Our understanding of Keynes's treatment of time also sheds further light on a second controversy, over the relationship between Keynes's liquidity-preference and the neo-classical loanable funds theories of the rate of interest. The controversy has been perpetuated by the Old Keynesian idea that the multiplier brings about equilibrium between intended (*ex ante*) and actual (*ex post*) saving, which necessarily takes place as a process over time, and thus inevitably leads to a continuation of the 'muddle' over 'flows of saving' and flows of loanable funds, which Keynes lampoons (*G.T.* 183) and Hansen defends (1953, p. 152). ► **A2.3.3** This controversy, too, dissolves once we recognise that effective demand (Chapter 1 of this book), the investment-saving identity (Chapter 2), and the multiplier (Chapter 3) all refer to positions of continuous short-period competitive equilibrium in the mechanical sense at any time; and that Hicks's different concept of equilibrium, over time, invokes a constant state of expectation and is defined to include the clearing of factor markets, in accordance with our third and fourth criteria of equilibrium. ► **A2.3.4** There is accordingly no room for investment to take the form of hoarding (new commodity money apart), or for saving to be supplemented by dis-hoarding or money creation. All that is left is the portfolio decision to determine the values of a given stock of each class of asset at any time. All we need for this are the concepts of the marginal efficiency of capital and of liquidity-preference.

4.3 THE STATE OF LONG-TERM EXPECTATION

In earlier chapters we have noted the analytical importance of Keynes's division between the state of short- and long-term expectation, corresponding to the expectations of producers and investors respectively. The state of short-term expectation depends upon the state of long-term expectation, since the latter is a major determinant of the prices and outputs of new capital-goods (the rate of investment) and, through the multiplier, the prices and outputs of consumption-goods also, and it has often been convenient to refer simply to the state of expectation as a whole. The state of short-term expectation can be represented by the set of expectations or expected prices for producible goods, both consumption- and capital-goods, for each day of Keynes's long period. The level of employment on any given day corresponds to the state of expectation, which may change from day to day. We have argued that short-term expectations can properly be regarded for analytical purposes as 'rational expectations' based on the daily equilibrium of forward markets for the product of each industry, and that this is in fact the

method of *G.T.* Chapter 3. This section will now consider why it is not legitimate to deal with long-term expectations in the same fashion, and also offer an interpretation of Keynes's concept of 'conventional valuation' in terms of his understanding of probability as summarised in the Prologue.

Keynes defines the state of long-term expectation as 'the state of psychological expectation which covers … future changes in the type and quantity of the stock of capital-assets and in the tastes of the consumer, the strength of effective demand from time to time during the life of the investment under consideration, and the changes in the wage-unit in terms of money which may occur during its life' (*G.T.* 147–8). The marginal efficiency of capital is the numerical device which translates this complex entity, via the prospective yield over the life of the capital-asset, into a single-valued expectation of a rate of return of the same dimension as the money-rate of interest. As we have already noted, the relationship between the marginal efficiencies of different types of capital-asset plays the central role in Keynes's discussion of the essential properties of money. When considering the influence of the state of long-term expectation on the valuation of capital-assets, it is helpful to follow Keynes in recognising that the marginal efficiency of capital is a corollary of the market price of any capital-asset (*G.T.* 137). The rest of this section will accordingly concentrate on the prices of capital-assets rather than their efficiency.

It is convenient, and does no great violence to reality, to postulate the existence of short-term forward markets, either in fact or as a representation of a process of convergence by trial and error. Thus the uncertainty about the value of today's output at the end of its production period is, in our terms, transferred from employer to wholesale dealer, and the effective demand on any given day is determinate. However, when it comes to the state of long-term expectation, it is self-evident that, in general, long-term forward markets for the output of capital-assets over their economic life do not exist. Examples of considerable practical importance, in which the investor can transfer the risk of a capital-asset to the consumer of its output, from landlord to tenant in the case of buildings, and through monopoly privileges which allow prices to be fixed in relation to cost (*G.T.* 163), are the exceptions which prove the rule.

The modern 'efficient markets hypothesis' (EMH) holds that asset prices reflect fundamental value, meaning that within the limits of random error, long-term expectations do indeed on average reflect the eventual outcome over the life of the asset. To sustain this hypothesis requires one of two assumptions, either

EMH-A   *the world behaves as if complete futures and insurance markets extend to the horizon of long-term expectation; or*

EMH-B   *a process of trial and error leads to a convergence of expectations on their equilibrium values.*

EMH-B implies EMH-A; while EMH-A is sufficient on its own, if no more than an assertion, given the absence of the required markets. Now Keynes would arguably be quite prepared to accept the two EMH assumptions as complements in the case of short-term expectation: in practice, entrepreneurs correct their expectations by trial and error in circumstances which are usually stable over short production periods (EMH-B); thus, for analytical purposes, it is acceptable to assume 'rational expectations' in the short term (EMH-A). By contrast, 'it is of the nature of long-term expectations that they cannot be checked at short intervals in the light of realised results' (*G.T.* 51). The long-term durable nature of capital-assets is precisely the problem; if the expectations upon which the investment was based prove mistaken, it is not possible, either to reverse the investment today, or to go back in time, adjust the original investment decision, and then check the revised results in the present, in order to find the equilibrium position. It is only in a stationary or steady state that adjustments made today might (given stable dynamics) be expected to have the same effect in the future as the same adjustments, made in the past, would have had today. So, the convergent feedback mechanism, which would be necessary to generate in practice a set of long-term equilibrium prices as the basis of prospective yield, is absent in any economy subject to unforeseen change, such as the one we inhabit. It cannot be emphasised enough that it is simply not legitimate to model the real world in terms of long-term equilibrium over time, because of the historical nature of time.

The efficient markets hypothesis replaces the assumption of perfect foresight with the only slightly weaker assumption of knowledge of an objective frequency distribution governing events.[2] If we follow EMH-B, that this knowledge can be acquired by discovery, every addition to the evidence will improve confidence in the expected value, in the sense of reducing its standard error as the sample size increases. In the more general Keynesian case, an addition to the evidence need not conform to the distribution of previous information in the well-behaved manner of drawings from an urn, so that the expectation may fluctuate dramatically. Even if there is considerable weight behind a given expectation, confidence may be shaken by the arrival of unexpected bad news; the knowledge that we know so little about the future always haunts us.

In the presence of such fundamental or intractable uncertainty, and in the context of highly 'liquid' investment markets, it is only *rational* to pay more attention to tomorrow's market price than to tentative and unreliable expectations of fundamental value. What matters is the expectation of tomorrow's price which, on the balance of Keynesian probabilities, is judged as likely to exceed as to fall short of today's price plus interest; or putting it another way, that today's price balances the bullish tendency against the bearish (where these tendencies may exist together in the mind of the same investor or separately among different investors). Evidence which would not be relevant for the purposes of calculating fundamental value, such as the intentions of other investors, must now take prominence. Indeed, the *only* thing that matters (ignoring transactions costs, etc) is the intentions of other investors, so that individual opinions matter only insofar as they contribute to 'average' opinion. If particular investors ('bears') believe the market is over-priced, they should sell today and buy back tomorrow, even if their long-term intention is to hold the asset for its economic life. There may be serious-minded investors in the market whose intentions reflect a model of fundamental value, yet it is still their intentions in the form of arbitrage operations that matter, and not the accuracy of their model, which can only be established long after the event. As Keynes points out in detail in *G.T.* Chapter 12, the real business of the professional investor must, perforce, be the study of market sentiment, in which the study of fundamental value is at best a minority option. The balance of Keynesian probabilities thus indicates a 'conventional valuation', the price today that balances the bullish and the bearish tendencies in the market as a whole and represents the average opinion or conventional wisdom as to the correct price. ► **A4.3.1**

The eloquence of Keynes's description of speculative excess in *G.T.* Chapter 12 has, for the modern Classical reader on the one hand, tended to obscure the fact that conventional valuation is not an aberration or temporary departure from fundamental value, but inevitable in the real-time world of organised asset markets: no forward market or convergence mechanism exists to bring long-term asset prices into line with their fundamental value. On the other hand, much Post Keynesian theory tends to treat investment as entirely exogenous, determined solely by 'animal spirits' or other institutional forces not open to competitive equilibrium analysis. Nevertheless, Keynes himself is explicit that

We should not conclude that everything depends on waves of irrational psychology. On the contrary, the state of long-term expectation is often steady. Thus after giving full weight to the importance of the influence of short-period changes in the state of long-term expectation as distinct from changes in the rate of interest, we are still entitled to return to the latter as exercising, at any rate, in normal circumstances, a great, though not a decisive, influence on the rate of investment. (*G.T.* 162)

The next section argues that in considering long-term accumulation, consistently with this statement, Keynes places his main emphasis on the indirect influence of the possibility of unforeseen changes in the state of long-term expectation upon the money-rate of interest through liquidity-preference, rather than on the direct effect of actual changes (and the speculative anticipation of such changes) in the state of long-term expectation upon the prospective yield. Liquidity-preference, like the propensity to consume, is a psychological response to the uncertainty of the future.

4.4   THE NATURE OF LIQUIDITY

It is common ground among writers on Keynes that the degree of liquidity of an asset is the degree to which a decision to use the asset as a store of wealth can be reversed at short notice and without loss. Liquidity allows investors to cut their losses if their expectations have to be revised. There is less clarity about the nature of liquidity itself, as discussed in the Prologue, and most writers equate liquidity with convertibility or marketability, the ability to exchange an asset for cash at a well-defined market price. This is not a satisfactory interpretation of the meaning of liquidity, at least in *The General Theory*, in which all assets are (as I have argued above) equally convertible in perfectly competitive markets, nor does it make sense of Keynes's reference to the liquidity of land.

Liquidity means more than convertibility and includes the degree to which the value of an asset, measured in any given standard, is independent of changes in the state of long-term expectation. Liquidity risk is then the possible (*not* probable or expected) loss of value as a result of a change in the state of long-term expectation. Keynes's liquidity premium is the margin required by investors between the marginal efficiencies of the asset and the standard in order to overcome preference for the standard. The size of this margin will depend upon the difference in the degree of confidence with which investors view the marginal efficiencies of the asset and the standard respectively.

Keynes comes closest to defining liquidity from first principles in his discussion of a situation where the standard of value (perhaps the goat to which he refers in *A Treatise on Money*, but certainly not land) does not have the normal character of money:

> In [a non-monetary] economy capital equipments will differ from one another (a) in the variety of the consumables in the production of which they are capable of assisting, (b) in the stability of value of their output (in the sense in which the value of bread is more stable through time than the value of fashionable novelties), and (c) in the rapidity with which the wealth embodied in them can become 'liquid', in the sense of producing output, the proceeds of which can be re-embodied if desired in quite a different form. (*G.T.* 240)

Liquidity is firstly a function of the degree to which a capital-asset can be used in the production of different consumables, so that a change in prospective yield based on production in one line can be met by switching to another line. The prospective yield on the second line is lower than originally expected from the first, but higher than now expected from the first after the change in expectations, reducing the impact of the change on the value of the asset. Keynes then refers to the importance of the stability of the value of the consumables produced. Stability in this context means independence from changes in the state of long-term expectation (*e.g.* bread is not a fashion item). The third element of his definition is the 'turnover period', the period over which the asset can be converted through production into consumable output. The shorter the period, the less likely is it that a change in the state of long-term expectation will arise during the life of the asset. Clearly Keynes is here thinking in aggregate terms: although an individual investor can always exchange an asset for money under perfect competition, its convertibility for the community as a whole depends on its conversion into consumption-goods through production and not just exchange. ▶ **A4.4.1**

For the various rather complex reasons set out in *G.T.* Chapter 17, the standard of value tends to be the asset whose value in terms of consumable output is the most stable with respect to changes in the state of long-term expectation. ▶ **A4.4.2** Thus when Keynes refers to liquidity he really does mean money, including short-term bank and state debts whose value is not sensitive to changes in the rate of interest because of the short period to redemption. Keynes treats capital-assets as fully convertible but not liquid, and mentions, almost as a footnote to the above definition (*G.T.* 240), the need for a premium to compensate for their liquidity risk relative to bonds. The rate of interest on bonds, where there is no 'risk proper', is entirely compensation for liquidity risk from unexpected changes in interest rates.

From this it is clear that Keynes regards capital-assets as less liquid than bonds, in the sense that their value is more sensitive to changes in the state of long-term expectation, since the value of capital-assets depends on expectations of both the interest rate and the prospective yield. On this definition of liquidity, money and bonds dominate capital-assets in terms of both 'risk proper' and liquidity risk. The first step in the portfolio decision is to choose between money and the next most liquid and safe class of assets, i.e. bonds; only then does the choice arise between capital-assets and bonds. Thus liquidity risk is the criterion for placing different categories of asset in separate compartments, and the demand for liquidity cannot be satisfied by assets other than money (i.e. the set of assets convertible on demand into means of payment at a fixed price in terms of the standard of value).

In the discussion of *G.T.* Chapters 11 and 12 Keynes takes the rate of interest as given and considers how expectations of prospective yield are affected by changes in both the balance and the weight of evidence. Market prices are determined by the balance of opinion, not so much in the minds of individual investors, but of all investors as expressed through supply and demand in a conventional valuation. Prices reflect not only what Keynes refers to as the 'actuarial' value, corresponding to the balance of evidence, but also the state of confidence, which is related to the weight of evidence. This distinction corresponds to 'the difference between the best estimates we can make of probabilities and the confidence with which we make them' (*G.T.* 240). The celebrated 'animal spirits' or spontaneous optimism relate to the state of confidence and have their counter-poise in liquidity-preference, 'the degree of our distrust of our own calculations and conventions concerning the future' (*C.W.* XIV, p. 116). The state of confidence is not something separate from the state of long-term expectation, but part of it. Confidence is weak when we know that our expectations are likely to change substantially, but we have no precise idea as to their future state: our present expectations already represent the best we can do on the available evidence.

► **A4.4.3**

Having held the rate of interest constant while discussing the marginal efficiency of capital, Keynes continues to draw upon his understanding of probability and the state of long-term expectation when he turns to his liquidity-preference theory of interest. Bonds differ from capital-assets in that their prospective yield is fixed from the outset, so that secure bonds carry no actuarial risk or 'risk proper'. By the same token, the state of confidence in this prospective yield (unlike those of capital-goods) is high, if not always absolute, and is not to be confused with the state of confidence in expectations of the future rate at which this prospective yield will be

discounted (i.e. the expected future rate of interest). The current rate of discount of the prospective yield on bonds thus reflects only the liquidity risk from holding bonds, so that conversely the bond rate is a measure of the premium required to overcome liquidity-preference, i.e. the lack of confidence that future interest rates will not differ from current expectations and that bond prices will not fall in consequence. The price of bonds is, as with all long-term convertible assets, struck as a conventional valuation based on the expression in terms of supply and demand of the balance of the bullish and bearish tendencies of investors as a whole.

Keynes's liquidity-preference theory of interest has been the subject of many detailed criticisms, and perhaps the most telling is one of the oldest, namely that the conventional 'safe' rate of interest is left 'hanging by its own bootstraps'. Yet this criticism loses its force when full account is taken of the historical nature of time and of the state of long-term expectation. Keynes recognises that the 'safe' rate can be managed down (*G.T.* 204), but that by an inverse square law reminiscent of Newton's (*G.T.* 202) a rate below John Bull's 2% (*G.T.* 309) compensates only to a vanishing extent for the risk from a future upward change in expectations of future interest rates. The future will always be unknown, and any sense of history makes unreasonable the belief that any given state of expectation will persist indefinitely.

Thus, according to Keynes, the rate of interest has a life of its own, based on our well-founded distrust of forecasts of the long-term future and on the security offered by money, as the store of value least affected by changes in such forecasts. There is no market mechanism for bringing the rate of interest into equilibrium with the propensity to consume at full employment, nor do market forces operate to reduce the liquidity-premium in the same manner as they tend to reduce the prospective yield of capital-assets. Behind Keynes's analysis lies an acceptance of the historical nature of time and of the world we inhabit as one 'in which our previous expectations are liable to disappointment and expectations concerning the future affect what we do today'.

4.5   SUMMARY

The demand for new capital-goods is a function of the actual state of long-term expectation (expressed through the marginal efficiency of capital) and of the uncertain prospect of indefinite change in that state (expressed through liquidity-preference). The common foundation of Keynes's three macroeconomic functions (including the propensity to consume) and his

classification of goods into four compartments is our uncertainty about the future, and it is this which interferes with the gross substitution axiom of Classical theory. The division of assets into capital-assets, bonds and money and the choice of the two partitioning functions between them reflects different orders of liquidity risk and permits the isolation of the essential properties of money.

The confusion between stocks and flows associated with some discussions of the marginal efficiency of capital and the theory of interest is resolved once the investment-saving identity and Keynes's use of time and equilibrium periods are fully appreciated. Unlike short-term expectations, long-term expectations cannot even for analytical purposes properly be treated as 'rational' in the modern Classical sense; it is only rational (or better, reasonable) to pay more attention to tomorrow's market price than to tentative and unreliable expectations of fundamental value. Yet Keynes places more emphasis, for the purposes of the long term, on the indirect influence upon current investment of the state of confidence through the rate of interest, than he does on the direct effect upon the prospective yield of investment from actual changes (and the speculative anticipation of such changes) in the state of long-term expectation. Liquidity-preference and animal spirits are opposite aspects of the state of confidence, which is a matter of the weight of evidence behind our forecasts of the future. Thus the rate of interest has a life of its own, based on our well-founded distrust of forecasts of the long-term future and on the security offered by money, as the store of value least affected by changes in such forecasts.

NOTES

1. Behind the full-employment investment-demand schedule lies a collection of heterogeneous capital-goods; there is no suggestion here of homogeneous capital with the problems of reswitching and reversing identified by Wicksell and Sraffa. The downward slope only assumes diminishing returns to each type of capital-good, on the assumption that full employment is maintained by intervention.
2. See Glickman (1994), Hayes (2006b). The necessary assumption of direct or indirect knowledge of the frequency distribution applies even to the more sophisticated Classical treatments of uncertainty and capital irreversibility such as real options theory (Dixit and Pindyck, 1994). See also Crotty (1996) on the relationship between asymmetric information and fundamental uncertainty.