In Search of Lost Time: the Neoclassical Synthesis

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IN SEARCH OF LOST TIME: THE NEOCLASSICAL SYNTHESIS

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Abstract

Present-day macroeconomics has sometimes been dubbed 'the new neoclassical synthesis', suggesting that it constitutes a reincarnation of the neoclassical synthesis of the 1950s. This paper assesses this understanding. To this end, we examine the contents of the 'old' and the 'new' neoclassical syntheses. We show that the neoclassical synthesis originally had no fixed content, but two meanings gradually became dominant. First, it designates the program of integrating Keynesian and Walrasian theory. Second, it designates the methodological principle that in macroeconomics it is better to have alternative models geared towards different purposes than a hegemonic general equilibrium model. The paper documents that: (a) the first program was never achieved; (b) Lucas's criticisms of Keynesian macroeconomics eventually caused the neoclassical synthesis program to vanish from the scene; (c) the rise of DSGE macroeconomics marked the end of the neoclassical synthesis mark II; and (d) contrary to present-day understanding, the link between the old and the new synthesis is at best weak.

JEL codes: B22, B30, E12, E13

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Introduction

Since its inception, macroeconomics has witnessed an alternation between phases of consensus and dissent. In the early years (from the 1940s to the end of the 1960s) macroeconomists claimed to have reached a consensus because they saw themselves as Keynesians both in terms of their method of analysis and their policy standpoint. Then, in the 1970s, Robert Lucas and other new classical macroeconomists launched a fierce attack on Keynesian macroeconomics. Two long decades of strong rivalry between Keynesians and anti-Keynesians (first, new classical and, then, real business cycle macroeconomists) ensued. In the mid 1990s, the wind changed, and the opposing tribes decided to bury the war hatchets. A new consensus arose.[1]

In the literature, these two consensus episodes are labeled 'neoclassical synthesis' and 'new neoclassical synthesis,' both taken as well established viewpoints. The former expression is credited to Paul Samuelson in the third edition of his undergraduate textbook, *Economics* (Samuelson 1955); the latter is due to Marvin Goodfriend and Robert King (1997), who used it to refer to the new developments that were then taking place in macroeconomics. They thereby suggested a lineage between the 'old' and the 'new' neoclassical syntheses:

> We call the new style of macroeconomic research the new neoclassical synthesis because it inherits the spirit of the old synthesis (Goodfriend and King 1997, 255).

Goodfriend and King barely expanded on what they meant by the 'old' synthesis, nor did most of the authors who borrowed the new neoclassical terminology from them. They all took for granted that there was an old synthesis, the meaning of which is obvious to everybody. Among other things, our paper will cast doubt on this view.

Our aim is twofold, first to assess what lies behind the 'neoclassical synthesis' term and, second, to ponder upon the relation between the 'old' and the 'new' synthesis. As will be seen, such a query brings out a series of intriguing questions, all suggesting that 'famous', the adjective that one may stamp on the neoclassical synthesis (cf. Romer 1993, 5), does not rhyme with 'clear'. While the content of the new neoclassical synthesis is transparent, that of the old synthesis turns out to be elusive. According to the person using it, it can either designate a general consensus among economists or a theoretical research program or yet a declaration of principles that macroeconomics should be

[1] This consensus has been shaken by the economic crisis that started in 2007 (see Duarte 2011). But we are here concerned with the macroeconomics of the mid 1990s and the first half of the 2000s, summarized in Woodford (2003) and Galí (2008).

pluralist.[2] Another intriguing fact is that there was a time when a neoclassical synthesis research program was in progress although the economists concerned with it did not put their work under the 'neoclassical synthesis' label.

It is our firm conviction that technical contributions in macroeconomics ought to be supplemented by works of a more reflexive nature aiming at placing theoretical developments in a wider perspective. This is the very contribution that our paper, divided in six sections, purports to make. In Section 1, we compare the meaning of the neoclassical synthesis expression at the time it was launched in the US by Samuelson in the 1950s with its present meaning, and argue that a long journey has taken place between times. In Section 2 we discuss the results of a JSTOR search, showing how the frequency of occurrences of the term changed over time and making the case that initially it had various different meanings. In Section 3 we draw a distinction between the notions of a consensus and a synthesis. Furthermore, we introduce the main claim of our paper, namely that over time the neoclassical synthesis term has been used in two distinct ways. In its first meaning, it designates the program of integrating Keynesian and Walrasian analysis through some gravitation process. In its second, it constitutes a rallying banner for those macroeconomists who, refusing the hegemony of general equilibrium analysis, claim that different models geared towards different purposes should co-exist within the field. In Section 4 we examine the consensus aspect of the neoclassical synthesis by presenting three visions around which a consensus can be established. In Section 5 we recount the fortunes and misfortunes of the neoclassical synthesis notion in three steps. First we examine the main attempts at achieving the neoclassical synthesis program by economists like Paul Samuelson, Lawrence Klein and Don Patinkin. Next, we explore Lucas's assault on this program and its underlying consensus.[3] We continue with the study of the second meaning of the neoclassical synthesis, the defense of a pluralistic macroeconomics, in the IS-LM model and in the works of the new Keynesian economists who have retorted to Lucas's criticisms. Under Robert Solow's mentorship, these economists (or at least some of them) presented their work as a rehabilitation of the neoclassical synthesis without fully realizing that in this process they had changed its

[2] That the term 'neoclassical synthesis' meant "different things to different economists" was a point already noted, in a different context, by Weintraub (1974, 52, fn. 1).

[3] While Lucas was not the only economist to attack the neoclassical synthesis, his works dismissed it and opened the door for the developments that occurred in mainstream macroeconomics since then. Other US critics include Axel Leijonhufvud (1968), Hyman Minsky (1972, 45; 1977, 5-7, 15), Paul Davidson (1972, 869 fn.6; 1978, 48-50) and Robert Clower ([1975] 1984). As to UK economists, after Leijonhufvud (1968) they used the term neoclassical synthesis to denote the kind of Keynesianism they disapproved (cf. Robinson and Cripps 1979, 140-2), which Joan Robinson (1971, 90) castigated as "bastard" and Sidney Weintraub (1977, 45) called "Hicksian Keynesianism." As stated by Tobin, "[these critics'] view was that the economy was always at an under full-employment equilibrium, and that thus the neoclassical rules never apply" (Colander 2007, 397).

meaning. Finally, in the last section, we turn to the new neoclassical synthesis and make our claim that it bears little, if any, relation to the old synthesis.

1. From Samuelson's inauguration of the 'neoclassical synthesis' to its present-day understanding

Macroeconomists (and historians of economics) attribute to Samuelson the coinage of the term neoclassical synthesis in the third edition of his *Economics* textbook in 1955. He did it in a solemn tone, hammering home a 'harmonist ideal' message, to borrow Kerry Pearce and Kevin Hoover's (1995, 201) characterization. At the risk of repetition, let us quote several such passages.

> Repeatedly in the book I have set forth what I call a 'grand neoclassical synthesis'. This is a synthesis of (1) the valid core of modern income determination with (2) the classical economic principles (Samuelson 1955, VI).

> Neoclassical synthesis: by means of appropriately reinforcing monetary and fiscal policies, our mixed-enterprise system can avoid the excesses of boom and slump and can look forward to healthy progressive growth. This fundamental being understood, the paradoxes that robbed the older classical principles dealing with small-scale 'microeconomics' of much of their relevance and validity — these paradoxes will now lose their sting. … Perhaps for the first time — the economist is justified in saying that the broad cleavage between microeconomics and macroeconomics has been closed (360).

> In recent years 90 percent of American economists have stopped being 'Keynesian economists' or 'anti-Keynesian economists'. Instead they have worked towards a synthesis of whatever is valuable in older economics and in modern theories of income determination. The result might be called neo-classical synthesis and is accepted in its broad outlines by all but about 5 per cent of extreme left wing and right wing writers (212).

Three claims are made in these quotations: a) that there is a consensus among American economists that monetary and fiscal policy can and should be used for stabilizing the economy and ensure full employment; b) that Keynesian theory, here understood as the income-expenditure model, fills the gaps to be found in classical theory; c) that any earlier existing cleavage between microeconomics and

macroeconomics has thereby been closed. However, Samuelson gives scant information about how Keynesian theory and classical theory are to be synthesized.[4]

Samuelson had a special motive for fostering the consensus view: the publication of his textbook and its subsequent revisions encountered fierce opposition by anti-government interventionism writers who saw Samuelson's textbook as a defense of government intervention (some calling the book communist) and as a criticism of free market ideas. As Yann Giraud (2011) showed, Samuelson explicitly took a 'middle-of-the-road position' in writing and revising his textbook, and such reasonableness and tolerance was used to defend the book against these charges. Much later, in a 1997 article, Samuelson discussed the criticisms: he evoked Lorie Tarshis's 1947 textbook, *The Elements of Economics*, and declared that Tarshis was "almost killed" by "vicious political and personal attacks [from the right] on him as a 'Keynesian-Marxist'" (Samuelson 1997, 158).[5] A similar fate, he continues, almost happened to him: "having tasted blood in trying to root the Tarshis text out of colleges everywhere", the same people turned towards Samuelson's book. Being centrist was Samuelson's strategy for deflecting these criticisms. "Interested in maximizing not *PQ* book revenues but rather *Q* influence, I could only gain from being eclectic and centrist" (159).[6]

Jumping in time, we now wonder how present-day economists understand the term "neoclassical synthesis". Again at the risk of being repetitive, we want to provide the reader with several such accounts, drawn from the writings of Peter Howitt, N. Gregory Mankiw and Michael Woodford:[7]

> Since it was widely believed that wages were less than fully flexible in the short run, it seemed natural to see Keynesian theory as applying to short

[4] Before the official inauguration of the term in 1955, Samuelson toyed with the neoclassical synthesis idea in other contemporary writings. As Pearce and Hoover (1995, pp. 201-2) indicate, in the second edition of the *Economics* textbook (1951), he presented the idea of a consensus on economic policy but he branded this "neo-classical theory" rather than neoclassical synthesis. Either the term or different understandings of neoclassical synthesis are present in two other early articles (Samuelson [1951] 1966; 1952). In the first of these Samuelson talked about a "general neo-classical theory that incorporates into the classical tradition whatever parts of the Keynesian and neo-Keynesian analysis … seem to possess descriptive validity for the present-day economy" (1271), while in the second he used the term neoclassical synthesis to designate the marginalist revolution of the late nineteenth century (60).

[5] As Pearce and Hoover (1995) argue, Tarshis's book "is often regarded as the first systematically Keynesian textbook" (192), while the first edition of Samuelson's *Economics* "was not tightly structured around Keynes's own conceptual framework" (186). So it is interesting to note that the inauguration of the neoclassical synthesis as a policy consensus paralleled a process of making *Economics* more Keynesian, a process that happened to most macroeconomics textbooks of the late 1940s.

[6] Samuelson's centrist strategy of presenting his interventionist ideas as part of a wide consensus in economics was not only noted but also explicitly rejected at the time. For example, in October 1961, E. C. Harwood reviewed the fifth edition of *Economics* (in a publication of the American Institute for Economic Research, a Massachusetts right-wing think tank, titled *Economic News*) and accused Samuelson of using the idea of a synthesis to give weight to his interventionist ideas. ("A Betrayal of Intelligence", in Paul A. Samuelson Papers, David M. Rubenstein Rare Book & Manuscript Library, Duke University, box 1, folder "MIT Archive Photocopies"). See also Giraud (2011).

[7] See also Blanchard (1987, 634-5).

> run fluctuations and general equilibrium theory as applying to long-run questions in which adjustment problems could safely be ignored. This view came to be known as the 'neoclassical synthesis'. (Howitt 1987, 274).
>
> How to reconcile these two visions of the economy — one founded on Adam Smith's invisible hand and Alfred Marshall's supply and demand curves, the other founded on Keynes's analysis of an economy suffering from insufficient aggregate demand — has been a profound, *nagging question* since macroeconomics began as a separate field of study. Early Keynesians, such as Samuelson, Modigliani, and Tobin, thought they had reconciled these visions in what is sometimes called the 'neoclassical-Keynesian synthesis.' These economists believed that the classical theory of Smith and Marshall was right in the long run, but the invisible hand could become paralyzed in the short run described by Keynes (Mankiw 2006, 35, emphasis added).
>
> The neoclassical synthesis, as developed by John R. Hicks and Paul A. Samuelson, among others, in the first decade after Keynes wrote, proposed that both the Keynesian theory and neoclassical general equilibrium theory could be viewed as correct, though partial accounts of economic reality. … *The details of how one got from the Keynesian short run to the "classical" long run were not really worked out*. … The 'neoclassical synthesis' allowed postwar Keynesians to maintain that there was no fundamental incompatibility between microeconomic and macroeconomic theory (Woodford 1999, 9-10, emphasis added).

These quotations are drawn from papers in which influential economists engaged in a retrospective reflection upon the unfolding of modern macroeconomics. They were written several decades after Samuelson introduced the notion. During this time a lot happened. The meaning of the neoclassical synthesis shifted from a consensus between microeconomists and macroeconomists to an issue internal to macroeconomics, the relationship between Keynesian theory and neoclassical general equilibrium theory (understood as Walrasian theory). The former's domain of study is the short period. Market non-clearing (in particular involuntary unemployment), disequilibrium, price and/or wages sluggishness are all deemed to be central traits of the Keynesian basic model. As to Walrasian general equilibrium theory, its domain of study is the economy in the long period supposedly featuring market clearing and flexibility.[8] The underlying

[8] While Samuelson had not originally associated the neoclassical synthesis with the compatibility of short- and long-run analyses or of micro- and macroeconomics, he did so in a 1963 article where he surveyed the developments in macroeconomics after Keynes (Samuelson [1963] 1966).

research program was to demonstrate that the short-period Keynesian state converges towards the Walrasian long-period allocation.

These quotations also hint at a point that is important for our purposes, namely that some present-day macroeconomists have doubts about the success of the neoclassical synthesis program described above, i.e. the project of establishing a synthesis between the two theories. Howitt expresses an agnostic view about this issue, declaring that there are two different juxtaposed approaches, but not entering into the issue of how they relate. By contrast, Mankiw and Woodford acknowledge the existence of this issue. Mankiw considers it a nagging question, while Woodford diplomatically states that "the details …. were not really worked out", which to all intents and purposes means that the neoclassical research program has not been achieved.

One interesting point to draw from the last two quotations is that they convey a more or less explicit recognition of the failure of the neoclassical synthesis program. What is lacking, however, is any mention of the upshot of this state of affairs, either the straight abandonment of the program, or changes in the meaning of the neoclassical synthesis notion.

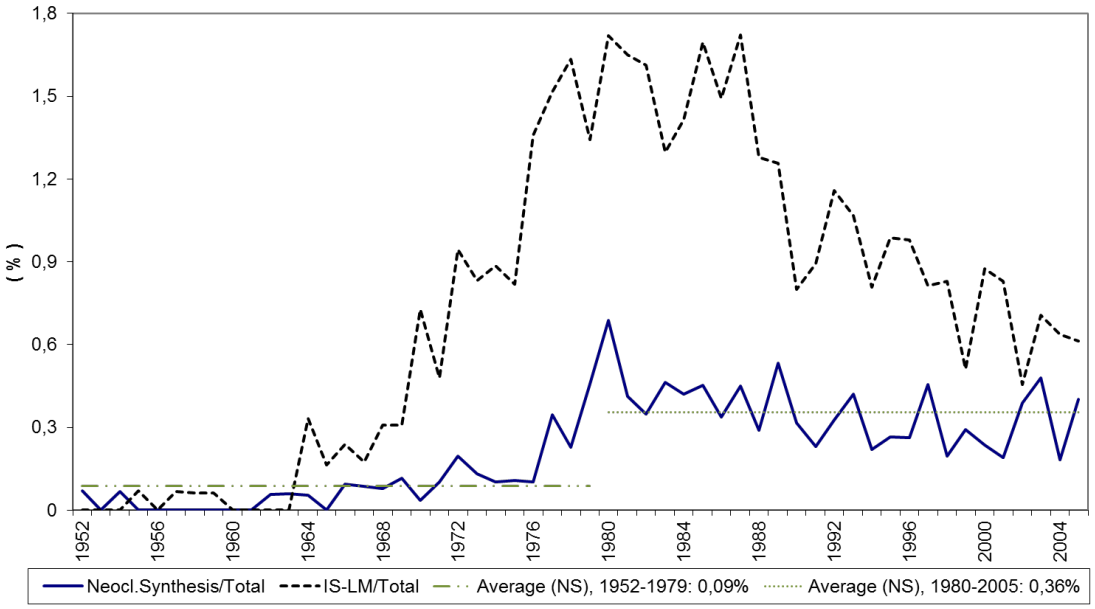
At this juncture, it can already be seen that the neoclassical synthesis is a complex historical object. Its meaning has been wavering from designating an intellectual consensus within a scientific community (but then is it a consensus within the macroeconomics profession or among all economists?) to the more precise meaning of being concerned with the relation between two theoretical streams (Keynesian and Walrasian theories). In this last interpretation, economists have been ambiguous about the content of the neoclassical synthesis, some viewing it as a real integration, and others as the simultaneous existence of two different theories. The problem is further compounded by the fact that, while the quotations from Howitt, Mankiw and Woodford suggest that the neoclassical synthesis term was widely used at the time it reigned in macroeconomics, a JSTOR study of its usage casts doubt on this view.

2. A JSTOR comparative study of the terms 'neoclassical synthesis' and 'IS-LM' model

Our aim in this section is both to assess the frequency with which the term 'neoclassical synthesis' is used in the literature and the meanings economists gave to it. To this end, we did a search in the articles published in economics and finance journals archived in the *JSTOR* database, counting how often the term appeared in them. From the quotations in the previous section, it is clear that there is currently a general presumption that the neoclassical synthesis and Keynesian macroeconomics (i.e. IS-LM

macroeconomics) were part and parcel of the same approach. If this is so, one might have expected the use of the 'neoclassical synthesis' term to go hand in hand with that of the IS-LM model. We therefore made a similar search for the term 'IS-LM', computing the percentage of articles mentioning it.[9] The solid line in Figure 1 represents the number of articles containing the term neoclassical synthesis as a percentage of the total number of articles in economics and finance journals. The dashed line gives the same information for articles containing the term "IS-LM."

Figure 1: Percentage of Articles with "Neoclassical Synthesis" and "IS-LM"



As far as the use of the term 'neoclassical synthesis' is concerned, Figure 1 shows that two periods need to be distinguished. During the first period (1952−1979), its use remained low: the term was mentioned in 0.09% of the total number of articles published annually; by contrast, 0.44% of the total number of articles published annually contained the term 'IS-LM'. This means that, on average, the term 'neoclassical synthesis' appeared in two articles per year, much less than the average of twelve articles per year containing the term 'IS-LM'. Moreover, in this first period most of the references to the neoclassical synthesis were in book reviews or meta-theoretical papers. Hardly any mention of the term is to be found in the journals at the cutting edge of research. Thus, in what was supposedly the heyday of the neoclassical synthesis (say, before the mid-seventies), very

[9] At the time of this research, there were one hundred and twenty eight economics journals and seventeen finance journals available in JSTOR. We searched "neoclassical synthesis" (as well as "neo classical synthesis", which includes "neo-classical synthesis") in articles and reviews in these journals, in all languages, from 1952 (the date of the first coinage by Samuelson) up to 2005 (when the availability of journal issues in JSTOR starts to decline). We also searched for "IS-LM" and its variants (as "IS/LM", "ISLM" and "IS-LL").

few Keynesian economists actually found it useful to put their theoretical practice into the terminology of the neoclassical synthesis.[10]

An additional feature of these early years is that economists understood the neoclassical synthesis term in very different ways: three authors used it as meaning stabilization policy (see Arrow 1967, 735; Fand 1969, 559, n. 9), five as a synthesis between Keynesian and neoclassical theory (see Sen 1962, 695; Bronfenbrenner 1966, 540; Loasby 1971, 870), one as the dominant paradigm (Hymer 1968, 720), one as the integration of micro- and macroeconomics (Wiles 1973, 388), three to cover the neoclassical theory of the late 19th century (Samuelson 1952, 60; Johnson 1954, 326; Tarascio 1974, 95), and others in a host of meanings, some of which are totally off the mark.[11]

However, things changed in the late 1970s, the period during which standard Keynesian macroeconomics was under attack. From 1980 to 2005, our JSTOR exercise recorded that the neoclassical term was present in 0.36% of the total number of articles published annually, a four-fold increase compared to the early years, and roughly 14 articles per year contained it. By contrast the use of the IS-LM term increased more slowly, to about 1.1% of articles in this period, which makes about 40 articles per year. In the early years of the 21st century a smaller increase in frequency occurred, associated with the emergence of the new neoclassical-synthesis idea.[12]

Our surmise is that this wider use of the expression in the literature was due to the influence exerted by Axel Leijonhufvud's and Robert Lucas's work. Both researchers criticized the neoclassical synthesis program, but for opposite purposes. To Leijonhufvud, a twofold move was needed: first abandoning the neoclassical leg and then replacing 'Keynesian economics' with the 'economics of Keynes' (Leijonhufvud 1968). To Lucas, on the other hand, a return to the *General Theory* was no solution to the failure of Keynesian macroeconomics. It is noteworthy that both Leijonhufvud and Lucas used the

[10] As the JSTOR data basis covers only articles, it might be objected that the neoclassical synthesis term had greater use in books and other academic material. We therefore looked at the indexes of a random but representative sample of relevant textbooks in macroeconomics. In none of them did we find any occurrence of the term. The books consulted were: Ackley (1961), Denburg and McDougall (1963), Smith (1970), Branson (1972), Gordon (1978), Branson and Litvack (1981), Barro (1987), Dornbush and Fischer (1990), and Hall and Taylor (1991).

[11] Just to give a sense of off-the-mark uses of the term, we can take Campbell (1963, 174-5) and Jorgenson (1964, 311-2). Campbell noted that "economic thought" and "economic analysis" were different, and hoped that "proponents of the two views will initiate a useful dialogue, culminating in another kind of 'neoclassical synthesis.'" By contrast, Jorgenson reviewed Robert Kuenne's book on general equilibrium and stated that its genre belonged to the "neoclassical synthesis," which he defined as "a special kind of mathematical history of economic thought."

[12] Just to give some figures about the number of articles published, in the period 1952−1979 about 61,300 economics and finance articles were published (an average of 2,200 per year), while this number rose to 102,400 articles in the period 1980−2005 period (roughly 3,900 per year).

'neoclassical synthesis' term to designate the theoretical practice they wanted to dismiss, while the authors they criticized did not include their work under this label (see below).

Figure 1 also shows that the frequency of usage of the terms 'neoclassical synthesis' and 'IS-LM' developed in parallel, particularly in the first period, suggesting that they could have been treated as synonyms. On the other hand, the higher frequency of the IS-LM term indicates that, unsurprisingly, the direct appellation (IS-LM model) is used more than the metaphorical one (neoclassical synthesis).[13] Interestingly enough, the use of the expression 'IS-LM' model declined sharply from the second half of the 1980s onwards as a result of the emergence of the real business cycle macroeconomics. In this later period, the IS-LM term reached almost the same frequency as the neoclassical synthesis term, which in contrast has remained roughly steady.

3. The problems to be solved

The first task we need to address is to separate the notions of consensus and synthesis. As already seen, although Samuelson conceived of a 'neoclassical synthesis' as referring to a policy consensus, present-day economists give it a theoretical content. This difference prompts us to systematize the differences between the notions of consensus and synthesis. We propose to call the outcome of a process by which two theoretical analytical frameworks, which at a certain stage are viewed as unrelated, if not irreconcilable, are made compatible or integrated, a synthesis. In other words, a synthesis consists of a new theory merging some elements from the two separate theories at the price of leaving others aside.[14] The identities of each of the theories involved should be made clear, and they need to be distinct from the identity of the synthesis.

Both the 'neoclassical synthesis' and the 'new-neoclassical synthesis' terminologies fail in this respect. As far as the second of these expressions is concerned, the matter is easily fixed: the new-neoclassical synthesis brings together the new-Keynesian and the real-business-cycle approaches. But what about the 'old' neoclassical synthesis? The natural candidate is to view it as a 'Keynesian/neoclassical synthesis', an expression used for example by Mankiw (2006).[15] However, this appellation is acceptable only if the

[13] There were relatively few articles containing both the terms "neoclassical synthesis" and "IS-LM": fifty in total (mostly published after 1970), for the entire sample, which represents less than 0.03% of all the articles published in this period, and only 12% of the articles that featured the term 'neoclassical synthesis' (i.e., out of all articles using the term "neoclassical synthesis" only 12% also included the term "IS-LM").
[14] To be useful, the synthesis notion should be understood in a narrow sense: the mere assertion that different theories are complementary does not make their relationship a synthesis.
[15] See also Colander (2006, 53).

'neoclassical' term is understood as referring to Walrasian theory at the expense of Marshallian theory.[16]

As to the notion of a consensus, it describes a state of mind which may exist in a given scientific community. Since our concern is macroeconomics, we shall take a narrower vision of consensus by stating that it bears on a vision of macroeconomics, i.e. a series of methodological and substantive principles about the proper way of constructing the field.

The second point we want to make is that over post-WWII history the neoclassical synthesis term has received two distinct meanings, both referring to the relationship between Keynesian and Walrasian theory. According to the first, the neoclassical synthesis is a theoretical program aimed at demonstrating how these two theoretical streams can be integrated, the Walrasian approach acting as a center of gravity for the Keynesian. According to the second meaning, the neoclassical synthesis consists of a declaration of principle stating that, to all intents and purposes these two theoretical streams cannot be synthesized but should live side by side in a state of mutual tolerance. In other words, their non-integrability is deemed no reason for eliminating one of them from the field of macroeconomics, which in turn becomes pluralistic or fragmented.

After making these points, we are able to distinguish four phases with respect to the place and meaning of the neoclassical synthesis in the history of macroeconomics: (a) a phase during which economists were working at implementing the neoclassical synthesis *program* without labeling their work with the neoclassical synthesis *term*; (b) a second phase where Leijonhufvud and Lucas, in their separate attempts to dismiss this program, found it useful to designate it as a neoclassical synthesis, thereby reinforcing the incipient use of the neoclassical synthesis terminology (Lucas's criticism, it turned out, was more effective than Leijonhufvud's and eventually led to the abandonment of the neoclassical synthesis program); (c) a third phase where new-Keynesian economists retorted to Lucas, using the neoclassical-synthesis term as a rallying banner to this end while unwittingly changing its meaning to a defense of pluralism in macroeconomics; (d) a fourth phase in which the pluralistic understanding of the neoclassical synthesis was defeated, although generous tributes were paid to it as the source of the new neoclassical synthesis. Our task in the subsequent sections of the paper is to describe these stages in a more detailed way.

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[16] According to Tony Aspromourgos (1986), Thorstein Veblen introduced the term 'neoclassical' in 1900 in a *Quarterly Journal of Economics* article to characterize Marshallian economics. Aspromourgos (1986, 625) traces to John Hicks (1932) and George Stigler (1941) its extension to marginalist theory in general. If Marshallian economics is the quintessence of neoclassical theory, it is hard to exclude Keynesian theory from it since Keynes was treading in Marshall's footsteps. As a result, the need to reconcile Keynesian with neoclassical theory falters. Making sense of Mankiw's characterization therefore requires a narrower understanding of the 'neoclassical' adjective. For a study of the Marshall-Walras divide, see De Vroey (2012).

4. Consensus or the lack thereof in the history of modern macroeconomics

As seen, in his 1955 *Economics* text, Samuelson understood the neoclassical synthesis as a consensus between two sub-communities of economists, microeconomists and macroeconomists. He pleaded for peaceful coexistence between these groups. He also asserted that microeconomists should trust macroeconomists as far as the issue of government activation was concerned. Our own concern is with a consensus within the macroeconomic profession. As already stated, we view a consensus as bearing on a particular vision of macroeconomics, i.e. the basic methodological principles upon which the discipline should rest. The most salient of them are enumerated in the first column of Table 1. We further consider that, during the development of macroeconomics, three distinct visions saw the light of day. The first is the *Keynesian vision*, associated with IS-LM macroeconomics. The second is the *Lucasian vision* that evolved over three stages: new-classical macroeconomics, real-business-cycle (RBC) macroeconomics, and finally DSGE macroeconomics. It is with this last stage that the new neoclassical synthesis notion has been associated. The third vision is the *first-generation new-Keynesian vision* underpinning the rather disparate series of models to be found in Mankiw and Romer (1991) and which arose as a reaction to new classical macro.[17] Table 1 summarizes the main tenets of these three visions.

Table 1. Three visions of macroeconomics

	The Keynesian vision	The Lucasian vision	The new-Keynesian vision (first generation)
Main object of study	unemployment	business fluctuations	unemployment
Static or dynamic approach	mostly static	dynamic	mostly static
Approach to general equilibrium	'half-baked' general equilibrium	general equilibrium	mostly partial equilibrium models
Microfoundations	à la Marshall	à la Walras	à la Walras
Market clearing?	market non-clearing	market clearing	market non-clearing
Expectations	little attention to expectations	rational expectations	rational expectations

Obviously, this is a broad-brushed picture but it will suffice for the purposes of our inquiry. Several remarks need, however, to be made. First, we characterize models

[17] In so far as DSGE macroeconomics is also called 'new-Keynesian macroeconomics', it becomes necessary to draw a distinction between two generations of new-Keynesian economists (despite the fact that the expression 'first generation new Keynesian modeling' is scarcely used in the literature): while economists of the first generation hold a vision of their own, those of the second generation adhere to the Lucasian vision.

belonging to the Keynesian vision as 'half-baked' general equilibrium models because, although they deal with the economy as a whole, they barely touch on the interaction between different sectors of the economy. A second comment is about microfoundations. Microfoundations *à la* Marshall has two features. As emphasized by Leijonhufvud (2006), optimality is a matter of intention, not of performance.[18] Moreover, Marshall saw no harm in starting the analysis from market functions without explicitly deriving these from individual decision-making. Keynes and Keynesian macroeconomists followed suit. By contrast, microfoundations *à la* Walras means a shift from optimizing planning to optimizing behavior, and, moreover, the acceptance that methodological correctness implies that the analysis should start with individual decision-making. Table 1 shows that the Keynesian vision is the only one to adopt Marshallian microfoundations. A third remark concerns the vision of first-generation new Keynesian economists. These form a loose family as it includes models of different natures. Hence our characterization is only partially accurate. While some models include general equilibrium (e.g. Diamond [1982] 1991 and Hart [1982] 1991), most of them are content with partial equilibrium (see Mankiw and Romer 1991).

After these remarks we can then turn to the comparison of the three visions. Here, the overall observation to be made is that the (old) Keynesian vision and the Lucasian vision are poles apart. By contrast, the first generation new Keynesian vision stands on its own as it mixes elements of each of them. It takes a large step towards the Lucasian vision by adopting Walrasian microfoundations and rational expectations, two features that have important implications, but it remains Keynesian as far as the other benchmarks are concerned. DSGE (also labeled 'new Keynesian) modeling is based on the Lucasian vision. The reason why a distinction between first and second generation of new Keynesian models needs to be drawn is easily drawn from looking at Table 1. They are similar on only two criteria (microfoundations and expectations). For the rest, they differ sharply.

Visions are possible objects of consensus. Let us now briefly sketch out the succession of stages of consensuses (or the lack thereof) over the history of macroeconomics. From the 1940s to the mid-1970s, macroeconomics experienced what can be called a 'Keynesian consensus'. That is, the Keynesian vision of macroeconomics was considered the right one. By the end of that period Lucas and his colleagues attacked this consensus and tried to replace it by a new vision, which we have branded as 'Lucasian'. This new vision was not immediately accepted. While traditional Keynesians

[18] "[To early neoclassical economists], micro-behaviour was thought of as adaptive. People sought to maximize utility or profit, but these were propositions about intentions, not performance. … [In modern theory], utility or profit maximization is a statement about actual performance not just motivation" (Leijonhufvud 2006, 1628).

rejected it completely, the first generation of new-Keynesian macroeconomists took a more nuanced view: while accepting important Lucasian methodological precepts, in particular the equilibrium discipline, they nonetheless strongly opposed its implication that market clearing was ever-present. This led to a vision distinct both from the Keynesian and the Lucasian, mixing elements of both of them. There was thus a period, stretching roughly from the mid-1970s to the mid-1990s, where no consensus prevailed within the profession, with two rival visions – the first generation new Keynesian vision and the Lucasian vision (held first by new classical and later by RBC economists) – fighting for prominence. The Lucasian vision ended up winning the day concomitantly with the emergence in the mid-1990s of the third wave of Lucasian-type modeling, DSGE macroeconomics (or second-generation new Keynesian macroeconomics).

5. The fortunes and misfortunes of the neoclassical synthesis notion in the history of macroeconomics

In this section we will try to substantiate our claim that there are two major meanings to the neoclassical synthesis. The first designates the *program* of integrating Keynesian and Walrasian theory. The second amounts to a *declaration of principle* that macroeconomics should be pluralistic, i.e. composed of alternative models. We start with the various attempts at achieving the neoclassical synthesis program (usually without reference to the term 'neoclassical synthesis'). Next, we present Lucas's assault on it. Following this, we study the second meaning of the neoclassical synthesis notion held by economists associated with the IS-LM model and by some first-generation new Keynesians.

5.1 The neoclassical synthesis program

Curiously enough, the neoclassical synthesis program, aiming at integrating Keynes and Walras, also started with Samuelson in his 1947 book, *Foundations of Economic Analysis*, written before the 'neoclassical synthesis' expression crossed his mind. It was mainly a general equilibrium piece. Treading in Walras's footsteps, Samuelson distinguished two objects of study, static and dynamic theories. The first described equilibrium as resulting from economic agents solving maximization problems taking prices as parameters; the second dealt with price adjustments towards equilibrium after the occurrence of shocks, with prices moving in the direction of excess demand functions in proportion to the functions' magnitudes.

Samuelson's analysis of dynamics rested on the concept of stationary equilibrium, which holds that equilibrium constitutes a state of rest. It supposedly comes into existence only in the long run, and the economy can depart from it in the short period,

during which market disequilibria exist. Whenever this is the case, gravitational forces start pushing the markets back to equilibrium. It suffices for getting the neoclassical synthesis program to be successful, first, to assign the Keynesian label to the disequilibrium states and the Walrasian label to the center of gravity, and, second, to device a way through which going from the former to the latter. For his part, Samuelson contented himself with writing down a time derivative meant to capture the sluggishness idea, and stopped there. What was lacking was any attempt at demonstrating how the *tâtonnement* process from disequilibrium to equilibrium was doing its job properly.

Among the various economists who have addressed this task two names stand out, those of Lawrence Klein and Don Patinkin. Klein was among those great economists, such as Hicks, Lange and Modigliani, who carved the future understanding of the central message of Keynes's *General Theory*. He began his career by writing a dissertation on Keynesian theory under Samuelson's supervision. This work became *The Keynesian Revolution* (1947a). In the process of writing it and in subsequent reflections, Klein came to realize that the conceptual apparatus set up by Keynes in the *General Theory* "cried out for empirical verification (or refutation)" (Bodkin, Klein and Marwah 1991, 19). Undertaking this empirical extension became his life's work. His first priority was to dynamize the IS-LM model.[19] The road he took was twofold. First, he lagged some of the model's variables in order to get a first-order system of difference equations. Second, since he wanted to verify Keynesian theory and, since involuntary unemployment was one of its central claims, he was particularly interested in the issue of wage formation. He contrasted the classical and the Keynesian systems in the following way:

$\frac{dw}{dt} = f(N^S - N^D); \quad 0 = f(0)$ the classical wage adjustment equation;

$\frac{dw}{dt} = f(N^S - N^D); \quad 0 \neq f(0)$ the Keynesian wage adjustment equation.

In words, the classical system converges towards a zero unemployment equilibrium state. By contrast, the Keynesian system converges towards a state of equilibrium featuring either an excess supply or an excess demand. It took a few years for Klein to move on from these insights, which he first mentioned in his 1947 book and in an article that same year (Klein 1947a,b), to their implementation in the Klein-Goldberger model.[20]

The fact that this model incorporates a convergence towards long-period equilibrium shows that it achieves an integration of short- and long-period analyses. Hence the temptation of proclaiming that the neoclassical synthesis program is

[19] "[The Keynesian theoretical system] is an extremely useful pedagogic model for teaching students the main facts about the functioning of the economic mechanism, but it is surely not adequate to explain observed behavior. … A workable model must be dynamic and institutional; it must reflect processes through time, and it must take into account the main institutional factors affecting the working of any particular system" (Klein 1955, 278-9).

[20] For a critical study of Klein's argument, see De Vroey and Malgrange (2012).

implemented. But there is a snag. In the Klein-Goldberger model (as well as in subsequent Keynesian empirical models) the economy is supposed to be in a Keynesian state of under-employment, both in the short and in the long run. The Klein-Goldberger model, it turns out, combines Keynesian short-period disequilibrium and Keynesian long-period equilibrium, with the latter still featuring involuntary unemployment. Therefore, we conclude that this model is effectively a synthesis, one between short- and long-run analyses, but not one between a Keynesian and a Walrasian analysis.

Another attempt at linking short and long period analysis is to be found in Patinkin's work, and here the concern is effectively the gravitation of a Keynesian short-period disequilibrium state towards a Walrasian long-period equilibrium state, exactly what we have named the 'neoclassical synthesis program'. Patinkin's attempt is discussed in the Keynesian chapters of his 1956 book, *Money, Interest and Prices* (Chapters 13 and 14). In them, he tried to reconstruct the central message of Keynes's *General Theory*, which for him meant explaining involuntary unemployment, using the Walrasian conceptual apparatus he had developed in the preceding chapters of the book. Although Patinkin did not state that his argument purported to implement the neoclassical synthesis as conceived of in Samuelson's *Foundations*, this is in fact exactly what it amounted to.[21]

The hallmark of Patinkin's theory of involuntary unemployment is that it is a disequilibrium phenomenon, the existence of which is limited to the re-equilibration time separating two successive equilibria. Its importance thus hinges on the slowness of the adjustment process. Starting from a state of equilibrium, Patinkin assumes that an increase in the demand for bonds occurs, the effect of which is to decrease the demand for commodities. As to what happens next, it depends on whether one reasons in Walrasian or in Keynesian terms. In the Walrasian framework, the adjustment process in the goods market operates quickly. As a result, a new equilibrium is rapidly established and there is no unemployment.[22] By contrast, in the Keynesian framework, this adjustment process is assumed to occur slowly. After a while, when inventories become too large, firms have no choice but to decrease production. As a result, their demand for labor diminishes. That is, the 'notional' demand for labor, to use later terminology, ceases to be operative and is replaced with 'effective' demand. Trading in the labor market takes place off the supply curve, which is tantamount to involuntary unemployment.

Patinkin is adamant that, in this account, prices are sluggish rather than rigid. To him, the state of involuntary unemployment so created should not be viewed as a position of equilibrium able to perpetuate itself. Its transitory existence is due to the fact that a decline in the prices of goods is going to occur. As a result, the real-balance effect will

[21] Lucas later characterized Patinkin's reasoning as "perhaps the most refined and influential version of what I mean by the term 'neoclassical synthesis'' (Lucas [1980] 1981, 278).
[22] Patinkin refers to a quick adjustment. To all intents and purposes, it should be an instantaneous one.

start to operate so that the economy will eventually be brought back to equilibrium. The point that matters for our assessment is that, according to Patinkin, the equilibrium allocation attained at the end of the slow adjustment process will be the same as that attained under the instantaneous adjustment assumption. If this is true, then Keynesian outcomes indeed gravitate towards the Walrasian equilibrium state, and the neoclassical synthesis program is crowned with success.

Unfortunately, Patinkin's reasoning cannot win the day. In effect, in the Keynesian chapters of his book Patinkin drifts away from the Walrasian principles he admitted in its initial chapters. As convincingly argued by Franco Donzelli (2007), Walras had felt compelled to introduce the no-disequilibrium trading rule in order to avoid wealth effects. By contrast, Patinkin's story is full of disequilibrium trading, but he fails to recognize that it generates wealth effects. As a result, the economy does not gravitate towards the Walrasian equilibrium that would have been attained had the adjustment taken place instantaneously. Instead, it converges towards a different allocation. Therefore, in so far as it is admitted that Keynesian theory deals with exchanges at 'false prices', the adjustment from Keynesian disequilibrium states towards the Walrasian center of gravity fails to occur.

The general conclusion we can draw from our analysis is that the neoclassical synthesis program did not succeed. For different reasons neither Klein-Goldberger nor Patinkin were able to integrate the Keynesian short-period and the Walrasian long-period analysis. With hindsight, this result is hardly surprising. In effect, the eventual contribution of these attempts (and a few subsequent ones such as the Barro-Grossman 1971 model) has been to bring out a result that had previously remained unperceived, namely that Keynes and Walras are incompatible bedfellows.

5.2. Lucas's assault on the neoclassical synthesis

Lucas's offensive against Keynesian macroeconomics was multi-dimensional. First, he criticized it for departing from the equilibrium discipline and for including sloppy concepts such as involuntary unemployment and full employment. Second, in the celebrated 'Lucas critique' article (Lucas 1976), he criticized the practice of using estimated macroeconometric models to compare alternative economic policies, as agents behave differently under distinct regimes and, thus, the estimated parameters change. As ultimate expressions of this practice Lucas cited the Klein-Goldberger and the Brookings models, which incorporate a stable Phillips curve. By criticizing these models and this practice Lucas indicted Keynesian macroeconometric models for failing to be 'deeply structural'. Third, he claimed that the 1970 stagflation episode in the US and in other economies had constituted a quasi-laboratory confrontation between two models, the

Keynesian stable Phillip-curve model and the natural rate of unemployment model, from which the second came out as the clear victor. For Lucas, these factors called for the dismissal of the Keynesian vision of macroeconomics.

A declaration of obsolescence apropos the neoclassical synthesis was part of Lucas's wider critique. It bore both on the neoclassical synthesis, narrowly understood, and the type of consensus that Samuelson had in mind. Starting with the first aspect, in his paper, "Methods and Problems in Business Cycle Theory" (Lucas [1980] 1981), Lucas argued that it is understandable that earlier economists adhered to the neoclassical synthesis, having in mind its gravitational conception, because they lacked the tools for doing serious dynamic analysis. To Lucas, the stationary conception of equilibrium underpinning these economists' analysis of the adjustment process was wanting. By definition, the gravitational analysis is about reaching a predefined equilibrium position and, therefore, cannot come to grips with irreversible changes in the data of the economy (the set of agents and firms, preferences and technology): such changes generate a new equilibrium position making the earlier equilibrium allocation obsolete before ever being reached. Another drawback of the gravitational approach on which Lucas zeroed in, is that it leaves the determination of the speed of adjustment to the economist, to the effect that he or she can give as much or as little importance to disequilibrium as desired.[23]

Lucas argued, that while Samuelson and Patinkin were not to be blamed for reasoning in terms of the stationary conception of equilibrium, once new concepts and tools became available – originating in neo-Walrasian theory *à la* Arrow-Debreu and new mathematical developments, in particular dynamic programming – it would be inappropriate to stick with the old conception.[24] Once these developments were available, "the idea that an economic system in equilibrium is in any sense 'at rest' is simply an anachronism" (Lucas ([1980] 1981, 287). In this new context, there is no longer any reason for trying to build a synthesis between Keynesian disequilibrium theory and Walrasian equilibrium theory because the latter can take on board that part of the *explanandum* that had previously been assigned to Keynesian theory. The need for two separate theories bearing respectively on the short- and the long- period vanished.

To Lucas, this undoing of the neoclassical synthesis in the narrow sense of the term was part of the broader undoing of the neoclassical synthesis as understood by Samuelson. Lucas developed this wider indictment in his 1979 article with Thomas Sargent (Lucas and Sargent 1979) and in a talk given at the Graduate School of Chicago's

[23] Thus, the speed of adjustment is a free parameter. These, Lucas claimed, had no room in macroeconomics. For him, parameters ought to be structural, i.e. to describe the microeconomic behavior of individual agents.

[24] "To ask why the monetary theorists of the 1940s did not make use of the contingent-claim view of equilibrium is, it seems to me, like asking why Hannibal did not use tanks against the Romans instead of elephants" (Lucas [1980] 1981, 286).

Annual Management Conference in that same year and entitled no less than "The Death of Keynesian Economics".[25] In this lecture, Lucas related the emergence of the Keynesian consensus to the Great Depression, which led to a widespread loss of faith in market forces, and gave way to the belief that the task of governments was to manage the economy on a year-to-year basis.

> The central message of Keynes was that there existed a middle ground between the extremes of socialism and laissez faire capitalism. … True that [the] economy cannot be left to its own devices, but *all* that we need to do to manage it is to manipulate the general level of fiscal and monetary policy. If this is done right, all that elegant 19th century economics will be valid and individual markets can be left to take care of themselves. In effect, Samuelson told his colleagues: 'Face it – you live in a world where virtually nobody has any faith in this laissez faire religion of yours. I am offering a substitute ideology which concedes the inability of a competitive economy to take care of itself, but which also offers a management system which is, say, 95% consistent with laissez faire'. These were hard times, and this was too good a deal to pass up. We took it. So did society as a whole. What I meant by saying that Keynesian economics is dead … is just that this middle ground is dead. Not because people do not *like* the middle ground anymore but because its intellectual rationale has eroded to the point where it is no longer serviceable (Lucas Archives Box 22, Lucas's emphasis).

While Lucas's declaration of the death of Keynesianism in general and of the neoclassical synthesis notion in particular was premature, it is true that the emergence of a new classical macroeconomics led to the downfall of the Keynesian consensus. Now two rival visions of macroeconomics, the (first-generation) new Keynesian and the Lucasian, disputed the field, daggers drawn.

5.3. The neoclassical synthesis as the defense of a pluralistic macroeconomics

For many economists the neoclassical synthesis is identical to the IS-LM model. This was Leijonhufvud's interpretation in his 1968 book. It remains widespread today – when colleagues are asked to define the neoclassical synthesis, the usual answer is 'the

[25] Lucas's talk was published in the alumni magazine, *Issues and Ideas*, in 1980. No copies of this article seem to have survived, but Lucas's preparatory notes, which appear to be close to the published article, can be found in the Lucas Archives held at David M. Rubenstein Rare Book & Manuscript Library, Duke University.

IS-LM model'.[26] When devising the IS-LM model, Hicks felt authorized to study short-period results in isolation from the long-period results. As a result, the problems of the feedback generated by the existence of disequilibrium states and the possible ensuing convergence towards long-period equilibrium were swept under the rug. The conclusion to be drawn is twofold. On the one hand, stating that the IS-LM model and the neoclassical synthesis are the same thing does not fit the neoclassical synthesis program definition (i.e. establishing a link between the short- and the long-period analysis). On the other hand, the IS-LM model ought to be associated with the neoclassical synthesis idea when its side-by-side interpretation is adopted. As far as Hicks himself is concerned, we may consider him a quintessential neoclassical synthesis economists as he had no qualms about working on the program of reviving Walrasian theory in his *Value and Capital* book (Hicks 1939) and on the translation of the *General Theory*'s message into a short-period model, without finding it necessary to relate these two undertakings.[27]

While the IS-LM model constitutes an inaugural manifestation of this second interpretation of the neoclassical synthesis, a later one can be found in the works of the first generation of new Keynesian economists such as Mankiw. Lucas's declaration that Keynesianism was dead did not suffice to kill it. Traditional Keynesians thoroughly rejected Lucas's program. To them, it "replaced messy truth by precise error" (Lipsey 2000, 76). For their part, a younger group of Keynesian economists, the so-called 'new Keynesians' took a more positive attitude by admitting that some of Lucas's criticisms were well founded and could not be dismissed with a sweep of the hand.[28] Accepting Lucas's central premises, the equilibrium discipline, rational expectations and Walrasian microfoundations, the challenge they set themselves was to construct a model demonstrating the existence of market non-clearing on the basis of these premises. To this end, they introduced frictions of several sorts in an otherwise standard model.[29]

New Keynesian saw themselves as the heirs both to Keynesian macroeconomics, and also, by some shift of meaning attached to it, to the neoclassical synthesis. At least, this is how Mankiw likes to think:

> The neoclassical-Keynesian synthesis is coherent, but it is also vague and incomplete. While the new classical economists responded to these defects by rejecting the synthesis and starting afresh, the new Keynesian economists thought there was much to preserve. Their goal was to use the tools of

[26] See e.g. McKenna and Zannoni's entry on the neoclassical synthesis in the *Encyclopedia of Keynesian Economic*s (1997, 463-467) and Colander (2006, 53).
[27] On this, see Donzelli (2012).
[28] Many of their works were collected by Gregory Mankiw and David Romer in their two-volume book, *New Keynesian Economics* (Mankiw and Romer 1991).
[29] As already stated when commenting on Table 1, new Keynesians developed disparate models so that, strictly speaking, one cannot write about them as if they were a well-constituted school. Therefore, our characterization is only valid for a wide sub-group of them.

> microeconomics to give greater precision to the uneasy compromise reached by early Keynesians. The neoclassical-Keynesian synthesis was like a house built in the 1940s. The new classicists looked at its outdated systems and concluded it was a tear down, while the new Keynesians admired the old-world craftsmanship and embraced it as an opportunity for a major rehab (Mankiw 2006, 35).[30]

Mankiw's observation is intriguing. The reader wonders what he has in mind when writing about a 'consistent but vague' neoclassical synthesis. For lack of a convincing alternative, we suppose that he means the neoclassical synthesis program. The problem, however, is that, as we have seen, this program has not been realized. Hence we are entitled to suspect that it suffers from inconsistency. The reader also wonders what Mankiw had in mind when referring to rehabilitation. It cannot bear on the neoclassical synthesis program, since establishing a synthesis between short- and long-period analyses was not high on the new-Keynesians' agenda. The hypothesis we want to put forward is that what lies behind the 'rehabilitation' term is actually a change in meaning of the notion of a 'neoclassical synthesis'.

In this new meaning, adhering to the neoclassical synthesis amounts to defending a partition of territory within macroeconomics: some macroeconomic models (new-Keynesian ones) are devoted to the study of market non-clearing; others (new-classical ones) to that of market clearing. However, the possibility and interest of bridging the Keynesian and Walrasian approaches is dismissed.[31] Each of them is considered valid for its own purposes. What is needed, it is argued, is to have different models tailored to the problem in hand. For example, to these economists, it is obvious that in the short run the labor market features involuntary unemployment. General equilibrium being unfit to tackle this problem, specific models – often small, partial equilibrium ones – are needed for its study. The bottom line is thus a rejection of exactly what Lucas was striving at, namely the hegemony of general equilibrium analysis.

Robert Solow is the most outspoken advocate of the neoclassical synthesis so understood. The following series of quotations illustrate this:

> My belief is that it is bad economics to stick rigidly to a single model (Solow, interviewed by Snowdon and Vane 1999, 283).

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[30] In an interview Mankiw also stated: "New Keynesians accept the view of the world summarized by the neoclassical synthesis: the economy can deviate in the short run from its equilibrium level, and monetary and fiscal policy have an important influence on real economic activity" (Mankiw in Snowdon and Vane 1995, 53).

[31] In his Nobel Laureate lecture, Solow admits that "the problem of combining long-run and short-run macroeconomics has still not been solved" (Solow [1987] 2000, xiv). However, as we shall see, in Solow's view this is no reason to keep developing them separately, which can be viewed as the very foundation of the second understanding of the neoclassical synthesis.

> One can be a Keynesian for the short run and a neoclassical for the long run, and this combination of commitments may be the right one (Solow 1997, 594).[32]
>
> My general preference is for small, transparent, tailored models, often partial equilibrium, usually aimed at understanding some little piece of the (macro) economic mechanism (Solow 2008, 246).

Admittedly, most new Keynesian economists have not insisted on this methodological standpoint to the same extent as Solow. It remains nonetheless the case that it underpins most of the articles reprinted in the Mankiw and Romer volume (1991).[33] It also turns out that earlier great Keynesian macroeconomists, such as Tobin and Modigliani, were unwitting adepts of this conception of a fragmented macro field, since, like Solow, they contributed as much to the Keynesian as to the general equilibrium side of the territory.[34]

6. DSGE macroeconomics and the new neoclassical synthesis

DSGE modeling is an outgrowth of the real business cycle model with three important modifications.[35] The first is the replacement of perfect competition with the monopolistic competition assumption, which is introduced through product differentiation using the so-called Dixit-Stiglitz aggregator. The second difference with the RBC model is price sluggishness as usually accounted for by Calvo pricing: at each period, firms are allowed to choose their prices as soon as they receive a signal, occurring exogenously with a given probability (which is independent of the last time that a firm chose its price, and of the state of the economy). The third departure from the RBC literature is the return of the role of monetary policy over the cycle, which brings back the concern of defining an optimal monetary policy, in an environment which typically defines monetary policy in terms of a 'Taylor rule'.

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[32] See also Solow (2000, 158).

[33] Exceptions to this unanimity are interesting to consider. Take Diamond's coordination failure model. Diamond wants to demonstrate under-employment rather than involuntary unemployment. To this end, he reasons in a general equilibrium framework with multiple equilibria. When taking such a line, there is no need to invoke a pluralistic macroeconomics.

[34] In his interview with Klamer, Solow defined himself as both neoclassical and Keynesian – neoclassical when building market-clearing models, Keynesian when building market non-clearing models (Klamer 1984, 3). That Tobin was in agreement with Solow is clear from the following argument: "According to the synthesis of classical and Keynesian macroeconomics reached by 1960, Keynesian macroeconomics is short-run. It does not pretend to apply to long-run growth and development. …. In the long run – perhaps with the help of Keynesian policies – markets will somehow clear, new workers will get jobs, and the fruits of technological progress will be realized" (Tobin 1992, 392). Tobin makes the same point when interviewd by Colander (Colander 2007, pp. 397-399).

[35] For a more detailed discussion, see Galí (2008), Duarte (2011) and the references therein.

This is the framework which Goodfriend and King (1997) decided to call the new-neoclassical synthesis. The notion rings well: it suggests that a consensus exists in a field usually marked by schisms (Duarte 2012), and has, moreover, the discreet charm attached to enterprises of reviving some antiquarian past. Small wonder then that it got a warm reception. One interpretation that should not be made, is that it is a story of two tribes, new Keynesians and RBC economists, who came together to settle their differences and investigate whether a common platform could be constructed, each making concessions to the other. On the contrary, the transition from RBC to DSGE modeling was a gradual, unplanned inflection. Several steps were involved: the search for non-technology shocks, which led to the notion of a monetary policy shock coming to the forefront; an increased interest in central banks' behavior, with a search for the optimal monetary-policy rule; the realization that monetary activation could make sense only if price stickiness were assumed; the realization that Calvo pricing could be a convenient way to bring price stickiness into the picture; the additional realization that price stickiness involved an economic structure different from perfect competition and that the revived monopolistic competition framework could fill the lacuna. At the end of the day, it turned out that the modeling strategy, the momentum of research and even the leading characters had all changed significantly.

To the economists taking part in it, the reconciliation also marked the end of the rivalry that divided the field. For them, the earlier schism between rival schools of thought had come to an end, a development which economists from the new Keynesian side, such as Blanchard, have met with relief:

> … [A]fter the explosion (in both the positive and negative meaning of the word) of [macroeconomics] in the 1970s, there has been enormous progress and substantial convergence. For a while – too long a while – the field looked like a battlefield. Researchers split in different directions, mostly ignoring each other, or else engaging in bitter fights and controversies. Over time however, largely because facts have a way of not going away, a largely shared vision both of fluctuations and of methodology has emerged (Blanchard 2009, 210). [36]

The new-neoclassical synthesis abides by our understanding of a synthesis, i.e. the merging of two theories that before were previously considered independent and possibly antagonistic. The new synthesis designates the successful merging of two theoretical streams, RBC and (first-generation) new Keynesian models, that had until then been

[36] Woodford (2009, 268-9) expresses a similar opinion. However, Mankiw (2006) and Solow (2010) did not follow Blanchard in agreeing to ride the DSGE horse. They were glad to see price rigidity and market failures return to the forefront of the macroeconomics research agenda, but they remained lukewarm about DSGE models and their methodological Lucasian principles.

considered alien to each other. In this merging, each of the two parties abandoned central tenets of their earlier views. RBC economists gave away perfect competition, flexible price and the classical dichotomy. New Keynesians brought price stickiness and a description of the monetary policy with a clear characterization of a monetary shock to the DSGE model, both elements that were absent in the first generation of RBC models. Moreover, the new Keynesians forwent the quest for a theory of involuntary unemployment.

Goodfriend and King (1997) reacted against the view that macroeconomics is "a field in intellectual disarray" (231), which makes it less attractive to policymakers and economic advisors. In contrast, they continue, in the last decade the field established a methodological core that gave "new dynamic microeconomic foundations for macroeconomics" (232). Therefore, in coining the term new neoclassical synthesis they seemed to have a wider embrace in mind. To them the new synthesis brought together many streams: (a) the large scale macroeconometric models that were used in the 1950s and the 1960s (e.g. the Brookings and the Federal Reserve System's MPS models, which are the offspring of the Klein-Goldberger model (1955)); (b) the stickiness assumption, the basic feature of the IS-LM model; (c) Lucasian basic principles, such as intertemporal substitution and the equilibrium discipline; and (d) monetarists insights regarding the theory and practice of monetary policy (Goodfriend and King 1997, 231-2). When this view is taken, there is indeed a link between the old and the new synthesis, but its content remains vague.

In contrast, our understanding of the neoclassical synthesis suggests that a sharp distinction is needed – and for that matter a less ecumenical one. As far as the first definition of the (old) neoclassical synthesis is concerned, DSGE macroeconomics discards the short-/long-period distinction resting on a stationary conception of equilibrium. Moreover the market-non-clearing notion, in particular involuntary unemployment, also vanishes. As far as the second definition is concerned, the side-by-side coexistence of distinct models, it was replaced by a single modeling strategy. In this light, it must be concluded that the new-neoclassical synthesis implies the rejection of the old one.

Concluding remarks

We have shown that the (old) neoclassical synthesis is an elusive notion. When investigating its varied meanings, two major understandings have surfaced. According to the first, it designates the program of establishing a synthesis between Keynesian short-period and Walrasian long-period analysis. After examining the two main attempts at implementing this program (by Klein and Patinkin), we concluded that they have both

been unsuccessful. In its second understanding, the neoclassical synthesis designates the defense of a pluralistic macroeconomics wherein Keynesian and Walrasian models exist side-by-side. This is the view that was present in the original formulations of the IS-LM model and is still held by Solow, Mankiw and others.

Given that the neoclassical synthesis in Solow's interpretation is a methodological principle rather than a research program, it makes no sense to wonder whether it succeeded. The question to be asked is whether it still underpins present-day macroeconomics, i.e. DSGE modeling. The answer is 'No'. Therefore, for better or worse, the neoclassical synthesis has become a minority view defended by those who reject the DSGE mainstream and prefer a pluralistic macroeconomics.

A second contribution of our paper, a byproduct of the first, is that we have brought out the important differences that exist between the models that constituted the first generation of new Keynesian modeling and the DSGE models. Calling DSGE models 'new Keynesian' is confusing. To avoid this ambiguity, we have suggested drawing a distinction between first- and second-generation new Keynesian models.

Finally, we have shown that Goodfriend and King's view that the new neoclassical synthesis constitutes a revival of the neoclassical synthesis does not stand up to closer scrutiny. What they hailed as a 'new-neoclassical synthesis' was not a 'neo-neoclassical synthesis'. While it was a synthesis between new Keynesian and RBC theories, it was neither a short/long- period synthesis (the neoclassical synthesis program) nor a defense of a pluralistic macroeconomics field. We surmise that the popularity of the term new-neoclassical synthesis has another explanation: that of treading in Samuelson's early footsteps by misnaming a consensus as a synthesis.

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