

# CAPITAL, CREDIT, AND THE MEDIUM RUN

LARRY J. SECHREST

FILLING GAPS AND BUILDING BRIDGES

**T***ime and Money* should be read by all Austrian economists, as well as by those of competing schools of thought. It is a seminal contribution by a man who can plausibly be described as the pre-eminent macroeconomist currently working in the Austrian tradition: Roger W. Garrison. Moreover, it is a work that constitutes a significant advance in both the manner in which Austrian theory is presented and the means by which one can readily compare and contrast a wide variety of macroeconomic approaches. In other words, it offers the reader both pedagogical and analytical insights. Both of these will be achieved if one carefully examines the detailed diagrams that pervade the book. These diagrams, most of which are familiar to anyone who teaches university-level economics courses, are the most obvious way in which this book differs from most Austrians' work on macro issues. They are also, therefore, a likely point of attack for Austrian critics of Garrison's efforts.

Some may dismiss the book as a betrayal of the "purity" of verbal reasoning. So be it. While I may sympathize with such a sentiment, I must ultimately reject it. Graphical analysis can produce definite benefits. It forces one to identify the variables and parameters involved in whatever relationship one is examining and, thus, to distinguish movements along a curve from shifts of a curve. In addition, such analysis helps to reveal anomalies and contradictions in one's thinking as well as to impel one to make explicit any assumptions that were initially implicit. All of this can, of course, also be achieved in a verbal presentation, but is often less likely.

I believe *Time and Money* to be a notable achievement which furthers macroeconomic thinking by (1) making clear exactly why the Austrian emphasis on the capital structure is indispensable, (2) offering a taxonomy of

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all well-known approaches to macroeconomics, (3) revealing which elements are essential—and which are not—to the Keynesian and monetarist arguments, (4) demonstrating that expectations and time lags have long been an integral part of Austrian analysis, (5) reacquainting the reader with ideas like Keynes's "full investment" and Friedman's "plucking model," (6) applying Austrian principles to issues as diverse as tax reform, deficit spending, credit controls, and Ricardian Equivalence, and perhaps above all, (7) providing academics with graphical models that are familiar, tractable, and illuminating.

The pedagogical contributions of this book are invaluable, but one should not judge them merely as classroom tools. At the same time that Garrison's diagrams provide the Austrian economist with a succinct method of conveying to undergraduates the reasoning of people like Mises, Hayek, and Rothbard, they also perform an outreach service to other schools of thought. Garrison does a very thorough job of presenting various non-Austrian approaches. Moreover, he does this in terms that proponents of those approaches might themselves use. Then he demonstrates precisely where they go astray by comparing them to the richer, more robust analysis offered by Austrians. As a result, two important goals are achieved. First of all, mainstream economists are introduced to Austrian macro theory in a way that should make such theory fully intelligible to them. Second, the superior explanatory power of Austrian analysis is revealed, but in a manner that entreats rather than offends.

It is fair, therefore, to say that, in a sense, Garrison "builds bridges" over the chasm that seems to separate Austrians from other economists. This is not, however, an act of supplication. Garrison never retreats from his firm belief that the Austrian focus on the intertemporal structure of capital provides Austrians with superior theoretical tools. To put the matter in narrower terms, in the debate between Keynes and Hayek, "Hayek was right" (p. 5).

Speaking of Hayek, it is appropriate to point out that Garrison relies more on the Hayekian analysis of money, capital, and business cycles than on that of Mises or Rothbard. If for no other reason, this is because Garrison's graphical point of departure is the "Hayekian triangle" introduced in *Prices and Production* (1935). As is well-known, Hayek continued to develop his ideas on capital in *The Pure Theory of Capital* (1941). Despite the prominence of Hayek's triangles in *Time and Money*, Garrison makes it clear that "*Time and Money* is not the sequel to Hayek's *Pure Theory*" (p. 11). In fact, as will be discussed later, Garrison does not hesitate to depart from Hayek on occasion.

References to Hayek's early work brings to the fore another characteristic of *Time and Money*. In Garrison's own words, it employs "theory from the 1930s and pedagogy from the 1960s" (p. 12). And Garrison is right not to apologize for such seeming anachronisms. His book serves a needed remedial function in that it advances the theory beyond the point at which Hayek left

it, and constructs pedagogical parallels to now-common visual tools like the Keynesian Cross, IS-LM, and aggregate supply-aggregate demand. It is in these ways that *Time and Money* fills in some important gaps.

The book is divided into twelve chapters, which are grouped into five parts. Part one is, unsurprisingly, introductory. It explains why the focus is on the capital structure rather than, for example, expectations. Capital is critical because it is the causal connection between short run and long run. Using a comment by Robert Solow as a point of departure, Garrison strikes at the vulnerable heart of mainstream macroeconomics. If the long run emerges from a sequence of short-run periods, how can it be that investment and consumption are positively related in the short run but negatively related in the long run? Keynesians look at the short run, and classical economists look at the long run; therefore, neither can give an adequate answer. But Austrians look at what might be termed the “medium run,” a time period during which the capital structure can change dramatically. It is these intertemporal transformations which constitute the “real coupling” (pp. 4-5) between short and long runs. Without a sound capital theory, macroeconomics is incomprehensible.

Garrison rejects the modern obsession with expectation-formation. He points out that entrepreneurial expectations about relative prices are deeply embedded in the Austrian theory, rather than being based on some mythical “representative agent” and then tacked on like an afterthought, as in rational expectations. Moreover, he asserts that the relevant distinction is not between local and global information sets, but between “market savvy and theoretical understanding” (p. 27).

Part two presents the capital-based theory of the Austrian School, while part three examines the labor-based approach of Keynes. The sharp contrasts between the two that Garrison brings out “allow Keynes and Hayek to go head-to-head” (p. 13). Part four is devoted to the varieties of monetarism seen in the work of economists such as Milton Friedman, Edmund Phelps, Clark Warburton, and Leland Yeager. Since parts two through four are the primary substance of the book, they will be discussed in more detail below. Part five consists entirely of a short summary chapter.

#### TRIANGLES AND FRONTIERS

In order to portray a macroeconomics that is based on heterogeneous capital, Garrison employs three core diagrams: the market for loanable funds, a production possibilities frontier (PPF), and the Hayekian triangle. The first two are familiar to all economists, but the third is usually known only to Austrians. The Hayekian triangle is a right triangle the base of which measures production time—or, equivalently, the stages of production—and the height of which measures output in value terms. Here, production is construed as a continuous-input-point-output process, even though that implies

that consumption requires no passage of time. Further, it must immediately be pointed out that “production time” itself has both value and time dimensions. “Two dollars worth of resources tied up in the production process for three years amounts to six dollar-years (neglecting compounding) of production time” (p. 49).<sup>1</sup> The slope of the hypotenuse of this triangle “reflects” but does not necessarily equal the rate of interest which clears the market for loanable funds.

If saving increases in the society (the rate of time preference falls), then the hypotenuse of the Hayekian triangle becomes flatter, its base becomes longer, and its height declines. In Garrison’s PPF, the axes of which measure consumption (vertically) and investment (horizontally), one sees a movement along the frontier to the southeast. The market for loanable funds reveals this same qualitative change, in that the supply of funds increases and the equilibrium rate of interest falls. This sequence of events leads to a fully sustainable macro structure, because the interest-rate movement accurately reflects the change in time preference and the concomitant shift of emphasis toward more investment and less consumption.

One can even add stage-specific markets for labor to the three interconnected diagrams named above, as Garrison does. When time preferences fall and production becomes more “roundabout,” the demand for labor in the early stages (higher-order goods) rises and the demand for labor in the late stages (lower-order goods) falls. Why? Because wage rates reflect the discounted marginal revenue product of labor, and interest rates have fallen. The interest rate effect on the discounted value of labor and thus on wage rates will be relatively greater the farther from the final goods that labor is used. Initially, therefore, wage rates in the early stages rise, while wage rates in the later stages decline. This induces a movement of labor away from the later stages and toward the early stages, which reverses the directions in which the respective wage rates are moving.<sup>2</sup> Wage rates in each of the stages ultimately return to their initial levels. Employment in the early stages is permanently higher, and employment in the later stages is permanently lower.

It would be correct, therefore, to say that “the change in the interest rate affects the pattern of employment and not the magnitude” (p. 66), a point also made by Hayek. This is of no small importance, because if there were a net

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<sup>1</sup>Garrison realizes that taking account of the effects of compounding would require an exponential function and a “triangle” with a nonlinear hypotenuse, but he rejects such a construction as being needlessly complex.

<sup>2</sup>Throughout the graphical analysis, Garrison assumes that labor is a nonspecific factor of production, although he is well aware that some workers possess firm- or industry-specific skills. This “human capital” he takes to be part of the capital structure (p. 65). Workers with these attributes would not change jobs. They would merely experience a rise or decline in their wage rates, depending on the stage of production in which they were employed.

change in incomes, then the Keynesian paradox of thrift could appear. Lower consumption (more saving) would, in that case, imply a negative income effect on the supply of loanable funds, little or no increase in investment, and a movement inside the PPF.

The next task is to portray the effects of an expansion of money and credit by a central bank. Here, too, the market rate of interest falls due to the increase in loanable funds. However, the artificially low rate of interest causes the quantity of funds saved to fall and the quantity of funds invested to rise. This “drives a wedge between saving and investment” (p. 70). Ex ante investment exceeds ex ante saving, but ex post the two must of course be equal. This necessitates the appearance of “forced savings,” following an initial period of overconsumption. The Hayekian triangle reveals the fundamental incompatibility involved here by virtue of the fact that its hypotenuse no longer is smoothly continuous. Because investors enjoy cheap credit, the lower end of the hypotenuse becomes flatter, that is, the early stages of production expand. But because consumers are spending at the same rate as before, and those who are employed are experiencing higher incomes, total consumer spending rises. Thus the upper end of the triangle’s hypotenuse becomes steeper. Both investment and consumption are, temporarily, increasing.

Equivalently, one may say that available resources are being pulled in two directions: toward the production of both more higher-order goods and more lower-order goods. In the PPF diagram, Garrison portrays these forces as vectors. More or less simultaneously, one pulls to the north (more consumption), while the other pulls to the east (more investment). The net effect is a move to the northeast outside the production frontier. Garrison realizes that such movements outside a PPF are rather unconventional, but he defends it on the grounds that a PPF should be construed as representing combinations of consumption and investment that are sustainable. Economic expansions resulting from acts of credit creation by a central bank are not sustainable and therefore must be depicted by movements beyond the PPF.

The proposition that such expansions are only temporary and must eventually reverse direction has long been central to the Austrian theory of business cycles. However, Garrison’s treatment helps to clarify an aspect of this process that some Austrians tend to overlook: Is the Austrian theory one of overinvestment or malinvestment? That is, given no change in time preferences (preferred rates of consumption versus saving), does the problem lie in the fact that too much has been invested, or in the fact that the investment is in the wrong stages of production? Garrison makes it quite clear that both are essential to the Austrian story. The malinvestment is what causes the expansion to be followed, despite any central bank efforts to forestall this, by a contraction of even greater magnitude. Producers of goods in the early stages of production compete for both complementary and substitutable resources

against the producers of goods in the late stages. Both cannot win. And it is the producers of higher-order goods who must bear the brunt of the correction, because their plans are incompatible with consumers' unchanged time preferences. Therefore, the initial movement to the northeast and outside the PPF is necessarily followed at some point by a reversal to the southwest and back inside the PPF.<sup>3</sup> Why not simply back to the frontier at the point of exit? Because the artificially low interest rate gives the resulting output mix an "investment bias" (p. 71). A return to the PPF at the point of exit would represent an output level which was sustainable, but the output mix at that point would remain unsustainable. Further correction of the balance between lower-order and higher-order goods would be necessary.

Discussions of that corrective mechanism bring overinvestment to the fore. The economy "crashes" because unjustified investments in the early stages of production have been undertaken. The economy recovers slowly, and no doubt painfully, from the contraction because the overinvestment in the early stages of production is sure to involve at least some goods that are durable as well as being firm- or even project-specific. Liquidation of such goods, and the firms or projects employing them, will be a difficult and time-consuming process. Re-establishing a sustainable level and mix of goods will take time. Quick and painless adjustments are out of the question.<sup>4</sup> The Austrian theory of credit-created cycles involves both overinvestment and malinvestment. Malinvestment causes the contraction; while overinvestment causes the contraction to take time. "[P]olicy-induced malinvestment is the unique aspect of the theory . . . [however] over-investment is a critical enabling aspect of the theory" (p. 81).

In his explication of the capital-based approach to business cycles, Garrison pauses to comment on several side issues. I will mention only two here. First of all, he notes that if in one's analysis, one minimizes the role of malinvested capital, then the expectations-adjusted Phillips Curve provides a story quite similar to that of Austrians. There, too, monetary injections cause errors by market participants and lead to unsustainable movements beyond the PPF. However, the Phillips Curve approach, which is often treated as one of the pillars of monetarist thought, depends critically upon price-level movements that deceive workers regarding their real wage rates. Therefore, the capital-based, or Austrian, theory is empirically more robust as an explanation for periods like the mid- to late-1920s, when the price level in the United States exhibited no significant changes.

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<sup>3</sup>Strongly risk-averse savers are likely to drive the economy deeply within the PPF.

<sup>4</sup>If the corrections truly had been quick and painless, the economy would never have left the PPF. There would simply have been a movement along the frontier.

Second, Garrison deals with two unavoidable aspects of recent developments in macro theory: expectations and time lags. From the market process-based perspective that all Austrians embrace, the mainstream approaches to expectations are highly artificial. Entrepreneurs, and indeed all market participants, possess information which reveals something about “underlying economic realities,” but they “do not already have enough information about those realities to make the conveyed information irrelevant” (p. 77). Economic agents learn about the economy as events unfold. Their expectations about future conditions depend upon both their theoretical understanding of macro-economic relationships and their concrete knowledge of specific events. Expectations are endogenous. Non-Austrians often treat the formation of expectations as an addendum to economic events. Austrians realize that expectations are “embedded” in the market process itself. Moreover, the elasticity of expectations regarding interest rates must be greater than zero, for there would be no credit-induced business cycles at all if that elasticity were zero.

What about time lags? Many macroeconomists think that questions about expectations can be translated into questions about the lag structure. For Austrians like Garrison, changes in interest rates certainly do change the structure of production, after some passage of time. How long is this passage of time? It is clearly greater than zero; otherwise there would be no cyclical phenomena at all. Garrison calls it “an intermediate lag, one long enough to allow a boom to get under way but short enough to prevent it from maturing into real growth” (p. 79). To call it the “medium run” seems very appropriate. Here too, as with expectations, the lag structure emerges from the market process of discovery.

#### DEFICITS, DEBT, AND RISK

The analysis of unsustainable booms caused by credit expansion may be the most dramatic use of Garrison’s capital-based model, but it is by no means the only such use. To demonstrate the broad applicability of the model, Garrison also surveys several issues of a fiscal or regulatory nature. What, for example, of Ricardian Equivalence, the notion that it is irrelevant whether a government finances its spending by issuing more debt or by raising taxes? To examine this, Garrison assumes that neither the spending itself nor the possible new taxes will, in themselves, alter the intertemporal structure of production, thus any such alterations will be attributable to the issuance of debt. As likely candidates which might meet that criterion, he suggests “humanitarian foreign aid” and a “simple lump-sum tax,” respectively.

Diagrammatically, the issuance of government debt increases the demand for loanable funds and raises the market rate of interest. Some private

investors are “crowded out” of the market as a result. The economy moves along its PPF to the northwest. That is, consumption rises, being stimulated by the tax reduction made possible by the increase in debt, and investment falls. In the Hayekian triangle, the higher interest rate produces a steeper hypotenuse, which signifies fewer resources devoted to the early stages of production and more to the later stages. This slows the growth rate, or, in other words, present consumption expands at the expense of future consumption. “To this extent, the debt burden is shifted forward” (p. 87).<sup>5</sup> Of course, Garrison recognizes that, if the new government debt is perceived as net wealth by the holders of that debt, then the movement may be out beyond the PPF. The commitments of entrepreneurs to long-term investment projects could reinforce this effect. Thus, one may say that debt-financed government spending possesses a “political kinship to monetary expansion” (p. 88).

Garrison also investigates credit controls and tax reforms in the light of his capital-based model. With usury laws which impose an interest-rate ceiling on consumer loans (as advocated by Adam Smith), the effects are qualitatively identical to those of a decline in the rate of time preference. The ceiling on consumer loans means that more funds are available for business investment, so the supply of loanable funds increases and market rates of interest fall. The hypotenuse of the Hayekian triangle becomes flatter, lengthening the production process. The economy moves along its PPF to the southeast. That is, consumption falls and investment rises. But what if the ceiling were a broadly based one that affected all credit transactions? Here one will see a disparity between the quantity of funds demanded and the quantity of funds supplied. As saving and investment decline, consumption rises. The structure of production becomes shorter, and the economy moves to the northwest along its PPF. The effects on the economy are similar to those that result when the government finances spending by issuing more debt.

There is an important variation on the interest-rate-ceiling scenario discussed above. What if the central bank accommodates the shortage of credit? The interest rate is artificially low, but entrepreneurs can get all the credit they demand at that rate, despite the smaller quantity of funds supplied by savers. Here the result is very different. The hypotenuse of the Hayekian triangle becomes flatter, investment in the early stages of production takes precedence over the later stages, and the economy moves out beyond its PPF to the northeast. This is unsustainable because actual saving remains less than investment, so it is necessarily followed by a collapse into the interior of the PPF. This should sound familiar. “Except for the differing announcement effects,

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<sup>5</sup>In short, Garrison disagrees with Mises’s defense of Ricardian Equivalence (Mises 1983, p. 168; 1966, p. 227). In fact, he cites Leland Yeager’s comment that Mises errs in being insufficiently subjectivistic on the matter.

the market process associated with papering over the credit shortage caused by an interest-rate ceiling, and the market process associated with a credit expansion are indistinguishable” (p. 101). The only advantage lies with the former. In that case, there is an announcement effect which might at least warn entrepreneurs of the underlying problem.

As far as “tax reform” is concerned, Garrison addresses only one contrast, though an important one given his framework of analysis: a tax on income versus a tax on consumption.<sup>6</sup> If the same total tax revenue is to result, and an income tax is replaced by a consumption tax, then the shape of the PPF will change. The vertical intercept (consumption) will decrease, and the horizontal intercept (investment) will increase. The structure of production shifts toward the early stages. That is, there will be more capital goods and fewer consumer goods. Conventionally put, the rate of economic growth rises.

Garrison argues that the change in the taxing method will have no first-order effects on the market rate of interest; therefore, the link between the slope of the Hayekian triangle and the market for loanable funds will be severed. He concludes that there are no compelling reasons to prefer one sort of tax over the other. “Each is deficient when judged by the standard set by the other” (p. 105).

In a relatively brief chapter 6, Garrison discusses, but offers no diagrams to illustrate, the role of risk in episodes of boom and bust, including those which have appeared in various Asian countries in the past two decades. Here his focus is on that component of interest rates known as the risk premium, in contrast to the more common concern with the inflation premium. Fiscal policy, monetary policy, and various regulatory actions can all affect both the level of risk in the economy and the degree to which particular economic agents bear the full costs of their risky actions. However, the principal problem lies with government deficits and the means by which they are financed. The unpredictability of government deficits increases the riskiness of the economy as a whole and of credit markets in particular. However, that increased risk may neither be perceived accurately nor have its costs borne by the appropriate actors.

In order properly to grasp the magnitude of a deficit, Garrison recommends using the deficit-to-saving ratio instead of the usual deficit-to-GNP ratio. By this standard, the U.S. deficits of the 1980s and 1990s were indeed “chronically large.” Moreover, as deficits escalated during recent decades, they were financed in ways that made the concomitant increase in risk progressively less visible. “The government has gone from taxing directly to borrowing domestically to monetizing debt to exporting debt to hiding debt” (p. 117).

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<sup>6</sup>Garrison sees these two types of taxes as having significantly different effects. Murray Rothbard (1977, pp. 108–11) argued that consumption taxes were really taxes on income, just at a lower effective rate.

## THE KEYNESIAN SYSTEM

The task of unraveling “what Keynes really meant” has long been a cottage-industry unto itself in the economics profession. In chapters 7, 8, and 9 Garrison succeeds in clearing away the debris of Keynesian thinking by, first, concentrating on what Keynes himself said and, second, separating the primary elements from the secondary. A key point of departure is the distinction Keynes made between cyclical and secular unemployment. The first supposedly requires countercyclical policies; the latter necessitates fundamental social “reform.” The first reveals Keynes as a meddler; while the latter reveals Keynes as a socialist, or perhaps more precisely, a fascist.

To illustrate the labor-based approach of Keynes, Garrison retains the PPF and the loanable funds market used earlier. To these he adds four new elements: the market for (homogeneous) labor, the familiar Keynesian Cross, a diagram that reflects the ratio of labor income to total income (assumed constant by Keynes), and a diagram showing the relation between the level of employment and the income accruing to labor.<sup>7</sup> The chain of events that results in a cyclical contraction is precipitated by an unpredictable, sudden decrease in the demand for investment funds (or a “collapse in the marginal efficiency of capital”). The demand for labor falls, but the wage rate remains the same, so there is a surplus of labor. Labor income, and therefore total income, both decline. As income falls, (1) the supply of loanable funds also falls, so the market interest rate does not change, and (2) consumption demand decreases, which exacerbates the problem, driving the economy into a contractionary spiral. In terms of the PPF, the movement is not along the frontier but deep into its interior. The Keynesian “solution” is, of course, expansionary fiscal and monetary policies, though these supposedly stabilizing actions may, in practice, be destabilizing (p. 157).

Garrison’s understanding of the Keynesian system is both profound and precise. Several noteworthy observations emerge from his close attention to the system’s details. For example, Garrison demonstrates that the rigidity of wage rates (either nominal or real) is not necessary to the argument, despite the considerable ink which textbooks usually devote to that issue. Given the fixed structure of production and an income-effect that swamps any real-balance effect in the market for loanable funds—both of which Keynes assumes—a collapse of investment demand would indeed produce a contraction. In addition, Garrison points out that it is not a “fetish for liquidity” that causes the problems, although increased “hoarding” does make things worse because it

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<sup>7</sup>Here labor income is positively, and strictly proportionally, related to the level of employment because of Keynes’s assumption of wage-rate rigidity. Garrison quite correctly points out that Keynes meant the real wage rate. Given the way Keynes modeled the economy, cyclical problems would still arise, even if commodity prices and nominal wage rates were perfectly flexible, because they would move together.

decreases consumption spending. Per Keynes, the contractionary catalyst is too little investment, not too much saving.

It is the issue of saving versus consumption which provides “the clearest contrast between the Keynesian and the Hayekian visions” (p. 160). “For Keynes, consumption is one of the two components of expenditures. . . . For Hayek, consumption is the final stage of a time-consuming production process” (p. 165). Since Keynes, by assumption, excludes changes in the structure of production from consideration, his system is incapable of reflecting changes in individuals’ time preferences. Present consumption and future consumption are not alternatives; they move in lockstep together. In effect, the Keynesian model presupposes that the market process is incapable of dealing with shocks such as a decrease in investment demand. Thus, with Keynes, one sees both a wage rate and an interest rate which clear their respective markets, but which are nonetheless problematic. “Keynes elevated the difficulties of an economy-gone-wrong to the status of a general theory” (p. 144).

To Keynes’s way of thinking, things were more likely to go wrong the closer one got to *laissez-faire* capitalism. However, even if countercyclical policies worked perfectly, capitalism was still to be condemned. The chronic problems were too high a rate of interest, too little investment, and thus too much secular unemployment. As Garrison explains in chapter 2, Keynes ultimately yearns for radical social reforms which effectively constitute an abandonment of capitalism. To achieve his ideal of “full investment,” Keynes wants the State to collectivize the processes of saving and investing so that capital will (somehow) cease to be scarce, the interest rate will be more or less zero,<sup>8</sup> all income will accrue to labor, and employment will be maintained at a high level.

Keynes thought this necessary because capitalists conspire to keep capital scarce and interest rates high. In the spirit of Marx, and the socialists of all parties, Keynes considered capitalists to be the exploiters of labor, rather than its benefactors. Garrison quite effectively demonstrates that it is this issue of social reform which lies at the heart of Keynes’s critique, not the issue of cyclical fluctuations. He furthermore suggests that the failure to recognize that fact has helped to produce so many different, and confusing, interpretations of Keynes. Upon reflection, “the decades of difficulties in identifying that [Keynesian] message become understandable” (p. 185).

#### MONEY AS THE CENTER OF ATTENTION

In the previous chapters of the book, money has been quietly ubiquitous. As Garrison says, in an important sense, it is “on every axis of every diagram” (p. 52). In chapters 10 and 11, however, money moves to the forefront, because

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<sup>8</sup>Keynes did allow for some small risk premium as well as a small return to those who exhibit skill in managing capital goods.

these two chapters are devoted to the related topics of monetarism and monetary disequilibrium theory.

With monetarism, Garrison's perspective has an interesting point of departure. He argues that monetarism, though clear and correct about the long-run effects of monetary expansion, is ambiguous and vulnerable when it comes to short- and medium-run effects. This may help explain why monetarism can be illustrated using a variety of diagrammatic frameworks.<sup>9</sup> Specifically, does an increase in the money supply lead to an increase in real output (Q) or an increase in the price level (P)? If monetarist thought is captured by the expectations-adjusted Phillips Curve, then prices and output are positively related. However, that seems to contradict the message of the equation of exchange, long a hallmark of monetarism, in which prices and output are inversely related (given an unchanging income velocity of money).

Garrison solves the dilemma by suggesting that both are correct, but at different stages of the economy's reaction to an unsustainable credit expansion. In other words, he effectively links monetarism with Austrian theory. Those two approaches are "parallel and complementary theories, each dealing with different but related aspects of a policy-induced artificial boom. . . . Overinvestment and malinvestment have a basis in monetarist as well as in Austrian theory" (pp. 200-01). Nevertheless, Garrison does not ignore the differences that exist. Obviously, monetarists focus on labor markets, while Austrians look at capital markets. According to monetarists, market interest rates fall (but the decline is not particularly important) because excess money balances are spent on bonds and other financial instruments. According to Austrians, those rates fall (and the decline is of fundamental importance) because the supply of credit available to entrepreneurs rises.

Ultimately, the biggest difference between the two theoretical approaches involves the structure of production. Monetarism adopts the Keynesian assumption of a fixed structure, that is, the rate at which present consumption is traded for future consumption remains constant, even though aggregate production of both capital goods and consumer goods does change. In the PPF diagram Garrison shows this as a movement along a linear demand constraint. Monetary expansion drives the economy outside the frontier; subsequently, the economy contracts back to the frontier. However, at all times the movements are along the demand constraint.<sup>10</sup> One might say, then, that monetarists offer an adequate explanation of why the boom is unsustainable. On

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<sup>9</sup>These include the four-sector model of Don Patinkin, the expectations-adjusted Phillips Curve, the labor-based model of Keynes, Friedman's "plucking model," and even the capital-based Austrian approach. As Garrison notes, "Monetarism is virtually framework-independent" (p. 210).

<sup>10</sup>Garrison incorporates into this a real cash-balance effect by maintaining the slope of the demand constraint but shifting its vertical intercept.

the other hand, they ignore issues involving the intertemporal structure, so they can provide no better than a weak reason why the correction phase takes so long. Given that the economy moves in and out along the demand constraint, it would seem that the correction phase should be brief. The fact that it usually is not brief must be counted as a deficiency of monetarism.

Garrison does not overlook the “other face” of monetarism: monetary disequilibrium theory. His focus is on Friedman’s “plucking model”<sup>11</sup> and the complementary work of Clark Warburton and Leland Yeager. Unlike the version of monetarism examined in the previous chapter, the constraint is on the supply side instead of the demand side. Monetary contractions “pluck” the economy downward, followed by recovery to the trend rate of growth in real output. The statistical result is that recovery periods (or booms) are more highly correlated with the magnitude of the preceding contraction than with that of the *succeeding* contraction.

Garrison offers two provocative judgments regarding this vision of the economy. First, he is convinced that this—and not the expectations-adjusted Phillips Curve—is the essence of monetarism. The Phillips Curve argument does not, for example, really reflect Milton Friedman’s analysis of the economy. He “was simply taking on his adversaries on their own terms” (p. 203). For Friedmanite monetarists, it is output that rises first, not prices. Second, even though some highly aggregated data seem to support Friedman, in fact the “Plucking Model provides no evidence against the Austrians” (p. 228). Friedman looks at movements in some aggregate measure such as GDP; Hayek or Mises would look at the changing proportions within the aggregate. Early in the expansionary boom, for instance, total investment spending might rise little if at all because investment in the early stages of production would increase while investment in the late stages fell. Tracking total investment without noting the changes in its components would give an economist little reason to think that an unsustainable expansion was under way.

#### A SUMMARY JUDGMENT

*Time and Money* is a multifaceted achievement. Within its pages the reader will encounter business cycle theory, capital theory, comparative economic thought, and many contemporary macroeconomic topics, as well as the tools needed to convey all of it to university students. Academic economists, regardless of school of thought, should welcome this book. It is lucidly written and well-organized, and every page reflects the years of thought that Garrison has devoted to these subjects. One manifestation of this is the fact that throughout

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<sup>11</sup>Despite the attention he devotes to it, Garrison believes the plucking model to be of “limited significance” (p. 230).

the book he successfully navigates between the Scylla of pedagogical simplicity and the Charybdis of theoretical complexity. The net result has just the right proportions of the two.

Are there any aspects of the book that justify negative comment? Yes, but they are relatively minor elements. For example, I would very much like to see Garrison weave the concept of the wages- or subsistence-fund into the tapestry he produces. He mentions it in passing (p. 58), but never returns to it. This deserves to be mentioned, because the wages-fund idea can significantly enhance one's understanding of why it is that the credit expansion is unsustainable.<sup>12</sup> The issue of human capital and how it is affected by changes in market interest rates also deserves a somewhat longer treatment. There clearly is a structure of human capital, just as there is one for physical capital, and indeed the two are related though not identical. Both involve heterogeneous factors, reflect individuals' time preferences, and require for success that complementary factors be forthcoming at the appropriate time. Furthermore, considerations of human capital could bring the business cycle theories of monetarists<sup>13</sup> closer to that of Austrians, and that similarity is a topic that interests Garrison. Finally, I wish Garrison had pursued one of his own questions further. After recognizing that Friedman's true position is illustrated by the plucking model, he asks, "But what is, after all, Friedman's theory of the business cycle?" (p. 231). Since the plucking model is data in search of a theory, it appears to me that those monetarists who eschew the Phillips Curve approach are left with no theory of cycles at all.

"Hayek gave us a good start on capital-based macroeconomics. The insights wrapped up in those triangles and the prospects for extensions and application are yet to be fully developed or fully appreciated" (p. 120). That research project is, indeed, not yet complete. Nevertheless, it seems undeniable that *Time and Money* constitutes a giant step in the right direction.

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<sup>12</sup>For a comprehensive exploration of the wages-fund and its role in Austrian business cycle theory, see Strigl (2000).

<sup>13</sup>This is probably only true of those monetarists who employ the expectations-adjusted Phillips Curve.

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