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IS-LM à la Hicks versus IS-LM à la Modigliani

Michel De Vroey

The aim of this essay is to revisit J. R. Hicks's famous "Mr. Keynes and the 'Classics'" ([1937] 1967), beyond doubt one of the most influential articles in the Keynesian tradition. It was presented jointly with two other papers, written by Harrod and Meade and pursuing the same aim of clarifying the content of Keynes's *General Theory*, to the 1936 Oxford meeting of the Econometric Society. Despite the fact that these three contributions were quite similar, Hicks's piece has by far been the most influential.¹

Rereading Hicks's article leads to a somewhat surprising result. It turns out that his SI-LL model, as he coined it, does not square with the subsequent IS-LM models found in macroeconomics textbooks at the heyday of Keynesian economics.² It may well be true that Hicks provided the conceptual apparatus that proved so successful, to the point of being identified with the very field of macroeconomics. Yet there is

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1. The issue of the social and intellectual interactions underpinning the creation of the IS-LM model by Hicks is broached in Young 1987.

2. Among many others, the following textbooks can be mentioned: Ackley 1961, Dernburg and McDougal 1960, and Allen 1967. Whereas Hicks labeled his model the SI-LL model, henceforth it will be designated under the IS-LM label.

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a breach of continuity between his own use of the model and that of standard textbooks. First, in Hicks's account, involuntary unemployment or non-market clearance exists in both the classical and the Keynesian models. This is no longer true in the textbook account of IS-LM. Therein, the classical model features market clearing, whereas the Keynesian model is supposed to exhibit involuntary unemployment. Second, in Hicks's article, monetary expansion has real effects in the classical model, whereas this is not necessarily so in the Keynesian model. In contrast, in the textbook account the inefficiency of monetary expansion (i.e., its lack of impact on employment) is the hallmark of the classical model, the opposite being true for the Keynesian model.³As a result, R. Clower's ([1975] 1984, 192–93) judgment that “Keynesian economics” owes as much to Hicks as to Keynes should be tempered. The transition from Keynes's economics to Keynesian economics is, rather, a two-step process: its first stage concerns the passage from the *General Theory* to Hicks's model; its second stage, the shift from Hicks's use of the IS-LM framework to its modern understanding. I claim that F. Modigliani's article “Liquidity Preference and the Theory of Interest and Money” (1944) played a decisive role in this second transition. It is his, not Hicks's, version that underlies the standard models. Hence the need to draw a distinction between IS-LM à la Hicks and IS-LM à la Modigliani.

My aim in this article is threefold. First, I want to provide a reinterpretation of Hicks's seminal paper. Only a minimal assessment of what Hicks regarded as the specifics of the “Keynesian revolution” will be made, so as to have the proper background for discussing his model. Second, I want to make a close comparison between Hicks's and Modigliani's essays and vindicate the claim of a two-step process evoked above. Third, I want to bring to the fore some ambiguities in Modigliani's position.

To close this introduction, it may be useful to contrast my essay's contribution with that of two recent articles on the same subject (Darity and Young 1995; Barends and Caspari 1999). As far as Darity and Young's survey article is concerned, three differences should be pointed out. First, whereas theirs has a broader scope than mine in that it inves-

3. Other differences between the Hicksian and the textbook versions of IS-LM exist, bearing on the change in labeling of the model, the abandonment of Hicks's two sectors perspective, and the shift from money to real income. Yet in comparison with the two above central differences, they look benign.

tigates the whole literature from Hicks, Harrod, and Meade to papers written in the 1950s, my article's only concern is the relationship between Hicks and Modigliani. As a result, my investigation is more in-depth. Second, the originality of my essay lies in its claim that there is a breach from Hicks's SI-LL to the standard IS-LM model and that Modigliani's 1944 article played a crucial role in recasting the former into the latter—a claim that is not in Darity and Young's article. Third, the two articles are underpinned by a different understanding of the concept of involuntary unemployment. In several articles, Darity and his coauthors have defended the view that it should be understood as meaning a state of less than full employment along with market clearing.⁴ In contrast, my essay adopts the non-market clearing definition of involuntary unemployment.⁵ This difference has a definite bearing on the conclusions reached in the two articles. As far as Barends and Caspari's article is concerned, it pursues the same aim as mine, as these authors, too, claim that Hicks's original model and subsequent IS-LM models differ significantly. However, they insist mainly on the two-sector aspect of Hicks's model and give little attention to Modigliani's role in this evolution.

1. IS-LM à la Hicks

The Background: Hicks's Appraisal of Keynes's *General Theory*

As aptly remarked by Coddington (1983, 66), "Hicks has gone on reviewing it [the *General Theory*] throughout his career."⁶ Thus, giving a synthetic account of his overall appraisal of Keynes's contribution in the *General Theory* (1937) is far from easy. Nonetheless, this task should not be sidestepped.

According to my own view, Hicks's appraisal of Keynes can be summarized in three points. First, to Hicks the *General Theory* belonged to the field of monetary theory and was geared toward criticizing the old neutrality-of-money viewpoint. Keynes's real target when attacking

4. Cf. Darity and Horn 1983 and Darity and Goldsmith 1995.

5. This adoption is vindicated in De Vroey 1998.

6. Of interest in this respect are Hicks [1937] 1967, 1967a, 1967c, 1977, [1979] 1983a, [1980] 1982, 1989. See also Klamer 1989. For a broader appraisal of the relationship between Keynes and Hicks, see Coddington 1983; Leijonhufvud 1984; Hamouda 1993; Hagemann and Hamouda 1994; McKenzie and Zamagni 1991.

classical theory, Hicks thus claimed, was not A. C. Pigou but a much older viewpoint to be traced back to the writings of authors such as David Hume, David Ricardo, and John Stuart Mill.⁷ The main issue to be addressed was whether changes in money supply could have real effects and, thus, whether monetary expansion could be used as a policy tool when the economy was slack: “Would it be true, even in a world where all borrowing and lending was long-term borrowing and lending . . . , that interest rates will be entirely determined by saving and investment, that the level of activity will be solely determined by the real factors in the system, and that the quantity of money will solely act upon the level of prices?” (Hicks 1967c, 159).⁸

Second, Hicks praised Keynes for having generated a shift in the main subject matter of economic analysis, from the long- to the short-period perspective. This claim is one of the most recurrent themes in Hicks’s commentary on Keynes.⁹ Here is how he puts it in his last book, *A Market Theory of Money* (1989, 1):

What is the essence of the “Keynesian revolution”? I would now state it in the following way. It had been a common assumption of his predecessors that the economy under study had a long-term equilibrium about which it would indeed fluctuate, but the fluctuations would be limited and by wise policy their amplitude could be damped. I think I can show that this was in their day a defensible position; in the days of the old Gold Standard it made a good deal of sense. By the time Keynes was writing his *General Theory* that standard was being abandoned; by his “persuasions” he had contributed to its abandonment, especially the abandonment of its old authority; he had no desire to go back to anything so rigid, so firm. Thus the only equilibrium which survives in his theory is a short-term equilibrium with no sheet-anchor to hold it.

7. “‘Classics,’ as used by Keynes, was a confusing description. . . . Keynes certainly means his ‘classics’ to include the neo-classics; it may indeed be some of the latter his cap most exactly fits. But I think that he spoke of them all as ‘classics’ because he perceived (quite rightly perceived) that some of the things he was attacking came down from Smith and Ricardo, especially perhaps Ricardo, whom he was right in identifying as the chief originator of what he called the classical tradition” (Hicks 1967c, 155–56).

8. See also Hicks [1976] 1983, 14.

9. Notice, however, that in his first review of the *General Theory*, Hicks seems to have held the opposite interpretation, namely that Keynes wanted to provide a long-term theory of unemployment. Compare with Hicks [1936] 1982.

Hicks did not object to the classical conclusions as far as the long period was concerned. As he stated, “the classical *long-period* theory is *full-equilibrium* theory” (1967a, 149). Rather, his point was that a change in emphasis from the long to the short period was overdue (1967c, 149). Classicists, he believed, could admit that “in the short period, while the supply of money is increasing, the increase can be a real stimulus” (161). Yet they refrained from uttering their views on this for fear of the consequences it might have.¹⁰

Third and finally, to Hicks a central feature of Keynes’s theory was its fixed-price assumption. In *Value and Capital*, Hicks (1946, 266) bluntly states that “Mr. Keynes goes as far as to make the rigidity of wage-rates the corner-stone of his system.” More generally, he praised Keynes for having laid the groundwork for a shift from the “flexprice” to the “fixprice” method.

Can Hicks’s threefold characterization be deemed a fair rendition of Keynes’s project (assuming that he would have endorsed my account of his interpretation)? No clear-cut answer can be given to this question. Beyond doubt, his characterization makes sense. Yet, to each of Hicks’s three points, doubts and counterarguments can be formulated. For what concerns the first feature—that Keynes aimed at taking up the issue of the real effects of money expansion—my opinion is rather of scepticism. Hicks’s reasoning supposes the exogeneity of the money supply, whereas to many commentators the *General Theory* should be seen as a struggle of escape from the quantity theory of money. Moreover, following Clower ([1975] 1984) and Leijonhufvud (1968), it can also be argued that Keynes was more concerned about bringing to the fore system flaws, that is, dysfunctions proper to the decentralized economy. In this line of thinking, it can be argued that Keynes’s aim was to replace a Marshallian partial equilibrium explanation, in which unemployment is seen as a labor market issue, by some interdependency or general equilibrium approach (yet different from the Walrasian one), in

10. “Quite a number of things will fit into place if we suppose that the classical economists, of this important and in so many ways constructive period, did have some such short-period theory, somewhere at the back of their minds, though they preferred not to emphasize it. . . . They were afraid that if too much weight were given to short-period effects, it would play into the hands of crude inflationists. The long-period, it would be said, is just a succession of short-periods. Why not keep the stimulus going, when the first dose is exhausted, by another dose? They were afraid of that question, for they did not know the answer to it. Yet they felt in their bones that the suggestion in it was wrong” (Hicks 1967c, 162).

which coordination failures could come to the forefront (De Vroey 1999a). Turning to the second characteristic, namely the shift from a long- to a short-period analysis, the feeling is that it may well be true that Keynes wanted to make a short-period argument (although Ricardian post-Keynesians would claim the exact opposite). Yet this is a point on which Hicks has insisted much more than Keynes ever did.¹¹ Finally, for what concerns the fixed price method, Hicks's insistence on viewing this as the cornerstone of Keynes's reasoning can also be questioned. To many interpreters, Keynes adopted this assumption as an expository device, the dropping of which should not thwart his main claim. So, one may have the impression that Hicks accredited Keynes with an assumption that he, for one, was anyhow keen to adopt.

"Mr. Keynes and the Classics" Revisited

The aim pursued by Hicks in his article follows from the above characterization. At stake is a confrontation of what the classicists and Keynes had to say on the subject of the short-period real effects of monetary expansion in a context of money-wage rigidity. In short, he endeavored to make a comparative exercise in policy effectiveness. Before entering this matter, however, it is necessary to assess Hicks's treatment of the labor market.

The labor market

A common feature of Keynes's *General Theory* and Hicks's "Mr. Keynes and the Classics" is their lack of an explicit account of how the labor market functions and in which state it happens to end up. The only information Hicks's reader gets is that the per capita rate of money wages is given and that the employment level can be increased both in the classical and in the Keynesian model (Hicks [1937] 1967, 128). This lack of specification of the state of the labor market is perplexing. To fill in the gap, several possibilities can be contemplated. First, one might surmise that the nominal wage is fixed yet coincides with its equilib-

11. His insistence, it may be suggested, was not entirely innocent. By characterizing the Keynesian revolution in such a way, Hicks allows himself to claim co-paternity over it. Keynes and himself, he recounts, started independently to build up a short-period model. Before the publication of the *General Theory*, Hicks had already begun to treat the short-period route in his "Equilibrium and the Trade Cycle" ([1933] 1982). His very interest in Keynes's theory sprang from the discovery of this similarity (Hicks [1980] 1982). Hence, the revolution toward short-term period analysis ought to be assessed, he almost claims, as a case of "parallel discovery."

rium value. Thus, employment is at its natural rate. But then why the fuss? In neither the classical nor the Keynesian model would any action that increased employment be defensible.¹² Second, one might assume that, in spite of the fact that the real wage underpinning the fixed money wage is the market-clearing wage, the labor market exhibits non-market clearance—the Don Patinkin story (Patinkin 1965, chap. 13). However, there is no indication that Hicks had this case in mind. Third, one might suppose that Hicks claimed that the labor supply was of a particular form—Modigliani’s insight, to be analyzed below. But again, there is no hint that this was the case. All these conjectures being discarded, the only remaining possibility is that, to Hicks, the fixed money wage rate was a “false price,” which happened to be higher than the market-clearing value. This is the viewpoint Hicks adopted in *Value and Capital*, in his note to chapter 8 (1946, 110) as well as in chapter 21, where he evoked three possible causes, the first of which is legislative control.

Hicks offered no explicit vindication for the assumption of money wage rigidity, a standpoint that may be put down to his belief that it was the cornerstone of Keynes’s system. Moreover he, for one, had no qualm about it. To him its adoption was simply a matter of empirical relevance.¹³ As far as the cause of wage rigidity is concerned, however, Hicks had an explanation of his own, emphasizing the fairness dimension—a theme that runs through all his writings. Here is how he puts it in *Value and Capital* (1946, 265):

The most important class of prices subject to such rigidities are wage-rates; they are affected by rigidity from all three causes. They

12. As will be seen below, this is the viewpoint adopted by Friedman, thereby subverting the IS-LM into an anti-Keynesian instrument.

13. As stated in his “The ‘Classics’ Again” (1967a, 147), “This [price rigidity] is a special assumption that can be incorporated into any theory. Certainly the economists of the past cannot be criticised for not making it, for in their time, it would quite clearly, not have been true. This is not a matter on which there can be any theoretical contradiction; it is the kind of change in the exposition of the theory which we ought to be making, all the time, in response to changing facts.” A similar justification is offered in *Capital and Growth* (1965, 76): “The fundamental weakness of the Temporary Equilibrium method is the assumption, which it is obliged to make, that the market is in equilibrium—actual demand equals desired demand, actual supply equals desired supply—even in the very short period, which is what its single period must be taken to be. This assumption comes down from Marshall, but even in a very competitive economy, such very short-run equilibrium is hard to swallow; in relation to modern manufacturing industry, it is very hard to swallow. It was inevitable that the time should come when it had to be dropped.” See also Hicks [1980] 1982.

are particularly likely to be affected by ethical notions, since the wage-contract is very much a personal contract, and will only proceed smoothly if it is regarded as “fair” by both parties. But, for whatever cause rigidity occurs, it means that some prices do not move upward or downward in sympathy with the rest—they may consequently exercise a stabilising influence.¹⁴

The fairness argument was an original and quite modern line of explanation for wage rigidity. However, when it came to depicting its impact on the working of the labor market, Hicks’s reasoning was anything but original. In fact, he did not conceive it differently from that of an exogenous wage floor, with its effect of disallowing the realization of market clearing. As a result, the Hicksian labor market can be assessed as featuring involuntary unemployment in the sense of non-market clearance; that is, there are agents who are eager to work at the ongoing wage rate *and* at a lower wage rate yet are observed as nonworking. If Hicks had no qualm about short-side rationing, oddly enough, however, he did not mention the term *involuntary unemployment* in his article. Nor is it found in Hicks’s other works.¹⁵

If facts of life can be considered compelling, both the classical and the Keynesian models should adopt the same assumption about wages insofar as they purport to enlighten the same real-world phenomena. Hence Hicks’s similarity of treatment of the labor market in the two models.¹⁶ Thus, unlike the case of modern textbook IS-LM models, it cannot be asserted that market clearing is present in the classical model but lacking in the Keynesian model. In both, the labor market is supposed to be in the same state of non-market clearance.

Notice, finally, that it follows from the fact that money wage rigid-

14. The same passage is in the first edition of *Value and Capital* (1939, 265). The fact that Hicks wrote his “Mr. Keynes and the Classics” while he was working on *Value and Capital* may also explain why he did not bother to justify the wage rigidity assumption in his article, since he was doing it in the book. Compare with Young 1987, 98. The fairness theme is also present in Hicks’s *Theory of Wages* (1963, 69–74) and his *Crisis in Keynesian Economics* (1974, 64–66).

15. Except for scattered remarks, no explicit reason for this absence is given. For example, in his new commentary in the second edition of the *Theory of Wages* (1963, 318), Hicks remarks without further elaborating on the point that he finds Keynes’s distinction between voluntary and involuntary unemployment awkward. The same opinion is expressed in Hicks [1979] 1983b, 127.

16. Had he in mind the view that the labor market is different in the Keynesian and the classical models, he would have stated it. Now he does exactly the opposite, stating that the fixed money wage is present in both cases.

ity is postulated rather than derived that we ought to see Hicks's article as geared toward demonstrating the persistence of involuntary unemployment rather than its arising. Likewise, the very presence of involuntary unemployment in both the classical and the Keynesian cases leads to the conclusion that Keynesian theory cannot be seen as being specifically concerned with involuntary unemployment. Its specificity becomes apparent only when reflecting on policy.

A comparative exercise in policy effectiveness

To draw a contrast between the classical and the Keynesian perspectives, Hicks focused on the effects of monetary expansion and an increase in the inducement to invest in employment and the interest rate, respectively. Table 1 summarizes the argument.

The solutions for what concerns the classical model are straightforward. Monetary expansion increases the level of employment and decreases the interest rate: "An increase in the supply of money will necessarily raise total income. . . . The rise in income will tend to increase employment, both in making consumption goods and in making investment goods" (Hicks [1937] 1967, 130).¹⁷ Note that, to Hicks, the fact that monetary expansion can have real effects does not necessarily justify its being undertaken: "It follows from this theory that you may be able to increase employment by direct inflation; but whether or not you decide to favour that policy depends upon your judgement about the probable reaction on wages, and also—in a national area—upon your views about the international standard" (130). An increase in the inducement to invest (i.e., a rightward movement of the schedule of the marginal efficiency of capital) always elicits a rise in the rate of interest. However, its effect on the employment level depends on the elasticities of supply in the two sectors of production considered. "Labour will be employed more in the investment trades, less in the consumption trades; this will increase total employment if the elasticity of supply in the investment trades is greater than that in the consumption-goods trades—diminish it if vice versa" (129).

Let us now turn to the Keynesian outcome. According to Hicks, a preliminary distinction ought to be drawn between Keynes's "special"

17. Darity and Young (1995, 12–13) have pointed out that Keynes's letter to Hicks commenting on the latter's article and which is often taken as an endorsement of the IS-LM model in fact expresses important reservations. In particular, he criticized the real effect of a monetary expansion.

Table 1 A comparative exercise in policy effectiveness: A summary of the argument

	Exogenous increase in money supply		Exogenous increase in the inducement to invest	
	Effect on employment	Effect on the interest rate	Effect on employment	Effect on the interest rate
• The classical model	$N_1 > N_0$	$r_1 < r_0$	$N_1 \geq N_0$	$r_1 > r_0$
• The Keynesian general model			$N_1 < N_0$	
• The standard Keynesian general model	$N_1 > N_0$	$r_1 < r_0$	$N_1 > N_0$	$r_1 > r_0$
• The liquidity-trap Keynesian general model				
• The IS curve intersects the LL curve on its horizontal section	$N_1 = N_0$	$r_1 = r_0$	$N_1 > N_0$	$r_1 = r_0$
• The IS curve intersects the LL curve on its upward-sloping section	$N_1 > N_0$	$r_1 < r_0$	$N_1 > N_0$	$r_1 > r_0$
• The IS curve intersects the LL curve on its vertical section	$N_1 > N_0$	$r_1 < r_0$	$N_1 = N_0$	$r_2 = r_0$

$N_0, r_0 (N_1, r_1)$ are the magnitudes prevailing before (after) the exogenous increase in the independent variable.

and “general” models. In the former it is assumed that the demand for money function has only one argument: the interest rate. This amounts to considering that the only motive for demanding money is speculative or, conversely, that there is no transaction demand for money. Hicks believed that such a position, on top of being untenable, was not to be found in the *General Theory*. Rather, he regarded Keynes as taking a more orthodox line by also considering the transaction motive in addition to the speculative motive. This is Keynes’s general model. Only the latter, Hicks argued, should be taken into account when drawing a contrast with classical theory. To compound the matter, two versions of the Keynesian general model ought to be distinguished, each depending on how liquidity preference is characterized: the standard Keynesian gen-

eral model and the liquidity-trap Keynesian general model.¹⁸ In the latter, the liquidity preference schedule has a section where the demand for money exhibits perfect-interest elasticity. As far as the standard Keynesian general model is concerned, an increase in both the supply of money and the inducement to invest will have the same effects as in the classical model. As far as the second of these factors is concerned, Hicks (135) observes, “A rise in the marginal-efficiency-of-capital schedule must raise the curve IS; and, therefore, although it will raise income and employment, it will also raise the rate of interest.”¹⁹ The conclusion to be drawn is that no basic difference between the two models exists. The only difference is in the reasoning procedure:

In a world where the interest-rate mechanism can always operate—where the rate of interest is flexible, and sufficiently flexible, in either directions, for its movements to have a significant effect on (saving or) investment—the Keynes theory is true and the “classical theory” is true; they lead to the same results. Though the paths of analysis are different, the end-results, achieved when all the same things have been taken into account, are the same. And either analysis can be put into a general equilibrium form in which it is directly apparent, that they come to the same thing. (1967a, 144)

However, this conclusion should be amended as soon as the liquidity-trap assumption is made, a case where the LM curve has a horizontal section. A specifically Keynesian outcome can now arise, hinging on where the initial intersection between the IS and the LM curves is located. Consider first the case where the IS curve intersects with the LM curve on its horizontal section. Then, a rise in the money supply affects neither the interest rate nor employment, since only the positively sloped section of the LM curve will shift to the right, whereas its horizontal section will remain unchanged. In contrast, an increase in the inducement to invest, eliciting a rightward move of the IS curve, boosts employment without changing the interest rate. Second, consider the case where the IS curve intersects with the LM curve on its upward sloping section. Here, an expansion either of the money supply or of the inducement to invest will increase employment. But these factors will exert an asymmetric effect on the interest rate: monetary

18. The “liquidity trap” terminology is not due to Hicks but to Denis Robertson (1940).

19. Here, for what concerns the effect on employment, Hicks is more affirmative than when discussing the classical model.

expansion results in a decreased interest rate whereas a shift in the IS curves raises it. Finally, consider the case where the IS curve intersects with the LM curve on its vertical section. The result of monetary expansion is the same as in the earlier case, whereas the change in the inducement to invest has no impact on employment whereas it increases the interest rate.

To conclude, the Keynesian model is fully at odds with the classical model only when the liquidity-trap assumption is made and when it is furthermore assumed that the intersection between the IS and LM curves lies on the horizontal section of the latter. Then, but only then, is the Keynesian system “completely out of touch with the classical world” (Hicks [1937] 1967, 136), as it displays both a stumbling block to the traditional monetary recommendation (the liquidity trap) and an alternative remedy (acting upon IS through fiscal policy). In this case, the classical and the Keynesian models exhibit differences in policy effectiveness. The Keynesian model is characterized by the inefficiency (efficiency) of monetary (fiscal) policy, contrary to what is possible in the classical model.

2. IS-LM à la Modigliani

As previously stated, the specificity of the Keynesian model, in Hicks’s account, hinges on the liquidity-trap argument. No difference between the Keynesian and the classical models would remain were this argument proven to be weak or flawed. This is precisely what happened with the emergence of the “real-balance effect,” put forward by Pigou (1943).²⁰ Thereby a new channel was brought to the fore thanks to which changes in the real quantity of money could affect aggregate demand even if they would not alter the interest rate. Eventually, the only bequest from the Keynesian revolution was a rudimentary pragmatic general equilibrium model, the IS-LM apparatus in general, devoid of any specific Keynesian trait. Clearly, Keynesians were in need of finding a new way of contrasting the Keynesian and the classical models.

Modigliani’s role in the unfolding of the debate was both destructive and constructive (1944). On one hand, he argued for the dismissal of liquidity preference — not because of the “real-balance effect” but,

20. Compare with Patinkin [1948] 1951, 1987.

rather, because he considered it as just a curiosity. On the other hand, he proposed a new contrast between the classical and the Keynesian models. Its gist is that a Keynesian outcome arises when two factors are jointly present: a particular shape of the labor supply curve, supposed to capture the sociological elements that affect labor supply, and some money disturbance, in particular an insufficient quantity of money. In sharp contrast to Hicks, Modigliani claims that the Keynesian model is characterized less by a lack of investment than by a maladjustment between the quantity of money and the money wage, the latter being too high relative to the quantity of money. In his words,

The statement that unemployment is caused by lack of investment, or that a fall in the propensity to invest or an increase in the propensity to save will decrease employment, has become today almost a common-place.

As we have seen, however, lack of investment is sufficient to explain underemployment equilibrium only in the “Keynesian case,” a situation that is the exception and not the rule.

It is true that a reduced level of employment and a reduced level of investment go together, but this is not, in general, the result of causal relationship. It is true instead that the low level of investment and employment are both the effect of the same cause, namely a basic maladjustment between the quantity of money and the wage rate. It is the fact that the money wages are too high relative to the quantity of money that explains why it is unprofitable to expand employment to the “full employment” level. . . .

What is required to improve the situation is an increase in the quantity of money (and not necessarily in the propensity to invest); then employment will increase in every field of production including investment. (76–77)

In his 1944 article Modigliani attributed to the Keynesian supply of labor two particularities: first, its argument is money rather than real wage and, second, it has a perfectly elastic section up to a kink from where it becomes upward sloping. The employment level corresponding to the kink is called “full employment.”

In the classical system the suppliers of labour . . . are supposed to behave “rationally.” In the same way as the supply of many commodi-

ties depends on the relative price of the commodity, so the supply of labour is taken to depend not on the money wage rate, but on the real wage rate. Under the classical hypothesis, therefore, the last equation of the system [the supply of labour function] takes the form:

$$N = F(W/P); \text{ or, in the inverse form: } W = F^{-1}(N)P. \quad (9a)$$

The Keynesian assumptions concerning the supply-of-labour schedule are quite different. In the Keynesian system, within certain limits to be specified presently, the supply of labour is assumed to be perfectly elastic at the historically ruling wage rate say w_0 For every value of W and P the corresponding value of N from (9a) gives the maximum amount of labour obtainable in the market. As long as the demand is less than this, the wage rate remains fixed at w_0 . But as soon as all those who wanted to be employed at the ruling real wage rate have found employment, wages become flexible upward. The money wage will not increase unless the money wage rate rises relatively to the price level. . . . Taking (9a) as a starting point, we may write:

$$W = \alpha w_0 + \beta F^{-1}(N)P, \quad (9)$$

where α and β are functions of N , W , P , characterised by the following properties:

$$\alpha = 1, \beta = 0, \text{ for } N \leq N_0, \quad (10)$$

$$\alpha = 0, \beta = 1, \text{ for } N > N_0,$$

where N_0 is said to be "full employment." Equations and inequalities (10) thus state that, unless there is "full employment" ($N = N_0$), the wage rate is not really a variable of the system but a datum, a result of "history" or of "economic policy" or of both. (47)²¹

It follows from this difference that a monetary expansion affects real magnitudes in the Keynesian model yet not in the classical model, contrary to what is the case in Hicks's reasoning. In the classical model "the real part of the system, namely employment, interest rate, output or real income, [does] not depend on money. The quantity of money has no other function than to determine the level of prices" (68).

21. As the symbols used by Modigliani have their traditional meaning, it is unnecessary to spell them out.

The contrast between Hicks's and Modigliani's approaches can now be easily drawn. It is synthesized in table 2. As seen, Hicks's classical model is characterized by the existence of a false wage and its ensuing lack of market clearing, on one hand, and by the effectiveness of monetary expansion in increasing employment, on the other. At first, it seems that this is exactly Modigliani's Keynesian model. Thus, it is as if Modigliani had simply rebaptized Hicks's classical model as the Keynesian model. In turn, the classical label is now applied to a new configuration, characterized by wage flexibility and labor market clearing, on one hand, and the ineffectiveness of monetary policy, on the other.

Modigliani's assumption that the argument of the supply of labor function is the monetary rather than the real wage will certainly look odd to the modern reader. It amounts to assuming workers' irrationality, as they can be indifferent between different real-wage levels insofar as they are underpinned by the same money wage.²² Modigliani himself soon recognized this point. In an interview with Feiwel (1989, 569), he justified its adoption by the circumstances prevailing at the time when Keynes was writing:

I think Keynes spoke as if he meant nominal wage rigidity. Of course, in his time it did not make much difference. Since inflation was very small, nominal and real wages were pretty much the same. So he did not have to make the distinction. Nowadays it seems absolutely vital to make the distinction. Anybody who believes wages to be *nominally* rigid ought to have his head examined. . . . Nominal wages are quite flexible. What is left then is to interpret Keynes as speaking of real-wage rigidity.

A shift from the nominal-wage to the real-wage argument is formally presented in Modigliani 1963. Herein he draws a contrast between his 1944 model and what he calls his "mid-50's" model, the latter being "essentially the model that I would have used had I been writing a comparable article at the time (and did actually use in my class lectures)" (1963, 79). A general comparison of Modigliani's 1944 and 1963 articles falls beyond the scope of this paper.²³ Only his depiction of the

22. At the time, this assumption seemed less outrageous than it is today. For an attempt at vindicating it, see Tobin 1947.

23. On this, see Fischer 1987.

Table 2 IS-LM à la Hicks and IS-LM à la Modigliani

	The labor market		The money market		Policy effectiveness	
	The classical model	The Keynesian model	The classical model	The Keynesian model	The classical model	The Keynesian model
Hicks	fixed money wage resulting in involuntary unemployment	fixed money wage resulting in involuntary unemployment	normally shaped liquidity preference curve	liquidity trap	monetary expansion increases employment	monetary expansion may fail to increase employment
Modigliani	market clearing	particular supply of labor function possibly resulting in underemployment	normally shaped liquidity preference curve	the existence of the liquidity trap is possible but not necessary	monetary expansion has no effects on employment	monetary expansion increases employment

labor market is relevant for my purpose. In this respect what is to be observed is a replacement of the 1944 supply of labor assumption by a new assumption cast in real terms:

$$\begin{aligned} N^s &= n^s(W/P), & \text{if } n^d(W_0/P, K_0) > n^s(W_0/P) \\ W &= W_0 & \text{if } n^d(W_0/P, K_0) \leq n^s(W_0/P) \end{aligned}$$

Modigliani (1983, 82) commented on it as follows:

The device embodied in equation (6) relies on the notion of a “potential” supply function $n^s(W/P)$, expressing the maximum supply of labour available at each real wage. The hypothesis of wage rigidity then states that the money wage will not be bid below the rigid level W_0 , even if there is an excess supply at this level. . . . W and N are determined by the intersection of the demand function and the potential supply function, if this intersection determines a value of W larger than W_0 ; otherwise $W = W_0$ and the level of employment is determined by the demand function alone. The difference between this level of employment and the potential supply at W_0 is then “involuntary unemployment” in the Keynesian sense.

Attributing rationality to workers is certainly an advance. Nonetheless this does not improve on what I see as the basic ambiguity of Modigliani’s argument present in both versions of his model. It turns out that his overall claim may rest on either an exogenous wage floor or a special supply of labor function argument. What remains unclear is which of them he actually favors.

The exogenous wage floor argument was taken by Leontief (1947).²⁴ In this case, the traditional understanding of the workers’ supply curve, as the ultimate expression of their optimizing behavior, still holds. It is, however, ineffective over a certain range, to the effect that workers are unable to make their equilibrium plan come true. Any market rationing resulting from the wage floor deserves to be called involuntary unem-

24. “Much more in keeping with the spirit of the *General Theory* is an interpretation which ascribes the monetary bias of the Keynesian supply curve of labour to the influence of some outside factors, that is, factors clearly distinguishable from the preference system of the workers. A minimum wage law offers a good example of such an outside factor. Whatever the shape of the intrinsic or potential supply curve no workers can be hired in this case at a wage rate which is lower than the legal minimum” (Leontief 1947, 236).

ployment, as defined above. If, for whatever reason, the wage floor cannot be abolished, a monetary expansion proves successful in circumventing this problem and enabling the market-clearing real wage to emerge.

Assume this is the right interpretation of Modigliani's contribution. It then turns out that he introduced a threefold change with respect to Hicks's original model. First, he kept Hicks's classical case yet renamed it the Keynesian case. Second, he discarded Hicks's own Keynesian case (the liquidity trap) as a marginal curiosity. Third, he reintroduced a new configuration, receiving the classic label, wherein the false fixed wage rate assumption is replaced by the assumption of a flexible market-clearing wage rate.

However, the exogenous wage floor line of reasoning is hard to defend as a robust and original argument. The wage floor may well lead to involuntary unemployment yet in a trivial and unoriginal way—everybody will accept this result. Moreover, it may well be true that its consequences can be trimmed through either monetary or fiscal policy. Yet, it would be more straightforward to attack the evil at its root and to abolish the floor.

The alternative interpretation is that the hallmark of the Keynesian labor market is to feature a particular supply of labor that, in graphical expression, incorporates a horizontal section. At first, this interpretation is more appealing than the wage floor, since it echoes Keynes's remarks on the sociological factors marking the specificity of the labor market. However, upon scrutiny, it also turns out to be flawed, because it no longer permits an involuntary unemployment result.

The issue here is whether the statement that involuntary unemployment exists whenever the demand for labor intersects with the supply of labor along its horizontal section is valid. Everybody will admit that any supply function expresses the optimum (and hence the maximum) quantity an agent wishes at each price. When it comes to the labor market, one can further specify that the optimum quantity of labor an agent wishes to trade at a given wage can be called full employment, as pointed out by Patinkin (1965, 314–15) when he stated that full employment coincides with all the points forming the supply of labor curve. This can be called a microfounded definition of full employment. Involuntary unemployment can be considered as its converse. Now take the case of a supply curve comprising a perfectly elastic section. In this case, the above proposition—that the supply function expresses the

maximum amount of trade an agent will contemplate—is no longer true. Since all the different points of the horizontal section ought to be considered as belonging to the supply schedule, each should be considered a full-employment point in the microfounded sense. As a result, no excess supply (or involuntary unemployment) assessment should be made whenever the demand for labor crosses supply in its horizontal section. True, the full employment point that is effectively obtained is not the highest possible at the given wage rate. However, reaching the highest possible employment level—the only point Modigliani calls full employment—would give agents no higher utility as compared with the other employment levels belonging to the horizontal section of the supply schedule. To see this, one has simply to reconstruct the choice-theoretic foundation underlying such a supply curve. It turns out that to the agent so represented consumption and leisure are perfect substitutes. His indifference “curves” are linear. Except when the real price is equal to the absolute value of the slope of the indifference lines, such cases usually result in corner solutions. This exception is exactly what happens at the wage magnitude corresponding to the horizontal section of the supply curve: all levels of employment are indifferent to him at this wage. Hence, any increase in employment along the horizontal section does not affect utility.

Thus, insofar as the total horizontal-plus-upward-sloping line/curve is effectively considered as expressing the supply of labor—rather than having the latter expressed by a simple upward sloping line or curve, a part of which is inoperative—no reference can be made to involuntary unemployment, strictly defined. It is true that underemployment exists, but only in that the maximum level of employment is not obtained. Filling in this underemployment gap does not improve agents’ utility.

Reading Modigliani, it is difficult to assess which of these two interpretations—the exogenous wage floor or the special supply of labor—he is endorsing. He seems to be sitting between them and not taking a clear stance. On one hand, he does not mention the wage floor yet states that the horizontal section express a “datum, a result of ‘history’ or of ‘economic policy’ or of both” (1944; 47), which suggests that workers’ volition is not at issue. On the other hand, he also suggests that the horizontal section expresses workers’ refusal to underbid, in which case it is involved. In fact, he fails to perceive the need to separate the two explanatory lines, which is opportune for his peace of

mind, as it allows him to keep the two irons in the fire. Hence his odd and, at bottom, indefensible account of the supply of labor curve. According to which section is considered, this curve is supposed to express two different realities: before the kink, it is meant to embody a datum alien to workers' volition; after, it is supposed to regain its standard status of the expression of optimizing behavior.

To make a broader appraisal of Modigliani's contribution, I believe that he in some sense rescued the IS-LM model, as he was able to make it serve a Keynesian cause again. After his recasting, it was again possible to draw a contrast between a classical and a Keynesian model as well as to justify state expansionary interventions in the economy. The Modigliani version of the IS-LM model was also highly successful in terms of its impact on the profession, as it became widely adopted. When, under Hansen's lead (1949, 1953), the IS-LM model began to find its place in textbooks, the Modigliani rather than the Hicks version was adopted. Hicks's own model fell into oblivion, not explicitly however, since the hiatus between his and Modigliani's versions remained unnoticed. Whenever coming back to Hicks's article, most economists tended to read it through the lens of the more modern model, failing to recognize its distinctive features. Hicks himself never raised the question whether, or how, they differed.

With hindsight, however, a rather sharp contrast emerges between the width of the adoption of the Modigliani version of the IS-LM model and its weak theoretical foundations. Whereas its conceptual sloppiness has been evoked above, a similar frailty can be observed for what concerns policy. Let me expand on this last point by introducing another big name into the picture, Milton Friedman.

The IS-LM model has usually been seen as geared toward serving a "Keynesian cause," that is, as denouncing states of underemployment and vindicating a policy of demand activation as the remedy. However, one should realize that little needs to be changed in order to transform the model into a piece of anti-Keynesian machinery. The case of Friedman is enlightening in this respect. In spite of his strong antagonism to the Keynesian cause, he had no qualms about discussing in terms of the IS-LM model. The question can be raised as to what his rationale was for accepting to reason in terms of an allegedly Keynesian model. The underlying reason, I surmise, is that he perceived intuitively that what at first seemed to be favorable to the Keynesian vision could easily be subverted into serving the opposite camp.

Friedman's conception of the classical model, expounded in his "Theoretical Framework for Monetary Analysis" (1971), is borrowed from Modigliani. However, he rejects the Keynesian case altogether on the grounds that the wage rigidity assumption is a "*deus ex machina*."²⁵ Hence, we have an IS-LM construct with only one submodel, the classical model. Friedman's main challenge was to retort to an empirical argument, namely, that in the real world monetary expansions have visible real effects. If it were true that the economy was in a classical state, this could not happen; monetary expansion would only have a nominal effect. Therefore, the real world was, as it were, on the side of Keynesians. If expansionary measures, be they fiscal or monetary, turned out to elicit real effects, this was interpreted as meaning that the economy was in a state of less than full employment to start with. In order to retort to this proof-of-the-pudding-is-in-eating-it argument, Friedman needed to be able to reproduce the effect found in Hicks's classical model (i.e., that an increase in the supply of money elicits real effects) yet without making this outcome the result of a preexisting state of disequilibrium, as Hicks had done.

In fact, no great change is required to get this result. It suffices to take the Hicksian model yet assume that the initially existing money wage is the long-period equilibrium wage and is flexible. Furthermore, it ought to be assumed that market clearing goes along with a certain dose of voluntary unemployment (or chosen leisure). This state, Friedman's story then runs, is wrongly interpreted by the "Keynesian doctors" as a case of underemployment, a market failure of some sort. Under their pressure, the central bank increases the money supply. Making the further assumptions of adaptive expectations and asymmetry of information between firms and wage earners, the monetary expansion indeed leads to an increase in employment, as in Hicks's model. However, this ought to be interpreted as a situation of disequilibrium (overemployment) cropping up on top of a preexisting state of full equilibrium, rather than, as in Hicks's version, the correction of some preexisting disequilibrium.²⁶ In other words, Friedman gives full strength to Hicks's caveat, noted above, that it might be indeed unwise

25. "The rigid price assumption of Keynes is, in this sense, much more arbitrary. It is entirely a *deus ex machina* with no underpinning in economic theory" (Friedman 1971, 44).

26. It should be emphasized that the disequilibrium in fact goes along with market clearing. Cf. De Vroey 1999b, 2000.

to engage in monetary expansion on the grounds that it disturbs full equilibrium. Though always possible (even in the classical model), an increase in employment is hardly desirable.

3. Concluding Remarks

The aim of this article was to reconsider the influence that Hicks's IS-LM model played in the transition from Keynes to Keynesian theory. Two points have been made. First, to draw the complete lineage from Keynes to Keynesian theory, a two-stage process should be considered: the recasting of the insights of the *General Theory* into Hicks's IS-LM model and the recasting of the latter into IS-LM à la Modigliani. IS-LM à la Hicks and IS-LM à la Modigliani differ both in their accounts of the labor market and in their policy conclusions. Second, in hindsight it turns out that neither of these two models proves to be a solid conceptual construction capable of defending the Keynesian cause. As Friedman's work shows, the IS-LM model can easily be converted into an anti-Keynesian apparatus.

References

- Ackley, G. 1961. *Macroeconomic Theory*. New York: Macmillan.
- Allen, R. G. D. 1967. *Macro-Economic Theory: A Mathematical Treatment*. London: Macmillan.
- Barens, I., and V. Caspari. 1999. Old Views and New Perspectives: On Re-reading Hicks' "Mr. Keynes and the Classics." *European Journal of the History of Economic Thought* 6.2:216–41.
- Clower, R. [1975] 1984. Reflections on the Keynesian Perplex. In Walker 1984.
- Coddington, A. 1983. *Keynesian Economics: The Search for First Principles*. London: Allen and Unwin.
- Darity, W., Jr., and A. H. Goldsmith. 1995. Mr. Keynes, the New Keynesians, and the Concept of Full Employment. In *Post-Keynesian Economic Theory*, edited by P. Wells. Boston: Kluwer.
- Darity, W., Jr., and B. L. Horn. 1983. Involuntary Unemployment Reconsidered. *Southern Economic Journal* 49.1:717–33.
- Darity, W., Jr., and W. Young. 1995. IS-LM: An Inquest. *HOPE* 27.1:1–41.
- Dernburg, T., and D. McDougal. 1960. *Macro-Economics*. New York: McGraw-Hill.
- De Vroey, M. 1998. Accounting for Involuntary Unemployment in Neoclassical Theory: Some Lessons from Sixty Years of Uphill Struggle. In *Economics and Methodology: Crossing Boundaries*, edited by R. Backhouse, D. Hausman, U. Mäki, and A. Salanti. London: Macmillan.

- . 1999a. Keynes and the Marshall-Walras Divide. *Journal of the History of Economic Thought* 21.2:117–36.
- . 1999b. Equilibrium and Disequilibrium in Economic Theory: A Confrontation of the Classical, Marshallian, and Walras-Hicksian Conceptions. *Economics and Philosophy* 15.2:161–85.
- . 2000. Marshall on Equilibrium and Time: A Reconstruction. *European Journal of the History of Economic Thought* 7.2:20–44.
- Feiwel, G. R. 1989. Testimony II: An Interview, Franco Modigliani. In *The Economics of Imperfect Competition and Employment: Joan Robinson and Beyond*, edited by G. R. Feiwel. London: Macmillan.
- Fischer, S. 1987. 1944, 1963, and 1985. In *Macroeconomics and Finance: Essays in Honor of Franco Modigliani*, edited by R. Dornbusch, S. Fischer, and J. Bossons. Cambridge: MIT Press.
- Friedman, M. 1971. A Theoretical Framework for Monetary Analysis. *NBER Occasional Papers*, no. 112:1–65.
- Hagemann H., and O. F. Hamouda, eds. 1994. *The Legacy of Hicks: His Contribution to Economic Analysis*. London: Routledge.
- Hamouda, O. F. 1993. *John R. Hicks: The Economist's Economist*. Oxford: Basil Blackwell.
- Hansen, A. 1949. *Monetary Theory and Fiscal Policy*. New York: McGraw-Hill.
- . 1953. *A Guide to Keynes*. New York: McGraw-Hill.
- Hicks, J. R. [1933] 1982. Equilibrium and the Trade Cycle. In Hicks 1982.
- . [1936] 1982. Mr. Keynes' Theory of Employment. In Hicks 1982.
- . [1937] 1967. Mr. Keynes and the "Classics." In Hicks 1967b.
- . 1939. *Value and Capital*. Oxford: Clarendon Press.
- . 1946. *Value and Capital*. 2d ed. Oxford: Clarendon Press.
- . 1963. *The Theory of Wages*. 2d ed. London: Macmillan.
- . 1965. *Capital and Growth*. Oxford: Clarendon Press.
- . 1967a. The "Classics" Again. In Hicks 1967b.
- . 1967b. *Critical Essays in Monetary Theory*. Oxford: Clarendon Press.
- . 1967c. Monetary Theory and History: An Attempt at Perspective. In Hicks 1967b.
- . 1974. *The Crisis in Keynesian Economics*. Oxford: Basil Blackwell.
- . [1976] 1983. Revolutions in Economics. In Hicks 1983.
- . 1977. Recollections and Documents. In *Economic Perspectives: Further Essays on Money and Growth*. Oxford: Clarendon Press.
- . [1979] 1983a. The Formation of an Economist. In Hicks 1983.
- . [1979] 1983b. Is Interest the Price of a Factor of Production? In Hicks 1983.
- . [1980] 1982. *IS-LM: An Explanation*. In Hicks 1982.
- . 1982. *Money, Interest, and Wages: Collected Essays on Economic Theory*. Vol. 2. Oxford: Basil Blackwell.
- . 1983. *Classics and Moderns: Collected Essays on Economic Theory*. Vol. 3. Oxford: Basil Blackwell.

- . 1989. *A Market Theory of Money*. Oxford: Clarendon Press.
- Keynes, J. M. 1936. *The General Theory of Employment, Interest, and Money*. London: Macmillan.
- King, R. G. 1993. Will the New Keynesian Macroeconomics Resurrect the IS-LM Model? *Journal of Economic Perspectives* 7.1:67–82.
- Klamer, A. 1989. An Accountant among Economists: Conversations with Sir John R. Hicks. *Journal of Economic Perspectives* 3.4:167–80.
- Leijonhufvud, A. 1968. *On Keynesian Economics and the Economics of Keynes*. Oxford: Oxford University Press.
- . 1984. Hicks on Time and Money. *Oxford Economic Papers*, November (supplement):26–46.
- Leontief, W. 1947. Postulates: Keynes' *General Theory* and the Classicist. In *The New Economics: Keynes' Influence on Theory and Public Policy*, edited by S. Harris. New York: Knopf.
- McKenzie, L. W., and S. Zamagni, eds. 1991. *Value and Capital Fifty Years Later*. London: Macmillan.
- Meltzer, A. H. 1988. *Keynes' Monetary Theory: A Different Interpretation*. Cambridge: Cambridge University Press.
- Modigliani, F. 1944. Liquidity Preference and the Theory of Interest and Money. *Econometrica* 12.1:44–88.
- . 1963. The Monetary Mechanism and Its Interaction with Real Phenomena. *Review of Economics and Statistics* 65.1:79–107.
- Patinkin, D. [1948] 1951. Price Flexibility and Full Employment. In *Readings in Monetary Theory* by the American Economic Association. Philadelphia: Blakiston.
- . 1965. *Money, Interest, and Prices*. 2d ed. New York: Harper and Row.
- . 1987. Real Balances. In vol. 4 of *The New Palgrave: A Dictionary of Economics*, edited by J. Eatwell, M. Milgate, and P. Newman. London: Macmillan.
- Pigou, A. C. [1936] 1983. Mr. J. M. Keynes' General Theory of Employment, Interest, and Money. In vol. 3 of *John Maynard Keynes: Critical Assessments*, edited by J. Cunningham Wood. London: Routledge.
- . 1943. The Classical Stationary State. *Economic Journal* 53:343–51.
- Robertson, D. H. 1940. Mr. Keynes and the Rate of Interest. In *Essays in Monetary Theory*. London: Staples Press.
- Tobin, J. 1947. Money Wage Rates and Employment. In *The New Economics: Keynes' Influence on Theory and Public Policy*. New York: Knopf.
- Walker, D., ed. 1984. *Money and Markets: Essays by Robert Clower*. Cambridge: Cambridge University Press.
- Young, W. 1987. *Interpreting Mr. Keynes: The IS-LM Enigma*. London: Polity Press.