

Chapter 2

Keynes, the “Classics,” and the “New Classics”: A Simple Presentation of Basic Differences

2.1 Introduction

This chapter reformulates *the static foundations* of “Keynesian macrodynamics” and *their proper interpretation* in an economically consistent and complete way. It is one of its aims here to lay the ground for a critique of conventional representations of “Keynesian dynamics” by indicating how certain deficiencies of these dynamic models can be attributed to a wrong understanding of their static components, that is, of the *Keynesian concept of temporary equilibrium* and the adjustment processes that are compatible with it. Its central purpose thus is to provide a clear picture (model) of the basic steps and components of Keynes’ revolution of macroeconomic thinking.

This will be done by taking as starting point the conventional synthetic model of “Classical Macroeconomics” and by providing a description of it as consistent and complete as possible, in particular with regard to its representation of Say’s Law [the central point in Keynes’ attack on the “Classics”!]. In our view, this Law has not yet been given a sufficiently exact expression in this type of model, which also implies that an exact critique à la Keynes of the defects of this Law has generally not been provided in the literature so far.

Completing the conventional “Classical Macroeconomic model” and showing how a Keynes’ type of revolution can be incorporated into it by means of basically *only one change* in its components is the objective of the first part of our following considerations. Yet, such a project would not be of too great importance if it would only clarify the starting chapter of a correct presentation of the theory of employment, interest, and money, that is, if it only served as a didactic introduction into the first stage of the development toward today’s macroeconomics. In the second part of this chapter we therefore in addition attempt to exemplify that important macroeconomic textbook models of temporary equilibrium can be reformulated and extended in such a way that they will be recognized as fairly simple modernization of the above basic representation of Classical Macroeconomics. These models to some extent improve the consistency of the Classical approach, yet, as we shall see,

also deprive it of important applications and conclusions, which were available in the original Classical setup of this approach. Modifying the “Classics” in this way to obtain a prototype model of the “New Classical economics” is important for an evaluation of the advances of this new approach to macrostatics and -dynamics. *And furthermore*, as we shall see, the obtained example of a New Classical model allows – just as its Classical predecessor – a revolution à la Keynes and consequently only provides us with a more precise, but eventually still pre-Keynesian type of analysis.

Some Observations

To start our investigations let us first – in the light of our above remarks – exemplify some basic flaws in the application and interpretation of the macroeconomic theory of aggregate demand and supply. The conventional (textbook) analysis of the aggregate demand and supply schedules Y^d, Y^s is normally based on a diagram as shown in Fig. 2.1.

The aggregate demand curve $Y^d(p)$ of this diagram is generally viewed as being derived from money *and goods market equilibrium*, that is, from the conventional IS-LM model, by varying prices p parametrically. It consequently represents more than just aggregate demand $C + I$ and will therefore be called the effective demand schedule $Y^d(p)$ in the following. The so-called aggregate supply curve $Y^s(p)$ is generally viewed, on the other hand, to determine for a given money wage that level of planned output (where with regard to given prices p) profits are maximized by price-taking firms. The economic background of this relationship will be reformulated in the following.¹

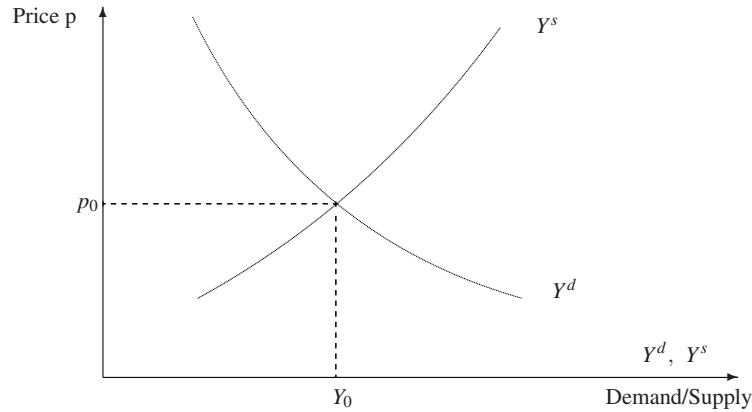


Fig. 2.1 Aggregate “demand” and “supply”

¹ By making use of the argument that $p(Y^s)$ must be interpreted to represent the supply price of producers when they expect to sell Y^s , which inverts the causality normally associated with the (p, Y^s) -schedule, cf. also the following.

The discrepancy between aggregate demand and supply is then often used to show the direction into which the price level will change – by making use of the standard *microeconomic* formulation of the so-called *law of demand and supply* [cf. the Fig. 2.1 and, e.g., Barro (1990, Chap. 20)]. This, however, is not a convincing starting-point for a proper understanding (and explanation) of the interaction of Keynesian “*aggregate*” demand and supply schedules. We cannot simply confront the goods-market equilibrium point $Y^d(p)$ with a level of planned output Y^s that is different from it by referring to price-taking and profit-maximizing firms. A different context consequently has to be found to interpret and explain Fig. 2.1. Disequilibrium in this diagram, as we shall see, has to be analyzed in the vertical or price direction, not in the horizontal or quantity direction. This means that, for given prices p and the corresponding situation of an IS-LM equilibrium $Y^d(p)$, it should be viewed as showing the level of competitive (supply) prices, which may be above or below the actual one. Price (setting) adjustment on the basis of this discrepancy may (or may not) move actual prices toward competitive ones, yet this happens – by definition – without any disequilibrium in the market for goods. This is the correct interpretation of a possible disequilibrium in Fig. 2.1,² which thus describes correct demand anticipations of producers and a disequilibrium between potential supply and actual market prices.

The consideration of equilibrium in the market for goods is in general based on a consumption function of the type $C(Y^s, \dots)$, where planned consumption expenditures have been assumed to depend on planned *output* Y^s .³ Hence, though a

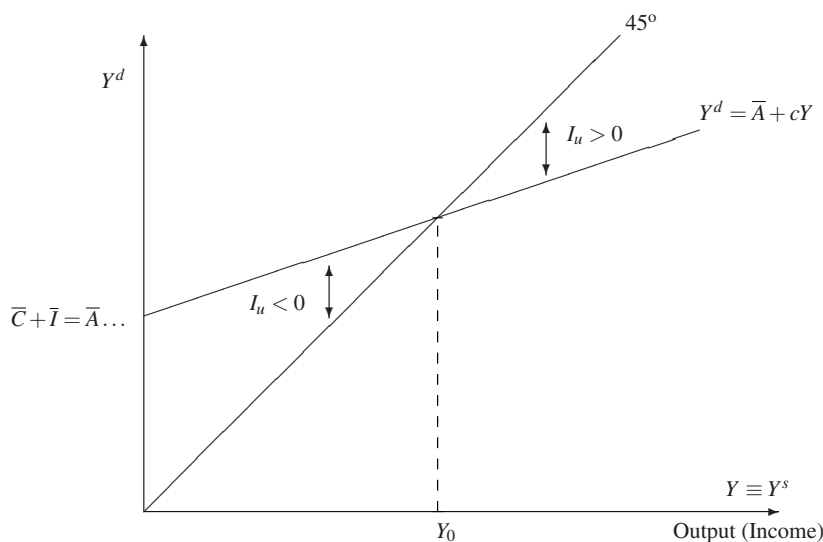


Fig. 2.2 The dynamic multiplier process

² See Chaps. 6 and 7 for an application of this interpretation of disequilibrium price movements.

³ This is often concealed by employing the ambiguous symbol Y instead of Y^s , but is revealed when unintended inventories are used to characterize disequilibrium situations as in the Fig. 2.2.

difference in Y^d and Y^s is allowed for in the literature (and used for the purposes of the above wrong type of disequilibrium analysis), the same seems not to be true for the treatment of planned income Y and planned output Y^s .

This fact is exemplified by the depicted misinterpretation of the standard 45°-cross-diagram shown in Fig. 2.2, which is quite common in the literature [see Dornbusch and Fischer (1987, Chap. 3) for an example].⁴ The diagram not only shows the equilibrium point of effective demand Y_0 , but also interprets situations of disequilibrium by means of I_u (= unintended investment). It shows in addition how adjustment toward equilibrium is assumed to take place – via the information provided by the unintended investment. Yet, situations which differ from the equilibrium Y_0 and the directions of adjustment which are derived from them cannot be interpreted in an economically meaningful way in the light of the above understanding of the symbol Y . This follows, for example, in case of $I_u > 0$, from the simple fact that planned “income” Y is then greater than money income actually received: $Y^d(Y)$, that is, producers suffer from “income illusion” in that they count as income the value of goods I_u , the future of which is fairly uncertain. And indeed, Dornbusch and Fischer (as well as many other textbooks) describe the adjustment toward equilibrium Y_0 in a way which cannot explain how the income that has gone into (accumulated) unintended inventories will be realized in the end. Such an interpretation of the core model of the theory of aggregate and effective demand is therefore very misleading and does not provide us with a firm background for an understanding of the Keynesian notion of effective demand – and its applications in economic dynamics.⁵

The above two examples show that the situation surrounding the concept of effective demand $Y_0 (= Y_0^d = Y^d(p_0))$ is often at least not well represented (or even understood) [see Sargent (1987, Chap. 2) for a further example into this direction]. In many applications of the above IS analysis this may cause no harm, since a correct representation of the assumptions underlying it is not needed in such cases. Yet, there exist also examples – in particular models with unintended inventories, but also dynamic IS-LM equilibrium models – where wrong or inconsistent extensions of this temporary equilibrium concept are proposed and studied.

To overcome such problems, a reconsideration of Keynes’ central critique of the Classical theory, that is, his way of rejecting Say’s Law, will be of great use. Hence, we shall first study the elements by which Say’s Law can be given explicit and nontrivial expression in an elaborate version of the macroeconomic model of the Classics. This will be done in Sect. 2.2 by an adequate completion of Ackley’s (1969) extensive, but still incomplete description of Classical Macroeconomics and Say’s Law. Section 2.3 then shows how the “Classical structure” of Ackley’s model can be completely overthrown – in a way which in our view is similar to Keynes’ reasoning – simply by thoroughly distinguishing between saving and lending and

⁴ An alternative interpretation of this adjustment process assumes a (Robertson) lag between income and consumption demand and proceeds by means of goods market equilibrium toward the point of effective demand Y_0 . This alternative thus avoids the problem of unplanned inventory accumulation.

⁵ We shall not consider inventory disequilibria in this book, which means that this problem ($Y \equiv Y^s$) will not be treated here in its full depth, cf., however, Sect. 6.3 for a simple further discussion of it.

their respective determinants. Consequences of this distinction and the modifications of Ackley's model deriving from it, however, also concern the money market, which then can no longer be of a Classical type. Such additional modifications of Ackley's Classical model will be introduced in a first step by means of Barro's (1990) approach to general macroeconomic equilibrium [the New Classical Macroeconomics], that is, they will appear, in Sect. 2.4, as a reformulation of our version of the Classical Macroeconomic model (Sect. 2.2) without the Keynesian aspects that were introduced into it in Sect. 2.3. These latter aspects are again added in Sect. 2.5 – now to the New Classical model of Barro – where we shall see that Keynes' original claim on the generality of the “General Theory” is still true – despite all progress that is nowadays maintained with regard to recent developments of macroeconomic theory.

In sum, the aim of this chapter is, on the one hand, to isolate as precisely as possible the basic logical flaw in the Classical system and to go on then to show the limitations of current seemingly consistent reformulations of this approach. We shall show, on the other hand, how Keynes' type of analysis can be obtained through minimal modifications and extensions of both the Classical and the “New” Classical Macroeconomics.

2.2 Classical Macroeconomics

The following provides a brief presentation of how Ackley's (1969)⁶ incomplete Classical model must be completed to allow for an unambiguous and consistent interpretation of the interaction of its simple behavioral relationships.⁷ We have chosen here Ackley's presentation of Classical Macroeconomics from the many textbook versions that exist of it, since it is in many respects the most complete treatment of this synthetic Classical model.

Since this model allows for downwardly rigid money wages \bar{W} (this assumption will be discussed later on), a central element in the discussion of Ackley's model is given by the *Classical aggregate supply function* (Fig. 2.3).

Here, Y_f^s, p_f characterize the point of full employment of the labor force for the given wage \bar{W} :

$$L^s\left(\frac{\bar{W}}{p_f}\right) = L^d\left(\frac{\bar{W}}{p_f}\right), \quad \frac{\bar{W}}{p_f} = Y^{s'}(L^d).$$

Prices $p > p_f$ imply that the real wage is below its equilibrium level, that is, labor demand L^d [based on Keynes' (1936, p. 5) Classical postulate No. I] exceeds the supply of labor L^s , in which case it is assumed that money wages react instantaneously,

⁶ See, for example, also Felderer and Homburg (1984) and Hillier (1991) for recent presentations of this synthetic model and note that Sargent's (1987) and McCallum's (1989) versions of the Classical model are in fact already models that synthesize Keynes and the Classics.

⁷ Our following presentation assumes that the reader has already some background knowledge with regard to the synthetic Classical model of textbook economics.

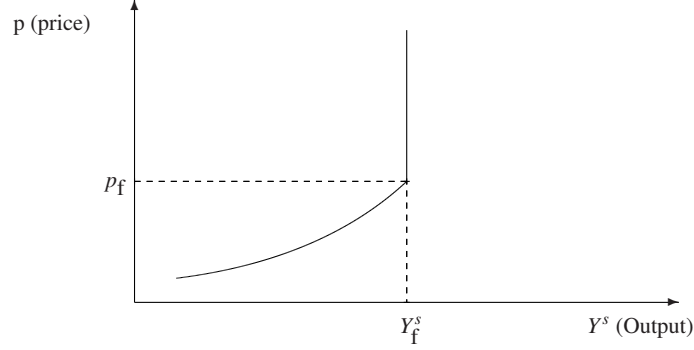


Fig. 2.3 Aggregate supply

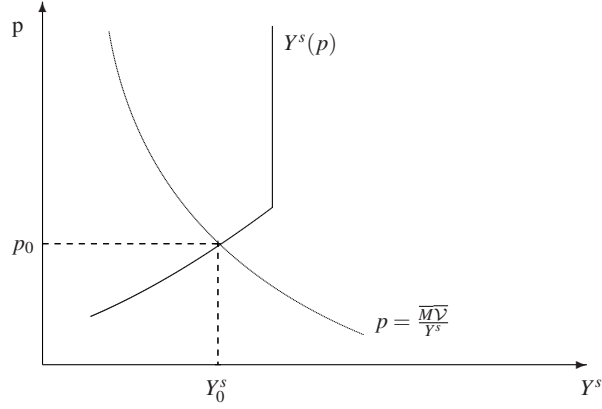


Fig. 2.4 Classical underemployment equilibrium

that is, rise to restore labor market equilibrium. This explains the vertical part of the aggregate supply schedule, while its downward sloping part gives expression to the fact that real wages are too high then to allow for full employment output.⁸

Combining the aggregate supply curve with the *strict quantity theory of money*⁹

$$\overline{M} \cdot \overline{V} = pY^s \quad (2.1)$$

then gives us two equations from which supply side equilibrium output Y_0^s and equilibrium prices p_0 can be uniquely determined – as is obvious from the Fig. 2.4.

And the standard production function relationship¹⁰ $Y^s(L)$ will then determine actual employment L_0 and the rate of unemployment $U_0 = \frac{L^s - L_0}{L^s}, L^s = L^s\left(\frac{\overline{W}}{p_0}\right)$,

⁸ See Glahe (1977, p. 27) for further explanations of this schedule.

⁹ See Crouch (1972, p. 173) for example.

¹⁰ See Sargent (1987, Chap. 1).

which is positive for sufficiently low equilibrium prices p_0 , that is, for sufficiently high wages \bar{W} or low quantities of money \bar{M} .

Keynes (1936, p. 5) described the above situation with the following words: The Classical theory of employment – supposedly simple and obvious – has been based, I think, on two fundamental postulates, though practically without discussion, namely:

I. The wage rate is equal to the marginal product of labor ... II. The utility of the wage when a given volume of labor is employed is equal to the marginal disutility of that amount of employment.

And after discussing the theoretical background and the empirical relevance of the second postulates he concludes on p. 16: “We need to throw over the second postulate of the Classical doctrine and to work out the behavior of a system in which involuntary unemployment in the strict sense is possible.”¹¹ We shall see in Chaps. 6 and 7, however that there are also logical as well as empirical reasons, which imply that the above first postulate should be dismissed from a Keynesian theory of effective demand, as well.

Ackley’s above version of Classical Macroeconomics is turned into a complete four-market macroeconomic model by *adding the capital market and its equilibrium condition* as in the Fig. 2.5 (see his p. 142 and compare also Keynes (1936, Chap. 14) for a discussion (of the defects) of this diagram).

By way of the terminology chosen, the Fig. 2.5 suggests that it is not only the capital market, but also the *goods market* that is represented by it. This is indeed the case as can be shown by *adding budget constraints* to the above model. These constraints are not discussed in Ackley (1969), an omission which there gives rise

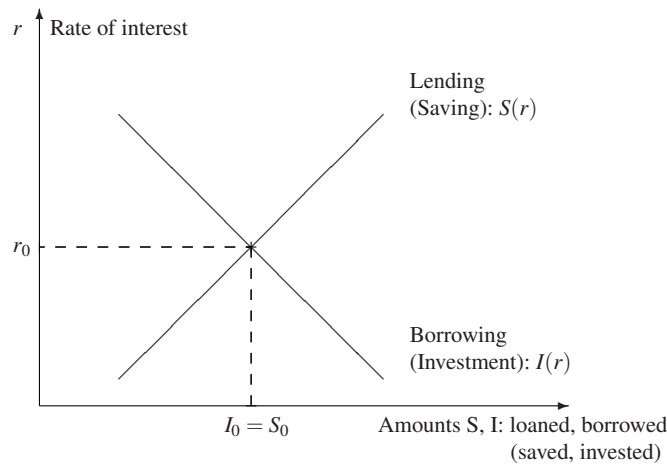


Fig. 2.5 Goods- and capital-market equilibrium

¹¹ He then interpreted the above situation (Y_0^s, p_0) as an underemployment equilibrium with no involuntary unemployment in the strict sense (see his discussion of various types of classical unemployment in his Chap. 2 and also our discussion of it at the end of this section).

to a considerable amount of vague verbal statements, for example, with regard to the implicitly employed type of “Say’s Law” and also the only implicitly present concept of aggregate demand Y^d .¹²

In a Classical world, saving normally can either mean “investing directly” or “lending.” The identity for consistently made *saving plans* consequently reads in view of this distinction:

$$pS \equiv pI_{\text{direct}} + \frac{1}{r}(B^d - \bar{B}), \quad (2.2)$$

where B^d denotes the total (stock) demand for (perpetual) bonds, \bar{B} the set of perpetuities (consols) already in existence and where $\frac{1}{r}$ is the (current) price of this type of bonds.¹³ Similarly, *planned investment* must be assumed to fulfill the following consistency requirement regarding the financing of investment

$$pI \equiv pI_{\text{direct}} + \frac{1}{r}(B^s - \bar{B}) \quad (2.3)$$

Here, B^s denotes the stock supply of bonds, that is, $\frac{1}{r}(B^s - \bar{B})$ represents the currently planned amount of money borrowing for investment purposes. Subtracting (2.2) from (2.3) gives

$$p(I - S) \equiv \frac{1}{r}(B^s - B^d). \quad (2.4)$$

This identity can now be used to provide justification for Ackley’s I-S-diagram (Fig. 2.5), which for the sake of clearness should at first be represented by

Figure 2.6, and identity (2.4) imply that it is the job of the rate of interest *to coordinate lending and borrowing*¹⁴ and that it, in doing so, *at the same time equates savings with investment: $S(r_0) = I(r_0)$, and thus brings forth equilibrium in the goods market as well*, if the following conventions are adopted to interpret the left hand side of (2.4):¹⁵

$$\left. \begin{array}{l} \text{Planned real income } Y \equiv \text{Planned output } Y^s \\ \text{Planned saving } S \equiv Y - C \equiv Y^s - C \end{array} \right\}, \quad (2.5)$$

where C denotes planned consumption. These two identities represent well known assumptions or definitions of macroeconomic theory. They immediately give rise to

$$\left. \begin{array}{l} p(I - S) \equiv p(Y^d - Y^s) \\ Y^d \equiv C + I \end{array} \right\}, \quad (2.6)$$

¹² cf. also Felderer and Homburg (1984) and Hillier (1991) in this regard.

¹³ See Crouch (1972, pp. 60ff.) for details and note that interest payments are given by \bar{B} in this case. For simplicity we shall assume that this is the only interest-bearing asset in the present model. Note also that the government sector is only introduced into this model in Sect. 2.8.

¹⁴ Compare, e.g., Mill (1965, Chap. XXIII) with regard to such a view.

¹⁵ Note here, that income Y is here composed of $Y \equiv WL^d + \Pi + \bar{B}$ (Π = profits) and that all direct investment is here made by households who earn the profits $\Pi = Y - WL^d - \bar{B}$ with regard to their past investments (see Chaps. 6 and 7 for the integration of profits into the investment decision).

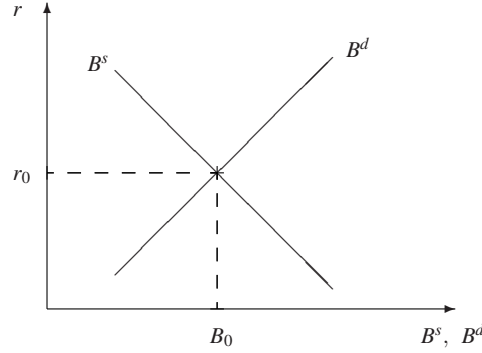


Fig. 2.6 The classical bond market

that is, the equivalence of I, S-equality and product-market equilibrium (as was claimed earlier).

We are now in the position to describe in detail the type of *Say's Law* that we have introduced by our above completion of Ackley's Classical model. Following Mill (1965, pp. 571/2) we have modeled the following two statements:

I. THE SUPPLY OF COMMODITIES IN GENERAL CANNOT EXCEED
THE POWER OF PURCHASE

which in the above model is represented by the assumption $Y \equiv Y^s$. This assumption – to our knowledge – has remained unquestioned as far as macroeconomic model building is concerned¹⁶

II. THE SUPPLY OF COMMODITIES IN GENERAL NEVER DOES EXCEED
THE INCLINATION TO CONSUME

In terms of our model this quotation from Mill's text can be represented by $Y^d = Y^s \equiv Y$ for any given Y^s , and must be viewed upon as an equilibrium condition: Aggregate demand Y^d is made equal to aggregate supply Y^s if $Y \equiv Y^s$ (assertion I) holds and if the rate of interest performs its job to equilibrate the demand and the supply for loans [$B^d = B^s$; note here that Mill – in trying to prove the above phrase – restricts his attention to the case $S \equiv I_{\text{direct}}$, while his discussion of loans and the rate of interest is confined to a later chapter of his "Principles"]. In our view, therefore, the formulation of *Say's Law* which is consistent with Ackley's (standard) version of Classical Macroeconomics should be

$$\left. \begin{aligned} p(Y^d - Y) &\equiv \frac{1}{r}(B^s - B^d) \\ Y &\equiv Y^s \\ B^s(r_0) &\equiv B^d(r_0) \end{aligned} \right\}, \quad (2.7)$$

¹⁶ See Crouch (1972, p. 142) for an explicit representation of this hypothesis, and Keynes (1936, p. 20) for a verbal statement in this regard which, however, did not hinder him to attack Mill's identical statement of this fact (see his p. 18).

that is, *it consists of two macroeconomic identities* [the first of which relates the desire and the ability to purchase with what is happening in the market for loans, while the second claims that planned income should equal planned output under all circumstances] *and an equilibrating mechanism* [which – via the market for loans – creates as much desire to spend as there is ability to purchase]. This form of Say’s Law overcomes the weaknesses of its purely verbal presentation in Ackley (1969) by giving it an exact content within the model that is employed by him.¹⁷ We thereby now know that the interpretation of Fig. 2.5 should be restricted to capital market phenomena [unless we in addition assume $I_{\text{direct}} \equiv 0$] and that moreover “lending” and “saving” cannot in general be treated as synonymous. Finally, we now have a clear idea why *the goods market* can be eliminated from the complete set of markets of Ackley’s Classical Macroeconomics and which concepts we should choose to discuss the determination of the rate of interest.

The above completion of his model *disqualifies* Ackley’s (1969, pp. 138f.) attempt (also present in more recent macro-models) to interpret the quantity theory *as a theory of aggregate demand* by means of its following reformulation

$$Y^d \equiv \frac{\bar{M} \cdot \bar{V}}{p}, \quad (2.8)$$

since aggregate demand Y^d has already been determined by $Y^d \equiv I + C \equiv Y^s + I - S$.¹⁸ The quantity theory cannot be used consistently for a description of aggregate demand in a Classical model in which the above elaborate form of Say’s Law is assumed to be valid.¹⁹ Yet, though the quantity theory and Say’s Law must be carefully distinguished with regard to their meaning and range of applicability, we shall see in the next section that they stand and fall together if the distinction between saving and lending is developed further.

The description of our version of a Classical model is now complete. Figure 2.4 determines equilibrium output Y_0^s and the price level p_0 and thus (as already indicated) employment L_0 and the rate of unemployment U_0 (which we assume to be positive). The rate of interest, in clearing the market for bonds, then creates the necessary demand for the predetermined output Y_0^s . The model implies that unemployment can be lowered only if either money wages fall, whereby $Y^s(p)$ is shifted downward, or if the quantity of money (here still of helicopter type) is raised,

¹⁷ Felderer and Homburg (1984, Chap. 4) use instead of Y the notional concept $Y + w(L^s - L^d)$ and thus include the labor market in their derivation of the aggregate budget constraint. The consequences of this approach (Lange and Patinkin) is that Classical underemployment equilibria (due to rigid wages) as they are, for example, discussed in Keynes (1936) are then impossible. This is therefore not a good starting point for a discussion of the macroeconomic controversy about the causes of unemployment and therefore not a good representation of pre-Keynesian macroeconomics.

¹⁸ $= Y^s(p) + \frac{B^s - B^d}{rp}$! Note here, that in the above general form of a Classical model the quantity theory has to be formulated by means of $p \equiv \frac{\bar{M} \cdot \bar{V}}{Y^s}$ to be consistent with the remainder of the model, a formulation which can be related to the Cambridge-interpretation of this theory.

¹⁹ See Keynes (1936, p. 183), for a harsh critique of mixing the quantity theory with the theory of aggregate demand.

whereby the other curve in Fig. 2.4 is shifted upward.²⁰ Hence, unemployment is caused by an imbalance between the level of money wages and the existing quantity of money, implying that it mainly depends *on the labor market* and the behavior of economic agents in this market (in relation to productivity and prices) how unemployment will develop over time.²¹

Glahe (1977, p. 25) gives several arguments why money wages may be downwardly rigid – in relation to the prevalence of imperfect competition in the main. Yet, also in the case of atomistic competition downwardly rigid money wages can be assumed to prevail – even if all unemployed workers are willing to accept lower wages. Such a situation is given if (e.g.) account is taken of the existence of firms that behave as follows:

- Wages are *set by firms* (and not by a Walrasian auctioneer)
- It is *not profitable for a firm* to hire new laborers at lower wages than are paid to those already in the work force of this firm (assuming homogeneous labor for simplicity)
- It is *not profitable for a firm* to cut the wages of all of its employees simultaneously
- It is *not profitable for a firm* to exchange its complete labor force against the cheaper work that can be obtained from the pool of the unemployed.

The reasons underlying the statement not profitable, of course, relate to the costs involved in the undertaking of such actions. Broadly speaking these costs consist of various types of productivity losses, which we shall not, however, consider here in more detail. Leaving extreme situations aside, it appears fairly obvious that firms will not try immediate wage cuts whenever the state of the labor market seems to allow for such an action – even in the presence of an atomistic labor market and a large pool of unemployed workers ready to work for less than the prevailing money wage \bar{W} [see Chick (1983, pp. 74 ff.) for further arguments of this kind and Blanchard and Fischer (1989, 9.4) for a brief formal discussion of such efficiency wage hypotheses].

Wage rigidity of this basic type combined with our Classical model (which has been supplemented by an explicit and “consistent” version of Say’s Law), however, imply that *involuntary unemployment and Say’s Law are not incompatible with each other* as it is claimed in Keynes (1936, pp. 15 ff.), cf. our above remarks. Classical economists could have discussed the existence of men involuntarily unemployed (had they wished to do so) without destroying at the same stroke the logic of Say’s Law in the market for goods.²²

²⁰ We here neglect the effects of capital accumulation and of technological change.

²¹ See also Modigliani (1944) for a set of related observations on Classical (Sect. 2.2) vs. Keynesian (Sect. 2.3) model building.

²² Note in this regard that Fig. 2.4 and $Y^s(p)$ can also be interpreted in terms of the wage fund theory where minimum nominal wages are fixed by law or opinion [as discussed by Mill (1965, p. 356)]. This way of interpreting Fig. 2.4 clearly shows that the supply of labor (and the labor market) should not be included in Mill’s discussion of the impossibility of a general glut (Say’s Law), in contrast to the Walrasian interpretation of Say’s Law à la Lange and Patinkin! Assuming

Hence, in exploring the logical flaws of the Classical model as presented above, we should concentrate on its view of the goods market and not on Keynes’ claim that it is logically impossible to have involuntary unemployment within a Classical framework.²³ Instead, our aim should (and will) be to explore in how far the working of the goods market must be viewed as more complicated than it is suggested by Say’s Law, how this complication contributes to an analysis of the extent of involuntary unemployment factually observed, and why the remedy of lowering money wages to cure unemployment may represent an ineffective or even dangerous proposal (as was claimed by Keynes).

These points will be examined in the following by developing further the distinction between *saving* and *lending* in a monetary economy. We thereby shall be able to demonstrate that – despite the existence of a Classical labor market *as well* as a Classical capital market – there will be a complete reversal in the causal explanation of unemployment. Our aim here, on the one hand, is to preserve (for purpose of comparison) the Classical elements of the above presentation as far as possible, while demonstrating, on the other hand, how the outlook on the mechanism of the economic system can be changed into a Keynesian one if saving and lending are properly distinguished. It is hoped that we are able thereby to demonstrate that very slight changes in the setting of a known model can have large consequences on its implications and that valuable insights can be gained by such a procedure. This demonstration should be valuable for didactic purposes, too, and it provides a good example, of how sensitive a conventional model may react with regard to seemingly minor qualifications in its analytical framework.

2.3 A “Keynes Revolution” in the Classical Model

The model considered in Sect. 2.2 obviously tries to provide a complete macroeconomic picture of a *monetary* economy, in which one type of input is used to produce one type of output, roughly related to the sphere of circulation by means of a medium for transactions (money), which can also be lent and borrowed. Though still in rudimentary form the four kinds of markets usually distinguished in a macroeconomic model are all present in this Classical model.

However, as a brief inspection of the identities (2.2) and (2.3) shows, money has not yet been fully integrated into the equations of this model. Money is used and thus held for transaction purposes and consequently must enter the budget identities of savers (and investors) unless they never plan to change their cash holdings (which, however, cannot be sensibly assumed in general). The obvious modifications of (2.2) and (2.3) are

that wages are paid out of past funds or assuming $Y \equiv Y^s$ clearly gives (2.7) as the basic description of Say’s Law [where the labor market is not involved!].

²³ The above model thus shows that Keynes’ (1936, Ch.2) labor market test for “involuntary unemployment in the strict sense” is not a sound test. This must be so, since one cannot test the nonworking of Say’s Law (which concerns the goods- and the bond-market) by reference to the labor market alone.

$$pS \equiv pI_{\text{direct}} + \frac{1}{r}(B^d - \bar{B}) + (M_S^d - \bar{M}_S), \quad (2.9)$$

$$pI \equiv pI_{\text{direct}} + \frac{1}{r}(B^s - \bar{B}) - (M_I^d - \bar{M}_I), \quad (2.10)$$

where \bar{M}_S , \bar{M}_I denote the actual money holdings of savers and investors and M_S^d, M_I^d their desired ones. On the basis of the definitions of Y and S (see Sect. 2.2) we now get instead of (2.4)

$$pI - pS \equiv pY^d - pY^s \equiv \frac{1}{r}(B^s - B^d) + (\bar{M} - M^d), \quad (2.11)$$

which is the so-called Walras-Identity of Flows or Keynesian aggregate budget restraint for our monetary economy [$\bar{M} \equiv \bar{M}_S + \bar{M}_I, M^d \equiv M_S^d + M_I^d$].

An immediate and important consequence of this simple correction of the Classical model of Sect. 2.2 with regard to the holding of money is that the equilibrium situation in the market for bonds as depicted in Fig. 2.6 now no longer informs us unambiguously on the state of the goods market *and* on the behavior of excess demand on this latter market. It is now logically quite possible (and even plausible, if the economic content of the savings function is taken into account) to have at one and the same time the relationships $p(Y^s - Y^d) \equiv p(S(Y^s) - I(r))$ and $B^d(r), B^s(r)$ without any direct logical contradiction between them. It is therefore completely admissible under the logically compelling extension (2.9) and (2.10) of the Classical model to incorporate a simple Keynesian consumption – or savings function – into this model, since the goods and the capital-market now have ceased to represent just two sides of the same coin (as it is suggested by Ackley’s bond market diagram, cf. Fig. 2.5). The definition of nominal savings $p(Y^s - C)$ is now clearly quite different from the definition of extra lending $B^d - \bar{B}$, because the latter is referring to the bond market and not to the demand gap on the market for goods. The confusion between saving and lending is one of the basic reasons on which the Classical view that “supply will create its own demand” (Say’s Law) rests, a confusion which is also present in Keynes’ (1936, p. 178) presentation of the Classical and his own theory of interest – despite his clear vision on the proper determinants of savings.

Adding a simple Keynesian savings function $S \equiv S(Y^s)$ to the model of Sect. 2.2 implies that Ackley’s Fig. 2.5 is to be replaced by Figs. 2.6 and 2.7, that is, we now need two diagrams to characterize bond and product market equilibrium.²⁴

The Classical bond market determines as in Sect. 2.2 the equilibrium rate of interest r_0 (Fig. 2.6), this rate determines as before the amount of *planned* investment, *which now however determines equilibrium output and income* [where planned saving is equal to planned investment]. The sequence of determinants that results from this new situation consequently is²⁵

²⁴ Note here that we do not yet revise explicitly the now inconsistent formulation of the money market, that is, the quantity theory of money of the Classical model. This market is left implicit in the following reconsideration of bonds- and goods-market equilibrium. The money market will be made explicit again in Sect. 2.4 and its IS-LM reformulation in Sect. 2.5.

²⁵ Cf. also Keynes (1936, Chap. 18) with respect to this simple sequence of causations (which, e.g., still neglects the so-called Keynes effect as a possible repercussion effect, see Sect. 2.5).

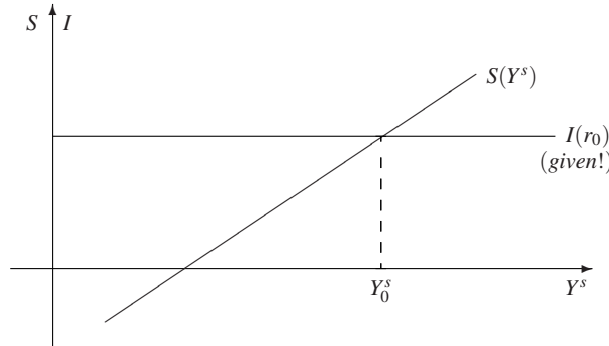


Fig. 2.7 The Keynesian IS-diagram

$$r_0 \rightarrow I_0 \rightarrow Y_0 \rightarrow L_0 \rightarrow p_0 \left[= \frac{\bar{W}}{Y^s(L_0)} \right],$$

that is, the conditions that prevail on our Classical bond market now determine output Y_0 as well as employment L_0 and competitive prices p_0 . Downwardly flexible money wages W will in this changed situation only give rise to downwardly flexible prices p_0 (a wage-price spiral) and will thus lead to monetary instability solely, that is, no improvement in employment conditions will result from this type of flexibility (if it were available).

The causal nexus that made rigid money wages \bar{W} the important element in the explanation of unemployment in the previous section is now completely removed from the model – simply by drawing a sharp distinction between lending and saving behavior and its central determinants. Wage policy – and in the above situation also monetary policy – cannot improve the prevailing (un-)employment situation.²⁶ It is not the money wage that is too high to allow for full employment, but it is the rate of interest (based on bond market equilibrium) that is not sufficiently low to imply an amount of investment that will (via the multiplier process) raise income and output to its full employment level. To quote Keynes (1936, p. 185): “A decreased readiness to spend will be looked on in quite a different light if, instead of being regarded as a factor which will, *cet. par.*, increase investment it is seen as a factor which will, *cet. par.*, diminish employment.”

This change in implications illustrates the basic difference between the model of this and the preceding section in a very pronounced way, in contrast to Keynes’ (1936, Chap. 14) considerations, however, without any change in the Classical theory of interest (à la Mill) simply by drawing a sharp distinction between the determination of this rate and the forces that determine the equilibrium in the market for goods.

Besides our addition of a Keynesian savings function to the Classical model of Sect. 2.2, there is, however, yet another change implicitly involved in the proposed modification of Ackley’s Classical Macroeconomics. From the assumption made on savings behavior there follows by means of identity (2.11)

²⁶ See, however, Mill (1965, p. 656) for qualifications with regard to this point.

$$M^d = \bar{M} + p[S(Y^s) - I(r)] + \frac{[B^s(r) - B^d(r)]}{r}, \quad (2.12)$$

that is, by assuming the savings relationship $S(Y^s)$ we have implicitly removed the quantity theory (see Fig. 2.4) from the model of Sect. 2.2. The assumed goods- and capital-market behavior thus imply an interest-elastic money demand function due to the fact that the aggregate budget restraint [by which we have removed the money market from an explicit treatment in this section] must hold true.

The above money demand function, of course, is a very peculiar one, though it already indicates why the rate of interest should become an argument in this demand function. Of course, this function should be replaced by Keynes’ or a Keynesian money demand function in the end. Obviously, this demands further changes and modifications in the demand and supply functions of other markets (goods, bonds) to make them a consistent whole and may well give rise to so many simultaneous dependencies that the above simple causal sequence may again become completely obscured by these extra modifications. Such a procedure should, however, not be adopted too hastily – in the name of mathematical generality of the finally accepted behavioral relationships. It is not the ideal of the Walrasian view (that everything depends on everything else) that macroeconomic model building should and does strive for. On the contrary, simple, yet informative models are still in need that are simultaneously *logically consistent* [or, alternatively, as clear as possible with regard to the gaps that have still to be filled], *give a clear impression of the basic macroeconomic forces* (which are assumed to determine income, employment, etc.), and which mainly *utilize conventional means in demonstrating their possibly new view* about the dominant forces that direct the macroeconomic behavior of the economy. It is in this sense that we have tried to show how a Keynesian view of these forces can be provided by only slight, minimally necessary improvements of an otherwise strictly Classical model.

It is stated in Ackley (1969, p. 137) that there can be no doubt about the logical completeness and consistency of his “Classical theory” and that Keynes was surely wrong in attacking it as logically incomplete or inconsistent. Yet, we have shown in this and the preceding section that Ackley’s model is neither complete (it neglects the budget restraints of, e.g., savers and investors) nor that it can be considered consistent (it illegitimately identifies lending and saving behavior, which is only possible if money does not enter the budget restraints, implying an economy that cannot really be considered to represent a monetary one).

The assumptions that have to be used to attach a proper interpretation to the two diagrams in the introduction to this chapter should now be obvious. The curve $Y^s(p)$ in Fig. 2.1 is better and more suggestively written as $p(Y^s)$, which together with $Y^s \equiv Y^d(p)$, that is, no error on the side of producers with respect to the level of effective demand at given prices p leads us to a confrontation of actual prices p and competitive prices $p(Y^s)$ outside the equilibrium point p_0 . Situations different from p_0 thus represent disequilibria in prices and not in quantities, that is, the standard interpretation of this diagram is fairly misleading.

An interesting example of this type of confusion is given by Benassy’s (1984) non-Walrasian model of the business cycle where producers adaptively modify their

demand expectations in an IS-LM-context of the type of Fig. 2.1 (see also Sect. 2.5). Such a simple modification of the conventional IS-LM-model (with endogenous prices) by means of an investment function $I(r, Y^{d*})$ which now also depends on expected demand Y^{d*} and which is supplemented by a money-wage Phillips-curve *and* the adaptive mechanism

$$\dot{Y}^{d*} = \mu(Y_0^s - Y^{d*}) \quad (2.13)$$

cannot, however, be regarded as a consistent modification and extension of this model, since the IS-LM-part of the model already assumes

$$Y^s \equiv Y^{d*} \equiv Y_0 \equiv Y_0^d \quad (2.14)$$

as we have seen above. Hence, this treatment of expected demand is not a convincing representation of the behavior of producers (2.14) and investors (2.13) in an IS-LM-context.²⁷

Similarly, the IS-LM-model does also not allow for disequilibrium in the market for goods (and money) without a fairly detailed revision of the assumptions (2.14), that is, we cannot formulate a price-level and interest-rate dynamics as in Sargent (1987, pp. 58 ff.) on the basis of these two imbalances solely – without any modification in the assumptions made on producers’ expectations of aggregate demand. Imbalance in the market for goods does no longer admit for the above type of perfect anticipation (2.14) of producers’ sales situation and thus necessarily leads in a Keynesian context to a much more complicated dynamics than is given by Sargent’s (1987) Walrasian or notional pure price adjustment rules.²⁸

Finally, we note that also the situation we have considered in Fig. 2.2 will give rise to a more complex dynamics than is considered there, since in such a disequilibrium situation the magnitudes “output,” “aggregate demand,” “income,” “expected demand,” and “expected income” should at first all be carefully distinguished making it possible thereafter to formulate which of these magnitudes can in fact be set equal to each other (to simplify the dynamics) on the basis of assumptions that look reasonable in the presence of such a disequilibrium situation. It is our opinion here that goods market disequilibrium will give rise to considerable complexities (including a more complicated inventory dynamics than has been considered in this type of literature so far). The equilibrium concept of “effective demand” Y_0 (which excludes the analysis of errors on the side of producers) is the central approach to avoid all such complexities (by assumption). Yet, if it is used as a shortcut for the problem of producers to form reasonable expectations on aggregate demand, we should not forget the assumptions on which it is based to avoid that it will be incorporated into a model that is not consistent with it.

²⁷ Unless they are reinterpreted as some sort of long-run expectation.

²⁸ Note here that only an adjustment rule of the type $\dot{p} = \alpha(\frac{\bar{w}}{Y^s(L_0)} - p)$ represents a good starting point for the further investigation of possible imbalances in Fig. 2.1, because of the assumed IS-LM equilibrium.

2.4 New Classical Macroeconomics

We shall now provide a brief discussion of the New Classical Macroeconomics by making use of the market clearing approach of Barro (1990) in its most developed form, that is, where the four basic markets of a minimally complete macroeconomic model are all present.²⁹ We shall then see that this model adds only minor improvements to the full employment situation of the Classical model of Sect. 2.2 (making it also more consistent thereby), while neglecting in its analysis of the classical causes of unemployment completely as they are, for example, discussed in Keynes (1936, p. 7). In Barro's (1990) textbook approach to macroeconomics much stress is laid on an explicit discussion of aggregate consistency requirements which in conjunction with the market-clearing approach are then used to determine general equilibrium on the macroeconomic level. Barro starts with the model of a Robinson–Crusoe economy and proceeds by introducing first a credit-market, then the money market, and finally the labor market into this model. It is somewhat astonishing, however, that in the final stage of his approach the consistency requirements – which receive so much attention throughout the book – are no longer explicitly discussed. Furthermore, the fact that equilibrium in the goods- and the labor-market are interdependent in this final version of his models and have to be determined simultaneously can be represented in a way that is much easier to understand and to manipulate than Barro's own presentation of it. And finally, on the basis of these two additions of Barro's approach to macroeconomics, we shall be able to show that Barro's model corresponds very well – with regard to its method as well as its results – to the other types of macromodels here considered and can therefore be usefully compared with them.

Appending the budget restrictions of households (and the Walras-Law they imply) to Barro's final basic form of a market-clearing model will make it again a complete and consistent model. Furthermore, this will also allow us to give a concise list of the differences and improvements of Barro's model with respect to the Classical model of Sect. 2.2 (this list will be fairly short). Finally, this new presentation of Barro's model will make the comparison with a conventional IS-LM-extension (Sect. 2.5) of our Keynes model (Sect. 2.3) very easy and will also allow us to show

²⁹ Barro (1990) treats the IS-LM model only in a closing chapter of his macroeconomic textbook and therefore considers macroeconomics by and large from a new-classical perspective solely, see the summarizing Fig. 2.11 in this chapter. This figure summarizes our result that IS-LM is indeed a generalization of this pre-Keynesian type of approach. It thus suggests that temporary equilibrium analysis must overcome this very limited stage of analysis if it truly wants to be applicable to the real world. Subsequent textbooks like Mankiw (1994) have given IS-LM analysis again more weight in their framework, while Blanchard (2006) even presents IS-LM as well as AD-AS as the core of his analysis of the medium- and the long-run. For a discussion of the AD-AS framework from a variety of perspectives, see also Dutt and Skott (2006), while Carlin and Soskice (2005) reformulate the AD-AS framework – as in Blanchard (2006) – towards a treatment of models of imperfect competition as well as a treatment of Neo-Wicksellian or New Keynesian approaches to monopolistic competition. Our approach in this chapter is further developed in Flaschel, Groh, and Proaño (2007) and Asada, Chiarella, Flaschel, and Franke (in preparation).

that the latter can be obtained from Barro’s model in a way such that Keynes (1936, Chap. 1) claim on the generality of the General Theory (again) becomes obvious [see Sect. 2.5].³⁰

Briefly characterized, Barro’s final basic model (implicitly) starts from the following (current) budget restriction of households (and firms)³¹:

$$pC + pI + \Delta B + M^d \equiv WL^s + pY^s - WL^d + (1 + \bar{r})\bar{B} + \bar{M}. \quad (2.15)$$

We have formulated this constraint directly on the aggregate level, where we in addition know that the stock of Barro’s one-period fix-price bonds \bar{B} held by private sector as a whole must be zero in each moment of time [we do not yet consider a government sector and have assumed – as in Barro (1990) – that all planned profits $pY^s - WL^d$ and all income expectations concern the household sector solely].³²

On the basis of given current prices $p, W, \frac{p}{1+r}$ for present and future commodities Barro proposes to adopt the following behavioral relationships as the result of rational choice in an intertemporal context ($w = \frac{W}{p}$ the real wage rate).³³

$$\begin{aligned} C &= C(w, r) && : \text{Consumption, } C_w > 0, C_r < 0 \\ L^s &= L^s(w, r) && : \text{Labor supply, } L_w^s > 0, L_r^s > 0 \\ M^d &= pm^d(Y^s, r) && : \text{Money demand, } m_{Y^s}^d > 0, m_r^d < 0 \\ I &= I(r) && : \text{Investment, } I_r < 0 \\ Y^s(w), L^d(w) &&& : \text{Firms' output and employment decision, } Y_w^s < 0, L_w^d < 0 \end{aligned}$$

We only note (but do not treat this problem any further here) that these equations are not consistently derived from the (intertemporal) budget restrictions underlying (2.15), yet that they do not obviously appear as being inconsistent. Our aim is to make use of the above approach of Barro to compare its strengths and weaknesses with the other prototype models of this chapter. The above restriction (2.15) implies the following type of *Walras-Identity (Micro-Version)*:

$$p(C + I - Y^s) + W(L^d - L^s) + (B^d - B^s) + (M^d - \bar{M}) \equiv 0,$$

³⁰ To not overload our reformulation of Barro’s final market-clearing approach we exclude depreciation, inflation, etc. and any discussion of permanent effects from our following considerations. Note also that we do consider here only direct investment for simplicity. For the case of credit-financed investment see (2.9) and (2.10) and for an integration of equities Sargent (1987, Chap. 1).

³¹ With regard to the magnitude ΔB we have departed from our earlier notation and follow Barro who uses excess demand ΔB of the household sector for simplicity instead of the more explicit notation $B^d - B^s$. Note also that we have implicitly made use of discrete time in the presentation of this identity, which avoids the dimensional problems of the stock/flow-distinction of continuous time models.

³² Note here that we follow Barro’s approach in this and the following section as closely as possible, which in particular means that we here exclude the speculative motive from liquidity preference, because of the type of bonds that is assumed: $p_B = 1$ instead of $p_B = \frac{1}{r}$ as in Sects. 2.2 and 2.3.

³³ This function is based on an optimal transaction balance approach [where, however, real balances effects have been excluded from consideration].

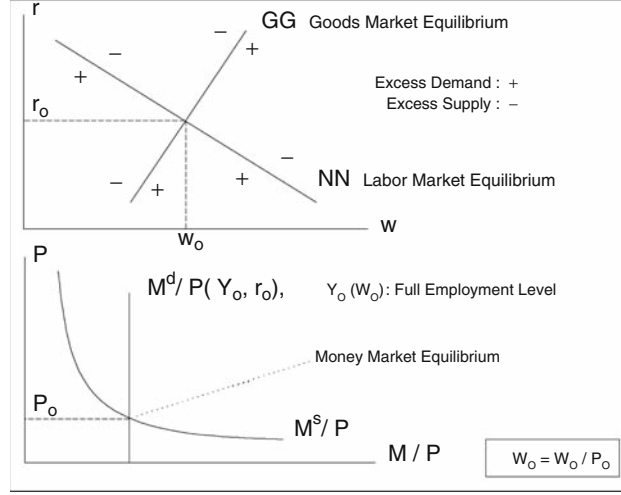


Fig. 2.8 The Barro model

which in turn implies the following formulation of *Walras' Law (Micro-Version)*:³⁴

If three of the four markets of the economy are in equilibrium, the fourth must be in equilibrium, too.

This law allows us to ignore the bond-market and its equilibrium condition in the presentation of Barro's market-clearing model (Fig. 2.8)³⁵

$$C(w, r) + I(r) = Y^s(w), \quad (2.16)$$

$$L^d(w) = L^s(w, r), \quad (2.17)$$

$$pm^d(Y^s, r) = \bar{M}. \quad (2.18)$$

These three remaining equations show that Barro's model dichotomizes (as does the Classical model!) with regard to the money-market and the determination of nominal values. Yet, in contrast to our Classical model the labor- and the goods-market are now interdependent as is the determination of real wages w and the interest rate r . In direct analogy to the conventional determination of IS- and LM-curves, (2.16) and (2.17) can be viewed to give rise to a positively sloped GG-curve and a negatively sloped NN-curve in w, r -space. Both curves depict the set of equilibria of (2.16) and (2.17), respectively, and they give rise to the following graphical representation of the model (2.16)–(2.18).

³⁴ This law, in particular, implies that any labor market disequilibrium must be accompanied by at least one further disequilibrium in this macromodel, which makes disequilibrium analysis more demanding than in the Keynesian underemployment model considered in the next section.

³⁵ Cf. here Barro's (1990, p. 144) brief discussion of this final basic market-clearing model ($W = wp!$).

This model can be easily manipulated – just as the conventional IS-LM-model – for various comparative-static exercises, which are, however, not of interest here, since we are dealing with different conceptualizations of the macroeconomy in this chapter solely.

Instead, our task is to assemble the differences between the above general equilibrium approach to macroeconomics and our former synthetic Classical model. These differences are given by the following:

- The inclusion of intertemporal substitution effects into household decisions:

$$C(w, r), C_w > 0, C_r < 0, \quad L^s(w, r), L_w^s > 0, L_r^s > 0$$

- The influence of the interest rate on optimal real transaction balances $m^d(., r)$
- The use of Walras’ Law (2.15) in place of Say’s Law (2.7), by employing the national income concept $Y \equiv Y^s + w(L^s - L^d)$ for households’ decision making

The first two modifications enrich the Classical model, but they do not alter its outlook significantly. The effect of the third, however, is significant, since we lose thereby an important property of the Classical model, namely the possibility to analyze the consequences of a money wage, which has been set too high [which in the Classical model implied unemployment despite the presence of goods-, credit-, and money-market equilibrium, see our reformulation of Say’s law]. Such an analysis is no longer possible in the above model of the New Classical Macroeconomics, since labor market disequilibrium now implies disequilibrium in at least one further market.

If there is disequilibrium in the above model, it is of such an extent that its treatment lies outside the possibilities that this model offers. *Therefore, this New Classical Macroeconomics has to restrict itself to the consideration of full equilibria only!*

Barro’s (1990, p. 145) conclusion is that the introduction of the labor market does not alter his basic market-clearing approach significantly, so that it suffices to consider this approach without this market for the most part of the book. Only in his Chap. 11 on unemployment it is, of course, necessary to reintroduce this market. But an inspection of this chapter shows that the term “reintroducing” does not mean “extending the model so that it now allows for the discussion of unemployment as well.”

In sum, we therefore find that this New Classical Macroeconomics improves (to some extent) the analysis of the behavioral relationships, but that it achieves this in a way, which severely limits its applicability. In our view, the Classical model is therefore still to be preferred over this New Classical version, since it does not exclude the analysis of the causes of unemployment from its final formulation.

2.5 IS-LM-Analysis as a Generalization of the New Classical Model

I have called this book the *General Theory of Employment, Interest and Money*, placing the emphasis on the prefix *general*. The object of such a title is to contrast the character of my arguments and conclusions with those of the *Classical* theory of the subject, upon which

I was brought up and which dominates the economic thought, both practical and theoretical, of the governing and academic classes of this generation, as it has for a hundred years past. I shall argue that the postulates of the Classical theory are applicable to a special case only and not to the general case, the situation which it assumes being a limiting point of the possible positions of equilibrium. Moreover, the characteristics of the special case assumed by the Classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience.

J.M. Keynes (1936, p. 3).

This quotation from the *General Theory* can be easily “mapped” into the above GG-NN-diagram when one notes that Keynes (1936, Chap. 2) explicitly accepts the marginal productivity relationships $L^d(w), Y^s(w)$ we have used in Barro’s model.

Keynes’ interest was to analyze massive unemployment on the basis of a demand-determined goods-market equilibrium. To obtain such an analysis from the above simple model let us again assume that the money-wage \bar{W} (set by firms and workers interactively) is much too high in comparison to the money wage W_0 momentarily needed to reach a full equilibrium in Fig. 2.9. As already stressed, the model of Sect. 2.4 is incapable of implying a reasonable answer for such a situation, since it does not allow a determination of income Y_0 in such a case as the Fig. 2.9 makes clear.

Let us furthermore assume (ad hoc) that by the experience of massive unemployment households will revise their income plans and substitute $\bar{W}L^d$ for $\bar{W}L^s$ (perhaps not exactly, but it may represent the better proxy than $\bar{W}L^s$, see Barro and Grossman (1971), for example, for a similar approach). The Walras-Identity of the preceding section will thereby be modified to the following *Walras-Identity (Macro-Version)*:

$$p(C + I - Y^s) + (B^d - B^s) + (M^d - \bar{M}) \equiv 0$$

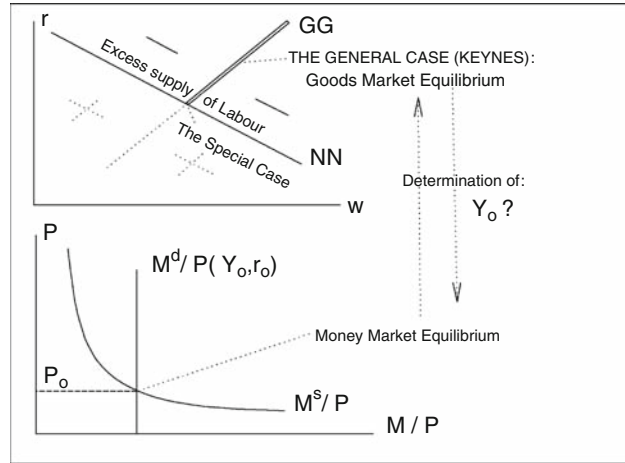


Fig. 2.9 The Barro model and the “General Theory”

and *Walras’ Law (of Flows)* has obviously to be rephrased on the basis of this identity (in a well-known fashion). The change from $(pY^s - WL^d) + WL^s$ to pY^s in the budget equation of households then suggests the following change in the *expenditure behavior* of households:

$$C(w, r) \mapsto C(Y, r), Y \equiv Y^s,$$

which, of course, is to be supplemented by $C_Y \in (0, 1)$ with respect to Keynes’ views on this matter.

As a consequence of this we no longer have Barro’s interdependence of the goods- and the labor market, but now obtain an interdependence between the goods- and the money-market plus the determination of prices by marginal costs. This leads us in a well-known fashion to the depicted conventional IS-LM-model (with endogenous prices, see Fig. 2.10), which nevertheless exhibits a striking formal similarity with our presentation of Barro’s approach in Fig. 2.8.

We have thereby shown how the conventional IS-LM-model (with endogenous prices)³⁶ is obtained in a fairly simple and straightforward way as a generalization of the general equilibrium model of Barro,³⁷ a fact that provides an interesting illustration for the above quotation from Keynes’ *General Theory*. Fifty years after the appearance of this book, Barro’s contribution thus seems to provide a more consistent [yet not too consistent]³⁸ model of pre-Keynesian Macroeconomics which, on the

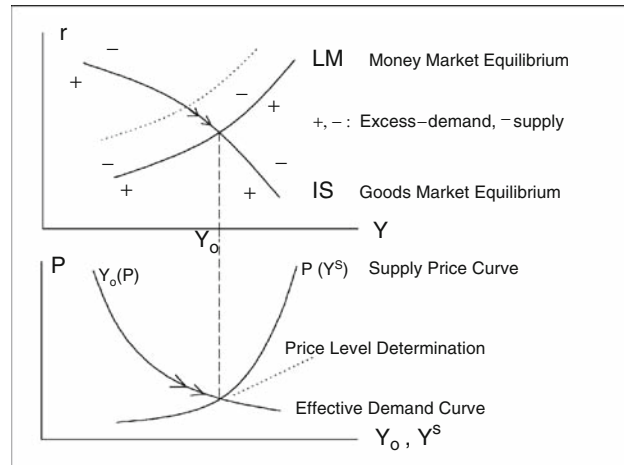


Fig. 2.10 IS-LM as a generalization of the new classical model

³⁶ See Turnovsky (1977, Chap. 2) and Sargent (1987, Chap. 2) for its detailed formal discussion with respect to given or endogenous prices p . See furthermore Sargent (1987, Chap. 1) for the so-called classical variant of this IS-LM model.

³⁷ Note here, however, that this *generalization in applicability* has been achieved by a *modification* in the assumed behavior of households.

³⁸ Cf. his derivation of the demand for money, his discussion of government expenditures and their effects on the private sector, etc. . . .

one hand, remains a good starting point for explaining the innovations introduced by the Keynesian concept of temporary equilibrium with deficient effective demand. On the other hand, we have seen that our original Classical model is not changed very much by Barro's modifications and extensions as far as its general equilibrium situation is concerned, while its underemployment equilibrium has been lost through this particular type of its revision. Today's orthodoxy again does not feel much need or pressure to develop a serious macrotheory of unemployment.

Remark: We have seen (in Sect. 2.4) how Barro's New Classical model can be completed with regard to the inclusion of the labor market and we have shown (in this section) how it can be modified and extended in a plausible way to give rise to the conventional IS-LM-model. In his Chap. 20 Barro, too, provides an introduction into Keynesian IS-LM analysis. In this chapter he furthermore adds a Keynesian theory of inflation by means of the equation³⁹

$$\pi_t = \lambda(Y_t^d - Y_t^s), \quad \pi_t = \frac{\Delta p_t}{p_t}.$$

As we have seen in the introduction, this equation represents an inconsistent addition of the law of demand and supply to the Keynesian IS-LM- framework!⁴⁰

We conclude from this comparison of Barro's New Classical model with a correctly interpreted IS-LM-model that the former could be a good guide to the latter, if it is presented in an appropriate way so that its special character becomes obvious and if the latter is not mixed with partial ideas from ordinary (Walrasian) demand and supply analysis. Such a statement should not convey, however, that macroeconomics in general and Keynesianism in particular has been and should be further improved by a thorough analysis of individual and aggregate budget constraints to be added to its new or standard behavioral relationships in a consistent way.

2.6 Keynes' Notes on the Trade Cycle

Since we claim to have shown in the preceding chapters what determines the volume of employment at any time, it follows, if we are right, that our theory must be capable of explaining the phenomena of the trade cycle.

J. M. Keynes (1936, p. 313).

Following this introductory remark of Keynes in his "Notes on the trade cycle" we shall here briefly recapitulate his observations on the main source and the pattern of the cyclical fluctuations, which characterize the evolution of capitalist economies. By this section, we only intend to sketch some basic medium run implications of

³⁹ Cf. also Sects. 9.2 and 9.3 for a characterization of this approach toward a theory of inflation, which is there called a Classical cross-dual rule of price level adjustment in contrast to the Keynesian dual one treated thereafter (in Sects. 9.4 and 9.5).

⁴⁰ See, however, Sect. 9.3 for a related (hybrid Keynes–Wicksell) approach toward a theory of price inflation.

the temporary equilibrium analysis of this chapter. It will therefore not provide a thorough presentation or even elaboration of Keynes’ ideas on this process. Yet, since most textbooks of macroeconomics often introduce IS-LM analysis without discussing its medium and long-run dynamic implications à la Keynes,⁴¹ this brief outlook on his views in this matter may help to stimulate further interest in Keynes’ own approach to the analysis of the trade cycle – and the role that expectations play in his arguments.

There are three main elements that can be used from the above IS-LM analysis for an analysis of the phenomenon of the business cycle:

- The marginal propensity to consume
- The marginal efficiency of capital
- The state of liquidity preference

The marginal propensity to consume out of income has already been introduced in the preceding section. Elements that may explain shifts in this propensity (and thus shifts in the IS-curve, without, however, having been introduced into this analysis yet) are among others:

- Changes in income distribution
- Changes in perceived wealth and disposable income
- Changes in the rate of time-discounting

cf. Keynes (1936, Chaps. 8 and 9). Shifts in the marginal propensity to consume decrease or increase the Keynesian multiplier and thus have expansionary or contractionary effects on the level of activity of the economy.

The marginal efficiency of capital, cf. Keynes (1936, Chap. 11), is defined in reference to certain time series $Q_1, \dots, Q_n, n \geq 2$ of prospective returns or yields of investment projects. Without going into the details of its definition,⁴² it can be seen that such an approach makes investment heavily dependent on expectations of returns over a considerable amount of time. It follows that investment demand may be very volatile and consequently may be of central importance for an explanation of the trade cycle.

Multiplier effects (including its changes) may add to this volatility and its impacts. Nevertheless, in Keynes’ view, they mainly transmit fluctuations in investment demand to those of income and employment, but do not by themselves explain the business cycle.

Changes in liquidity preference, cf. here Keynes (1936, Chap. 15), refer to the stock of accumulated savings and are – as investment demand – highly dependent on the “state of confidence.” This, of course, is particularly true for the speculative motive for holding cash balances, which through sudden changes in expectations may give rise to “discontinuous” changes in the rate of interest.

⁴¹ Cf. here Chaps. 6-8 for the formal difficulties that are involved in the discussion of IS-LM models of cyclical growth.

⁴² See Keynes (1936, pp. 135/6) for his original proposal of such a definition.

We may summarize the above provisionally by the use of three additional parameters γ , η , and λ in the three behavioral relationships, which underlie the IS-LM-part of the model in Sect. 2.5:

$$C\left(\underset{+}{Y}, \underset{-}{r}, \underset{+}{\gamma}\right), \quad I\left(\underset{-}{r}, \underset{+}{\eta}\right), \quad \frac{M^d}{P}\left(\underset{+}{Y}, \underset{-}{r}, \underset{+}{\lambda}\right). \quad (2.19)$$

These parameters express that the employed behavioral relationships may be subject to changes, which are not explained by the IS-LM-model, but are added to it from the outside in an ad hoc fashion, due to the fact that an endogenous treatment in particular of the marginal efficiency of investment is at least a very demanding task.

“By a *cyclical* movement we mean that as the system progresses in, e.g. the upward direction, the forces propelling it upwards at first gather force and have a cumulative effect on one another but gradually lose their strength until at a certain point they tend to be replaced by forces operating in the opposite direction; which in turn gather force for a time and accentuate one another, until they too, having reached their maximum development, wane and give place to their opposite. We do not, however, merely mean by a *cyclical* movement that upward and downward tendencies, once started, do not persist for ever in the same direction but are ultimately reversed. We mean also that there is some recognizable degree of regularity in the time-sequence and duration of the upward and downward movements.

There is, however, another characteristic of what we call the trade cycle which our explanation must cover if it is to be adequate; namely, the phenomenon of the *crisis* - the fact that the substitution of a downward for an upward tendency often takes place suddenly and violently, whereas there is, as a rule, no such sharp turning-point when an upward is substituted for a downward tendency.

J. M. Keynes (1936, pp. 313/4).

Keynes then starts his discussion of such fluctuations in investment, income, employment, etc. from the late stage of a boom period. In this stage of the boom, it may become apparent for investors – due to the past effects of capital accumulation on the abundance of physical capital and the costs of production – that their views on the marginal efficiency of capital demand a significant revision ($\eta \downarrow$). Such a revision of ideas – when it becomes generalized – may lead to a significant change in η and thus a fall in effective demand (via the multiplier process), which in turn may aggravate the pessimism that has become established ($\eta \downarrow\downarrow$). The cumulative upward trends of the boom may thereby become reversed and turned into cumulative downward trends in income and employment.

It appears as plausible that this decline (or collapse) in the marginal efficiency of capital (η) will give rise to an increase (or upward jump) in the liquidity preference parameter λ , that is, a (sudden) increase in the demand for money. IS-LM analysis implies that this will lead to a (sharp) increase in the rate of interest r and consequently to a further decrease in investment and income. Negative expectations are thereby confirmed and strengthened. It follows that the parameters η and λ may interact in such a way that there results a collapse in economic activity. (Of course, also milder forms – as the recessions of the sixties – are conceivable in the above framework).

The upper turning point for economic activity is thus explained by the interaction of free parameters of the model, which bring a boom that is gradually losing force

to an end – since the gradual change in η , λ has endogenous consequences (on I , Y , and r) that confirm the opinions that are responsible for this change in behavior. Finally, one effect of the boom may also have been that the marginal propensity to consume has risen (e.g., due to an increase of the share of wages in national income). The parameter γ may therefore also contribute to the decline in economic activity by its subsequent decline.

Let us assume for our following discussion of the lower turning point in economic activity that there has been a long period of economic prosperity, so that the above described moments all work with sufficient strength and induce a depression of considerable strength. Economic activity now being low means that the rapid accumulation of “capital” in the past has created a significant amount of idle capital-goods. It is obvious that this excess capacity in production must disappear before there can be any recovery in the parameter that characterizes the marginal efficiency of capital. A considerable amount of time will elapse therefore during which now unprofitable investments of the past are eliminated in physical or in value form. Such a process of capital depreciation will not in general accelerate, since there is a floor to the level of gross investment (above zero) that helps to maintain a low level of economic activity. Once the capital stock has been reduced so far to be in line again with the prevailing level of activity, a return to a more optimistic view on investment profitability becomes possible and may come about. The forces that have operated downward in the development of the depression may now come to help to allow a spreading optimism to gather force. Rising investment and thus rising income and economic activity confirm the positive change in the parameter η , eventually leading to a further increase in it. An improving state of confidence may give rise to a decline in λ , the liquidity preference parameter, and thus to a decline in the rate of interest, giving further force to the spreading investment optimism. The resulting cumulative upward effects may, of course, in some cases be weak and thus only lead to a minor recovery, but may in other cases be strong enough to generate once again a boom of significant duration and strength.

This brief sketch of cumulative upward or downward working forces and the gradual appearance of counteracting elements that bring an end to such upward or downward tendencies must suffice here as an outline of the potential of IS-LM-analysis to explain business fluctuations. The central role of the parameter η (in comparison to the other two parameters⁴³) in the explanation of such fluctuations should be obvious from the statements just made.

No such analysis is possible when the Classical model is used instead (because of its reliance on Say’s Law in the main). Business fluctuations in the market clearing approach are then, for example, explained by introducing local markets and misperceptions of agents in such a setup, see Barro (1990, Chap. 19), Sargent (1987, Chap. 18) for details, or by so-called real business cycles, see Blanchard and Fischer (1989, Chap. 7).

Keynes’ approach to explaining the trade cycle has not received much attention in the discussion on growth and instability that developed after the appearance of the

⁴³ Which play the role of amplifiers.

General Theory (see the next chapter). This may in particular be due to the strong psychological influences that appear in his explanation of the cycle as, for example, in the following statement (p. 317):

...it is not so easy to revive the marginal efficiency of capital, determined, as it is, by the uncontrollable and disobedient psychology of the business world.

Instead of the above speculative type of interaction of primarily psychologically determined magnitudes (the parameters η, γ, λ), dynamic economic analysis has turned to the analysis of interactions of a more mechanical type in the sequel: the multiplier/accelerator-approaches. Various results of these endogenous interactions (of S and I) will be considered in the following chapter.

2.7 Conclusions

We have started in this chapter on temporary equilibrium from a completed version of the prototype model of so-called classical macroeconomics, which is used in the literature to explain by it the advances of Keynesian economics. This model has indeed allowed us to give a clear description of Keynes' rejection of (a sophisticated version of) Say's Law. At the same time it enabled us to reconsider the advances of the New Classical economics, and to show that they are in fact of a very pre-Keynesian nature, which moreover again allow for a Keynesian revolution [just as in the basic Classical model], leading thereby toward a (correctly interpreted) conventional type of IS-LM model. We have shown the basic flaw in the Classical model (the incorrect identification of saving with lending), and have seen how this flaw is overcome in its New Classical version, at the expense of reducing the validity of the model to full equilibrium situations solely, that is, to a special and not too interesting case from which Keynes wanted to depart.

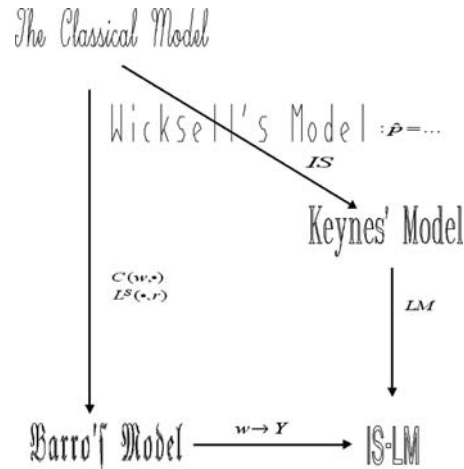
We have furthermore seen that very small changes – if they concern an important error in a prototype model – may have large consequences such as the following:

- The wage paradox (a declining nominal wage rate does no longer improve the situation on the labor market in the “Keynes model” of Sect. 2.3)!
- The savings paradox (increased saving – instead of lowering the rate of interest and thereby raising investment – leads to a decrease in output and employment in this simple revolution of the Classics)!

The procedure applied and the results obtained in this chapter may be summarized in the form of the Fig. 2.11.⁴⁴

This diagram shows in compact form the hierarchical relationships that exist between the various macroeconomic models we have considered in this chapter by pointing to the main elements of change involved when going from the special or

⁴⁴ See the appendix with regard to a brief presentation of Wicksell's contribution to these macroeconomic approaches.

Fig. 2.11 Basic macroeconomic models**Table 2.1** Types of aggregate budget constraints

No.	Macroidentity	Goods-M.	Bond-M.	Money-M.	Labor-M.
1.	Say (crude form)	X			
2.	Say (sophisticated form)	X	X		
3.	Keynes (general form)	X	X	X	
4.	Keynes (reduced form)		X	X	
5.	Say (Lange version)	X	X		X
6.	Walras (barter form)	X			X
7.	Walras (general form)	X	X	X	X

older situation to the more elaborate or newer one. We think that this way of restructuring the relationships between basic prototype models of macroeconomic analysis will contribute to a clarification of the real advances in macroeconomic theory.

Since the chapter has laid much stress on various types of aggregate budget constraints, we shall close it with a brief survey on them as well as further interesting alternatives of such aggregate consistency relationships of macroeconomic model building.⁴⁵

In the Table 2.1,⁴⁶ the symbol X characterizes those markets that are included in the formulation of the corresponding identity. Note here, that we did only make use of the identities 2, 3, and 7 (and their background) in this chapter. Identity 1 (i.e.,

⁴⁵ The names used to characterize the macroidentities in Table 2.1 indicates the context into which the respective identity has to be placed.

⁴⁶ The identity 3 and the following one are normally called Walras' Law of Flows and Stocks, respectively, which, however, is a fairly misleading denomination since both of these identities correspond to the Keynesian notion of an underemployment equilibrium and thus do not address questions of a Walrasian type [note here, however, that we have called identity 3 in Sect. 2.4: Walras Identity (macro-version) to stress its relationship with the corresponding general equilibrium identity of Sect. 2.3 (here No. 7)]. As can be seen from the Table 2.1 and our discussion in Sects. 2.1 and 2.2, the two aggregate restrictions 3 and 4 have nevertheless more in common with the type of Say's identity, which precedes them (No. 2) than with the constraints 5–7 in the Table 2.1.

$I \equiv S$) is often used in real models of (cyclical) growth such as Solow's or Goodwin's growth model. Note, furthermore, that identity 4 is not really an aggregate budget constraint, but a partial one, namely that of shareholders for their portfolio decision [which may be considered a useful approximation to No. 3 in appropriate types of models]. Note finally that the $(n - 1)$ -market version of Say's Identity (Lange and Patinkin discussion of Say's Law) does not supply us with a *Classical* version of this Law which – for example, due to the wage fund theory, that is, due to the fact that wages are paid out of past proceeds – should not contain the labor market.⁴⁷ Say's Law should be considered as a predecessor of the above “Keynes' Law” – as demonstrated in this chapter – and not as an incomplete version of the most general type of Walras' Law, that is, of the aggregate budget constraint of the New Classical Macroeconomics. Much of the confusion of the Lange and Patinkin discussion simply originates from the fact that Say's Law is discussed there from the perspective of notional Walrasian excess demand functions and the corresponding concept of macroeconomic general equilibrium instead of making use of a truly Classical or Keynesian type of analysis of this Law.⁴⁸ We conclude that a proper analysis of aggregate budget constraints still remains a vital issue in macroeconomic theory.

Having discussed here various concepts of temporary equilibrium as the fundament for the following presentations,⁴⁹ we now start our investigation of the explanations of growth and cycles in a capitalist economy. In view of the present chapter it is natural to start from Keynesian models of the goods-market (IS-equilibrium), which soon after the appearance of the General Theory were extended to the analysis of economic growth and which became the leading explanations of growth and cycles in the fifties and the sixties.

Appendix: Wicksell's Cumulative Process. An Intermediate Case Between the “Classics” and “Keynes”

Consider again the Classical model of Sect. 2.2 and let us now add a “banking sector” to its (modified) restrictions (2.9) and (2.10) for savers and investors in the following simple way

$$M^s - \bar{M} \equiv \frac{1}{r}(B_b^d - \bar{B}_b)$$

[we should change our former notation B^d, B^s to B_S^d, B_I^s here to allow again the use of B^d, B^s for aggregate magnitudes]. Through this addition, identity (2.11) now assumes the following form:

⁴⁷ This fact, as we have seen, allows the analysis of underemployment equilibria also in a Classical context, independent of the very restrictive assumptions of the wage fund theory.

⁴⁸ This may not be too obvious from Patinkin's (1965) own analysis of these concepts, since the case of a production economy is not thoroughly analyzed in his book.

⁴⁹ See here in particular Chap. 6.

$$p(Y^d - Y^s) + \frac{1}{r}(B^d - B^s) + (M^d - M^s) \equiv 0 \quad (2.20)$$

Note here that we have employed the corrected budget restrictions of Sect. 2.3 in the derivation of this aggregate identity, but that the model of Sect. 2.2 will otherwise remain unchanged, that is, remain classical in nature with regard to the assumed behavioral relationships. Only the budget constraints are now made consistent with the given existence of money and no modification of the savings function as in Sect. 2.3 is added. This partial revision of the Classical model nevertheless represents an important intermediate step, in that it will allow us to provide a simple and precise description of Wicksell’s cumulative process of price-level changes.

To demonstrate this let us assume – as in Ackley (1969, pp. 158 ff.) – that the price level is temporarily fixed and that the money market consequently cannot [and need not] be in equilibrium in each moment of time. The strict version of the quantity theory thereby gives way to a more sophisticated version of it, where – as we shall see in a minute – the natural rate of interest (at which the product market is in equilibrium, see Fig. 2.5) may be different from the interest rate that is actually established through the operation of the bond-market (because of monetary disturbances as they may result from the above type of money supply by the banking sector).

We are now in the position *to show* – in contrast to the simple quantity-of-money approach of Sect. 2.2 – how monetary factors and their changes affect the price level – namely via deviations between the actual (market) rate and the natural rate of interest. Assume that the market rate of interest is flexible and clears – as it should do – the bond market: $B^d(r_{00}) = B^s(r_{00})$, cf. Fig. 2.6 in Sect. 2.2. At this rate of interest it is – in contrast to the Classical model of Sect. 2.2 – not generally true that the goods market must also be in equilibrium then, cf. Fig. 2.5. Such a disequilibrium situation may come about because of the behavior of banks that – in an attempt to attract borrowers and to stimulate investment – supply extra money to reduce the market rate r_{00} below the level r_0 at which $I = S$ holds true.⁵⁰ Consumption and investment demand is increased through this excess supply of money and the resulting low rate of interest. This excess supply is thus accompanied by an excess demand for goods [cf. the above aggregate budget restraint (2.20)].

In such a situation it is natural – for the Classical model – to assume that prices will respond to goods market disequilibrium in the following way:⁵¹

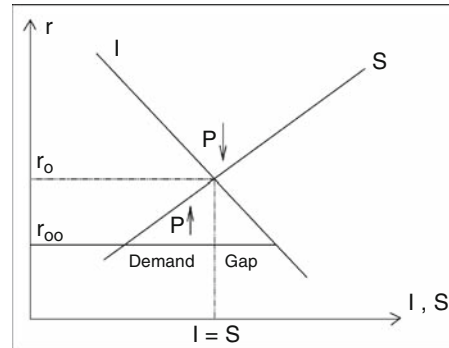
$$\dot{p} = \alpha[I(r_{00}) - S(r_{00})], \quad \alpha = \text{const} > 0. \quad (2.21)$$

This additional equation makes this intermediate type of model again a determined one. Furthermore, this state of a bond market equilibrium is unstable with respect to its goods market consequences, that is, the goods market cannot achieve equilibrium by the above assumed price level dynamics as long as the banking sector continues to supply the economy with extra money to keep the market rate of interest r_{00} below

⁵⁰ See, for example, Patinkin (1965, p. 529) for a brief description of such a situation.

⁵¹ Cf. also our discussion of the so-called Keynes–Wicksell model in Sect. 9.3.

Fig. 2.12 The quantity theory, the goods market, and inflation



the level of the natural rate r_0 (which would clear the goods market). There will consequently be cumulatively rising prices or inflation as long as monetary policy is conducted in this way [see, however, Patinkin (1965, pp. 591 ff.) for a discussion of the forces, which may restrict banks in this type of behavior].

The above simple extension of the Classical model thus provides a clear picture of the process by which too high a quantity of money influences the behavior of prices by its creation of an inflationary gap in the market for goods (Fig. 2.12).

We see that an even simpler modification of the Classical model than that of Sect. 2.3 (on Keynes) can provide us with a Wicksellian view of the working of a market economy.

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