

## **Two Natural Rates: Friedman and the Austrians**

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## Introduction

The key controversy that lies at the heart of macroeconomics is, and long has been, the question of what causes business cycles. Many different explanations have been offered for the cyclical movements in prices, production, employment, and so forth. These explanations have included, among others, phenomena as diverse as irrational exuberance, technological innovations, perverse central bank policies, chaotic changes in business investment, and the misidentification of changes in the price level as representing changes in relative prices.

What most cycle theories have consistently and, it seems, almost obstinately ignored is the crucial role of the capital structure. It is the structure of capital which serves as the conduit through which monetary effects are transformed into real effects, that is, through which the short run merges into the “medium run”, and the medium run into the long run. In abstract terms, the capital structure embodies the relationship between monetary theory and value theory.

Monetarists, for example, do acknowledge that capital must be considered, but fail to grasp its true significance due to their employing an approach closely associated with the work of Frank Knight. “Production and consumption, in the Knightian conception, are not temporally distinct activities....Knightian capital theory, in the hands of the Monetarists, did not provide an alternative basis for integrating monetary theory and value theory; it provided, instead, a device for keeping the two theories segregated” (Garrison 1989, 13).

Keynesians usually skirt the issue altogether by assuming some given capital structure and focus instead on the “circular flow” aggregates of expenditures, income, and

employment.<sup>1</sup>

What is needed is an approach that identifies the causal relations between money, credit, saving, capital, and production. In other words, the only truly fruitful approach will be one which pays full attention to the two universals of macroeconomics: time and money.<sup>2</sup> In order to accomplish that, one must never lose sight of the fact that the essence of business cycles can be found in certain, broadly predictable, rearrangements of the structure of production.

In general, the purpose of the present paper is to explain why and how those rearrangements of the capital structure occur. More narrowly, there will be an attempt to illuminate the special significance of two relationships, neither of which has received in recent years the attention it deserves. First, it will be shown that whenever the market rate of interest (MRI) falls below the natural rate of interest (NRI), one should expect that, with a time lag, the actual rate of unemployment (ARU) will fall below the natural rate of unemployment (NRU). In other words, capital markets and labor markets are linked together. Secondly, it will be seen that in order to have a sustainable increase in capital investment and, thus a more “roundabout” production process, it is necessary to have available a fund of saved capital---a wage or subsistence fund---that is sufficient to support the ordinary factors of production during the lengthened production period. If monetary expansion has created more *credit* but not more *saved capital*, then the initial increase in capital will not persist, but will instead reverse itself and become capital consumption. Again, capital markets and labor markets are linked together.

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While this is not intended as an exercise in the history of economic thought, this essay will borrow elements from several schools of thought: the natural rate of interest from Knut Wicksell and the Austrian School, the heterogeneity of capital and the importance of intertemporal coordination from the Austrians, the wage-fund from the Classics, and the expectations-adjusted Phillips Curve from the Monetarists.

### **Two Natural Rates**

The natural rate of interest (NRI) is the “rate of interest on loans which is neutral in respect to commodity prices, and tends neither to raise nor to lower them. This is necessarily the same as the rate of interest which would be determined by supply and demand if no use were made of money and all lending were effected in the form of real capital goods” (Wicksell [1898] 1965, 102). From a slightly different perspective, the NRI is the rate “*at which the length of the roundabout methods of production is extended just so far that it can be supported with the available subsistence fund*” (emphasis in original) (Strigl [1934] 2000, 114). In terms perhaps more familiar to most present-day economists, one can think of the NRI as that rate of interest at which *ex ante* investment equals *ex ante* saving.

The natural rate of unemployment (NRU) was introduced by Milton Friedman “to parallel Knut Wicksell’s ‘natural rate of interest’ “(1977, 458). Like the NRI, the NRU reflects the underlying real variables in the economy, not the possible distortions brought on by certain monetary policies. The NRU is not a constant “but depends on ‘real’ as opposed to monetary factors---the effectiveness of the labor market, the extent of competition or monopoly, the barriers or encouragements to working in various occupations, and so on”

(Friedman 1977, 458).<sup>3</sup> Interestingly, Friedman goes on to make reference to a “forced-draft economy” that induces workers to “sacrifice leisure for goods that they value less highly than the leisure” (1977, 459). The significance of this latter comment is that it reveals Friedman’s (at least implicit) awareness of time preference as an important part of the supply of labor. Clearly, leisure is a present good, and labor is a means to acquire future goods. Since the rate of time preference is the rate at one prefers to trade present goods for future goods, then workers’ decisions are a reflection of their time preferences. Friedman has identified the fact that, if the expected real wage rate differs from the actual real wage rate, then workers’ allocations of labor versus leisure will depart from their preferred allocations. Actual economic conditions will be inconsistent with time preferences. And those economic conditions will be unsustainable (Friedman 1977, 457).

### **Changes in the Capital Structure**

Time preferences and unsustainable expansions are elaborated upon in great detail in the Austrian approach to business cycles. Beginning with the NRI, which Austrians often succinctly refer to as “the exchange ration between present and future goods” (Rothbard [1962] 1970, 299), the sequence begins with an injection of money that does *not* have equiproportional effects on all economic agents. It has markedly differential effects because it appears as additional credit extended to businessmen. But this credit expansion is not the result of an increase in voluntary savings, because, by assumption, no change in time preferences has occurred.<sup>4</sup> The increase in the supply of credit drives the market rate of

interest (MRI) below the NRI. This does not, contrary to common misunderstandings, require that the MRI be arithmetically low. All that the theory implies is that market rates will be lower than they *would have been* in the absence of the monetary stimulation (Wicksell [1898] 1965, 107-20; Mises [1949] 1966, 558-59).

What are the predictable effects of the disparity between the MRI and the NRI? Entrepreneurs are induced to shift their investment focus away from shorter-term projects and toward longer-term projects due to the now (apparently) greater profitability of the latter. In standard financial terms, the net present values of all capital-using projects are now higher than they would have been because the market rate at which their expected cash flows are discounted is lower than it would have been. Further, the largest proportionate increases in net present value will accrue to those projects whose cash flows are most removed from the current time period. The resulting restructuring of production constitutes a “lengthening” or an increase in the “aggregate production time” (Garrison 1978, 6; 2001, 45-49). That is, entrepreneurs invest more in those goods that are far removed from the ultimate consumer and less in goods that are near the ultimate consumer. One might think of these events as representing an increase in the demand for capital goods relative to consumer goods, albeit one which has been fueled by monetary expansion rather than by a decline in time preferences. Normally, whenever production becomes more “roundabout” rather than less, one would expect marginal productivity to rise.<sup>5</sup> However, the expected productivity gains can only be realized if the projects can be completed. And the projects cannot all be completed so long as the MRI is less than the NRI. Why must this be so?

Voluntary savings have not increased---there being no change in time preferences---so *ex ante* investment must now exceed *ex ante* savings. However, *ex post*, the two must be equal. This will necessitate the appearance of what Austrians, as well as others<sup>6</sup>, have called “forced saving”. The effect of the lower MRI is a shift of resources away from the production of consumer goods now and toward the production of capital goods which will boost consumer goods production only in some future period. Consumers are harmed by this involuntary reallocation, while entrepreneurs appear to benefit. That is, consumers are temporarily forced to consume less (save more) than they would prefer so that business firms can have available the resources they require for their new projects. The economy appears to be “booming”, because the demand for capital goods has risen and the demand for consumer goods has not fallen. Unemployment among the factors of production is low, and the incomes of resource owners are rising. However, this apparent prosperity is unsustainable (Garrison 2001, 67-83). The inevitably self-reversing nature of the process stems from the fact that the departure of the MRI from the NRI has brought about a structure of production that is inconsistent with individuals’ time preferences:

[T]he workers set about to consume most of their new income, in short to reestablish the old consumer/saving proportions. This means that they redirect the spending back to the consumer goods industries, and they don’t save and invest enough to buy the newly-produced machines, capital equipment, industrial raw materials, etc. This all reveals itself as a sudden sharp and continuing depression in the *producers’ goods* industries...business had invested too much in capital goods and had underinvested in consumer goods. (emphasis in original) (Rothbard 1969, 22-23).

The turning point for the economy arrives when entrepreneurs discover that the complementary resources needed in order to complete their projects will not be forthcoming,

or only at much increased prices which, in the limit, could equal the “discounted value of the future quasi-rents accruing to the entire project” (O’Driscoll and Rizzo 1985, 209). The existing structure of production simply cannot be maintained because “[i]t is relative scarcity of complementary factors which here causes excess capacity and upsets plans..... complementarity is the essence of all plans, and withdrawal of a factor, or its failure to turn up at the appointed time, will equally endanger the success of the production plans” (Lachmann [1956] 1978, 107). The reassertion of consumers’ unchanged time preferences by means of increased spending for consumer goods serves to draw essential factors away from the capital projects entrepreneurs had earlier undertaken.<sup>7</sup>

The result is a pervasive condition of excess capacity, as mentioned above. Input prices are higher due to firms’ having bid against one another for various factors of production, and, therefore, projects that previously had appeared to be profitable now are revealed to be unprofitable. In addition, the demand for credit increases as entrepreneurs scramble for additional funding in order to maintain their existing projects in the face of the rising costs of production; while financial intermediaries restrict the supply of credit because loans to finance projects appear ever riskier. The MRI climbs back toward a level consistent with consumers’ time preferences, that is, back toward the NRI.<sup>8</sup> The ensuing credit crunch accelerates the downturn in the capital goods industries. Some projects are cancelled altogether. Others are completed but often at a loss. The severity of the liquidations will largely depend upon the degree of specificity of capital and labor. Losses will fall most

heavily on those firms that have employed very project-specific capital (both human and nonhuman) and labor. However, even nonspecific labor will suffer increased unemployment to the extent it has been utilized as a *complement* to specific capital.

As the decidedly unpleasant but necessary liquidations begin to occur, the incomes of those involved, e.g., employees and stockholders, decline, business pessimism spreads, both investment spending and consumer spending fall, and a downwardly spiraling recession ensues. In short, the economy will appear to experience a typical “Keynesian” contraction (O’Driscoll and Rizzo 1985, 210-11). However, the source of the problem is not that proposed by Keynes. Whatever “animal spirits” (Keynes [1936] 1997, 161-62) may be, they play no role here. Moreover, Keynes asserted that “[t]he right remedy for the trade cycle is not to be found in abolishing booms and thus keeping us permanently in a semi-slump; but in abolishing slumps and thus keeping us permanently in a quasi-boom” (322). That sentiment presents policy makers with a false dichotomy and encourages them to undertake an improper course of action. True recovery from the recession can only be attained when and if all those unsound investments born of the monetary expansion have been liquidated, and such a recovery will only be delayed if the central bank engages in additional excessive monetary injections. Once the necessary corrections have been made, the MRI will once again equal the NRI, and the ratio of consumer goods’ prices to capital goods’ prices will accord with individuals’ time preferences.<sup>9</sup>

### **An Alternative Story**

Many Monetarists have offered an explanation of business cycles that appears

superficially to be quite different from the foregoing. When looked at more closely however, the two approaches actually have a number of common elements. Beginning with the proposition that the demand for money is a stable and predictable function “of a relatively small number of arguments” (Laidler 1982, 39), Monetarists typically proceed to an unexpectedly high rate of growth in the money stock brought about by the central bank. If this growth exceeds the rate of growth in money demand, then those who first receive the newly created funds are holders of excess money balances. To reestablish their desired portfolios they spend the excess on various assets. That, of course, drives up assets’ prices and drives down their yields. This familiar “liquidity effect” causes the purchases of stock and assets to increase:

As the process continues, the initial impacts are diffused in several respects: first, the range of assets affected widens; second, potential creators of assets now more in demand are induced to react to the better terms on which they can be sold, including business enterprises wishing to engage in capital expansion...third, the initially redundant money balances concentrated in the hands of those first affected by the open-market purchases [of government securities by the central bank] become spread throughout the economy. (Friedman and Schwartz 1963, 60).

If the monetary expansion is unanticipated, its initial effect will be on interest rates, rather than commodity prices (Friedman 1972, 204-206). Spending on capital goods and durable consumer goods rises, so aggregate output and incomes rise.<sup>10</sup> The demand for loanable funds then increases with the expansion of economic activity. This “income effect” pushes both real and nominal interest rates back up again. In fact, interest rates rise even farther due to the formation of inflationary expectations: creditors restrict the supply of credit

and debtors increase their demand for credit as a manifestation of such expectations. The time period required for the formation of inflationary expectations is likely to vary a great deal depending on the severity of past episodes of inflation (Friedman 1972, 213-216).

As the demands for various goods and services increase during the expansion phase of the cycle, the first effect is likely to be on output. But eventually commodity prices must reflect the increased rate of growth in the money stock. In short, inflation (as conventionally defined) appears. As part of this general inflation, the prices of inputs, in particular nominal wage rates, also rise. However, these nominal wage rate increases often constitute *decreases* in wage rates in real terms. Because workers allegedly form their expectations of inflation “adaptively”, during the economic expansion workers’ expectations of inflation lag behind the actual rate. Therefore, they falsely believe that their nominal wage increases represent increases in their real wage rate, and they willingly supply more labor. For their part, employers face a simpler task. They are likely to think of the real wage rate in terms of the nominal rate relative to the price(s) of the product(s) they sell. Thus they correctly identify the drop in real wage rates and increase the quantity of labor they demand.

In a fashion strikingly similar to the Austrian focus on interest rate signals which induce entrepreneurs to form a capital structure that is inconsistent with time preferences, here Monetarists focus on wage rate signals which induce workers to form a “labor structure” that also is inconsistent with time preferences. The mistaken belief that real wage rates have risen leads workers to offer more of their labor (a future good), when, if they had not been deceived, they would have preferred leisure (a present good). These “signal-extraction” errors cause workers to act *as if* the rate of time preference has fallen, but in fact it has not.

To this point in the Monetarist version of the cycle story, unemployment is down and production and incomes are up. In the long run, however, the apparent prosperity cannot be sustained. Workers discover that the actual inflation is higher than they had anticipated, and they bid nominal wage rates up so as to at least keep pace. Employers react to the higher real wage rates by reducing the quantity of labor they demand. Production and incomes decline, and the economy slips into a recession. The only way to postpone the contraction is for the rate of monetary growth to accelerate so that the rate of price inflation also will accelerate. In the context of adaptive expectations, workers would then continue to believe they are receiving higher real wage rates, employers would continue to recognize that real wage rates are lower, and the ARU would remain below the NRU.

However, a sequence of repeated accelerations of monetary growth would, if steadfastly maintained, lead inevitably to hyperinflation and a collapse of the entire economy. For that reason the increases must eventually cease. When they do, the actual rate of inflation will be less than the expected rate, workers will think their real wage rate has fallen, employers will see that real wage rates have risen, and the unavoidable recession will finally appear. Equilibrium conditions can be reestablished if and only if individuals' expectations of inflation are generally in accord with the actual rate of inflation. Then perceived real wage rates will equal the actual real wage rates, and the ARU will equal the NRU. As an outgrowth of this analysis, it is unsurprising that the overwhelming concern of Monetarists is with the credibility of central bank policies and, therefore, with the reliability of agents' expectations of inflation.<sup>11</sup>

Economists of both schools of thought are correctly perceiving at least part of the cyclical mechanism. If Austrians are right to insist that business cycles are essentially a series of transformations of the capital structure, then Monetarists are also correct to insist that this has profound effects on the employment of labor.<sup>12</sup> Both groups identify excessive monetary growth as the initial problem, both explain that the “boom” is ultimately unsustainable because conditions are inconsistent with time preferences (though this is only implicit for Monetarists), both pay attention to relative prices (Austrians more so), both describe equilibrium in terms of a “natural rate”. However, the causal chain seems clearly to flow from credit conditions and interest rates to capital formation and project selection to labor markets and wage incomes. Broadly put, Monetarists see the effects; Austrians see the causes. It is capital that drives the structure of production, not labor. One of the most important elements in that structure of production---indeed, the threshold determinant of the viability of any given structure---is the subsistence fund, a concept too long neglected.

### **The Centrality of a Subsistence Fund**

As discussed above, the issue of the *complementarity* of inputs is prominent in these explanations of the business cycle. This is obvious and explicit in the case of Austrians, though perhaps only implicit in the case of Monetarists. In the former, one finds repeated warnings that no capital structure can be maintained unless the necessary complementary factors are available in the proper quantities. In the latter, the expansion cannot be sustained because workers withdraw their labor from the market when they discover that their incomes have fallen in real terms---that is, in terms of actual goods and services. In both, the problem arises whenever the owners of the crucial factors of production cannot be provided with

sufficient goods to support them during the time required to complete the multi-stage production process. And one must recall that all modern production is a multi-stage, roundabout process.

To progress from the extraction of raw materials to capital equipment to intermediate goods to consumer goods is unavoidably time-consuming. And “hardly anything that man eats or otherwise uses could have been attained without roundabout methods of production” (Strigl [1934] 2000, 3). The central importance of time escapes many observers because there often seems to be a fairly short interval between the initiation of some project and the appearance of a finished product. That is usually deceptive, however, because one forgets that *prior* to beginning the project there had to exist a whole matrix of available raw materials and machinery whose discovery, extraction, and assembly may have required years to accomplish. In other words, every stage of production presupposes that there has already been an earlier stage that lies closer to the originary factors of land and labor. It will be followed by a stage closer to the final consumer good. And yet it is only those final consumer goods that can sustain human life. At every stage of the process the owners of the factors of production must be able to acquire for their own use the necessary final goods. “[C]apital is something that is employed in a *permanent process of investment and release*” (emphasis added) (Strigl [1934] 2000, xxix). At the heart of the process is the subsistence fund.

Classical economists referred to this concept as the “wages-fund”, but it must be broader than that because it must encompass all originary factors of production. Moreover, it must be thought of in real, not monetary terms. Wicksell explains that “the total amount of consumption goods produced yearly, monthly, or weekly can be regarded...as a *fund* for the

payment of wages and rents. This fund represents the (real) demand for labour and land” (emphasis in original) ([1898] 1965, 125). Strigl calls this subsistence fund “free capital” and goes on to point out its importance:

If an excessive investment of capital has taken place, then investments in the economy certainly exist which might later permit the production of means of subsistence, but the thing lacking right now is free capital which permits the continuation of production... Stated simply: The machines and raw materials are there, but there is too little of that which people who work need for their subsistence; the workers cannot work in advance for their payment if they have nothing to live on... Only when a product becomes a consumer good is the once tied up capital free again. It is clear that an excessive tying up of free capital is identical to the choice of too lengthy roundabout methods of production. ([1934] 2000, 31-32).

What Strigl is describing is something utterly fundamental to a proper understanding of capital, the structure of production, and business cycles. When Austrians, and others, make reference to the complementarity of factors of production it is easy to slip into the error of thinking, for example, that they are simply talking about the need for laborers whose skills and experience match the requirements of the capital equipment that entrepreneurs are utilizing. But if that were all that was involved, then why cannot those entrepreneurs’ demand for such labor bring it forth? At this point, the Monetarist emphasis on misperceived real wage rates could come into play. However, Austrians look elsewhere, so why is it that “[u]nemployment of some factors is not merely compatible with the Austrian theory; unemployment of those factors whose complements cannot come forward in the conditions planned is an essential feature of it” (Lachmann[1956] 1978, 113-14)?

Ultimately, the answer lies in that imbalance which precipitates the cyclical sequence. What does it mean to say that the supply of credit exceeds the supply of saved capital, or, in the terms used here earlier, to say that the MRI falls below the NRI? It means that economic

agents are not saving enough to support the capital structure that entrepreneurs are induced to seek. Entrepreneurs try to establish a structure of production that *cannot* be maintained to completion (or completed but at a loss) because there are insufficient consumer goods. Too much has been invested in capital goods relative to the investment in consumer goods. Production is always both sequential and time consuming. To be viable, at every stage there must exist *both* the capital goods whose greater marginal productivity raises the standard of living *and* enough consumer goods to provide for the owners of those factors of production that are being employed. This is what Strigl means by referring to capital as a permanent process of investment and release. If the expansion of money and credit---in the absence of an increased rate of saving---has artificially stimulated capital projects, then there will be a consumer goods “crunch”. Some projects will have to be liquidated and converted frantically to consumer goods production. The initial capital creation during the boom is followed by capital consumption during the recession.

If on the other hand, the rate of voluntary saving increases, that is, the rate of consumption decreases, then there will be sufficient credit to finance a lengthened structure of production. There will be funding for the additional raw materials, capital equipment, and so forth which, at some point in the future, will be capable of producing more consumer goods than ever before. Moreover, there will also be enough consumer goods available now and during every stage of the entire production process to sustain the owners of the factors of production until such time as the new consumer goods become available. The economy will experience a net creation of capital; no capital consumption will be necessary. In the final analysis, the crucial complement to any given arrangement of capital goods is sufficient

quantity and variety of consumer goods.

### Natural Rate Linkage

It was suggested earlier in this paper that departures of (a) the ARU from the NRU and (b) the MRI from the NRI were to a degree causally, not just coincidentally, related. It is now necessary to explain why that is so. Recall that during the upswing in the economy the disparity between the MRI and the NRI drives entrepreneurs to seek a more roundabout structure of production than had previously existed. This leads, for some considerable time, to higher incomes in capital goods industries, most of which is then spent on consumer goods in an unchanged pattern of time preferences. In short, capital goods production rises dramatically, while consumer goods demand remains robust. One might visualize these events as a temporary movement out beyond the economy's production possibilities frontier. Prosperity *appears* to be pervasive. Incomes are high, and unemployment is low. Output prices are rising, but input prices lag behind. Only later will the rate of growth in input prices catch up with and surpass that of output prices. The principal point is that when the MRI drops below the NRI, price inflation is the predictable result.

[It is a fact that] when upward movements of prices have been observed, the contractual rate of interest---the money rate---was *low* relatively to the natural rate, and that at times of falling prices it was relatively *high*. It is only in this relative sense that the money rate of interest is of significance in regard to movements in prices...In the place of attempts to discover whether high prices are accompanied by high or by low rates of interest, it would have been well to elucidate the real meaning of a high or of a low rate of interest. It might then have been seen that it is an essentially relative conception, and that a further datum must be supplied, namely the level of the *natural* rate. (emphasis in original) (Wicksell [1898] 1965, 107).

As Wicksell recognized a century ago, whenever the  $NRI > MRI$ , prices rise. And

whenever the  $MRI > NRI$ , prices fall. Of course, in the present world of seemingly perpetual inflation, one might want to couch his observations in terms of higher or lower *rates of inflation*, rather than a higher or lower *price level*. That is all well and good, but how is this fact causally linked to rates of unemployment? The answer lies in the process by which economic agents, particularly workers and the owners of other productive inputs, form expectations of price inflation. This writer would argue that the process must be more “adaptive” than “rational”. Rational expectations in its strong form, where economic agents are significantly deceived only if policy makers’ actions are atypical and, thus, typical policies have no impacts on any real variables, utterly fails to account for the recurrence of cyclical phenomena. During the post-World War II period, for instance, it is not plausible to claim that the consistently countercyclical policies of various national governments are still capable of surprising those nations’ citizens. The more recent, weaker form of rational expectations focuses on monetary changes which affect the price level. Changes in the price level are supposedly misinterpreted by entrepreneurs as signifying changes in the relative price of their product, an error which elicits a change in production of the good. Aggregated across all entrepreneurs, real output changes.

Here too, it is difficult to see how this can repeatedly lead to massive swings in production and employment. Changes in the Consumer Price Index <sup>13</sup>, for example, have for many years been updated monthly and publicly announced, and in recent years they can be accessed in moments from any personal computer. In order adequately to explain the repetitive nature of business cycles in terms of errors, one must look, not for something that depends entirely on timing, but for something systemic. Economists of the Austrian school

have addressed this issue of errors by differentiating between knowledge of the abstract economic principles of how an economy works and knowledge of concrete facts regarding a particular job, firm, or industry.

Market participants possess enough entrepreneurial knowledge to make the economy work, but they possess little or no theoretical knowledge. The play-off between knowledge *within* and knowledge *of* the structure has the same analytical significance for the Austrian formulation as the play-off between local and global information has for the New Classical formulation. In both, the distinction between two kinds of knowledge allows for the derivations of results that conform in some degree to real-world observations. But for the Austrians, the distinction is not just an abstract modeling device; it is a recognition of one of the most fundamental features of real-world market economies. (emphasis in original) (Garrison 1989, 20-21).

This distinction between abstract knowledge and concrete knowledge offers the most convincing explanation of why the same macroeconomic policies continue to have effect on the economy. Entrepreneurs and workers misunderstand<sup>14</sup> the significance of, respectively, the prevailing interest rates and wage rates. They both have more than enough data from which they could draw the correct conclusions, but they fail to do so. Moreover, they *repeatedly* fail to do so. The reason is that they possess no theoretical framework around which to wrap the data. They have only the mass of data, some parts of which may even seem to contradict other parts. They are afloat in a sea of concretes, buffeted about by each new datum.

Eventually, they become aware that something is badly wrong. Entrepreneurs discover that their capital projects are no longer profitable. Workers discover that their higher nominal wage rates buy fewer and fewer commodities. Both Monetarists and New Classicals are right to point out that workers and entrepreneurs are slow to identify the true economic

conditions. However, economists of both groups have failed to see exactly why this happens.

### **Summary**

Business cycles revolve around the structure of production. Unsustainable changes in that capital structure are literally what constitutes the cycle. Monetary expansion fuels a credit increase which, in turn, drives the MRI below the NRI. Finding the low MRI attractive, entrepreneurs undertake lengthier, more roundabout production processes. The economy seems to be booming. Incomes are rising, and the ARU falls below the NRU. However, what this situation requires is a subsistence fund that provides consumer goods to the owners of ordinary factors until such time as the new production mix can create even more consumer goods.

But such a fund will not be available, because time preferences have not declined. That is, economic agents prefer the old proportions of consumer goods to capital goods, not the new, lower ratio that is being produced. Sooner or later, capital consumption will replace capital creation as some projects are liquidated and the resources redirected toward the production of consumer goods. A credit crunch drives the MRI above the NRI, as financial intermediaries restrict the supply of credit. The ARU rises above the NRU, and wage incomes fall. The economy descends into a recession. Equilibrium can be reattained only when the MRI is once again consistent with time preferences, that is, when it once again equals the NRI---although the NRI may now be numerically different from what it was when the cycle began.

## Notes

1. See Cochran and Glahe (1999) for an analysis of Keynes in contrast to the Austrianism of Friedrich Hayek.
2. See Garrison (2001) for an extended discussion.
3. In the same essay, Friedman goes on to cite factors such as the changing composition of the labor force, unemployment insurance, and welfare programs.
4. Austrians insist that no cycle will result from an increase in bank credit that stems from a lowering of time preference and, therefore, an increase in voluntary savings (O'Driscoll and Rizzo 1985, 177-81; Rothbard [1962] 1970, 854-55; Strigl [1934] 2000,67-68).
5. For a simple example, one can compare fishing using only one's bare hands with delaying the fishing until one has constructed a fishing net.
6. Friedrich Hayek (1932) found evidence of the concept as far back as Jeremy Bentham, who called it "Forced Frugality".
7. A later section of this essay will focus on how this is manifested in the form of an inadequate subsistence fund.
8. The MRI is likely to overshoot the NRI before equilibrium is reached.
9. Numerically, the new NRI may differ from the old NRI. The events of the cycle may lead to quite different distributions of wealth and income from what existed prior to the initial monetary expansion. Therefore, the weighted average of all individuals' time preferences---what one might call "aggregate" time preference---may have changed.
10. Friedman, like most Monetarists, seems much less interested in the relative proportions of what is produced than in the monetary sum that supposedly represents total production.
11. More recently, Friedman seems to have forsaken the expectations-adjusted Phillips Curve analysis in favor of what he calls the "plucking model" (1993). This, however, would leave Monetarism without any coherent theory of business cycles at all.
12. Austrians, however, never fail to emphasize the relative changes in employment across different sectors and industries rather than just the changes in aggregate employment (Garrison 2001, 64-67).
13. This writer is not suggesting that official indices like the CPI reliably measure price inflation. However, proponents of rational expectations typically employ such indices, so the example is germane to their arguments.
14. Based on the foregoing, the verb clearly should be "misunderstand" rather than the more common "misperceive".

## References

- Cochran, John P., and Fred R. Glahe. 1999. The Hayek-Keynes Debate—Lessons For Current Business Cycle Research. Lewston, New York: Edwin Mellen.
- Friedman, Milton. 1972. “Factors Affecting the Level of Interest Rates”. In Money Supply, Money Demand, and Macroeconomic Models, ed. John T. Boorman and Thomas M. Havrilesky, 200-18. Boston: Allyn and Bacon.
- \_\_\_\_\_. 1977. “Inflation and Unemployment”. Journal of Political Economy 85 (3): 451-71.
- \_\_\_\_\_. 1993. “The ‘Plucking Model’ of Business Fluctuations Revisited”. Economic Inquiry, Vol. 31 (April): 171-77.
- Friedman, Milton, and Anna J. Schwartz. 1963. “Money and Business Cycles”. Review of Economics and Statistics (supplement) 45: 32-64.
- Garrison, Roger W. 1978. Austrian Macroeconomics: A Diagrammatical Exposition. Menlo Park, California: Institute for Humane Studies.
- \_\_\_\_\_. 1989. “The Austrian Theory of the Business Cycle in the Light of Modern Macroeconomics”. Review of Austrian Economics 3: 3-29.
- \_\_\_\_\_. 2001. Time and Money: The Macroeconomics of Capital Structure. London: Routledge.
- Hayek, Friedrich A. 1932. “A Note on the Development of the Doctrine of ‘Forced Saving’”. Quarterly Journal of Economics 47 (November): 123-33.
- Keynes, John M. [1936] 1997. The General Theory of Employment, Interest, and Money. Amherst, New York: Prometheus Books.
- Lachmann, Ludwig M. [1956] 1978. Capital and Its Structure. Kansas City: Sheed Andrews and McMeel.
- Laidler, David E. W. 1982. Monetarist Perspectives. Cambridge, Massachusetts: Harvard University Press.
- Mises, Ludwig von. [1949] 1966. Human Action: A Treatise on Economics. Chicago: Henry Regnery.

O'Driscoll, Gerald P., Jr., and Mario J. Rizzo. 1985. The Economics of Time and Ignorance. New York: Basil Blackwell.

Rothbard, Murray N. [1962] 1970. Man, Economy, and State: A Treatise on Economic Principles. Los Angeles: Nash Publishing.

\_\_\_\_\_. 1969. Economic Depressions: Their Cause and Cure. Lansing, Michigan: Constitutional Alliance.

Strigl, Richard von. [1934] 2000. Capital and Production. Translated by Margaret Rudelich Hoppe and Hans-Hermann Hoppe. Auburn, Alabama: Ludwig von Mises Institute.

Wicksell, Knut. [1898] 1965. Interest and Prices: A Study of the Causes Regulating the Value of Money. Translated by R. F. Kahn. New York: Augustus M. Kelley.