

**SYMPOSIUM: LESSONS LEARNED FROM AUSTRIAN  
MACROECONOMICS AND THE WORK OF ROGER GARRISON<sup>†</sup>**

**Roger W. Garrison and the Integration of Austrian  
and Mainstream Macroeconomics**

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**Abstract**

Early in his career, in an article titled “Austrian Macroeconomics: A Diagrammatical Exposition,” Roger W. Garrison contributed a new and penetrating analysis of how Austrian capital theory relates to the Keynesian aggregate expenditures model. This paper reviews the development of Garrison’s thought as his analysis became increasingly simplified and more powerful, culminating in the version presented in his 2001 book, *Time and Money*. Garrison’s work points to a multipronged approach that the Austrian school might profitably pursue in advocating the Mises-Hayek theory of the business cycle to mainstream macroeconomists. No single element of Garrison’s presentation is controversial, and it would be particularly beneficial to have specific features refined and clarified through ongoing dialogue and debate with other schools. This may be the only profitable avenue through which any more correct and meaningful understanding of the business cycle can emerge.

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**I. Introduction**

Garrison’s early article, “Austrian Macroeconomics: A Diagrammatical Exposition,” published in *New Directions in Austrian Economics*, appeared in in 1978. The type of graphic exposition he introduced was then uncommon in the Austrian literature, with the few diagrams appearing previously in Hayek’s *Prices and Production* ([1931] 1935, pp. 39–61) and *The Pure Theory of Capital* (1941, pp. 101–

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431) and in Rothbard's *Man, Economy, and State* ([1962a] 2009; see, e.g., pp. 282, 314, 334, and 383) being the only notable exceptions. Even more exceptional was that Garrison showed how the Austrian models could be presented alongside their Keynesian alternatives in the same diagram. Often, the difference is that the Keynesian dimension would be static, ignoring production time, and in some sense accurately descriptive, but compared to the Austrian version, offering less explanatory power (Garrison 1985).

This comparison cuts two ways: if a model lacks explanatory power, there are fewer ways it can be falsified against reality. The failure of Keynesian and new-Keynesian economists to predict, or policymakers to prevent, the 2008–09 financial crisis and recession has been followed by Keynesian policy responses. Though ineffective, these responses have typically been criticized as being too conservative and insufficiently Keynesian. In contrast, the Austrian model could come up short against reality in numerous ways. Garrison refined his analysis in a series of articles culminating in the definitive version presented in *Time and Money* (2001). *Time and Money* is aptly characterized as the most important book on macroeconomics that the Austrian school has produced since *Human Action*.

Garrison's approach to macroeconomic analysis stems from distinctly Austrian philosophical perspectives that nonetheless should be especially attractive to open-minded non-Austrians. These perspectives include the role of subjectivity in entrepreneurial planning and how this subjectivity frustrates most approaches to measuring the capital stock. His background in electrical engineering gave him a unique understanding of how installing capital limits subsequent resource reallocation and the scope for technique reswitching.

Garrison's study of Mises and Hayek, among others, contributed an awareness of how the sustainable growth resulting from technological progress and lowered time preference differs radically from the unsustainable growth that results from expansionary policy. This awareness, virtually unique to the Austrian school, was lost by our mainstream colleagues several generations ago. The Austrian capital-based macroeconomics Garrison espoused explains how expansionary government policy, which aims at removing political actors' election risk, actually makes our lives much riskier by destabilizing the macroeconomy. The Austrian causal-realist story

purports to explain much more than competing mainstream theories, which are uniformly more limited and less satisfactory.

The rest of the paper is organized as follows: Section 2, “Engineering and Austrian Methodological Foundations,” discusses Garrison’s formative background; section 3, “Production and Interest,” discusses the coordinating and equilibrating role of capital markets and the interest rate; section 4, “Unsustainable Expansion,” explicates the boom phase of the business cycle; section 5, “Keynes and the Austrians,” presents Austrian objections to Keynesian business cycle theory; section 6, “Austrian Business Cycle Theory and Monetarism,” does the same for Milton Friedman’s business cycle theory; section 7, “Austrian vs. Real Business Cycle Theory,” does the same for RBCT; section 8, “Lacuna in ABCT,” discusses some needed areas for future research; and section 9 concludes.

## **II. Engineering and Austrian Methodological Foundations**

Garrison received a bachelor of science in electrical engineering in 1967 from the University of Missouri at Rolla. This curriculum introduced him to capital budgeting or engineering economics long before he began formally studying economics (Garrison 2004a). His engineering background enabled him to see early on how multiple internal rates of return in capital budgeting problems explain what motivates firms to switch among capital combinations.

Experience as an electrical engineer also led him to observe that firms with too much installed capital would find it easier to demonstrate low rates of return, and therefore to justify rate increases from public utilities commissions, recognized in the literature as the Averch and Johnson (1962) effect. Thus, regulated public utilities have a profit-maximizing incentive to overinvest in capital, beyond what would be optimal for an unregulated firm.

On the level of a national economy, in Japan, overinvestment in heavy industry dramatically illustrates the impact of too much capital equipment. The Ministry of Economy, Trade, and Industry (METI) has long socialized investment in the industrial sector, something specifically advocated by Keynes, resulting in so much overinvestment that returns are depressed. Low interest rates in Japan were consistent with the restrained monetary policy followed by the Bank of Japan until about 1980, but more recent Keynesian-inspired stimulus spending promoted by American advisors has delivered a crushing stagnation along with deficits.

*Time and Money* was and remains a landmark in Austrian macroeconomics. Garrison not only gave a fresh, broader, and more persuasive exposition of the Austrian business cycle, but he explored how it is related to the alternatives. Only individuals make choices, and any effort to abstract too far from that fundamental reality is not likely to offer meaningful insight. Entrepreneurs have to simultaneously gain private knowledge that they can shield from others for strategic advantage, while also learning of and accommodating their actions to the desires and plans of others (Garrison 1995a).

Entrepreneurial price setting is always an experiment, though ideally it should be informed by intersubjective prior beliefs and corrected through feedback with intersubjective posterior confirmation or falsification. Capital is ill defined, unmeasurable, and may prove as resistant to overcoming these issues as utility resists cardinal measurement. What makes capital a producer good is no intrinsic feature of the good itself, but the subjective, forward-looking plans and expectations of entrepreneurial managers. This knowledge is inarticulate, inchoate, and tacit (Hayek 1948a, 1948b, 1948c, 1952, 1967a, 1967b, 1978a, 1978b). This subjective aspect truly indicates that capital lies in the eye of the beholder.

Entrepreneurs design smaller-scale business plans to fit into the plans of others, which they modify to reflect changing conditions and disappointed expectations. The way productive resources are tied up in a production structure can be thought of as a set of timed inventory stocks planned for future delivery and consumption. A taxonomy of time concepts and measurements underlies a taxonomy of multiply-specific capital (Garrison 1992, 1997). But when money affects the distribution of these resources, money has ceased to be a veil. As Garrison (2001, p. 8) puts it, “Capital gives money time to cause trouble.” Money becomes a “loose joint” when credit expansion enables the relationship between investment and saving to break down (Garrison 1984). Now these real effects will be revealed as beneficial or destructive.

*Time and Money* was unprecedented in offering a lucid and thorough exposition of Austrian business cycle theory while also comparing and contrasting alternative Keynesian and monetarist theories within a common theoretical framework. Inevitably, Garrison makes extensive use of the Hayekian triangle introduced in the first edition of *Prices and Production* ([1931] 1935, p. 39) but he also manages to integrate the familiar and mainstream production

possibilities curves, the loanable funds model, and a market for labor services. This accomplishment is comparable in scope to the IS–LM model (Hicks 1937, pp. 153, 156; Modigliani 1944) in offering an explanation of vast swathes of the macroeconomy. The difference is that Garrison’s explanation is correct as well as encompassing.

### **III. Production and Interest**

The Austrian insight, going back at least to Wicksell ([1898] 2007, p. 102), is that production takes time, implying ongoing trade-offs between immediate and future consumption. Value is added at each stage of production, adding to the value of final output delivered to the consumer, though all these values are artifacts—imputed values—of the anticipated value of the final good. Thus all production depends on an intricate chain of subjective expectations, constantly subject to revision, primarily of resource prices and availability, but also of future consumer preferences and consumption plans (Garrison 1986). Production only adds value because it moves incomplete goods-in-process and raw materials closer to the state at which they can satisfy consumer wants.

If the time preferences underlying interest rates fall throughout the economy, this means that people choose to wait for better or more complete want-satisfaction, rather than have their wants fulfilled sooner but less completely. This desired outcome is attainable by diverting resources from rapidly yielding production to slower, more roundabout, yet more productive methods. We can harvest fast-growing poplars relatively quickly, but if we want to build bigger, stronger, more substantial, and more durable houses or ships, we have to wait for the oak to grow.

No one opts for a lower rate of return unless that choice will enable them to enjoy more—sufficiently more—in the future, in terms of either a greater quantity or improved quality. The essence of time preference is to prefer gratification sooner rather than later, so to compensate actors for waiting, they have to at least anticipate receiving more in the future. Time preference can be low, but cannot be nonexistent or negative—we always prefer more to less, as long as the good satisfies our wants.

### **IV. Unsustainable Expansion**

According to ABCT, business cycles result from increasing the money supply. This makes more funds available for banks to lend, depresses the interest rate, reduces incentives to save, and increases

incentives to spend on immediate consumption—regardless of what happens to time preference (Garrison 1996a, 2004b). To meet this new nominal demand, firms take goods-in-process out of the production stream and offer them for sale as goods for immediate consumption—Kirzner’s half-baked cakes (1996, pp. 39–41).

From the producer’s perspective, the lower interest rate makes it cheaper to borrow for investment projects and lowers the expected return on marginal projects. As investment increases, the average expected return falls along with the marginal return—both normal results from a lower interest rate. Clearly, there are some similarities between what results from lowered time preference and monetary expansion (table 1). These similarities have confused several generations of economists. However, there are clear differences, which are generally uncontroversial (Garrison 2002).

**Table 1. Reduction in time preference vs. monetary/credit expansion**

	<b>Reduction in time preference</b>	<b>Monetary/credit expansion</b>
<b>Money supply</b>	no change	increases
<b>Interest rates</b>	decrease	decrease
<b>Saving</b>	increases	decreases
<b>Investment</b>	increases	increases
<b>Consumption</b>	decreases	increases
<b>Capital accumulation</b>	increases sustainably at a faster rate	increases unsustainably, initially at a faster rate
<b>Short-term output growth</b>	increases	increases
<b>Long-term (sustainable) output growth</b>	increases	decreases

But the extra liquidity here has not resulted from consumers’ choice to save more because their time preference has fallen. Lower interest rates result in consumers saving less and consuming more, as long as their time preference has not also fallen. Although it can be demonstrated that in some periods the demand for investment is interest-inelastic, or relatively inelastic (Leijonhufvud 1986, p. 417), this is not a real problem for ABCT. Low interest favors some kinds of investment over others, and inevitably has real and lasting effects on the distribution of capital over the production structure (Garrison 1989). During an unsustainable boom, everyone is happy as long as the expansion continues, and so-called “intellectuals” proclaim that enlightened policy has freed society both from technological

limitations and the dogmatic shackles of the dismal science. Inevitably, this excitement is followed by the truly dismal reality of a recession or worse.

### **V. Keynes and the Austrians**

The Austrian response to Keynes has been less than enthusiastic. Rather than posit an inexplicable collapse of aggregate demand as the proximate cause of the business cycle, ABCT contrasts sustainable with unsustainable aggregate demand growth. Keynesians decry ABCT for not explaining random details, often misrepresented or misconstrued, that are cherry-picked from economic history, but even if it were empirically verifiable on its own terms, Keynesian business cycle theory does not purport to offer any explanation at all (Garrison 2006b). Keynesianism is to ABCT what creationism is to evolution.

Friedman and Schwartz's *Monetary History of the United States* (1963) contributed to the understanding of the causes of the Great Depression. Previously it had not been entirely clear whether monetary policy had been expansionary or contractionary during the thirties until this definitive study appeared with its huge volume of previously unavailable monetary data. Until then, Keynesians were free to presume that facts supported their conclusions. Rothbard's (1962b) reliance on subsequently ignored monetary aggregates and proxies was largely necessitated by the unavailability of more widely accepted data prior to publication of the *Monetary History* (Rothbard 1978). Anderson's ([1949] 1979, pp. 425–59) contemporary account of the Great Depression indicated that government regulatory and stimulus initiatives amplified the economy's volatility and lengthened the time needed for recovery. Responding to Keynesian assertions that monetary policy had been unambiguously and ineffectively expansionary, Friedman and Schwartz concluded that policy had been almost unambiguously contractionary. New Deal stimulus policy was often inconsistent and sometimes contradictory, as Rothbard (1962b, pp. 301–15) shows, providing some support for Keynesian claims, but the inconsistent expansionary-contractionary policy provided an especially difficult environment for entrepreneurs' liquidation of malinvested capital, delaying recovery for nearly ten years (Garrison 1999). In an important sense, both Keynesians and monetarists failed to see the forest for the trees.

One difficulty with criticisms of Keynes and Keynesianism is that every commentator finds something different to criticize in Keynes alone, and when considering Keynesianism, the range of potential

objections expands exponentially. Though this circumstance in and of itself is no real criticism of Keynes, it highlights why Keynesianism has persisted in spite of effective but narrow objections. Garrison (1993) offers an appraisal of Meltzer's (1988) interpretation of Keynes, which Garrison argues is essentially correct—though of course, that will be disputed by many Keynesian apologists. Garrison also argues that Meltzer's view of Keynes's motivation in writing the *General Theory* was both unique and uniquely correct.

Keynes's chapter 24 articulates his vision of an ideal socialist reality where capital yields *zero* return, and so cannot contribute to exacerbating income inequality. Interestingly, Schumpeter's ([1911] 1934, pp. 229–33) business cycle theory was also built on an expectation of a zero interest rate (Rothbard 1962b, p. 73). In Keynes's scheme, impartial and public-spirited civil servants would supervise investment, and some class of entrepreneurs—perhaps private, perhaps political, though more likely bureaucrats—would be compensated for risk-bearing. But the socialization of investment would aim at eliminating risk.

If risk results solely from the unforeseeable and wastefully competing initiatives of capitalist entrepreneurial innovators, innovation and competition could certainly be stamped out in favor of central economic planning under a charismatic elite of latter-day Keynesian disciples. However, other sources of risk might prove more troublesome. In Keynes's utopia, capital is to yield zero risk-adjusted return—and eventually, risk will be managed down to zero as well, so there will be no interest. To Keynes, interest, not gold, was the truly barbarous relic to be stamped out. To Austrians, a zero-interest environment might seem a particularly quixotic goal, but certainly sufficiently wasteful overinvestment in capital equipment would depress the marginal return on capital and interest rates for some time, as during the technology boom of the 1990s (Garrison and Callahan 2003) or the housing bubble of the 2000s. In Japan, socialized investment approaches this ideal.

The more socialized investment and other forms of central economic planning attempt to suppress risk, whether systemic or project-specific, the greater the risk of fat-tailed volatility. Extreme events could be prevented from occurring as often, but would be catastrophically worse when they do happen (Peters 1999, pp. 108–14). Risk will never disappear—it will simply be suppressed and declared *passé* by ignorant policymakers, delusional intellectuals, and their parroting apologists. What better way to socialize financial risk

while allowing crony capitalists to continue to capture the rewards—if any?

Keynes argued that with lower interest rates, the natural rate of unemployment would be lower and could more readily be sustained at that level (Meltzer 1988, pp. 123–35). Risk would be systematically lowered, capital accumulation would be accelerated, and the capital stock would be greater, leading to faster economic growth, higher real wages, and permanently lower unemployment (Garrison 1987). In reality, the cost of capital varies greatly with the size of the capital stock as well as over the business cycle (Malkiel, von Furstenberg, and Watson 1979). Recall that the Hayekian production structure is sustainable at any given rate of time preference or capital accumulation—it is the misallocation of resources, including equipment, human capital, and goods-in-process, throughout the production structure that renders production unsustainable. This is an issue Keynes failed to recognize.

Keynes's critique of capitalism centers on its wasteful nonzero interest rates and the fact that selfish capitalists' antisocial rent-seeking leads them to refrain from financing valuable projects. Such desirable projects might not provide an attractive return, but could always generate additional employment. Unfinanced projects have expected yields below the prevailing market interest rate. Thus capitalism prevents employment because it avoids financing less valuable projects and persists in allocating scarce resources to the highest-yielding, most-desired activities. Lower the interest rate to zero and every project can be financed, without sociopathic concerns over mere profitability. In a zero interest rate environment, all projects are profitable, and there are jobs for everyone.

In Keynes's view, the capitalist economy's positive interest rate keeps capital artificially scarce due to the need to avoid investment projects with expected rates of return below the market interest rate. Thus, investors selfishly refrain from investing enough to maximize real output and material well-being, or to keep unemployment as low as its potentially realizable level. If only we did not have to ration investment funds to their expected highest-yielding use, we could enjoy permanent abundance. Similarly, selfish consumer-workers save due to a sociopathic preoccupation with their future, when that part of their income could be providing additional demand for late-stage retail output. Thus, saving creates unemployment.

Keynes mistakes the cause for the symptom. His logic is that if we had and could make use of an infinite supply of capital

equipment, we could produce without limit and employ 100 percent of the labor force, and the interest on capital would fall to zero. Keynes (1936, pp. 375–77) claims that by lowering the interest rate to zero through monetary expansion, unemployment will fall to zero as well. Monetary expansion enables us to simultaneously enjoy all the advantages of both lowered time preference and immediate gratification!

Keynes's program to socialize investment would eliminate the riskiness of lending incurred by banks, but it would not lower the project-specific risk. He felt that the systemic risk borne by banks was the largest and most volatile part of bank interest, so that by taking savings away from privately owned, privately managed, profit-motivated banks, and entrusting it to an impartial and disinterested government agency, interest rates could be lowered dramatically and kept at low and steady levels, effectively insulated from the animal spirits of the market (Keynes 1936, pp. 128–30).

Keynes's view that socially undesirable and unnecessary lender's risk accounts for most of the market interest rate remains both debatable and problematic. Project-specific investment risk, if any, would be eliminated partly by a judicious selection of projects, uncontaminated by the profit motive, and partly by the creation of a managed, not-for-profit financial environment in which socialized investment planning would allow many humanitarian projects to flourish, which the cutthroat competition of the market would never have permitted.

Keynes's relatively primitive analysis avoided the multidirectional mutual causality of Hicks and many later Keynesians' simultaneous equation models. High time preference leads us to limit risk exposure, but as time preference falls, we are more willing to take risks and have more time to avoid and minimize their impact. Monetary/credit expansion makes risky borrowing cheaper and so subsidizes risky behavior while depressing the actual returns to assuming risk. Risk-taking becomes socialized, though the rewards are still privately captured. The level of risk assumed is misperceived as much lower than that to which agents and the economy are actually exposed (Minsky 1982). This actual level of high risk, though invisible, is far greater than any level that could be considered welfare optimal.

Keynesian macroeconomics describes a recession without offering a causal explanation. Keynes designed his *General Theory* to justify public policy that had already been adopted. Garrison's (1978)

“Austrian Macroeconomics: A Diagrammatical Exposition” shows how the Hayekian triangle explains what the Keynesian cross fails to, which is where this output comes from and how it is produced over time (see also Garrison 1995b).

Tullock’s (1987) critique of ABCT fails to recognize the differences in what Keynesian and Austrian theory purport to explain. ABCT theory explains why an unsustainable expansion occurs and what makes it unsustainable, while Keynesian business cycle theory merely describes what happens to aggregate output.

## **VI. Austrian Business Cycle Theory and Monetarism**

Monetarist and new classical macroeconomics rely on intertemporal labor substitution (Garrison 1988; 1991), whereas ABCT relies on the complementarity of capital in production. Friedman (1969, p. 222) was agnostic about the precise long-run transmission mechanism through which monetary injection affects real output. But Friedman (1968) also framed an argument for a downward-sloping short-run Phillips curve with a negative trade-off between inflation and unemployment, which became vertical in the long run.

At the height of the Phillips (1958) curve’s popularity as a guide to policy, Edmund Phelps (1967) and Milton Friedman (1968) independently challenged its theoretical foundations. They argued that nominal wages were largely irrelevant, and that worker behavior responded only to inflation-adjusted wages. In their view, real wages would adjust to make the quantity of labor supplied equal to the quantity demanded, and the unemployment rate would then stand at a level uniquely associated with that real wage—the “natural rate” of unemployment, often also called the “nonaccelerating inflation rate of unemployment,” or NAIRU.

In the expectations-augmented Phillips curve proposed by Friedman and Phelps, unanticipated inflation results in a temporary depression of the real wage, making labor a relatively cheap factor of production and facilitating lowered unemployment. This short-run trade-off between inflation and unemployment disappears as soon as workers learn to expect the prevailing rate of price inflation and start demanding higher nominal wages. When workers thus restore the real wage to its pre-inflation level, labor ceases to be an especially cheap resource, and unemployment rises back to its natural rate (Garrison 2006a). One difficulty with the short-run Phillips curve is that an expanding money supply should lower the real wage during a

boom, making labor cheaper and more productive, but this is the opposite of what happens (Garrison 1990; 2012, pp. 442–45).

The Friedman-Phelps critiques of the Phillips curve also failed to consider the impact of Cantillon effects of expansionary policy. Both monetary expansion and expansionary fiscal policy (such as public works) increase demand for output, and therefore demand for labor, in particular sectors at the expense of others. The higher real wage in the initially favored sectors accompanies a reallocation of resources, including labor, to those sectors. At each successive wave of spending, the increase in the real wage is dissipated, until it is overcome by the general increase in prices, which rise to meet it, and eventually rise beyond the average increase in nominal wages introduced by the expansionary policy.

During the 1970s, the Phillips curve became badly discredited as a policy guide, as the experience of protracted stagflation unambiguously demonstrated the ineffectiveness of government attempts to exploit this inflation-unemployment trade-off, leading to more of both (O'Driscoll and Shenoy 1976; Garrison 1994). It is thus somewhat curious that under the guise of the so-called Keynesian resurgence, the Phillips curve is again being invoked to justify expansionary monetary and fiscal policy.

William Niskanen (2002) estimated a Phillips curve for the United States using annual 1960–2000 data. By adding one-year-lagged terms in unemployment and inflation, he was able to show that this familiar equation is misspecified. In his improved specification, the immediate impact of inflation is to reduce unemployment, confirming the traditional understanding of the Phillips-curve relationship and consistent with ABCT, but also finding that unemployment increases after an interval as short as one year. Niskanen's results support ABCT, where credit expansion results in temporary but unsustainable economic expansion, resulting in lowered unemployment in the short run, but recognizing that this policy-induced malinvestment must permanently reduce total output and income, and must ultimately bring about higher unemployment. Niskanen showed that the higher unemployment and lower output follow rather quickly.

Following Niskanen, Reichel (2004) estimated vector error correction models for various countries, and Moghaddam and Jenson (2008) estimated a respecified error correction model. Mulligan (2011) and Ravier (2013) also found that monetary expansion creates jobs in the short run, but wipes out far more jobs and output with a lag of less than a year.

Recent research even questions whether price inflation results from a monetary origin (Stock and Watson 1999, 2007; Duca 2000; Atkeson and Ohanian 2001; Bachmeier, Leelahanon, and Li 2007; Binner et al. 2010). It is clear that the Phillips curve relationship between inflation and unemployment is not stable over time (initially recognized in Samuelson and Solow 1960), and structural breaks can result in spurious coefficient estimates and findings of cointegration. Recent empirical studies examine whether, and the extent to which, growth in the monetary aggregates is reflected in growth in such inflation measures as the consumer price index. A significant recent literature has suggested that consumer price index (CPI) inflation has become decoupled from the monetary aggregates, often arguing that the CPI, or money, or both, are incorrectly measured. It may be that entrepreneurial planners and consumers are so adept at anticipating inflationary price movements that the CPI and the money supply increase simultaneously, thus monetary aggregates do contribute to explaining current inflation.

Friedman's formulation follows Knight (1934) in modeling capital as static in the short run, at least in response to monetary injection, and if money did not affect the capital structure, it could only have real effects through labor markets. Friedman suggests that monetary injection is perceived correctly, and at least more rapidly, by employer-producers, but not by worker-consumers. So producers take advantage of temporarily low real wages by employing more workers. In the short run, unemployment falls, but eventually, workers start expecting higher prices and demand higher wages, shifting the short-run Phillips curve upward. Friedman's helicopter money (1969, pp. 4–7) ignores injection and Cantillon effects on real output and resource distribution (Bellante and Garrison 1988).

Cheap money can generate recovery and growth, but the fairly important catch is that it will not be sustainable. Monetary/credit expansion can make consumption and investment expand as complements in production rather than substitutes, but not without limit, and not without a subsequent collapse.

## **VII. Austrian vs. Real Business Cycle Theory**

Garrison (1991) addresses the relationships among ABCT and new classical general equilibrium business cycle models, including real business cycle theory (RBCT). Some RBCT models account for real persistence of misallocated production with “time-to-build” (Kydland and Prescott 1982) and similar constructions. RBCT (Kydland and

Prescott 1982; Long and Plosser 1983; Plosser 1989) predicts temporally clustered positive correlations among factor productivity, employment, and real output, thus explaining the business cycle in terms of adjustment to random, unexplained, and unobservable productivity shocks. When technology improves or factor costs fall, factors become more productive and employment and output increase. This increase in output and employment will be persistent because it is accompanied by an increase in investment, which has a persistent impact on the capital stock and therefore on factor productivity. Capital equipment takes time to install, and once installed, has a long-lasting impact on output and employment. Negative productivity shocks result in higher unemployment, which persists either because of the time it takes to install capital that addresses the newly lowered factor productivity (Kydland and Prescott 1982), or simply because the already-installed capital is long lived, locking entrepreneurs for the time being into newly less-productive activities that are complementary with lowered labor employment.

The emphasis on how investment drives the business cycle reveals strong affinities with ABCT, but RBCT suggests that more installed capital leads to persistently higher employment and output. Capital and labor are complementary factors as long as productivity is stable or rising, but they become substitutes as soon as productivity falls. The capital stock is long lived, regardless of how its productivity has changed, but workers can be laid off. In RBCT, overinvestment/malinvestment causes a sustainable boom, which ABCT views as unsustainable. Also, in RBCT, the key policy implication is to keep the boom going, not prevent it as recommended by Mises ([1912] 1980, [1949] 1999), Hayek ([1931] 1935, 1941), and Garrison (2001).

Kydland and Prescott (1982) introduced the time-to-build production function. In concept, this captures some of the Austrian insight that time is required to complete the production process. Garrison (2001, p. 48, fig. 3.6) even points out that consumption also takes time. The Kydland and Prescott model can be thought of as nested in the ABCT model because in Austrian capital theory, all production takes time, but in the Kydland and Prescott formulation, this is only explicitly modeled for capital production; consumption goods production is treated as relatively instantaneous. Viewing the RBCT model as nested in ABCT helps explicate the relationship between the two approaches.

The main difference between the ABCT and RBCT models is that in RBCT there is no sustainable outcome or growth path. Factor productivity and its underlying determinants are temporally clustered, and once it has been high for a protracted period, this constitutes an above-trend boom. There is nothing that marks such an expansion as either sustainable or unsustainable. Recessions occur when factor productivity randomly turns down for a protracted period of low investment, employment, and output—downturns in productivity are also temporally clustered. As with Keynes, business cycles have no real cause, they just happen. Although RBCT research emphasizes empirically sophisticated techniques, these methods are unique to the approach and are also informationally astringent. Thus RBCT does not seem promising as an approach toward a deeper understanding of the business cycle.

Garrison (2001, p. 248) presents a useful taxonomy. RBCT assumes constant general equilibrium, where recessions result from random inward movements of the production possibility frontier. Recessions only end when the right confluence of random, unobservable factors shifts the frontier back outward. If there were no shocks, the economy would just continue following a long-term secular growth trend with no business cycles. A main assumption of RBCT is that individuals and firms respond optimally all the time and the economy never leaves general equilibrium.

RBCT suffers from an inherent circularity in that output depends on factor productivity, but this, in turn, depends in reality on the phase of the business cycle. Since factor productivity is an artifact of the cycle itself, it cannot offer a satisfactory explanation of what causes the cycle. Thus, RBCT is about as satisfactory as Keynesianism.

### **VIII. Lacunae in Austrian Business Cycle Theory**

Given the abject failure of the more fashionable, state-of-the-art business cycle theories, why has ABCT not been universally hailed? Hypothetically, what would the Austrians have to accomplish to take the world of business cycle theory by storm? The cynical though probably accurate view is that, like Keynesianism, we would have to justify whatever bad public policy the decision-makers feel best enhances their own standing—hypocrisy is the homage which vice pays to virtue. Instead, examination of this question should focus on what an ideal public policy should be. This would equip us to persuade first other economists, then voters. Once that is

accomplished, the flotsam of the political class will be carried with the tide.

Here are some of ABCT's apparent shortcomings. Observing the features that signal or constitute an unsustainable expansion has only been very cursorily explored, and clearly much work is to be done there. This task is complicated by differences that render each unsustainable expansion somewhat unique, but common underlying causes point to common features that need to be identified, explicated, and explored more fully. Practical analysis for investment analysts may be achieved before practical "dashboard" metrics for policy assessment. Measuring the extent of unsustainability in the production structure is thus a worthwhile enterprise for the next generation of economists.

A sustainable production structure should offer the same return on investment in early, middle, and late stages throughout the economy, at least on average and after arbitrage adjusts enterprise value based on returns. Once monetary expansion/credit injection distorts the production structure, returns should also change systematically: low returns in early stages, higher in middle stages, and highest in late stages. This constellation of changes in returns should be observable, but after arbitrage should result in systematically *lower* enterprise values in early stages of production, and *higher* values in late stages, which should also be observable in equity prices. The low returns in early stages should result in a fall in prices for resources used in those sectors, just as the higher returns in retail sectors should cause resource prices used there to be bid higher. This phenomenon should be observable and amenable to empirical examination and statistical testing.

Haberler (1986) criticized Hayek's formulation of the Ricardo effect in that falling real wages do not necessarily accompany the increase in capital investment brought on by monetary expansion. An expansion characterized by overinvestment in complementary labor-capital combinations is just as likely to be unsustainable as one characterized by newly installed capital substituting for labor, which both Hayek and Keynes believed was more typical. Future research might address the differences between expansions that raise the real wage from those that lower it. Haberler also criticized the implications of Hayek's preference for a fixed money stock. If zero money growth and technological progress led simultaneously to economic growth and a decreasing price level, Haberler argues that rising wages would be necessary to maintain full employment. He

neglects to note that technological progress would continue to increase the demand for labor, even as it would promote additional substitution of capital for labor.

Tullock's (1987) critique of ABCT misconstrues a number of the theory's details, which Garrison (1989) addressed. Among the failings Tullock saw in ABCT were that no two expansions or recessions have precisely the same duration, and that output rises during an expansion, which Tullock concluded was the opposite of a recession. Garrison pointed out that ABCT is more a theory of what makes an expansion unsustainable rather than a theory of recession or depression.

ABCT research is likely to take on an increasingly international focus. Bilo (2012) explains malinvestment in terms of how coordination failures spread through international trade. Expansionary monetary policy causes domestic Cantillon effects with international spillovers. Monetary expansion boosts exports but also finances foreign investment, spreading malinvestment. The expansion collapses when the inflation ends.

Ravier and Cachanosky (2015) analyze fiscal policy with capital-based macroeconomics, using a Garrisonian framework to analyze fiscal policy with idle resources, including initial unemployment. They show that with initial unemployment, even if an expansionary fiscal policy successfully enables the economy to reach potential output, the resulting resource imbalances ensure that the expansion will be unsustainable. Phillips curve estimates are likely to be one focus of empirical ABCT research. Mulligan (2011) and Ravier (2013) develop some of the implications of ABCT for the Phillips curve. ABCT suggests it should not merely be vertical in the long run, but positively sloped. How unsustainable a production structure can become, whether there is any systematic relationship between the extent and duration of monetary inflation/credit injection, and how long and to what extent the unsustainable expansion can proceed are also valuable empirical questions to address.

#### **XIV. Conclusion**

Reviewing Garrison's contributions should give us hope for the future of Austrian macroeconomics and perhaps even for the mainstream. This exercise highlights the vast opportunities for future research. These opportunities include measuring overallocation or misallocation in different production stages. It also suggests an opportunity for refining and operationalizing definitions of

malinvestment. Future research may also relate capital allocation across sectors to interest rates or money supply measures, modeling the timing of an economic collapse, and devising strategies for predicting a collapse. This exercise also points to the need to measure sustainable output, in contrast to the extra output generated by monetary expansion or credit injection. All members of the Austrian school owe Garrison a debt of gratitude both for his contributions to refining, expanding, and popularizing Austrian business cycle theory and for identifying so many areas for needed future research.

Since no part of Garrison's presentations, either from the early form or the more sophisticated final form, is particularly controversial, engagement with the mainstream remains possible and probably inevitable. Mainstream macroeconomists differ from us in how they interpret the implications of these features, or what they perceive as the limitations of particular models. Perhaps it is premature to hope for the common ground of a universal consensus, but certainly ongoing discussion and debate can both better illuminate the underlying reality and spur the development of more powerful and meaningful theory.

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