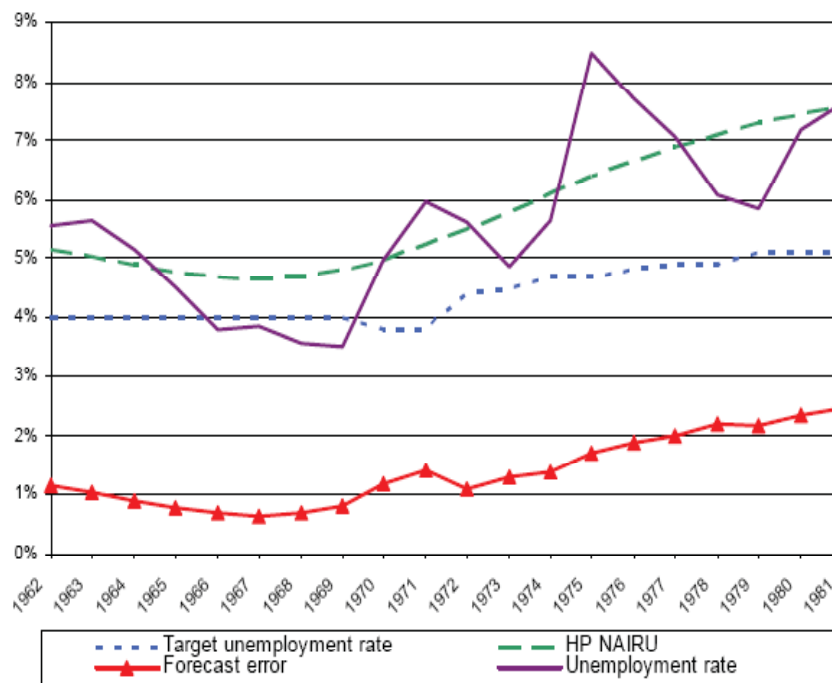
Scepticism relating to the inflationary impact of oil price hikes is not confined to Lucas. In his Nobel Lecture, Milton Friedman [1977, 463], also rejects the OPEC explanation of stagflation, since 'before the quadrupling of oil prices in 1973, most countries show a clearly marked association of rising inflation and rising unemployment.' Ben Bernanke, believes that 'the role the conventional wisdom has attributed to oil price increases in the stagflation of the 1970s has been overstated' [Chappell and McGregor, 2004, 247-8] and he places strong emphasis on monetary policy accommodation as the key factor in explaining how higher foreign oil prices could have translated into domestic inflation in the US [Bernanke, 2002; See also Taylor, 1998a; Clarida et al., 1999, 2000; Rebelo, 2005].

Recently, this debate has been reignited by Barsky and Kilian [2002; 2004] who highlight a number of conceptual and empirical difficulties arising from the oil price shocks explanation of macroeconomic instability. First, the belief that exogenous political events in the Middle East, including the activities of the OPEC cartel, *cause* recessions and/or inflation via oil price shocks, as well as contributing significantly to the 1970s productivity slowdown in the US and other major industrial economies, is a hypothesis that is *not* strongly supported by the evidence. For example, inflation was already accelerating in the US *before* the first OPEC oil shock of 1973-74, subsequent oil shocks in 1990 and 1999 did not lead to 'stagflation', and the recession that started in the US in 1990 was already underway *before* the rise in oil prices. Moreover, Barsky and Kilian [2004, 125] offer a persuasive argument that the causation runs from macroeconomic activity to the price of oil. The power of the OPEC cartel to manipulate oil prices is 'far from exogenous' and in fact responds endogenously to macroeconomic conditions in the US economy. Finally, Barsky and Kilian argue that the experience of 'stagflation' in the 1970s is quite consistent with the standard expectations-augmented Phillips curve framework. Evidence that actual unemployment was below the natural rate (or NAIRU) for the mid-to-late 1960s and early 1970s is provided by Reis [2003] and Gordon [2003]. Federal Open Market Committee (FOMC) minutes also indicate that the Fed was aiming to achieve an unemployment target less than the natural rate. Figure 1 illustrates the path of the target (identified from *Economic Report of the President* [1962-81]), natural (NAIRU), and actual unemployment rates in the US for the period 1962-81.

In the case of the UK economy, Nelson's 'monetary neglect hypothesis' is a much more convincing explanation of the acceleration of inflation than any alternative. With the notable exception of a minority of British economists, in particular David Laidler [1976], the so-called 'new inflation' of the early 1970s was viewed, both in

the media and academia, as almost entirely a cost-push phenomena [Nelson, 2004; Nelson and Nikolov, 2004]. As a result, monetary policy was excessively expansionary well before the OPEC oil price hike --- the inflation Genie was already out of the bottle! In retrospect, the combination of Keynesian inspired wage and price controls aimed at defeating inflation, combined with a fiscal and monetary expansion aimed at stimulating output and employment seems bizarre, but it was representative of the macroeconomic confusion that pervaded the UK policy debate at that time. It is hardly surprising that this King Canute strategy failed and, as a consequence, by 1975 inflation in the UK had reached 25 per cent. See Figure 2.

FIGURE 1
Unemployment Rate and Forecast Errors of the Natural Rate, US, 1962-81.



Source: Reis, 2003.

NEW CLASSICAL INFLUENCES ON MACROECONOMIC POLICYMAKING

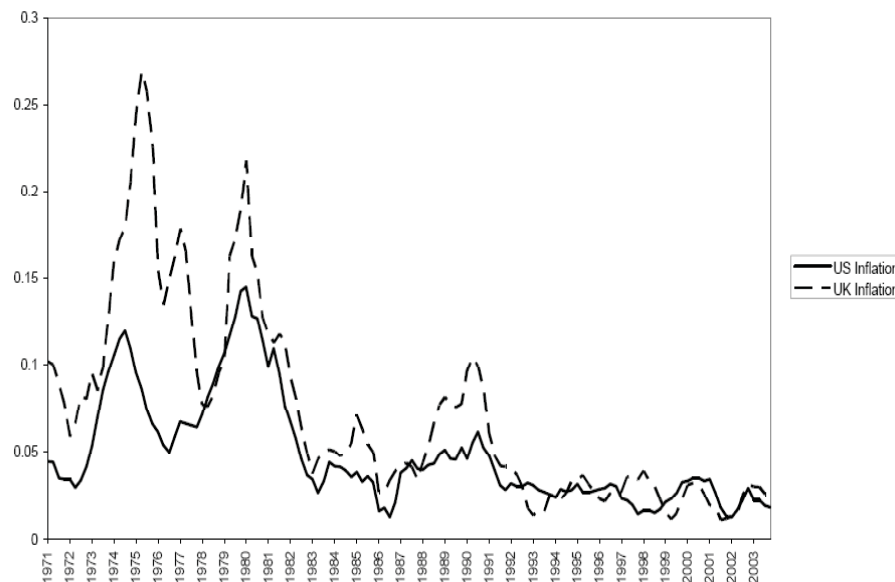
In October 1995 the Royal Swedish Academy of Sciences announced its decision to award the Nobel Memorial Prize in Economics to Robert Lucas... 'For having developed and applied the hypothesis of rational expectations, and thereby having transformed macroeconomic analysis and deepened our understanding of economic policy.' In 2004 Finn Kydland and Edward Prescott also received the Nobel Memorial Prize.... 'For their contributions to dynamic macroeconomics: the time consistency

of economic policy, and the driving forces behind business cycles.’ However, in commenting on the influence of new classical macroeconomics on practical policymaking, Seidman argues that neither the Fed, US government, or the business community, were persuaded by new classical thinking, and that ‘the *only* place that the new classical counter-revolution succeeded was in academia’ [emphasis added].

With respect to the business community, it is unsurprising that new classical theorising had little *direct* practical impact. However, since businesses are forward looking, inflation expectations will clearly influence their key decisions. A monetary policy framework that provides more stability cannot but help establish a more favourable business climate conducive to long-term planning. Since new classical thinking in general influenced the emergence of the current monetary policy frameworks of both the US and UK economies, as argued below, the influence of new classical economists on the business community has been *indirect*, but non-the-less important. As Figures 2-4 illustrate, both the US and UK economies have experienced a ‘Great Moderation’ with respect to economic stability over the last twenty years, and economists such as Bernanke, Taylor and the Romers attribute much of this stability to improvements in the conduct of monetary policy.

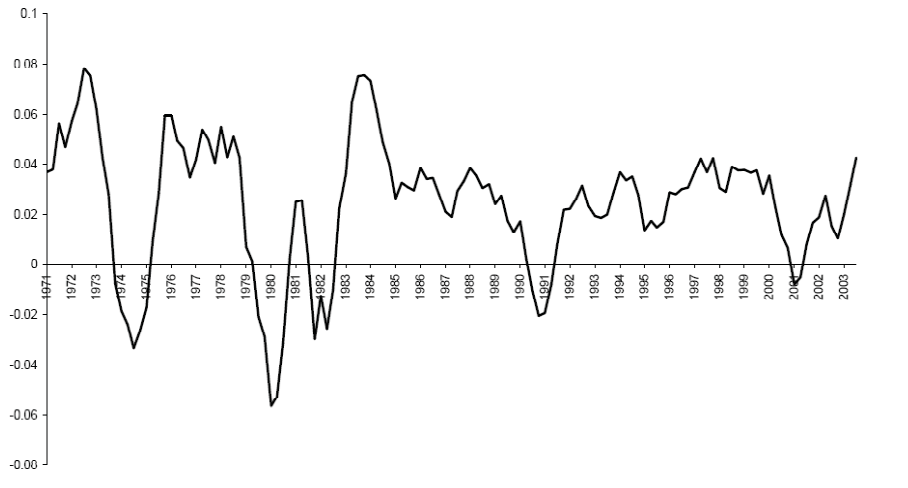
Did the research of Lucas and other new classical economists influence the conduct of macroeconomic policy via their contributions within academia? As a mainstream macroeconomist I would argue ‘yes’, for reasons developed below.

FIGURE 2
Inflation in the US and UK, 1971-2003



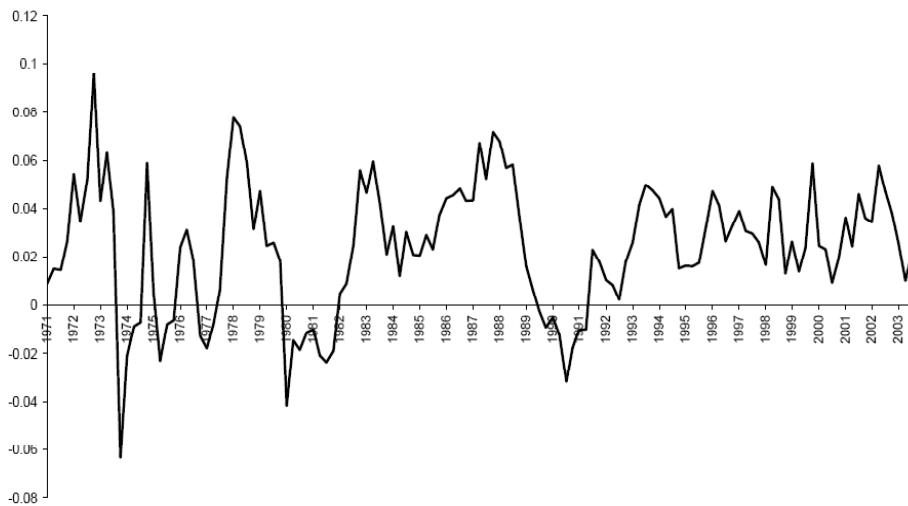
Source: Minford, 2006.

FIGURE 3
Real GDP Growth, US 1971-2003



Source: Minford, 2006.

FIGURE 4
Real GDP Growth, UK, 1971-2003



Source: Minford, 2006.

October 1979: A defining moment

Just as the 'Wall Street Crash' of October 1929 marked a defining moment in twentieth century US macroeconomic history, there is also general agreement among mainstream macroeconomists that fifty years later, Paul Volcker's 'declaration of war on inflation' [Orphanides, 2006], beginning in October 1979, also marked a decisive turning point in post-war US macroeconomic history [Bernanke, 2005; Goodfriend, 2005; Meltzer, 2005]. Since then, macroeconomic policy, in particular the conduct of

monetary policy, has increasingly followed several important guidelines established by developments in macroeconomic theory, *including several key contributions from the new classical school.*

In a recent *Journal of Economic Perspectives* ‘Symposium on Macroeconomic Lessons’, Chari and Kehoe [2006], in contrast to the views expressed by Mankiw [2006a], argue that policymakers and advisors who are heavily involved with the ‘hurly-burley of day-to-day policymaking’ often fail to appreciate the link between theoretical advances and practical policymaking. However, the connection is ‘easy to see if one steps back and takes a longer term perspective.’ Given this perspective ‘the most straight forward reading of developments in macroeconomic policy is that they were strongly influenced by developments in macroeconomic theory.’ To illustrate this point let us return to the macroeconomic debate relating to the emergence of the ‘Great Inflation’ during the late 1960s and 1970s, and the subsequent ‘Great Moderation’ of the post-1984 period.

The ideas hypothesis

As already noted, there are several plausible explanations of the emergence of the ‘Great Inflation.’ One persuasive explanation is the ‘ideas hypothesis.’ This hypothesis emphasises a number of policy errors that had their origins in a mainstream acceptance of a defective Keynesian theoretical framework that encouraged monetary policy to become ‘unusually prone to creating volatility during the late 1960s and the 1970s’ [Bernanke, 2004a]. This framework downplayed the importance of inflation relative to unemployment, neglected the influence of endogenously determined inflationary expectations, displayed undue optimism about the ability of policymakers to use both fiscal and monetary policy to ‘fine tune’ the economy, gave too much weight to non-monetary forces (cost-push shocks) as contributing factors to rising inflation while neglecting the influence of monetary factors, and accepted unrealistically low estimates of the sustainable (natural) rate of unemployment [De Long, 1997; Orphanides, 2003; Nelson, 2004].

One important variant of the ‘ideas hypothesis’ is the ‘Berkeley Story’ advocated by Christina and David Romer [2002]. They place great emphasis, on the adoption of a defective model (a stable, policy invariant long-run Phillips curve), and underestimation of the natural rate of unemployment, as an explanation of US macroeconomic instability in the late 1960s and 1970s [Sargent, 2002; Meltzer, 2006]. The Romers also highlight the importance of the selection of Federal Reserve Chairmen, because the ‘history of the Federal Reserve shows that ideas have been crucial’ [Romer and Romer, 2002, 2004]. Their research shows that ‘the key determinant of the quality of monetary policy has been policymaker’s beliefs about how the economy functions and what monetary policy can accomplish.’ As Romer [2005] argues.... ‘Perhaps the strongest evidence that the Great Inflation in the United States and elsewhere was the result of ideas is the fact that ideas ended it.... Like all revolutions, the Volcker revolution was a triumph of better ideas over worse ones.’

During the last twenty years there has been a substantial reduction in macroeconomic volatility in the US economy (see Figures 2 – 4). This ‘Great Moderation’,

in Fed Chairman Bernanke's language, is due in large measure to improvements in monetary policy which 'deserves more credit than it has received in the literature' [Bernanke, 2004a]. A strong case can be made that this policy success can be linked to the development of a number of important ideas [Taylor, 1992; Bernanke, 2003, 2004b, 2005; Goodfriend, 2004, 2005; Mishkin, 2006], namely: (i) there is no long-run Phillips curve trade-off between inflation and unemployment; (ii) inflation expectations are dependent on the monetary policy regime and consequently the success of monetary policy outcomes depend critically on establishing 'tightly anchored' expectations; (iii) an end to the conviction, held by many Keynesians during the 1970s, that monetary policy is a defective weapon for combating inflation, and that disinflation involves a politically unacceptable 'sacrifice ratio'; (iv) a long-run commitment to low and stable inflation as a key prerequisite for achieving both economic efficiency and sustainable growth, i.e., inflation, especially high and volatile inflation, has significant costs; (v) the time-inconsistency problem plagues monetary policy and provides an important rationale behind the decision in many countries to adopt an inflation target as the nominal anchor; (vi) the effectiveness of monetary policy is dependent on the credibility and reputation of the policymaker; (vii) the efficacy of monetary policy is substantially improved by central bank independence; (viii) to achieve good outcomes from monetary policy it is necessary to establish a strong nominal anchor; (ix) a consensus has emerged during the last twenty years that a 'constrained discretion' framework for monetary policy represents a superior 'middle ground' between 'iron clad rules' and 'unfettered discretion' [Bernanke, 2003].

While the Friedman-Phelps critique of the Phillips curve clearly played a very important role, especially in the development of the first four ideas, it is also the case that the emphasis given to rational expectations by Robert Lucas, together with the seminal contributions of Kydland and Prescott [1977] and Barro and Gordon [1983], reinforced the Friedman-Phelps arguments, and stimulated and encouraged the subsequent monetary policy research [Phelps, 1967; Friedman, 1968a; Snowdon and Vane, 2006]. This research eventually culminated in a theoretical framework supportive of the current monetary policy consensus that emphasises credibility, central bank independence, and a nominal anchor based on an inflation target (see points (v) to (ix) above, and Barro [2005]). It should be noted that the current consensus favouring central bank independence is very much based on new classical rather than monetarist influence since Friedman 'categorically rejected central bank independence' in favor of a strict $k\%$ monetary rule (see [Friedman, 1968b]; [Bibow, 2004]).

Credibility and monetary policy effectiveness

The importance of credibility of pronouncements on monetary policy by central banks has long been appreciated [Blinder, 1998, 1999, 2002]. However, according to Bernanke [2005]... 'in the late 1960s and 1970s, as the US inflation crisis was building, economists and policymakers did not fully understand or appreciate the determinants of credibility and its link to policy outcomes.' This changed after the publication in 1977 of the classic Kydland and Prescott contribution, 'Rules Rather than Discretion: The Inconsistency of Optimal Plans.' This paper, more than any other new classical

contribution, provides a clear exposition of *why* credibility is so important to the effective conduct of monetary policy, and consequently 'has been a major influence on the practice of central banking and fiscal policymaking over the last thirty years' [Chari and Kehoe, 2006]. However, as Bernanke emphasises, this contribution 'largely left open the critical issue of *how* a central bank is supposed to obtain credibility in the first place' [Bernanke, 2005, emphasis added]. With a Friedman-Lucas-Kydland-Prescott hard-core monetarist $k\%$ monetary growth rate rule ruled out on practical grounds due to instability in the velocities of monetary aggregates, the field was open for an alternative approach.

Kenneth Rogoff [1985] provided the key contribution by suggesting a two-pronged strategy of appointing an inflation-averse central banker (an 'inflation hawk') combined with an institutional structure specifying a strong nominal anchor and a guarantee of central bank independence. The contacting approach suggested by Walsh [1995], which specifies explicit performance benchmarks for central bankers in order to increase accountability and transparency, should also be viewed as a major contribution to the post-Kydland and Prescott literature that highlights central bank credibility as an important prerequisite for monetary policy effectiveness.

In his Nobel Memorial Lecture, Edward Prescott [2006], in discussing his contribution to the time-inconsistency insight concludes that:

The increased stability of the economy and the improved performance of the payment and credit system may be due in part to the diffusion of findings of Finn's and my 'Rules Rather than Discretion' paper. People now recognise much better the importance of having good macroeconomic institutions such as an independent central bank.

The New Neoclassical Synthesis: Inflation targeting as 'constrained discretion'

An increasing consensus of economists now support the case for constrained discretion in some form of activist rule. Indeed, during the last decade of the twentieth century, macroeconomics began to evolve into what Goodfriend and King [1997] have called a 'New Neoclassical Synthesis' (NNS). Goodfriend [2004] argues that.... 'Great progress was made in the theory of monetary policy in the last quarter century. Theory advanced on both the classical and Keynesian sides....The New Neoclassical Synthesis incorporates elements from both the classical and Keynesian perspectives into a single framework.' The central elements of this new synthesis involve:

- (i) the need for macroeconomic models to take into account inter-temporal optimisation (new classical/real business cycle);
- (ii) the widespread use of the rational expectations hypothesis (new classical) in both a *forward looking* aggregate demand (IS) and aggregate supply function;
- (iii) recognition of the importance of imperfect competition in goods, labour, and credit markets (new Keynesian);
- (iv) incorporating costly price adjustment into macroeconomic models (new Keynesian).

Goodfriend argues that... 'The modelling of expected future income in the IS function and expected future inflation in the aggregate supply function reflects the influence of rational expectations into macroeconomics by Robert Lucas in the 1970s.' Furthermore, 'the assumption of rational expectations as a modelling device is now entirely orthodox' [Woodford, 2000]. As is evident from their structure, *NNS models encompass key elements from both new classical and new Keynesian theorising* [Calvo, 1983; Gali, 2002; Goodfriend, 2004, 2005]. In turn, new classical and new Keynesian models retain important elements of earlier Keynesian and monetarist thinking. This 'new paradigm' integrates Keynesian elements such as nominal rigidities and imperfect competition into a real business cycle dynamic general equilibrium framework (in a recent paper, Minford [2006] advocates using flexi-price 'new classical' or even 'just plain classical models' for guiding monetary policy in a world of low inflation. In his view the testing of NNS and new classical models has 'not reached anywhere near a conclusion.' Minford also favours a *price level*, rather than inflation target).

How do these developments relate to monetary policy? According to Goodfriend and King the NNS models suggest four major conclusions about the role of monetary policy. First, monetary policy has persistent effects on real variables due to gradual price adjustment. Second, there is 'little' long-run trade-off between real and nominal variables. Third, inflation has significant welfare costs due to its distorting impact on economic performance. Fourth, in understanding the effects of monetary policy, it is important to take into account the credibility of policy. According to Goodfriend and King this implies that monetary policy is best conducted within a *rules based framework* with central banks adopting a regime of *inflation targeting* [Bernanke and Mishkin, 1997; Bernanke and Woodford, 2004].

Strong advocates of explicit inflation targeting, such as Bernake, Mishkin, and Svensson, believe that any inflation targeting monetary policy regime needs to be 'flexible' in the sense 'that it involves some concern about the stability of the real economy' [Svensson, 2003]. The need for flexibility can in part be illustrated by considering a conventional form of the loss function (L_t) assigned to central bankers given by equation (1).

$$(1) \quad L_t = \lambda (\pi_t - \pi^T)^2 + \Phi (y_t^*)^2, \lambda > 0, \Phi > 0$$

In this quadratic social loss function π_t is the rate of inflation at time period t , π^T is the inflation target, and y_t^* represents the percentage output gap, or deviation of real GDP (Y_t) from the trend of potential ('not overambitious') GDP, Y_t^* . Therefore, $y_t^* = [(Y_t - Y_t^*)/Y_t^*] \cdot 100$. The parameters λ and Φ are the relative weights given to achieving the inflation target and stabilising the output gap. For strict inflation targeting, $\Phi = 0$, whereas with flexible inflation targeting, $\Phi > 0$. As Svensson notes, 'no central bank with an explicit inflation target seems to behave as if it wishes to achieve the target at all cost.' Setting $\Phi = 0$ would be the policy stance adopted by those who Mervyn King [1997] describes as 'inflation nutters', and all countries that have introduced inflation targeting have rightly built in an element of flexibility to the target. Thus a rules based framework involves the 'formulation of *clear objectives* for monetary policy and the creation of institutional *commitment to those objectives*' [Svensson, 2003].

In contrast to Professor Seidman's arguments, I believe that the modern emphasis coming out of the NNS monetary policy literature, on longer time horizons, policy rules, the design of institutions, credibility and central bank independence, as well as the downplaying of the role of discretionary countercyclical fiscal policy, has been heavily influenced by new classical ideas [King, 1997; 2004; Clarida, Gali and Gertler, 1999; 2000; Taylor, 1999]. Clarida et al. [2000] point out that... 'The idea that expectations may matter in generating inflation and that credibility is important in policy-making were simply not well established' during the 1960s and 1970s. That expectations and credibility are now well entrenched ideas that influence central bank monetary policy is in large part due to the influence of Lucas, Kydland and Prescott, as well as Friedman and Phelps.

Central bankers

According to Goodfriend and King [1997], the NNS ideas relating to monetary policy 'are consistent with the public statements of central bankers from a wide range of countries' as well as the models used within central banks for policy analysis and forecasting (for example, see the Bank of England's macroeconomic model [Bank of England, 1999, 2004]). Moreover, Goodfriend is quite explicit that:

Modern models of interest rate policy owe more to post-monetarist rational expectations reasoning and notions of credibility and commitment to policy rules born of the rational expectations revolution

This view is backed up in an interview given by Ben Bernanke [2002], four years before becoming Chair of the Board of Governors of the US Federal Reserve System. In responding to a question relating to the influence of Robert Lucas on macroeconomic policymaking he commented as follows:

The main contribution of Robert Lucas is his insistence that we should think about monetary regimes as rules and as frameworks, rather than discretionary choices made day-by-day as events unfold. I would argue that is what inflation targeting is about.it is a very clear framework for stated objectives and operating procedures in the conduct of monetary policy. It tries to change the public's perceptions of how monetary policy operates.

While Greenspan's 'risk management' approach to monetary policy has been widely discussed [Greenspan, 2003, 2004; Blinder and Reis, 2005; Friedman, B. 2006; Mankiw, 2006b], Mishkin [2004], advocates a monetary policy regime of 'constrained discretion', via the adoption of an explicit inflation target by the Fed, because it 'has the potential to reduce the likelihood that the central bank will fall into the time-inconsistency trap' (since September, 2006, Mishkin has been a member of the Board of Governors of the Federal Reserve). In any case, Taylor [2005] does not find Greenspan's 'Risk Management' approach to monetary policy to be incompatible with 'several good monetary principles' embedded in the well-known algebraic 'Taylor rule' shown in

equation 2 [Taylor, 1993], including a commitment to price stability, the 'greater than one principle (i.e., the nominal interest rate, i , should rise more than the increase in inflation), a positive 'neutral' real rate of interest, r^* , that the Φ parameter is positive, and recognition that policy will frequently need to be pre-emptive.

$$(2) \quad \text{Taylor Rule} \quad i = r^* + \pi_t + \lambda[\pi_t - \pi^T] + \Phi[y_t^*]$$

In the UK, Mervyn King [2005], Governor of the Bank of England, also implicitly acknowledges the influence of new classical thinking on practical policymaking in the following statement:

A key motivation for the study of monetary policy rules was the insight that if economic agents base their decisions on expectations of the future then the way monetary policy is expected to be conducted in the future affects economic outcomes today. Hence it is very important to think about how policy influences the expectations of the private sector...The academic literature on monetary policy rules has performed a great service in emphasising the importance of expectations.

The Bank of England's new quarterly macroeconomic model (BEQM), introduced in January 2005, together with the previous Medium-Term Macro Model (MTMM), both display new classical influences [Bank of England, 1999, 2004]. In particular, the BEQM contains 'more explicit forward looking representations of agents' expectations about the future,' a recognition that agents form expectations on the basis of 'limited information,' a 'more micro-founded theoretical structure,' and a recognition of the importance of a policy rule in order to anchor inflation in the long run.

Finally, Alan Greenspan [2003] has indicated that in designing monetary policy, the US Fed 'has drawn on the work of analysts, both inside and outside the Fed, who over the past half century have devoted much effort to improving our understanding of the economy and its monetary transmission mechanism.' He goes on:

A critical result has been the identification of a relatively small set of key relationships that, taken together, provide a useful approximation of our economy's dynamics. Such an approximation underlies the statistical models that we at the Federal Reserve employ to assess the likely influence of our policy decision.

It would be astonishing if the work of new classical analysts had not influenced the construction of these statistical models and Taylor [1997b] confirms that macroeconomic models with rational expectations are regularly used by the Fed to help guide monetary policy decisions about the setting of interest rates.

Economic Report of the President

When John Taylor was a member of the President's Council of Economic Advisors (1989-91) he co-authored the 1990 Economic Report of the President. Chapter

3 of that document provides a ‘translation’ of the previous twenty years of academic research in order to make the case for policy rules. Prominence is given to issues relating to the importance of credibility, the design of macroeconomic policies, the advantages of systematic policies, time inconsistency, the importance of achieving low and stable inflation, and the importance of distinguishing between the short-run and long-run Phillips curve trade-off. According to Taylor [1998b] the 1990 Report ‘helped to pave the way to the application of policy rules in practice’ and central bankers ‘now emphasise the importance of following systematic policies with clearly stated credible goals.’

One good measure of the extent to which macroeconomic research has changed economists’ views of macroeconomic policy is to compare the 1962 Economic Report of the President with the 1990 Report [Tobin, 1987; Solow and Tobin, 1988; Solow and Taylor, 1998]. The change of emphasis with respect to practical policymaking in Chapter 3 of the 1990 Report is striking compared to Chapter 1 of the (orthodox Keynesian) 1962 Report. While the latter articulates a strong case for ‘Full Employment as the Objective of Stabilisation Policy’, to be achieved through the ‘essential’ application of discretionary fiscal and monetary policy, the 1990 Report emphasises the costs of inflation, and the importance of ‘*forward-looking*’ expectations and credibility in the formulation of policy (see pages 77 – 88 of the 1990 Report). It is clear that the authors of the 1990 Report, including Taylor, see a direct link coming from academia to practical policymaking when they note that:

recent economic research and practical experience, while supporting the view that macroeconomic policy has powerful effects, lead to the conclusion that *discretionary macroeconomic policies can be detrimental to good economic performance*. Instead policies should be designed to work with a *minimum of discretion*, with a clear focus on the *longer* term, and with allowance for contingencies [emphasis added].

While Chapter 1 of the 1962 Report highlights involuntary unemployment (the concept appears three times in the first six pages), the 1990 Report makes no mention of this key orthodox Keynesian idea (see below).

Woodford’s model

Another metric of the extent to which macroeconomics has changed and progressed is reflected in the work on monetary policy by Michael Woodford. For example, substantial differences are apparent when comparing the neoclassical synthesis orthodoxy of Don Patinkin’s *Money, Interest and Prices* [1956] with Michael Woodford’s NNS (or neo Wicksellian) *Interest and Prices* [2003]. The workhorse model in Woodford’s seminal work is one that bears the heavy imprint of both new classical and new Keynesian ideas.

In Chapter 1 of *Interest and Prices*, Woodford is quite explicit that his book is intended to rehabilitate the case for systematic stabilisation policy aimed at achieving an inflation target, by providing ‘theoretical foundations for a rule based approach

to monetary policy', taking into account endogenous rational expectations [Muth, 1961], the new classical critique [Lucas, 1976], and using the tools of intertemporal equilibrium modelling developed in the wake of Kydland and Prescott's 1982 paper, [Prescott, 2006]. To Woodford, the real business cycle model is a useful 'building bloc' in establishing an important 'benchmark' description of the dynamic path of output. The output path described in such models represents a 'virtual equilibrium' (natural) level of output 'that *would* occur in an equilibrium with flexible wages and prices.' However, Woodford's key to obtaining 'less trivial consequences of systematic monetary policy' than came out of the early flexi-price, competitive, new classical monetary models, is to adopt the assumption of wage and price inertia in the spirit of new Keynesian models. Inflation dynamics and rules based policy prescriptions are then related to actual output relative to its natural rate.

In his review of *Interest and Prices*, Green [2005] argues that Woodford's book 'is likely to be a bible for central bank economists who regard themselves as having a public charge to design and implement stabilisation policy.' In Woodford's words:

What appears to be developing, then, at the turn of another century is a new consensus in favour of monetary policy that is disciplined by clear rules intended to ensure a stable standard of value, rather than one that is determined on a purely discretionary basis to serve whatever ends may seem most pressing at any time....there are important advantages of commitment to a policy other than discretionary optimisation.

EMPIRICAL EVIDENCE AGAINST THE NEW CLASSICAL COUNTER-REVOLUTION

I agree with Seidman that the empirical evidence is not supportive of the Ricardian equivalence theorem. Lucas's monetary equilibrium theory of the business cycle also failed to stand up to empirical scrutiny. However, with respect to the 1982 recession, while new classical predictions of the costs of disinflation were too optimistic, Keynesian predictions, based on their wage and price equations, were too pessimistic. Furthermore, real business cycle theory has also been integrated into mainstream NNS models as well as providing new empirical insights into the length of the 1930s Great Depression.

The 1982 recession

By 1979 the theoretical debate in macroeconomics indicated that the sacrifice ratio arising from a policy of disinflation would be smaller if (i) the policy was announced in advance, (ii) is credible, (iii) expectations are forward looking, and (iv) prices and wages are responsive to aggregate demand conditions [Chadha et al., 1992]. One interpretation of the recession induced by the Volcker disinflation is that, due to the erosion of the Fed's anti-inflation credibility during the 1970s, by 1979 the Fed was caught in what Chari et al. [1998] call an 'expectations trap.' Chappell and McGregor

[2004] provide evidence from FOMC deliberations that the time inconsistency problem ‘provides a plausible explanation of the rise of inflation in the 1970s.’ Their argument does not concentrate on the idea of the Fed attempting to spring inflationary surprises in order to drive unemployment below the natural rate. Rather, due to the Fed’s lack of credibility, once caught in a high inflation time consistent equilibrium, policymakers perceived correctly that any attempt at aggressive disinflation by the Fed was likely to lead to a high ‘sacrifice ratio’ in terms of lost output and higher unemployment (see also, Chappell, McGregor and Vermilyea [2005]). As events turned out, the sacrifice ratio was greater than anticipated by the new classicals, and less than anticipated by the Keynesian pessimists, some of whom favoured the use of some form of prices and incomes policy (see Tobin [1980, 1987]; Snowden and Vane [2002]).

Real business cycle theory

Numerous criticisms have been levelled at real business cycle theory [Gali and Rabanal, 2005]. However, since real business cycle methodology is, in principle, ideologically neutral, it has the capability of fostering models with enormous diversity, and forms the ‘core’ of NNS models [Goodfriend, 2005]. As Woodford [2003] points out... ‘flexible price real business cycle models of aggregate fluctuations are of practical interest, not as descriptions of what aggregate fluctuations should be like *regardless* of the monetary policy regime, but as descriptions of what they would be like under an *optimal* monetary policy regime.’ Without question, real business cycle theorists have challenged conventional wisdom by raising profound questions relating to the meaning, significance and characteristics of economic fluctuations. However, when it comes to explaining events such as the *initial causes* of the Great Depression, real business cycle theorists have failed to find a convincing explanation that comes anywhere near to matching those that focus on aggregate demand shocks [Bernanke, 2002]. Nevertheless, it is important to note that during recent years several economists have begun to investigate economic depressions using neoclassical growth theory [Pensieroso, 2007].

Cole and Ohanian [1999] were the first economists to study the Great Depression from a real business cycle theory perspective. They attempt to account not only for the downturn in GDP in the period 1929–33, but also seek to explain the slow recovery of output between 1934 and 1939. Cole and Ohanian [2002a; 2002b] argue that the weak recovery process was mainly due to the adverse consequences of New Deal policies, particularly policies related to the National Industrial Recovery Act (NIRA) of 1933, and National Labour Relations Act (NLRA) of 1935. Both Acts, they claim, distorted the efficient working of markets by increasing monopoly power and encouraging firms to grant large pay increases for incumbent workers (see also Benjamin and Kochin [1979]).

It is interesting to note that, during the 1970s and 1980s, both Lucas and Prescott were reluctant to apply equilibrium theorizing to explain the Great Depression. During the 1990s Prescott changed his mind while Lucas remained committed to the Friedman-Schwartz [1963] monetary explanation (see Prescott [1999, 2002]; Chari et al. [2002]; De Vroey and Pensieroso [2006]).

NEW CLASSICAL INFLUENCES IN THE TEXTBOOKS AND ACADEMIA: SOME OBSERVATIONS

While Seidman is correct in his observation that the 'undergraduate textbooks that dominate the market continue to use a Keynesian framework' (IS-LM-AD-AS) as their basis, even a casual comparison of Ackley's [1961] or Lindauer's [1971] macroeconomic textbooks, with their well-known modern counterparts, reveals many key changes influenced by the 'new classical counter-revolution.' As Table 1 illustrates, with the exception of the Lucas critique and calibration techniques, all the other major new classical contributions, appropriate at the undergraduate level, are well represented (perhaps the most remarkable change has been the almost complete disappearance in textbooks and the macroeconomics literature of Keynes's concept of 'involuntary unemployment' [Lucas, 1978; Tobin, 1987; Blinder, 1988a; De Vroey, 2004. See also, Table 1 in Snowden [2006]).

In his critique of new classical economics, Seidman also notes that the 'driving force behind new classical models in academia was the new set of mathematical models that it provided for PhD candidates and assistant professors' and consequently 'new classical economics will last a long time in academia.' I agree (see Johnson [1971]; Snowden and Vane [1996]). Reflecting Lucas's methodological preferences, there is no question that the new classical revolution involved the introduction of new quantitative techniques not found in the 'kit bags of the older economists' [Blinder, 1988b]. Lucas firmly believes that the *only way* to formulate a problem in economic theory is to do it mathematically.....'mathematical analysis is not one of many ways of doing economic theory. It is the only way. Economic theory is mathematical analysis. Everything else is just pictures and talk' (quoted in Warsh [2006, 168]).

CONCLUSION

Professor Seidman's critique of new classical economics, especially with respect to its influence outside academia, is to be welcomed even though I disagree with his negative assessment of the contribution of new classical theorists to progress within the field. As is the case with most revolutions in economics, exaggerated claims have been made on behalf of new classical economics and the demise of the Keynesian approach to macroeconomic analysis. Nevertheless, in this paper I have argued that the transformation of macroeconomics, *both theory and policy*, during the last thirty five years has been considerable, and the influence and contribution of economists such as Robert Lucas and Edward Prescott has been significant. New classical economics has not been a false path but an *illuminating complement* to mainstream developments in both macroeconomic theory and policy and numerous new classical insights now form part of the mainstream core. As Blanchard [2000] highlights, in his eve of millennium survey of macroeconomics, the new Keynesian and new classical research routes, that seemed so divisive during the 1980s, have 'surprisingly converged.' The fact that the 1970s-style market clearing monetary models of the business cycle did not stand the test of time does not mean that important insights were not forthcoming from this research programme, leading to modifications and improvements to the mainstream macroeconomic models [Lucas, 1996].

TABLE 1
The New Classical Content of Macroeconomic Textbooks

Major New Classical Contributions	Ackley 1961 Lindauer 1971	Abel and Bernanke (2005)	Blanchard (2003)	Colander and Gamber (2002)	Delong (2002)	Froyen (2002)	Dornbusch, Fischer and Startz (2004)	Gordon (2003)	Hall and Papell (2005)	Mankiw (2007)
Rational Expectations	No	Yes	Y	Y	Y	Y	Y	Y	Y	Y
Policy Ineffectiveness Anticipated- Unanticipated Money	N	Y	Y	N	Y	Y	Y	Y	Y	Y
Time Inconsistency	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Policy Credibility	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rules v Discretion	Ackley N Lindauer Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lucas Critique	N	Y	Y	N	Y	N	Y	N	Y	Y
Monetary Equilibrium Business Cycle Theory	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ricardian Equivalence	N	Y	Y	Y	Y	N	Y	Y	Y	Y
Real Equilibrium Business Cycle Theory	N	Y	Y	Y	Y	Y	Y	Y	N	Y
Calibration Techniques	N	Y	N	N	N	N	Y	N	N	N

Controversy and dialogue have been, and will continue to be, a major engine for the accumulation of new knowledge and progress in macroeconomics. The 1970s ‘Lucasian revolution’ [Blinder, 2002] certainly forced Keynesians to rethink the prevailing conventional macroeconomic wisdom, and the gradual emergence of a ‘New Neoclassical Synthesis’ in the 1990s reflects a thirty year journey of genuine progress in the field. I leave the final words to Chari and Kehoe [2006]:

Macroeconomics is now firmly grounded in the principles of economic theory. These advances have not been restricted to the ivory tower. Over the last several decades, the United States and other countries have undertaken a variety of policy changes that are precisely what macroeconomic theory of the last thirty years suggests.

NOTES

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