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Short-run macro after the crisis: The end of the 'new' neoclassical synthesis?

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Oliver Landmann

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Abstract

The Financial Crisis of 2008, and the Great Recession in its wake, have shaken up macroeconomics. The paradigm of the “New” Neoclassical Synthesis, which seemed to provide a robust framework of analysis for short-run macro not long ago, fails to capture key elements of the recent crisis. This paper reviews the current reappraisal of the paradigm in the light of the history of macroeconomic thought. Twice in the past 80 years, a major macroeconomic crisis led to the breakthrough of a new paradigm that was to capture the imagination of an entire generation of macroeconomists. This time is different. Whereas the pre-crisis consensus in the profession is broken, a sweeping transition to a single new paradigm is not in sight. Instead, macroeconomics is in the process of loosening the methodological straightjacket of the “New” Neoclassical Synthesis, thereby opening a door for a return to its original purpose: the study of information and coordination in a market economy.

JEL Classification: B22, B40, E10, E12, E13

Keywords: Financial Crisis, Great Recession, Macroeconomics, New Neoclassical Synthesis, Keynesian Economics, New Classical Economics, Great Moderation

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“The State of Macro Is Good” (Blanchard 2008)

“The State of Macro Is Not Good” (Krugman 2009)

1. Introduction¹

On the eve of the financial crisis of 2008, macroeconomics was at ease and at peace with itself. A long history of internal feuding between competing paradigms, often conducted in a heated atmosphere, seemed to have come to an end. A state of reconciliation was finally achieved, a “New Neoclassical Synthesis” (Goodfriend/King 1997), embodied in a macroeconomic consensus model. This model offered a blueprint for monetary policy which promised to maintain price stability and to keep cyclical output volatility at a minimum. The prevailing self-confidence of macroeconomists was well captured by Lucas (2003, p. 1) who opened his presidential address to the American Economic Association with this assessment:

“Macroeconomics was born as a distinct field in the 1940's, as a part of the intellectual response to the Great Depression. The term then referred to the body of knowledge and expertise that we hoped would prevent the recurrence of that economic disaster. My thesis in this lecture is that macroeconomics in this original sense has succeeded: Its central problem of depression prevention has been solved, for all practical purposes, and has in fact been solved for many decades.”

Short-run macro has fulfilled its duty, Lucas implied, so macroeconomists should redirect their focus to the more important supply-side issues of long-term growth and development. In a similar vein, Blanchard (2009) concluded that the state of macro was “good” after many years of “enormous progress and substantial convergence”. At the time, these assessments seemed to be vindicated by more than two decades of low inflation and moderate output fluctuations in the advanced industrialized countries. This “Great Moderation”, as it came to

¹ The author acknowledges helpful comments from participants at Wirtschaftswissenschaftliches Seminar Ottobeuren, “Entwicklung, Stand und Perspektiven der Wirtschaftswissenschaft”, September 2013.

be called (Bernanke 2004), was widely credited to the wise policies of central bankers who followed the guidelines set by the New Neoclassical Synthesis model.

This happy state of affairs came to an abrupt end when the Financial Crisis of 2008 pushed the world into its most severe slump since the Great Depression. All of a sudden, pervasive macroeconomic instability and uncertainty was back, and so were the bitter fights among macroeconomists about what to do about it. Although policymakers responded swiftly and mostly with the right moves, the mainstream macroeconomic policy framework did not prepare them well for what they were facing nor was it much help in crafting the proper response.

As so often before, a major macroeconomic shock has come as a surprise to both policymakers and to academia. Inevitably, then, the New Neoclassical Synthesis came under attack and macroeconomists hurried back to the drawing board to figure out what had gone wrong. This paper attempts to give a preliminary assessment of what this soul-searching has produced so far. Will the New Neoclassical Synthesis be overhauled and resurrected? Or does short-run macroeconomics require an altogether different paradigm (Buiter 2009, De Grauwe 2009)? And if so, how could it look?

The remainder of this paper is structured as follows: Section 2 looks back at the evolution of macroeconomics from the Keynesian revolution to the recent New Neoclassical Synthesis. Section 3 discusses the response of the research community to the 2008 Financial Crisis, emphasizing two themes: the role of the financial sector in macroeconomic models and the significance of microfoundations for the direction and scope of macroeconomic analysis. Often in the past, times of crisis have presented a window of opportunity for the breakthrough of sweeping new paradigms. As Section 4 concludes, however, this time is different.

2. A Brief History of Macroeconomic Theory since Keynes

Short-run macroeconomics, constantly propelled by the interaction of events and ideas throughout the 20th century, has come a long way since Keynes (1936). Disregarding the incomplete and incoherent strands of pre-Keynesian business cycle theory (surveyed by Haberler 1937), we can distinguish three broad stages in the long journey of macroeconomics since the Great Depression: The first stage took macroeconomics from the Keynesian

Revolution to the Neoclassical Synthesis of the post-war period. The next stage opened with the New Classical challenge against the Neoclassical Synthesis which eventually culminated in the Real Business Cycle Theory of the 1980s. The last part of the journey was marked by a revival of Keynesian thought (“New Keynesian Macroeconomics”) and coincided with the period of the Great Moderation. The term “New Neoclassical Synthesis” refers to the merger of the key elements of New Classical and New Keynesian theory. Figure 1 summarily sketches this history whose three stages are now briefly reviewed in turn.

2.1 From the Keynesian Revolution to the Neoclassical Synthesis

As most scientific revolutions, the Keynesian revolution of the 1930s resulted from a massive failure of the ruling paradigm to account for important observed facts - in this case, the depth and persistence of the Great Depression. However, the Keynesian revolution did not displace the old paradigm completely, but left economics divided into two inconsistent and competing visions of how a market economy works. What Keynes (1936) called “classical theory”, was largely the neoclassical tradition of equilibrium price and market theory which described the coordinating power of markets and the efficiency of market-determined resource allocation. The Keynesian income-expenditure model, in contrast, with its core concept of an underemployment equilibrium, justified thorough skepticism with regard to the aggregate homeostatic properties of a market economy. The controversy between “Keynes and the Classics” (Hicks 1937) gradually died down as the post-war economy proved much more stable and resilient than many observers had been led to believe by somber visions of secular stagnation (Hansen 1938).

A clever way of reconciling classical and Keynesian thought both with one another and with the relative macroeconomic stability of the post-war period was provided by Samuelson (1955). He argued that a market economy, for the reasons spelled out by Keynes, cannot be trusted with ensuring full employment on its own. But if monetary and fiscal policies are employed to solve the problem of underemployment, they would place the economy on a trajectory on which the principles of classical equilibrium analysis applied for the purpose of explaining relative prices and resource allocation. This was the neoclassical synthesis. It seemed to give an accurate and logically coherent account of macroeconomic developments in the advanced economies during the quarter century after World War II when governments began to use the tools of Keynesian counter-cyclical policy actively and rapid growth

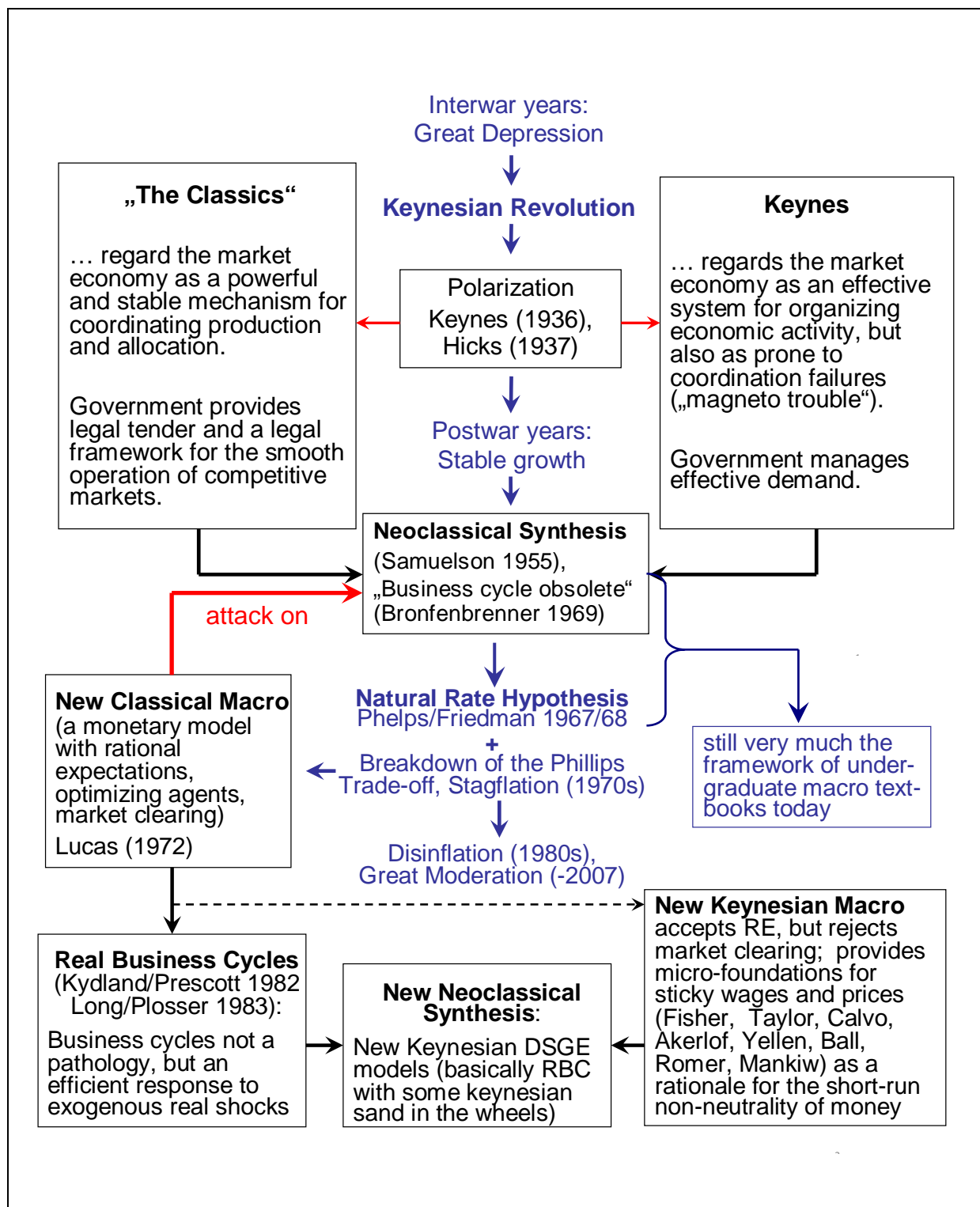


Figure 1: From the Keynesian Revolution to the New Neoclassical Synthesis

prevailed with only minor cyclical fluctuations. In fact, confidence in the ability of macroeconomic policy grew increasingly stronger in this period, to the point where conventional wisdom had convinced itself that the business cycle was “obsolete” (Bronfenbrenner 1969).

Arguably, this confidence - or, as it soon turned out, overconfidence - carried the seeds of self-destruction. Sure enough, as soon as the business cycle was thought to be vanquished, it was back with a vengeance - and the consensus of the neoclassical synthesis was gone.

2.2 The Rise of New Classical Macroeconomics

The shocks that ended the golden age of the post-war world economy came from the supply side. Inflationary expectations, a consequence of the gradual acceleration of inflation during the 1960s, and the explosive rise of commodity prices destroyed the stability of the Phillips Curve which had become a central pillar of the neoclassical synthesis. The resulting stagflation, the simultaneous rise of inflation and unemployment, at first proved hard to accommodate for the Keynesian short-run macroeconomic model which was essentially a model of aggregate demand.

The failure of the Keynesian paradigm to predict stagflation prepared the ground for the New Classical counter-revolution. Led by Robert Lucas, the New Classicals regarded the neoclassical synthesis as completely discredited by the breakdown of the Phillips Curve, as so “wildly incorrect” and “fundamentally flawed” that there was no point in trying to repair it (Lucas/Sargent 1979). What they proposed instead, was a reconstruction of macroeconomics from the first principles of general equilibrium theory, deriving all behavioral equations of the model from individual rationality. Most importantly, Lucas (1972) extended the axiom of rationality to the formation of expectations.

Contrary to New Classical allegations, the old model of the neoclassical synthesis was far from hopelessly damaged. As a matter of fact, the repair work was begun almost immediately. Augmented by an expectations-augmented Phillips Curve and incorporating supply shocks, the old model did quite well tracing the co-movement of output, employment and the price level, as conditioned by the origin of exogenous shocks (Gordon 2009). This extended model continues to be the essence of what most intermediate-level textbooks present as short-run macroeconomic theory (Blanchard/Johnson 2013, Mankiw/Ball 2011).

However, the New Classical research agenda, due to its initial empirical success, its logical coherence and its promise of reuniting microeconomics and macroeconomics, captured the imagination of an entire generation of young macroeconomists in the 1970s and 1980s and thus became the industry standard for what it meant to do serious macroeconomics. The

new paradigm turned out to have surprisingly powerful implications, both in disciplining the specification of macroeconomic models and in conditioning their empirical predictions. More importantly, it completely changed the normative tone of macroeconomics. Whereas the neoclassical synthesis saw the government as the natural guarantor of macroeconomic stability, the New Classicalists insisted on subjecting the case for any stabilization policy to the usual standards of welfare economics: If the government was to intervene in any way, it must first have identified the particular market failure it wished to correct. But since the New Classical models consisted of perfectly rational agents interacting on perfectly competitive markets, a role for an active stabilization policy was virtually ruled out by assumption.

The New Classical movement came in two waves. The first wave, initiated by Lucas (1972), was a monetary business cycle model which attributed aggregate output movements to individual producers confusing aggregate and relative price changes. When it became increasingly clear that this particular model was hard pressed to give a satisfactory account of the depth and persistence of recessions, the New Classicalists steered their paradigm away from the tradition of monetary business cycle theory and turned it into a purely Real Business Cycle (RBC) model. The RBC approach was pioneered by Kydland/Prescott (1982) and Long/Plosser (1983). It rejected the premise, shared by both the neoclassical synthesis and Lucas's monetary model, that business cycles can be interpreted as mostly demand-driven departures from a supply-determined path of potential output. In the RBC model, all output movements are instead regarded as manifestations of a stochastic trend, resulting from the optimal response of an optimizing representative individual to various unexpected exogenous shocks. The shocks are modeled as time-series processes with an autoregressive structure well known to the agents populating the models. In fact, the time-series properties of the exogenous shocks drive the dynamic behavior of RBC models to a large extent.

How good an explanation of business cycles is the RBC theory? The answer depends a lot on what one means by an "explanation". The New Classical methodology has changed that meaning in a subtle way. Traditionally, explanatory power was measured by the success of observable exogenous variables to account for the time-series variation of some observable endogenous variable. The RBC research agenda set itself the objective of building models that can replicate the time-series properties of key macroeconomics variables as fully as possible. Similar as these two criteria sound, they do not amount to the same thing. This can

be seen most clearly from the way RBC theory measures technology shocks, the major drivers of its dynamics. Starting from a standard growth-accounting framework, technology is measured as the Solow residual in the usual way. As it happens, a growth-accounting decomposition of the cyclical short-run variation of output attributes most of this variation to fluctuations of the Solow residual. That is, in production function terms, most of the short run variation of output remains unexplained - the residual is a “measure of our ignorance”, as Abramovitz (1956) famously put it many years ago. The RBC methodology is to use this measure of ignorance as an exogenous explanatory variable in its business cycle model where - surprise, surprise! - it turns out to be a major driver of output fluctuations and is indispensable for the replication of observed output movements. Simulated changes in output fit the actual changes quite closely, which RBC theory records as success. But we still do not know what is behind the variation of the Solow residual. How much progress is this?

2.3 The New Keynesian Revival and the “New” Neoclassical Synthesis

The principle of building every macroeconomic relation on sound microeconomic foundations had, and continues to have, a lot of appeal, both intellectually and, so it appeared at least initially, in terms of empirical explanatory power. In fact, the desirability of microeconomic foundations for macroeconomics was recognized long before the New Classicals appeared on the stage. A large body of theoretical work in macroeconomics, carried out well within the framework of the neoclassical synthesis in the 1950s and 1960s, was mainly concerned with providing behavioral foundations to the central pillars of Keynesian theory: the consumption function, the investment function, and the money demand function.

When inflation increased and the stability of the Phillips Curve became an issue, the micro-foundations literature shifted its attention to the supply side of the economy. The dramatic implications of rational expectations in an equilibrium model of output and inflation, first pointed out by Lucas (1972), underlined the urgency of this research. Once Fischer (1976) and others had demonstrated that a model with a nominal rigidity, such as a contract-related delay in the adjustment of nominal wages or prices, has distinctly Keynesian features even under rational expectations, the challenge was to develop a sound theoretical explanation of nominal rigidities. A “sound theory”, of course, made sure it did not depend on money illusion or some other ad-hoc irrationality on the part of households or firms. The

resulting research agenda spawned a huge literature which soon became known as “The New Keynesian Economics” (Mankiw/Romer 1991).

What distinguishes New Keynesianism from the old Keynesianism of the Neoclassical Synthesis is the incorporation of most of the methodological axioms of New Classical Macroeconomics: Neutrality of money in long-run equilibrium (a vertical Phillips Curve at natural output or unemployment), strictly forward-looking behavior (rational expectations), an explicit dynamic stochastic general equilibrium (DSGE) framework, and the derivation of all behavioral equations - not just for the private sector, but also for the central bank - from intertemporal optimality conditions. In short, a New Keynesian model looks a lot like a Real Business Cycle model, with the addition of money and some sand in the wheels in form of a nominal rigidity in price setting.

What made the New Keynesian model particularly popular was its ability to provide a framework for a systematic monetary policy aiming at stable prices and output. The model suggests a flexible inflation targeting strategy, implemented through a policy rule that has the interest rate respond to movements in inflation and output, very much along the lines of a Taylor rule. With its particular blend of New Classical methodology and New Keynesian short-run non-neutrality of money, the model appeared to have achieved a new reconciliation of the Classical and Keynesian traditions that fell out with each other so bitterly in the 1970s. Hence, “New Neoclassical Synthesis”.

As pointed out above, the establishment of this new paradigm as the mainstream in monetary macroeconomics coincided with the Great Moderation, a period of low inflation and unusually stable output in the advanced economies, extending from the second half of the 1980s to the eve of the Financial Crisis in 2008. A number of reasons have been cited for the benign macroeconomic climate of that period: improved inventory management in the private sector, improved macroeconomic management by policymakers, and plain luck, i.e. the absence of major destabilizing shocks. How much of the credit is due to central banks remains controversial. There is solid evidence, however, that the macroeconomic turbulences of the 1970s and early 1980s were associated with monetary policies which strayed widely from the guideline of the Taylor rule (Judd/Rudebusch 1998). Not surprisingly, then, central banks and academic macroeconomists grew increasingly confident that proper management of the short-term interest rate was enough to keep the macro economy on course. Once

again, then, just as in the late 1960s, the business cycle was believed conquered. And once again, it did not fail to make a powerful comeback.

3. The Reappraisal of Macroeconomics After the Financial Crisis

The history of macroeconomics, as sketched above, reveals one salient parallel between macroeconomic theory and its object, the macro-economy: They are both subject to cycles. They both experience times of relative calm, followed by phases of extraordinary turbulence. And clearly, whatever one may think about the relation of macroeconomic theory to reality, their states of calm and excitement are highly correlated. Macroeconomic turmoil was always associated with facts and experiences which the prevailing theory found hard to accommodate. The consequences each time were excitement and controversy in the research community. This was true in the 1930s when Keynes launched the Keynesian Revolution in response to the inability of the contemporary mainstream to provide a plausible account for persistent high unemployment during the Great Depression. It happened again in the 1970s when the Neoclassical Synthesis struggled to accommodate the stagflationary shocks of the time, which paved the way for the triumph of the “New Classical” movement. Today, the “New Neoclassical Synthesis” pays the price for its complete neglect of the vagaries of financial markets.

3.1 Placing the Financial Sector Back into Macroeconomics

How badly was macroeconomics shaken by the Financial Crisis of 2008? Her Majesty, the Queen of England, embarrassed economists when she famously wondered: "If these things were so large, how come everyone missed them?" The implied expectation that economics should progress to the point where it can predict an event like the Financial Crisis may be asking too much. After all, seismology was not declared a failure when it failed to pinpoint the timing of the last major earthquake. What seismology is expected to provide, however, are an understanding of the underlying mechanisms, an assessment of looming risks, and indicators for early warning systems. Held against this standard, mainstream macroeconomics admittedly did a lot worse than seismology. The key elements in the causation of the Financial Crisis were totally absent from the paradigm of the New Neoclassical Synthesis. The financial sector was reduced to a single money market interest rate which could be con-

trolled by the central bank and acted as the sole transmitter of monetary-policy impulses to the goods and labor markets. There were no banks, no shadow banks, no subprime lending, no securitization, no interconnectedness between banks, no leverage, no bubbles, no liquidity crises, no deleveraging - nothing of that sort. This is not to say that there was not considerable analysis and insight about these phenomena, but whatever knowledge existed was scattered and unconnected to the macroeconomic model of the New Neoclassical Synthesis. The canonical macro model and financial economics simply had “no point of contact” (Friedman 2013).

When an anthill suffers damage from a major blow, the immediate consequence is a period of high excitement and activity as the ants scramble to rebuild and fortify the structure. This is very much what happened in macroeconomics after the trauma of the Financial Crisis. The architects of the New Neoclassical Synthesis quickly went to work to fill the glaring gaps in their analysis and to add details of the financial sector to their models. The theory was extended to analyze the proper response of monetary policy to credit spreads and to the volume of credit supply (Curdia/Woodford 2010), to highlight the central bank balance sheet as an instrument of monetary policy (Curdia/Woodford 2011), and to identify disruptions in financial intermediation as a source of disturbances to economic activity (Gertler/Kiyotaki 2010), to name just a few examples. A large literature has developed along these lines. A survey is provided by Brunnermeier et al. (2012).

This work is by no means limited to sticking financial add-ons onto the canonical mainstream model. Rather, some of the fundamental strategic simplifications of the model must be reviewed critically. In a world of homogeneous representative agents, for example, it is hard to rationalize a social function for financial intermediation between lenders and borrowers. Nor could a deleveraging crisis or a Fisherian debt deflation occur in the absence of heterogeneous agents who differ with regard to their spending patterns.

3.2 Realism vs. Microfoundations: The Case of the Phillips Curve

The efforts now under way to reconnect macroeconomics and financial economics promise substantial progress. However, the reconstruction of macroeconomics is unlikely to stop there. As Blanchard (2008) pointed out in his pre-crisis survey, the convergence of macroeconomics towards the canonical new-synthesis model may have gone too far. Almost ritu-

ally, the same set of optimality and equilibrium conditions appeared in paper after paper, hardly questioned any more because they had become the defining features of serious macroeconomics. The calm of the Great Moderation did not subject this received wisdom to a serious test. When the test came and the received wisdom was found wanting, everything that went unquestioned for a long time was up for a critical reappraisal. Some of the critics used strong language. Buiter (2009) flatly declared “most mainstream macroeconomic theoretical innovations since the 1970s ... to be self-referential, inward-looking distractions at best.” (Krugman 2009) accused macroeconomics of mistaking “beauty, clad in impressive-looking mathematics, for truth”. Putting the hyperbole aside, a legitimate case can be made that some of the standard assumptions of the new-synthesis model owe their popularity more to their theoretical elegance and analytical convenience than to their accuracy in describing actual behavior (Caballero 2010).

A case in point is the New Keynesian Phillips Curve, originally proposed by Calvo (1983), which is the standard model of inflation in the New Neoclassical Synthesis. This model starts from a clever, but highly artificial and unrealistic set-up designed to introduce a nominal rigidity into a world of perfectly forward looking rational price setters. The nominal rigidity results from the assumption that price setters get an opportunity to adjust their prices only at intervals that are stochastically determined and exogenous to them. An awkward scenario. But the resulting inflation equation is parsimonious and elegant, and it meets the requirement that the behavioural relations of a macroeconomic model must not be posited ad hoc, but should be derived from the first-order conditions of some explicit optimization problem solved by rational individuals. Lack of realism in an assumption is not, as such, a sin in economic modelling. But the elegance of the New Keynesian Phillips Curve comes at a price: Its main empirical implication - that there is inertia in the price level, but not in the inflation rate - is strongly contradicted by the facts (Fuhrer/Moore 1995, Mankiw 2001). How is it, then, that the new-synthesis model can generate the observed persistence of inflation if such persistence is not a feature of the New Keynesian Phillips Curve? Only by building the persistence into the time-series representations of the exogenous shocks which constantly drive the economy away from its steady-state equilibrium path.

Thus, just as the RBC theory on which it builds, the canonical New Keynesian model lets its exogenous shocks do most of the work in replicating the observed time-series behavior of

the macro-economy, rather than deriving these properties from its own inherent dynamic structure. The irony here is that some simple specifications of the Phillips curve which allow for an inertial backward-looking momentum of inflation do a remarkably good job in describing the inflation process, but are considered “ad hoc” because they are hard to derive theoretically from a model of rational forward-looking agents. The New Keynesian Phillips curve, in contrast, is not considered ad hoc because it solves a straightforward maximization problem. A clean theoretical rationalization of inflation inertia would be highly desirable, of course. But in the meantime, one is left to wonder who is the arbiter of “ad-hockery” in macroeconomics. Why is it ad hoc to assume downward wage rigidity or inflation inertia right away while it is not ad hoc to assume some arbitrary exogenous frequency λ at which prices can be revised?

3.3 Back to the Roots: Macroeconomics as the Study of Information and Coordination

On a more fundamental level, it has become increasingly clear that the desire of anchoring aggregate relations in individual behavior, which is entirely uncontroversial as a general principle, has led macroeconomics into an axiomatic straightjacket of rules that define what is and is not an acceptable model. These rules were laid down early on by the New Classicals with the commendable objective of using the reductionist neoclassical rationality principle to discipline macroeconomic modelling. But what started as an agenda of containing arbitrary discretion eventually morphed into a set of arbitrary principles itself that shut off once-important strands of thinking. Macroeconomics thereby lost sight of issues which, if pursued more systematically, would have left it better prepared for the crisis it faced in 2008. Two themes in particular moved off the radar screen of mainstream macroeconomics because the New Classical Microfoundations agenda somehow answered them a priori: The breakdown of coordination in a decentralized market economy and the processing of dispersed information by households and firms.

Arguably, macroeconomics once started out as the study of coordination failures in large systems of interconnected decentralized markets (Leijonhufvud 1981). In particular, mass unemployment was explained by Keynes (1936) as a failure of the market economy to coordinate the transaction plans of quantity-constrained households and firms. Whether or not this theme was adequately captured by the IS-LM apparatus of the neoclassical synthesis is debatable. But there is no question that macroeconomics completely abandoned the analy-

sis of coordination failures when it adopted the New Classical research agenda (Laidler 2009, Leijonhufvud 2009a, Spahn 2009). Once Robert Lucas had convinced the research community that stable macroeconomic relations could only be obtained if one started with optimizing agents interacting through cleared markets in a competitive economy, coordination failures were defined away. Departures from first-best outcomes could still occur, but only because incomplete information prevented agents from reading the market signals correctly. Thus, while transaction plans may have been based on a mistaken interpretation of information available to households and firms, they were still perfectly coordinated. In such a setup, the government had no business intervening in the machinery of coordination. If there was any role for public policy, it was to avoid becoming a source of macroeconomic noise itself.

Real Business Cycle theory led macroeconomics even further down that road. It eliminated markets and prices by reducing macroeconomics to the study of a rational, but lonely Robinson Crusoe who faces shocks to his productivity. In a Robinson Crusoe economy, coordination cannot become an issue by definition. Moreover, that same Robinson, while living in a stochastic world with uncertainty, fully understands the particular shocks to which he is exposed and he also understands the stochastic nature of the system that generates these shocks. In this way, any possible problems associated with the processing of information have been moved off the radar screen of macroeconomics as well. The Robinson Crusoe model is about as far as one can go in distancing oneself from the study of coordination failures. The lonely nerd who is perfectly informed about the relevant frequency distributions over an infinite time horizon and who understands and strictly observes his intertemporal budget constraint is a poor starting point if one is out to understand a world of burst bubbles, failed Ponzi games and mass defaults as typically produced by a financial crisis.

The New Keynesians, eager to retain as much of the New Classical Microfoundations as possible in order to evade the criticism that had brought down the old neoclassical synthesis, have largely bought into the Robinson-Crusoe caricature of the macro economy. The New Neoclassical Synthesis thus differs from the RBC model only marginally - mainly by pouring some sand into the wheels of Robinson's optimization machinery in the form of a nominal rigidity which delays the response of the price level to a monetary disturbance. The resulting short-run non-neutrality of money is what gives the New Neoclassical Synthesis that

“Keynesian” flavour which is needed to get a role for money and monetary policy in a theory of business cycles. By its very construction, this “stability-with-frictions” paradigm cannot address the more severe instability brought about by a genuine breakdown of coordination (Leijonhufvud 2009a).

What is more, a whole range of coordination issues is resolved a priori by the rational-expectations hypothesis which, as a central tenet of New Classical thought, was also embraced by the New Neoclassical Synthesis. The rationality of rational expectations refers to the efficient use of information and it implies not only an astonishing information-processing capability of households and firms, but also a high degree of implicit coordination among them. As agents are assumed to form expectations in line with the model they inhabit, they are assumed to have the full picture given by the model and, therefore, to share the same picture. On the face of it, this is a remarkable behavioural proposition. At the very least, it makes for a curious contrast with the fierce debates raging among professional economists about the right macroeconomic model.

In the aftermath of the 2008 Financial Crisis, the standards of what passes as respectable, microfounded macroeconomics have begun to shift away from the axiomatic postulates of the New Classical School towards an approach which places more emphasis on behavioural realism (Akerlof/Shiller 2009). In particular, ways are explored to move beyond rational expectations towards a paradigm which takes into account learning and which allows for agents struggling to process new and confusing information (De Grauwe 2012, Frydman/Phelps 2013, Woodford 2013). Most of the ideas that are developed along these lines are not entirely new. Concepts like herding, animal spirits, or multiple equilibria have been developed and explored to various degrees in the past, but they have subsequently been pushed to the fringes of mainstream macroeconomics because they did not fit into the self-imposed straightjacket of the New Neoclassical Synthesis.

4. Conclusion: This Time Is Different

This paper has reviewed the evolution of macroeconomics from Keynes to the New Neoclassical Synthesis and sketched the reappraisal of the state of knowledge that has begun after the Financial Crisis of 2008. The story of macroeconomics was told in section 2 as a sequence

of crises, paradigms, paradigm wars, and attempted syntheses between conflicting paradigms:

- ◆ The Great Depression of the 1930s paved the way for the breakthrough of the Keynesian paradigm, but left the field divided between microeconomics and macroeconomics.
- ◆ The Neoclassical Synthesis was an attempt to reconcile “Mr. Keynes and the Classics” (Hicks 1937), but did not bring unity methodologically.
- ◆ The Stagflation of the 1970 cast doubt on the Neoclassical Synthesis and helped the New Classical Revival win the day. Microfoundations-cum-Rational-Expectations became the new industry standard.
- ◆ The New Neoclassical Synthesis was an attempt to press the Keynesian notions of nominal rigidity and short-run non-neutrality of money into the New Classical mold. This paradigm provided an analytical foundation for a monetary-policy doctrine which was followed by numerous central banks and widely credited for the Great Moderation.
- ◆ Yet another macroeconomic crisis, the Financial Crisis of 2008, shattered the Great Moderation and discredited the New Neoclassical Synthesis.

But this time is different in one important respect. This time, no single new revolutionary paradigm was waiting in the wings to topple the ruling paradigm and to take its place. Rather, there is a wealth of ideas for reshaping macroeconomics. Some of them can be accommodated within the general framework of the New Neoclassical Synthesis, others require a more radical departure from traditional thinking.

It would be premature to consign the New Neoclassical Synthesis to the scrap heap of abandoned economic ideas. After all, it has worked remarkably well for a long time during the Great Moderation. But the calm of that period lulled macroeconomists into a complacency which prevented them from noticing how much they had narrowed down their subject, both in scope and methodology. The experience of the Financial Crisis of 2008 and the subsequent slump of the world economy suggests at least two general lessons for macroeconomics:

First, the failure of the New Neoclassical Synthesis to capture any of the mechanisms that led to the Financial Crisis revealed a fatal blind spot, namely the almost total neglect of the financial sector. More fundamentally, macroeconomic theory failed to see that the Great Moderation fostered complacency and encouraged risk taking, thereby undermining its own foundations as well as those of the underlying macroeconomic paradigm. One could interpret this failure in a broad sense as a vindication of the Lucas Critique (Lucas 1976). But even more, it vindicated the analysis of heterodox thinkers such as Hyman Minsky (1986) who had developed a theory of a cycle of stability and instability in capitalist economies, based on endogenous shifts in attitudes towards risk.

Second, the market system appears to obey quite different laws of motion in tranquil periods like the Great Moderation and in times of crisis. This observation calls for a generalization of macroeconomic theory to allow for non-linearities: Small shocks that push the economy not too far away from its steady-state equilibrium may entail a different, more benign response than large, once-in-a-lifetime shocks. Leijonhufvud (1973, 2009b) has evoked the notion of a corridor around the long-run equilibrium which divides the impulse-response space into compartments with distinctly different response patterns. The relevance of this general idea became evident when interest rates across the world hit the zero lower bound after 2008 and the profession was forced to relearn the macroeconomics of the liquidity trap. Even within the broad logic of the New Neoclassical Synthesis, it is possible to derive results that appear paradoxical when compared to what one would expect under normal conditions when monetary policy has traction (Eggertson 2010). A noteworthy and widely discussed example is the multiplier effect of fiscal policy.

Thus, like the Great Depression of the 1930s, the Financial Crisis of 2008 has shattered the prevailing consensus in the profession. But unlike the Great Depression or the stagflation of the 1970s, it has not produced a sweeping transition to a single new paradigm. When historians of economic thought will look back to how the 2008 Financial Crisis has reshaped macroeconomics, they may well conclude that the field has come out of the crisis less self-confident and less unified, but with a richer agenda and a broader scope as it struggled to escape from the analytical straightjacket of the New Neoclassical Synthesis.

References

- Abramovitz, Moses (1956)*, Resource and Output Trends in the US Since 1870, *American Economic Review*, 46, 5-23.
- Akerlof, George and Robert Shiller (2009)*, *Animal Spirits*, Princeton and Oxford.
- Bernanke, Ben (2004)*, The Great Moderation, Remarks at the meetings of the Eastern Economic Association, Washington, DC, February 20.
- Blanchard, Olivier (2009)*, The State of Macro, *Annual Review of Economics*, 1(1), 209-228.
- Blanchard, Olivier and David Johnson (2013)*, *Macroeconomics*, Boston et al.
- Bronfenbrenner, Martin (1969)*, *Is the Business Cycle Obsolete?* New York.
- Brunnermeier, Markus, Thomas Eisenbach and Yuliy Sannikov (2012)*, *Macroeconomics with Financial Frictions*, NBER Working Paper No. 18102, May.
- Buiter, Willem (2009)*, The unfortunate uselessness of most 'state of the art' academic monetary economics, <http://blogs.ft.com/maverecon>, March 3.
- Caballero, Ricardo (2010)*, Macroeconomics After the Crisis: Time to Deal with the Pretense-to-Knowledge Syndrome, *Journal of Economic Perspectives*, 24, 85-102.
- Calvo, Guillermo (1983)*, Staggered Prices in a Utility-Maximizing Framework", *Journal of Monetary Economics*, 12, 383-398.
- Curdia, Vasco and Michael Woodford (2010)*, Credit Spreads and Monetary Policy, *Journal of Money, Credit, and Banking*, 42 (supplement 1), 3-35..
- Curdia, Vasco and Michael Woodford (2011)*, The Central-Bank Balance Sheet as an Instrument of Monetary Policy, *Journal of Monetary Economics*, 58, 54-79.
- De Grauwe, Paul (2009)*, Top-Down versus Bottom-Up Macroeconomics, Paper presented at the CESifo Conference "What's Wrong With Macroeconomics?", Munich, November 6-7.
- De Grauwe, Paul (2012)*, Booms and Busts: New Keynesian and Behavioural Explanations, in Robert Solow and Jean-Philippe Touffut (eds.), *What's Right with Macroeconomics?* Cheltenham.
- Eggertsson, Gauti (2010)*, What Fiscal Policy Is Effective at Zero Interest Rates? *NBER Macroeconomics Annual*, 59-112.
- Fischer, Stanley (1977)*, Long Term Contracts, Rational Expectations, and the Optimal Money Supply Rule, *Journal of Political Economy*, 85, 191-205.
- Friedman, Benjamin (2013)*, *The Simple Analytics of Monetary Policy: A Post-Crisis Approach*, Harvard University, January.

- Frydman, Roman and Edmund Phelps, eds.* (2013), *Rethinking Expectations*, Princeton.
- Fuhrer, Jeffrey and George Moore* (1995), Inflation Persistence, *Quarterly Journal of Economics*, 110, 127-160.
- Gertler, Mark and Nobuhiro Kiyotaki* (2010), Financial Intermediation and Credit Policy in Business Cycle Analysis, in Benjamin Friedman and Michael Woodford (eds.), *Handbook of Monetary Economics*, Vol. 3, 547-599.
- Goodfriend, Marvin and Robert King* (1997), The new Neoclassical Synthesis and the Role of Monetary Policy. In Ben Bernanke and Julio Rotemberg (eds.), *Macroeconomics Annual* 12, 231-283.
- Gordon, Robert* (2009), Is Modern Macro or 1978-era Macro More Relevant to the Understanding of the Current Economic Crisis?, Paper presented to International Colloquium on the History of Economic Thought, Sao Paulo, Brazil, August 3.
- Haberler, Gottfried* (1937), *Prosperity and Depression*, Geneva.
- Hansen, Alvin* (1938), *Full Recovery or Stagnation?*, New York.
- Hicks, John* (1937), Mr. Keynes and the Classics, A Suggested Interpretation, *Econometrica*, 5, 147-159.
- Judd, John and Glenn Rudebusch* (1998), Taylor's Rule and the Fed: 1979-1997, *Federal Reserve Bank of San Francisco Economic Review*, 3, 3-16.
- Keynes, John Maynard* (1936), *The General Theory of Employment, Interest, and Money*. London.
- Krugman, Paul* (2009), How Did Economists Get It So Wrong? *New York Times Magazine*, September 6.
- Kydland, Finn und Edward Prescott* (1982), Time to Build and Aggregate Fluctuations, *Econometrica*, 50, 1345-1370.
- Laidler, David* (2009), Lucas, Keynes, and the Crisis, *Journal of the History of Economic Thought*, 32, 39-62.
- Leijonhufvud, Axel* (1973), Effective Demand Failures, *Swedish Economic Journal*, March, reprinted in *Leijonhufvud* (1981), 103-129.
- Leijonhufvud, Axel* (1981), *Information and Coordination*, New York and Oxford.
- Leijonhufvud, Axel* (2009a), *Macroeconomics and the Crisis: A Personal Appraisal*, CEPR Policy Insight 41, London.
- Leijonhufvud, Axel* (2009b), Out of the Corridor: Keynes and the Crisis, *Cambridge Journal of Economics*, 33, 741-757..

- Long, John und Charles Plosser (1983)*, Real Business Cycles, *Journal of Political Economy*, 91, 39-69.
- Lucas, Robert E. (1972)*, Expectations and the Neutrality of Money, *Journal of Economic Theory*, 4, 103-124.
- Lucas, Robert E. (1976)*, Econometric Policy Evaluation: A Critique, *Carnegie-Rochester Conference Series on Public Policy*, 1, 19-46.
- Lucas, Robert E. (2003)*, Macroeconomic Priorities, *American Economic Review*, 93, 1-14.
- Lucas, Robert E. and Thomas Sargent (1979)*, After Keynesian Economics, *Federal Reserve Bank of Minneapolis Quarterly Review*, 3, 1-16.
- Mankiw, N. Gregory (2001)*, The Inexorable and Mysterious Tradeoff Between Inflation and Unemployment, *Economic Journal*, 111, C45-C61.
- Mankiw, N. Gregory and Laurence Ball (2011)*, *Macroeconomics and the Financial System*, New York.
- Mankiw, N. Gregory and David Romer, eds. (1991)*, *The New Keynesian Economics*, Cambridge.
- Minsky, Hyman (1986)*, *Stabilizing the Unstable Economy*, New Haven and London.
- Spahn, Peter (2009)*, The New Keynesian Microfoundations of Macroeconomics, *Jahrbuch für Wirtschaftswissenschaften*, 60, 181-203.
- Woodford, Michael (2013)*, *Macroeconomic Analysis without the Rational Expectations Hypothesis*, NBER Working Paper No. 19368, August.