IYLM: a General Theory–compatible replacement for ISLM

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The ISLM model, introduced in 1936–37 to provide interpretations of Keynes’s General Theory, subsequently emerged in its Hicks-Hansen form as the workhorse and ‘trained intuition’ of post-war macroeconomists. However, ISLM is an essentially orthodox model based on neoclassical foundations and fails completely as an adequate representation of central elements of Keynes’s macroeconomic thought. This article proposes IYLM as a replacement for ISLM, the new model being General Theory–compatible in that it is grounded only on key propositions in that work. Its purpose is to contribute, within the constraints of a two-market framework, to the resurrection of Keynes’s macroeconomics as an alternative to the inadequacies of much current macroeconomics. The first part of the article derives the model and argues that those sympathetic to The General Theory can accept the IYLM framework whilst simultaneously rejecting ISLM. The second part shows that Hicks-Hansen ISLM is based on an income-augmented form of orthodox loanable funds theory.

Key words: IYLM, ISLM, Keynes, Macroeconomics

JEL classifications: E12, B22, B31

1. Introduction

The ISLM model has a long, controversial and convoluted history across time and economists. Although often attributed solely to Hicks, and sometimes called the Hicks-Hansen model after Hansen later institutionalised Hicks’s formulation within the profession, it would be more accurately called the Harrod-Meade-Hicks-Reddaway-Champernowne-Lange-Timlin-Modigliani-Hansen ISLM model to indicate the broader range of its originators, contributors and institutionalisers from 1936 to 1953. Despite its important role in the development of orthodox macroeconomic thinking, the origins of this model remained neglected until Young’s (1987) revealing study. The role played in this history by Keynes has also been a matter of controversy, his stance being interpreted in different ways and generating sharp divisions of
opinion, including amongst those sympathetic to *The General Theory* (*GT*). In contemporary macroeconomics, the ISLM model continues to play a part in the work of some commentators such as Paul Krugman, although its role within the profession is very much diminished compared with its pre-eminence in the latter half of the twentieth century.

However, there is an important missing chapter in this story—that of the existence of a *GT*-compatible replacement for ISLM. Our argument comprises two parts. First, on the constructive side, we show that it is possible to construct a two-market model, which we call IYLM, that is firmly based on many of the key ideas in the *GT* and contains no elements foreign to that work. To our knowledge, no model of this type has been previously developed, although the material for its construction has always been available. Had this model or some close variant of it been that which helped form the 'the trained intuition' of macroeconomists instead of ISLM, the analytical development of macroeconomic theory may well have been very different from what it has been. Second, on the negative side and consistent with long-standing post-Keynesian criticism that Hicks-Hansen ISLM is an orthodox model based on the loanable funds theory that Keynes rejected, we make a (smaller) contribution to show that it is grounded on an *income-augmented* form of this theory. This modification of traditional theory draws on and seeks to absorb the critique expressed in the only diagram in the *GT*. In combination with certain other apparently non-threatening ideas taken from Keynes, it then constitutes the backbone of Hicks-Hansen ISLM, erroneously but widely believed to capture essential features of the *GT*.

The main purpose of the article is to contribute to the development of macroeconomic theory along the lines proposed by Keynes. There is a vital need to resuscitate Keynes's contributions as an alternative to the theoretical, methodological and policy inadequacies of the bulk of today's macroeconomics, these being even more salient as a result of recent global crises. But if Keynes is to be revived adequately, it is crucial that there is sufficient and widespread understanding of both the framework and arguments of the *GT* itself and the deficiencies and distortions about his thinking in orthodox economics (ISLM, the neoclassical synthesis, new Keynesianism, new classical macroeconomics, etc). Although aware of these, post-Keynesians have, in widely rejecting ISLM, failed to realise that a *GT*-compatible alternative is available. Keynes himself implied the idea of mutually determining income and the interest rate by considering the product and money markets together (Keynes, 1971–89, 7: pp.178–9), so that the central question then becomes not *whether* to do it, but *how*—using the classical framework or that of the *GT*. For all economists sympathetic to Keynes, IYLM provides a means of clarifying some of his key contributions to macroeconomic theory in a conceptually adequate and digestible manner undistorted by orthodox reinterpretations.

Since the IYLM model has many more significant aspects than can be discussed here, we give primary attention to three things: the construction of the model from Keynes's theoretical and methodological ideas, some of its main properties and its key differences from Hicks-Hansen ISLM. Several further points deserve emphasis. First, the only key similarity between IYLM and ISLM is that they are both two-market equilibrium models; apart from that, their differences are vast. Second, as a representation of the *GT*'s central general propositions, IYLM belongs to a different family of models in opposition to and acting as a replacement for ISLM models. It is not just another ISLM model, for it incorporates the principle of effective demand, a monetary production economy and the integration of the real and monetary sectors in the short and long periods. By
contrast, ISLM has no role for the principle of effective demand, relies on Say's law and has at its core a theory applicable only to imaginary real exchange economies. Third, the number of key propositions of the GT that IYLM embraces is, despite its relatively lean nature, remarkably large; it is capable of capturing a major part of the ideas, interactions, complexities and richness that inform that work, although many of these are not treated here for length reasons. Finally, since the literature on both ISLM and Keynes is vast, our discussion concentrates on the primary sources and original models, with only few excursions into the secondary literature.

2. GT-compatibility

Although the originators of ISLM generally sought to provide interpretations of the GT, they drew heavily on classical theorising so that their interpretations became highly GT-incompatible. This obscured the nature and extent of the differences between Keynes's conceptual framework and methodology and those of orthodoxy, led to an inability to capture his main propositions and arguments adequately, generated severe distortions of his new ideas and created interpretations that defused his revolutionary aspects through reconciliations and accommodations with orthodoxy.

In claiming 'GT-compatibility' for IYLM, we mean the following.

(i) Given the simplifications of its framework, no two-market equilibrium model can capture all the key elements of the GT. However, it can seek to capture as many as possible of the essential elements, without doing violence to other elements.

(ii) All the primary ingredients from which the model is constructed derive from or are consistent with the GT and associated writings, and none are antithetical to these sources. The goal is to develop a model grounded solely on the aspects of the GT capable of being captured by the IYLM framework.

That said, the number of GT-compatible aspects captured by IYLM is remarkably large. They embrace many of the central ideas of the GT as follows.

(a) The principle of effective demand: the idea that laissez-faire monetary production economies self-adjust to any one of a continuum of long period equilibrium outcomes, rather than a unique full employment equilibrium. Whilst this principle is presented within the IYLM framework rather than Keynes's D-Z framework, the conclusions that employment and income are determined by the point of effective demand, that this point is determined by expected profit maximisation and that Say's law is invalid, remain intact.1

(b) A Marshallian state of rest concept of equilibrium, not a market-clearing concept in timeless Walrasian or other orthodox forms.

(c) The existence of two different rates of return, not just one (or variations on one) as in ISLM. These rates are the marginal efficiency of capital (mec) and the long-term nominal interest rate (Keynes, 1971–89, 7: pp.165).2

2 These rates are related to Keynes's generalisation of Wicksell's (1898/1936, ch. 8) natural rate of interest. Wicksell stressed the need for two rates of return to characterise long period equilibrium; Keynes agreed but abandoned any notion of a unique natural rate.
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(d) The mec schedule, which ranks the accumulated value of investment projects against a descending mec.  
(e) The consumption function, the marginal propensity to consume (mpc), and the multiplier that expands changes in demand components into larger demand changes.
(f) Uncertainty and expectations as crucial exogenous variables in both the product and money markets, with long-term expectation (LTE) and speculative money demand being two relevant instances.
(g) A different and broader concept of rationality within an overall framework of uncertainty. Agent rationality is maintained throughout, without recourse to irrationalities.  
(h) A framework that deals explicitly with both long-period and short-period theorising using Marshallian and not Walrasian foundations.
(i) Keynes's three independent variables: the mec, the mpc and the interest rate.  
(j) The non-neutrality of money in all periods.
(k) The non-reducibility of the system in either direction (to theoretical individualism or holism), with system behaviour dependent on complex interactions between wholes and parts that avoid fallacies of composition.
(l) Structured, not simultaneous, causality.
(m) Both flexible and sticky wages and prices.
(n) A different concept of generality based on economic considerations, not mathematical requirements.

The main omitted aspects concern Keynes's D-Z model and its more intricate properties. At the level of IYLM, these chiefly involve the more detailed treatment of aggregate supply, including the labour market. However, supply-side variables can still be included in IYLM by treating them as exogenously influencing, and interacting with, IYLM variables, similar to the discussion of money wage changes in chapter 19. Thus whilst primary causation runs from the effective demand equilibrium of the goods and money markets to the labour market, important feedbacks also occur.

The crucial differences between IYLM and ISLM emerge more fully in what follows, but both their number and nature underscore the gulf between the conceptual frameworks and methodologies underpinning the two models. Although the diagrams and equations look similar in some respects, these formal similarities are superficial and should not distract attention from the huge differences between foundations, causal mechanisms and conclusions. It is the economics incorporated into the diagrams and equations that matters, not the mathematics.

3. Construction of the IYLM model

The model is constructed in income-return space, with income (Y) on the horizontal axis, and two rates of return on the vertical axis: the marginal efficiency of capital (mec)

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3 Keynes's mec schedule is effectively a reworking of Fisher's (1930, ch. 7) concept of investment opportunities, rate of return over cost, and the separation of this rate of return from the interest rate.

4 On the centrality of uncertainty to Keynes's thought in general, its roles in influencing investment, liquidity preference and agent rationality under uncertainty, see O'Donnell (1989).
and the long-term rate of interest \( (i_L) \). Income is measured in real terms, and the two rates in nominal terms, which treatment is viewed as consistent with the GT.\(^5\)

3.1 Derivation of the IY Curve

In the IYLM model, the construction and properties of the IY curve diverge fundamentally from those of the IS curve. The derivation starts with Keynes's theory of investment and its key component, the mec schedule. All new capital assets whose purchases are under consideration by firms are ranked in descending order of their mec, this being defined 'in terms of the expectation of yield and the current supply price of the capital-asset' (Keynes, 1971–89, 7: p.136). Assuming a sufficiently large number of projects, the diagram can be approximated by a smooth downwards sloping curve as in Figure 1, the general equation to which is \( I = I (\text{mec}) \) with \( I' < 0 \), where \( I \) is any possible level of investment.

Five properties of this diagram deserve attention. First, the shape of the curve is a property of the economy in its given state, including such factors as profit opportunities, technology, prices, wages and the state of LTE (or confidence).\(^6\) Second, by construction, the mec varies monotonically down the curve from a maximum on the left to a minimum on the right. Third, whilst LTE is a vital behavioural determinant, the schedule is not a price-theoretic behavioural relation within an orthodox 'price mechanism', and its slope is not an 'interest elasticity'. Fourth, the mec is calculated without reference to interest costs, so that the schedule is independent of the interest rate.\(^7\) Fifth, the mec schedule is not conflated with an investment demand curve, this being a very misleading confusion due to Keynes's own use of terms.\(^8\)

![mec](image)

**Fig. 1. Marginal efficiency of capital schedule**

\(^5\) See Keynes's discussion of units (Keynes, 1971–89, 7: pp. 41–3), the presentation of the mec in nominal terms (Keynes, 1971–89, 7: pp. 136; 7, pp. 141–3), the use of employment on the horizontal axis of the D-Z model and its link to real income (Keynes, 1971–89, 7: pp. 24–30), and the use of employment and real national income as the two dependent variable of the GT (Keynes, 1971–89, 7: p. 245). Real income may be represented using a wage unit or price index, with Keynes preferring the former.

\(^6\) In the GT, the state of LTE and the state of confidence are synonyms; see O'Donnell (2004, pp. 207–11).

\(^7\) Interest costs are not deducted from the series of expected returns because the GT's equilibrating mechanism compares the mec to the alternative return on funds which is the interest rate.

\(^8\) In the GT, the mec schedule is also called the 'investment demand schedule' (Keynes, 1971–89, 7: p. 136). Given that the latter typically means an investment–interest rate relationship, these are clearly *not* the same thing, and it is vital to distinguish them. Better synonyms for the mec schedule are the investment opportunities, or possibilities, curve. Unfortunately, Keynes's language here and later (Keynes, 1971–89, 7: pp. 180–1) is capable of both misleading the sympathetic and being exploited by the orthodox, including the originators of ISLM. Harrod (1937, p. 76), Hicks (1937, p. 153) and Hansen (1949, p. 57, 1953, pp. 117–20) all explicitly identify the mec schedule with investment demand, or the demand for loanable funds, in the above price-theoretic sense. On Keynes's habit of occasionally deploying imprecise language, see O'Donnell (2004).
The multiplier enters via the aggregate consumption function (again not derived from orthodox choice-theoretic analysis), and the equilibrium condition for the product market as a whole. The equilibrium condition is \( Y = C + I \) in the two sector case, and the multiplier is \( k = 1/(1 - mpc) \), where \( mpc \) is the marginal propensity to consume. For the general four-sector case, these equations can be expanded.\(^9\)

The derivation of the IY curve is then based on the following equations.

\[
I = I(mec)
\]

\[
C = C(Y) \quad \text{with} \quad C'(Y) = mpc, \quad \text{and} \quad 0 < mpc < 1.
\]

\[
Y = C + I \quad \text{(equilibrium condition)}
\]

\[
= C(Y) + I(mec).
\]

The general equation for the IY curve then becomes

\[
Y = Y(mec) \quad \text{with} \quad Y' < 0.
\]

Figure 2 shows the level of income, \( Y \), corresponding to any given value of the marginal efficiency of capital, \( mec \).

Note the following features of the IY curve:

(i) Along the curve, the \( mec \) falls from left to right, falling \( mec \) being associated with rising income because the implementation of more investment opportunities leads to higher \( Y \).

(ii) The IY curve is determined by the state of the economy, not by price-theoretic analysis of agent behaviour. Its length, position and slope, being determined by the \( mec \) schedule and the consumption function, can change whenever these properties of the economy (or their underlying determinants) change.

\[
\text{Fig. 2. The IY curve}
\]

\(^9\) As Keynes notes (Keynes, 1971-89, 7: pp. 122-5), the multiplier can be considered in either \textit{pari passu} or lagged terms.
(iii) Two of the three independent causal variables of the GT—the mec schedule, and the propensity to consume (or spend)—underpin the curve.

(iv) Investment and saving are equal at all points ($I = S$). However, this is a consequence of equilibrium, not a cause of it as in ISLM. Here, $I$ and $C$ determine $Y$, with $S$ as a residual necessarily equal to $I$.

(v) The curve makes no reference to the rate of interest and is not derived from any prior interest rate relationships. The interest rate (yet to be introduced) does influence $I$, $Y$ and $S$ endogenously, but does so through other causal relations.

In sum, the IY curve represents aggregate equilibrium in the product market based on the properties of the economy—the mec schedule, the consumption function and the multiplier. It is not derived from any elements antithetical to the GT, as with ISLM.\(^\text{10}\)

### 3.2 Derivation of the LM curve

In contrast to the IY curve, the LM curve is derived in largely the same manner as in ISLM, its two foundations being Keynes’s theory of liquidity preference which determines money demand ($L$), and the assumed monetary system which determines the money supply ($M$).\(^\text{11}\)

Two clarifications are relevant here. First, the interaction between liquidity preference and the monetary system generates ‘the’ money rate of interest. This rate refers to the long-term rate relevant to investment decisions rather than short-term rates for other purposes, and plays a crucial role in determining the point of effective demand. Second, since Keynes’s approach is applicable to a wide spectrum of monetary systems ranging from the gold standard to modern real-time gross settlement systems, it applies regardless of the particular slope of the LM curve. Whatever the monetary system, the focus is always on the relevant long-term rate generated by that system.

In simple algebraic terms, total money demand based on Keynes’s behavioural relationships is a positive function of nominal income and a negative function of the (long-term) interest rate. The general equation may be written as $L = L(PY, i^*),$ with $Y^* > 0$ and $i^* < 0.$\(^\text{12}\)

Equilibrium requires equality between money demand and money supply. Since the GT is capable of dealing with any sort of monetary system, Figure 3 illustrates two examples corresponding to the evolution of the monetary system since the 1920s.\(^\text{13}\)

Given an often assumed exogenous money supply (whether determined by the gold standard or the central bank), the equation $L = M$ delivers an upwards sloping curve as shown in Figure 3(a). By contrast, Figure 3(b) illustrates the case of modern systems in which the central bank controls the cash rate and/or attempts to manage the long rate. Here the money supply is endogenous and accommodates to the prevailing demand for money at the long-term rate. The LM curve is now a horizontal line through that rate, this being determined by the controlled rate and private sector expectations.

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\(^{10}\) The name IS comes from the loanable funds equilibrium condition that simultaneously determines $I$ and $S$, namely, $I = S$ (Hansen, 1953, p. 144n1). Its replacement is called IY because Keynes’s fundamental causal relation runs from $I$ to $Y$.

\(^{11}\) We rely here on Keynes’s simple analysis in the GT that treats liquidity preference as equivalent to money demand as distinct from Wray’s (1992) expanded model, which distinguishes them.

\(^{12}\) The idea that the interest rate is a ‘conventional’ variable (Keynes, 1971–89, 7: pp. 201–4) can also be handled within the IYLM framework, but this is not developed here.

\(^{13}\) Meade (1937, pp. 100–101) also discusses two monetary systems or ‘banking policies’.
concerning the term structure of interest rates. In such systems, it is money demand that determines the money supply required for equilibrium at the given interest rate.\footnote{The \textit{LM} curve is sometimes shown as horizontal at the short rate of interest but, as many have noted besides Keynes, the long rate is the relevant one for investment decisions.}

## 3.3 The Overall Model

The equations for the two market model are summarised below.

<table>
<thead>
<tr>
<th>Product market</th>
<th>Money market</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I = \text{I (mec)}$</td>
<td>$L = L (PY, i_e)$\footnote{For $Y$ measured in wage units, $PY$ replaces $PY$ where $W$ is the money wage.}</td>
</tr>
<tr>
<td>$C = C(Y)$ with $0 &lt; C'(Y) &lt; 1$</td>
<td>$L = M$</td>
</tr>
<tr>
<td>$Y = C + I$</td>
<td>Exogenous money supply</td>
</tr>
<tr>
<td>$Y = Y (\text{mec})$.</td>
<td>$Y = Y (i_e), 0 &lt; Y' &lt; \infty$.</td>
</tr>
</tbody>
</table>

The overall equilibrium condition for simultaneous equilibrium in both markets is $i_e = \text{mec}$.\footnote{Notably, Meade (1937) reunified the \textit{mec-$i_e$} distinction, used their equality as his equilibrium condition but did not relate his model to the principle of effective demand.} As shown in Figure 4 for the two cases, macroeconomic equilibrium occurs at the intersection, E, the income-rate combination generating product market equilibrium ($Y^*, \text{mec}$) equalling the income-rate combination generating money market equilibrium ($Y^*, i_e$).

The model captures Keynes's key insight that rational, expected profit-maximising firms continue to invest until the \textit{mec} reaches the level of the long-term nominal interest rate (Keynes, 1971–89, 7: p. 184). In competitive equilibrium, $i_e$ sets the floor to which the \textit{mec} falls. From this point on, no more projects exist with positive expected profits so that any further investment only involves expected losses.\footnote{Our use of this central mechanism in the \textit{GT} is far from new; see, for example, Kregel (1988), Rogers (1989) and Wray (1992).}
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Fig. 4. Effective demand equilibrium under different monetary systems

Point E represents equilibrium in a Marshallian state of rest. It is a long-period competitive equilibrium occurring after all endogenous changes have fully worked themselves out; that is, after all the complex interactions between the determinants underlying the curves (including self-interest, competition, LTE, the mec, prices, wages and rationality under uncertainty) are exhausted. E is also the point of effective demand, the level of Y up to which it is expected to be profitable to expand supply but beyond which expected losses occur.18

The model’s equilibrating forces are based on the proposition that rational firms pursue expected profits and flee expected losses. Real income, therefore, can neither be less than nor greater than Y* because such outcomes mean firms are behaving irrationally. Any Y < Y* means mec > i_n, so that rational firms will increase investment until mec = i_n, so causing income to rise to Y*. At this point, no opportunities expected to be profitable are left unexploited. Y > Y* cannot eventuate because mec < i_n and rational firms will not be tempted by expected losses. Say’s law is not and cannot be a property of the GT or IYLM, since any increase in supply beyond Y* will not occur and hence will not create its own demand. There are also no automatic tendencies to full employment, for competition and self-interest drive the economy to long-period equilibria at the point of effective demand, with no forces to ensure this coincides with full employment.19

In this context, the principle of effective demand in monetary production economies may be stated as follows. Real income (and employment) are given by the point of effective demand, this point being determined by expected profit maximisation in which the marginal efficiency of capital adjusts to the long-term nominal interest rate, in the period under consideration. Clearly, limits are set on the profitable expansion of output independently of full employment, and inextricable inter-connections occur between the real and monetary sectors. In Figure 4, Y* depends solely on the relative positions of the IY and LM curves. Given any IY curve, the general equilibrium of the system depends on the position of the LM curve with the consequence that

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18 The model can also easily deal with short-period equilibria and the business cycle.
19 As Keynes also observed, the system contains no mechanism whereby price and wage flexibility will automatically result in E settling at Y*.
macroeconomic equilibrium can occur at any point in a spectrum or continuum ranging from unemployment equilibria to inflationary equilibria.20

The simple framework of the model and its small number of equilibrium-generating determinants may be summarised as follows: the LTE-influenced mec schedule, the consumption function and the multiplier produce the IY curve; liquidity preference and the monetary system generate the LM curve; and all agents behave rationally under uncertainty (irreducible and reducible). In Keynes's often truncated statement, equilibrium depends on the three independent variables of the mec schedule, the consumption function and the interest rate (Keynes, 1971–89, 7: pp. 183–4, 245, 249).21

Having demonstrated the existence of IYLM as a two-market GT-compatible model in the sense previously outlined, we now turn to elucidating the key orthodox foundation of Hicks-Hansen ISLM, the income-augmented loanable funds theory.

4. Hicks and ISLM

The underlying strategy of Hicks (1937) was to put Keynes in his place—not in the pulpit as a revolutioniser of economics, but as a member of the congregation whose contribution adds to the mainstream despite Keynes’s own beliefs. This is done by identifying Keynes as another in a series of economists (including Marshall, Wicksell and Lavington) whose thought has improved, by qualification and extension, the corpus of orthodox theorising. Indeed, viewing the GT as another step in the elaboration of orthodoxy implies that Hicks’s own ‘generalisation’ of the GT is a further advance on Keynes’s work in this evolution.

Hicks implements his generalisation by making ISLM equations entirely symmetrical in $Y$ and $i$, thereby removing the ‘simplifications’ (or omissions) that Keynes is said to have made. Hicks’s model is thus based on $S = S(Y, i)$, $I = I(Y, i)$ and $M = L(Y, i)$. The generalisation of the first two equations to resemble the third, however, turns out only to be mathematically grounded and to occur within a framework of thought alien to that of the GT. This is evident from the (brief and unconvincing) reasons given for the expansions.

Hicks’s first reason is that ‘mathematical elegance would suggest that we ought to have’ $Y$ and $i$ in all three equations. Elegance here is grounded in symmetry, so that symmetry becomes an aesthetic value imposed on the model independent of any causal reasoning.22 Next, in relation to saving, Hicks adopts the orthodox loanable funds view that $i$ is a direct and well-defined determinant of $S$, to which $Y$ is added as another determinant. His generalised $S$ equation is actually identical to the $S$ equation he employs in his ‘classical’ model. Keynes’s removal of $i$ from the $S$ equation is regarded as a simplification with which any general approach should dispense. Hence we ‘can

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20 In the IYLM model, inflationary equilibria have to be interpreted conceptually.

21 Whilst sharing the same ultimate objective, and agreeing with many of the points in Hayes (2007, 2010), our respective analyses relate to different contexts: the D-Z model in his case and IYLM in ours. We argue that both models are necessary to understanding the GT, but each has advantages and disadvantages. The advantages of IYLM include its clear demonstrations of the centrality of the monetary sector, the role of the interest rate in determining the point of effective demand, and money–real sector integration as against money neutrality.

22 General equilibrium theory exemplifies a similar dominance of mathematical elegance over economic reasoning.
reinsert the missing $r$ in the $S$ equation, thereby allowing for 'any possible effect of the rate of interest upon saving' (Hicks, 1937, p. 156; emphases added). This view ignores and distorts Keynes’s thought in two respects. On the one hand, it ignores his grounds for omitting $i$ as a univocal determinant of $S$; namely, that whilst $i$ may influence $S$, its overall influence is unclear and ambiguous due to a mixture of conflicting tendencies. On the other hand, $i$ may influence $S$ indirectly, and in an opposite direction to that of orthodoxy—rising $i$ can lead to falling $I$ and $Y$ and therefore falling $S$, ceteris paribus. Thus, contrary to Hicks, Keynes can justifiably omit $i$ and still maintain that it has significant indirect effects on $S$ via its interactions with intermediate variables.23

Finally, $Y$ is inserted into the $I$ equation on the following argument. Any increase in employment taken to be permanent leads to an increase in income, which leads to an increase in consumption demand, which increases the mec and hence investment demand. Thus $Y$ becomes one of the determinants of $I$. This argument is less than convincing and betrays orthodox underpinnings. It assumes unemployed labour but fully employed capital equipment (for $I$ will only increase if there is no idle equipment in the short run) and it assumes that an increase in supply (due to the unexplained increase in employment) will generate demand (increased $C$ and $I$), this being the Say’s law view rejected by the $GT$.

Although Hicks refers to Keynes’s terminology from time to time, his treatment of these concepts betrays the deeply orthodox underpinnings of his thought, especially his preoccupation, for price-theoretic reasons, with the interest rate as the variable of greatest relevance.24 According to Hicks, Keynes’s differences from orthodoxy boil down to two issues. First, Keynes’s dropping of $i$ from the $S$ equation means that (i) this equation ‘becomes the multiplier equation which performs such queer tricks’, and (ii) this form of the $S$ equation is ‘a mere simplification, and ultimately insignificant’ (with the implication that the multiplier and its queer operations have similar insignificance). Note also that the mec schedule is conflated with the investment demand schedule, so that any distinction between the mec and $i$ also disappears. Second, Keynes’s interest rate analysis becomes the key to understanding his real contribution because it inserts and emphasises $i$ in the demand for money. For Hicks, it ‘is the liquidity preference doctrine which is vital’.

Almost all the core components of the $GT$ become irrelevant in Hicks’s hands, with only one (liquidity preference) being taken as important and then only in a particular way. Hicks’s pre-occupation is with the overall shape of the LM curve and hence variations in its interest ‘elasticity’. The real contribution of the $GT$ (‘the most important thing in Mr Keynes’ book’) becomes the possibility that all LM curves have, at low levels of income, a flat region at a minimum rate of interest (the liquidity trap). The horizontal section at the left end of the LM curve and its basis in liquidity preference is then viewed as Keynes’s only improvement to orthodox theorising. Hence Hicks’s conclusion: despite its grand revolutionary intentions, the $GT$ only adds to our understanding of a very special case, ‘the Economics of Depression’.

The unstated corollary is that Keynes was hugely mistaken about the nature and significance of his theory. First, the liquidity trap, which occupies a very minor place in his thought as a possibility that has not yet happened to his knowledge (Keynes,

23 Hicks’s orthodoxy is also revealed by his (implicit) reliance on theoretical individualism rather than system-based aspects of the $GT$.

24 The rate of interest is also very important in IYLM, but for very different reasons.
As "the most prominent Keynesian in the United States" (Seymour Harris in Hansen, 1953, p. xi), Hansen was ideally situated to be the driving force behind the institutionalisation of Keynesian ideas in the post-war period, primarily via his *Monetary Theory and Fiscal Policy* (1949) and *A Guide to Keynes* (1953).

In both works, his treatment of the GT is based on three elements. The first is a 'heavy reliance ... upon the brilliant work' of Hicks (1937); the second a focus on money, particularly its price (the interest rate); and the third a desire to conjoin the insights of orthodoxy and Keynes. The result is a discussion with two contrasting aspects. The first conveys the impression that Hansen is sympathetic to Keynes's overall framework, whilst the second reframes the GT in largely orthodox terms. Although many of Keynes's ideas are accurately explained (but not always), their theoretical roles in Hansen's analysis are dominated by orthodoxy and hence often at odds with their roles in the GT. As with Hicks, Keynes is not viewed as the creator of a revolutionary general theory, but simply as the inventor of important new ideas that improve mainstream analysis.

Hansen (1949, p. 72, 1953, p. 119) introduces the mec schedule but immediately conflates it with the orthodox investment demand schedule. Attention is then paid to its slope, the interest 'elasticity' of investment, this reflecting its origins as a price-quantity variable in the loanable funds framework, rather than its origins as a property of the economy. An even more striking move away from the GT occurs when Keynes's mec and consumption function are identified with the pre-Keynesian concepts of productivity and thrift. Hansen summarises his ISLM analysis as follows.

In this chapter ... [the analysis shows that income and the rate of interest are mutually determined by (1) the marginal efficiency schedule (productivity), (2) the consumption function (the level of the curve varies with the degree of thriftiness), (3) the liquidity preference schedule, and (4) the quantity of money. It is clear that productivity and thrift have very much to do with the rate of interest. (Hansen, 1949, p. 81, also pp. 71–2)

A footnote then emphasises the decisive turn towards orthodoxy: 'Considering the Keynesian system as a whole without concentrating too narrowly on certain passages in the *General Theory*, there is much more agreement between Robertson and Keynes than appears on the surface'. Although Keynes relocated himself outside the

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25 According to Hicks (1980–81, pp. 139, 141–2), he gradually became 'dissatisfied' with his ISLM apparatus (but without fully disowning it). He also noted that his 1937 framework was not that of the GT (as he understood it): 'ISLM was in fact a translation of Keynes's nonflexprice model into my terms', these terms being explicitly Walrasian. Not surprisingly, the outcome bore little relationship to the GT.
productivity-thrift framework in an alternative mecc-mpc framework, Hansen (like Hicks) pushed him firmly back within the orthodox price-theoretic enclosure.26 Hansen's 'classicalisation' 27 of the GT continued in his Guide to Keynes, where Keynes is portrayed as improving earlier interest rate theory by providing the element missing from orthodoxy, namely, liquidity preference. 'The neoclassical (loanable-fund) formulation and the Keynesian formulation, taken together, do supply us with an adequate theory of the rate of interest' (Hansen, 1953, p. 143; emphasis in original). In other words, the loanable funds theory (via Pigou and Robertson) provides the real (or natural) rate of interest used in the Hicksian IS curve, whilst Keynes's liquidity preference theory provides the money rate of interest and the LM curve. Together they (apparently) remove the indeterminacy in orthodox theory outlined in chapter 14 of the GT. Keynes's contribution was thus to supply the missing second equation in \( Y \) and \( i \) that eliminated the problem. But whilst Keynes saw one 'half of the story', he was 'confused' about the other and so never provided an overall solution. According to Hansen, this left the door open for Hicks to bring all the elements together to generate the required solution 'in a method of presentation which makes it impossible to forget the whole picture, namely, that productivity, thrift, liquidity preference, and the money supply are all necessary elements in a comprehensive and determinate interest theory' (Hansen, 1953, pp. 147–8; emphasis added).

Hansen is to be read with awareness of his underlying position and strategy, independently of the oft-conveyed impression of sympathy with the GT. Sympathy there undoubted was, but in theoretical terms it was superficial and had tight limits that annulled deeper analytical acceptance. Hansen never viewed Keynes as a revolutionary who re-oriented economics, but as just another important figure who provided necessary ingredients to improve the mainstream, ingredients that others (Hicks) deployed for even greater improvement. This synthesising motivation (present in many interpreters in the 1930s, promulgated by Samuelson and others in the 1940s, and still very much alive today) undermines any ability to present the GT in Keynes's own terms. As with other synthesisers, Hansen's writings ultimately become a most unreliable guide to Keynes.

6. Income-augmented loanable funds theory

The handling of Keynes's charge of indeterminacy in orthodox interest rate theory is a central element in the development of ISLM. The IS curve is derived from loanable funds theory, not in its traditional form, but in an income-augmented form that allows the \( S \) and \( I \) curves to be influenced by income variations in the short run. This is evident in Hicks's general equations (\( Y \) is added to the \( I \) and \( S \) equations) and in his CCSS diagram used as a foundation for his IS curve (Hicks, 1937, pp. 156–7). The same idea pervades Hansen's similar diagram and discussion where IS is explicitly derived from the 'neoclassical (loanable-fund) formulation' to which is added a family of income-dependent \( i-S \) curves (Hansen, 1953, pp. 143–4).

This turn towards income-dependence is related to the only diagram in the GT which emerged from the 1935 Harrod-Keynes correspondence on interest rate theory

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26 The same continuity theme is expressed in Hansen (1948, p. 133): it would be 'a mistake...to make too sharp a dividing line between pre-Keynesian and Keynesian economics'.

27 Or 'ISLMisation', to borrow Young's (1987, p. 94) phrase.
(Keynes, 1971–89, 13: pp. 530–61). This is both ironic and tragic. Ironic because Keynes saw the diagram as a powerful critique of classical interest theory in its own terms, but Harrod, Hicks and Hansen, ignoring the full set of his objections and focusing solely on this particular difficulty, absorbed it as a short-run improvement of classical theory. Tragic because, as Keynes indicated to Harrod, viewing orthodox theory as repairable can only mean that key elements in the GT have been misunderstood.

The income-augmented version of loanable funds theory may be depicted using Figure 5, which shows two downwards sloping investment curves, \( I_1 \) and \( I_2 \), and a series of upwards sloping, income-dependent, saving curves, \( S(Y) \). The income-dependence of investment is omitted for simplicity.

Keynes’s diagrammatic critique may be outlined as follows. According to traditional loanable funds theory, the intersection of any pair of \( S \) and \( I \) curves yields a determinate interest rate. The intersection of \( I_1 \) and \( S(Y_{E1}) \) yields the interest rate, \( i_{E1} \), for example. This can only be true if \( I_1 \) and \( Y_{E1} \) are consistent with each other, which assumption we make for present purposes. If the \( I \) curve now shifts to \( I_2 \) without any shift in the \( S \) curve, a higher rate of interest will emerge at \( F \); this time on the assumption that \( I_2 \) and \( Y_{E2} \) are consistent. But in general this cannot be the case, since the increase in \( I \) will increase \( Y \). Keynes’s charge of indeterminacy arises because the two curves are not independent. Any shift in the \( I \) curve changes \( Y \) and results in a new \( S \) curve, and since classical theory has no way of determining the new \( Y \) or \( S \) curves, it cannot specify the new interest rate. His opponents, however, absorbed this income dependence without abandoning their theory as follows.

Suppose the market is in equilibrium at \( E_1 \), the intersection of \( I_1 \) and \( S(Y_{E1}) \), with internal consistency between \( I_{E1} \) and \( Y_{E1} \). Then the \( I_1 \) curve exogenously shifts to \( I_2 \). If income is unchanged, \( I \) will rise to \( I_{E2} \), some of the exogenous increase in \( I \) being crowded out by the interest rate rise. But the increase in \( I \) to \( I_{E2} \) will lead to higher

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Fig. 5. Income-augmented loanable funds theory

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28 The origins of this diagram are explained in O'Donnell (1999) and Besomi (2000).
29 Harrod's letter of 30 September 1935 (Keynes, 1971–89, 13: p. 553) provides a useful summary of the structured, non-simultaneous causality of Keynes's argument, subject to the last word being changed from 'save' to 'consume'. But Harrod (1937) reveals Harrod's own position – he reinterprets the above structure using orthodox concepts and simultaneous equations, strongly defends the fundamentals of orthodox theory, and concludes, like Hicks, that Keynes only produced re-adjustments of orthodox, not a revolution.
30 It is not difficult to include it, the cost being a more complicated diagram with both \( I \) and \( S \) curves having \( Y \) as a shift variable.
The IYLM model

income, say $Y_2$, which causes a rightswards shift in the $S$ curve to $S(Y_2)$. This causes a second rise in $I$ to $I^{29}$ due to the endogenous fall in $i$. However, if $I_0$ and $Y_2$ are still inconsistent, ongoing repetitive adjustments involving $I$, $Y$, $S$ and $i$ occur, ceasing only when internal consistency obtains between all four variables. Suppose this occurs at $E_{29}$, the new equilibrium point, where $I_{29}, Y_{29}, S(Y_{29})$ and $i_{29}$ co-exist in stable relationships. Two related matters then emerge (as they did at the time)—the stability/convergence of the adjustment process, and the importance of income and interest ‘elasticities’.31

In the long run, however, classical theory resumes its sway—$Y_E$ is exogenously supply-side determined at $Y^e$, the $S$ curve is then fixed in position, and shifts in the IS curve only produce determinate changes in $i$ and in the composition of income between $I$ and $C$, without altering $Y$. This disappearance of income-augmentation is consistent with the orthodox claim that the $GT$ is not a general theory, just a special (short-run) case of orthodox theory.32

ISLM thus becomes the combination of two different theories of the interest rate. Modified loanable funds theory generates an income-dependent ‘real’ rate and an IS curve, whilst Keynes’s liquidity preference theory generates an income-dependent nominal rate and the LM curve. Equilibrium occurs when the two rates of interest are equal, this also determining income. But there is no analytical attempt to reconcile the two different rates, the issue being obscured by ambiguous and unexplained wording or silently eliminated by implicit assumptions.

7. Conclusion

Less than a year after its publication, the $GT$ was derailed and transformed into something it was not. In its orthodox, re-conceptualised, ISLM form, it became a primary vehicle for developing and applying Keynesian macroeconomics the world over. However, the cause of this distortion lay not in the idea of developing a reduced model of the $GT$ as two interacting markets accompanied by shift parameters, but in the use of orthodox price-theoretic technology that re-engineered and erased its genuine innovations.33

There is a vital need to resuscitate the actual macroeconomic theory of the $GT$. Simple multi-market models can help in this resuscitation whilst at the same time avoiding ISLM disfigurement. We have shown that the IYLM model does this via $GT$-compatibility. Economists sympathetic to Keynes can thus be comfortable with IYLM, whilst simultaneously rejecting ISLM as a caricature and distortion. The task is one of ensuring that the right type of two-market model is used in understanding core components of the $GT$ and the behaviour of monetary production economies. This will be one informed by the ideas Keynes stressed, including the principle of effective demand, the distinction between the mec and $e_m$, the multiplier, the integration of real and monetary factors, structured causality and inescapable uncertainty.

31 Stability became a major discussion point at the 1936 Oxford meeting when ISLM-type constructions were first presented (Young, 1987, pp. 46–50).
32 Harrod, who played key roles in both the genesis of the $GT$ diagram and ISLM-type models, unwaveringly argued that classical theory could absorb Keynes’s critique through modification and was not irremediably damaged by it. For this (and deeper) reasons, his 1937 paper is yet another travesty of the $GT$.
33 As Laidler (1999) correctly observed, very strong continuity exists between classical economics and ‘Keynesian’ economics after the $GT$, especially in ISLM form. Had Keynesian economics proceeded along IYLM or D-Z lines, such strong continuity would not have emerged.
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