NATURAL RATES OF INTEREST AND SUSTAINABLE GROWTH

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The evolution of macroeconomic theory and monetary policy has brought us to a point that calls for critical reflection. It is undoubtedly true that no newcomer to the field can even begin to understand the current state of macroeconomics and policy formulation without understanding just how, dating from the pre-Keynesian era, the profession has arrived at this state. High theory today takes the form of stochastic dynamic general equilibrium analysis, while policy discussion, which concerns itself with economy-wide disequilibrium, centers on the effectiveness—or ineffectiveness—of old-style fiscal and monetary stimulants. The market is a process and so too is the theorizing about it. The history of macroeconomic thought reasserts its relevance at times of economic crises and almost inevitably leads us to the question, "How far back do we have to go to start all over?"

A plausible answer is that we have to go back to 1912 and the publication of Ludwig von Mises' *Theory of Money and Credit* (Mises, [1912] 1953). The year itself has significance as the immediate predawn of the Federal Reserve System, while Mises's title reflects both the theme of the conference and the particular focus of this panel. In the modern era of interest-rate targeting (dating from the early 1980s), the Federal Reserve's concern about the misallocation of credit has been largely overshadowed by its near-exclusive attention to unemployment and inflation.

Lip service to the goal of a long-run sustainable growth rate has been just that. If interest rates are manipulated with an eye to their short- and medium-run impact on the unemployment rate and their long-run effect on the rate of inflation, they cannot at the same time be expected to steer the economy along a sustainable growth path. The sustainability that the Federal Reserve has actually achieved is strictly (and perversely) an inter-crises sustainability. For all too long, the Fed has acted to extend its own policy-induced booms, forestalling market corrections and

hence making the eventual—and ultimately unavoidable—crisis more pronounced than it would otherwise have been. Maintaining a sustainable growth rate in the more worthy sense of avoiding those periodic crises would require the fullest recognition of interest rates in their fundamental role of allocating credit and hence allocating resources in ways that are consistent with people's willingness to save. If long-run macroeconomic stability is our goal, then due attention to the time element that characterizes both saving propensities and investment decisions is a strict prerequisite to assessing alternative policies and recommending reforms.

In an earlier paper (Garrison, 2009), I argued that the Federal Reserve's implicit observance of the Taylor Rule, by which policymakers split the difference in various proportions between reducing cyclical unemployment and constraining inflation to some target rate (e.g., 2 percent), was an ill-fated exercise in learning-by-doing. The problem is that the "doing" occurred about every six weeks, when the Fed's policy committee met, but the "learning" occurred only about once every decade, when the economy found itself dealing with still another crisis.

The Fed's mid-game strategy of deviating from the Taylor Rule in the downward direction during 2003 and 2004 (setting a one percent target for the Fed funds rate), can be seen, at least in part, as an attempt to maintain sustainability in the short-run sense of forestalling an inevitable downturn. The perceived need for exceedingly low interest rates on the heels of the Federal Reserve's extended conformity with the Taylor-Rule suggests that the rule itself is not conducive to sustainability in the longer-run sense of avoiding those periodic crises.

Natural Rates—of Unemployment and Interest

Hardwired into our macroeconomic thinking, particularly about policy issues, is the notion of a natural rate of unemployment. Though initially introduced as the wage rate (or pattern of wage rates) "that would be ground out by the Walrasian system of general equilibrium equations" (Friedman, 1968, p. 7), the natural rate soon took on a more worldly meaning by its being associated broadly with real (as opposed to monetary) forces in the economy. In his 1976 Nobel lecture, Friedman (1977) included among these real forces (in addition to the fundamentals of tastes, resource availabilities, and technology) legislative considerations affecting employment opportunities. Minimum wage legislation, unemployment insurance, investment tax credits, and Social Security's minimum retirement age all have their separate effects but do not affect in a systematic way the cyclical pattern of macroeconomic magnitudes. The point, of course, is to identify, given any particular constellation of real forces, an ongoing, stable, i.e. cycle-free, rate of unemployment, which is then christened the natural rate. For some time now, macroeconomists have taken the natural rate to be in the neighborhood of 5-6%.

Though subject to change and not crisply definable, the natural rate is a benchmark for identifying super-natural or sub-natural unemployment rates, their deviation from the natural rate representing the unemployment rate's cyclical

component. By contrast, structural unemployment, whatever its source, is seen as a separate category. Outside of the Austrian school, the structural component of unemployment, which is rooted in mismatches between workers' qualifications and employment opportunities, is not thought to be systematically related to the cyclical component.

The very term "natural rate of unemployment" was coined by Milton Friedman in recognition of its being the conceptual counterpart to Swedish economist Knut Wicksell's "natural rate of interest" (Friedman, 1977). By melding ideas from Chicago and from Stockholm, we see that a healthy economy is one in which, *inter alia*, the unemployment rate and the interest rate are both at their natural levels. In this happy circumstance, the economy's labor markets would be fully adjusted to the labor-leisure tradeoffs that characterize the working-age population, and its credit markets would be allocating labor and other resources in accordance with saving propensities. With both rates at their natural levels, there would be no call, at least on these counts, for any pro-active policy adjustments.

Thinking in terms of these twin natural-rate concepts reveals a fundamental tradeoff in Federal Reserve policymaking, a seemingly obvious tradeoff in the light of the Fed's operating procedure of interest-rate targeting. Given this procedure and consistent with the Taylor Rule in circumstances of low inflation, a super-natural unemployment rate (e.g., 9%) calls for monetary ease (i.e., for lowering interest rates); a sub-natural unemployment (e.g. 4%) rate calls for monetary restraint (i.e., for raising interest rates.)

But what if market interest rates were initially at their natural levels? In that case, dealing with a labor-market problem by targeting a different Fed funds rate would create a credit-market problem. In particular, bringing the overall rate of unemployment down to its natural level by lowering interest rates would drive a wedge between propensities to save and propensities to invest. Equally significant if not more so, differential interest-rate sensitivities in the investment world would result in a misallocation of credit—and hence in distortions of the patterns of wage rates and producer-good prices. Wage rates and prices unduly favored by policy-infected wages and prices would include durable capital (including housing), durable consumer goods, and time-consuming production processes. Attention to this "malinvestment" (reflecting differential interest-rate sensitivities), as distinct from the more conventionally conceived over- or under-investment, is unique to the Austrian theory as introduced by Ludwig von Mises (1912) and developed by Mises ([1940] 1966), F. A. Hayek ([1935], 1967 and [1939] 1975) and others. The recognition of the effect of differential interest-rate sensitivities on the allocation of capital and its labor complement imply that the structural component of unemployment is in play during the course of the business cycle.

Malinvestment in the Austrian theory is most straightforwardly associated with the expansion phase of the business cycle, during which unemployment is in the natural or sub-natural range. A credit-driven boom entails excessive investment and particularly in the interest-rate sensitive sectors of the economy. It is this

malinvestment and the implied distortion of the temporal pattern of investment relative to saving propensities that eventually necessitates a correction (a bust in the more dramatic episodes) and a subsequent realignment in accordance with the underlying economic realities.

With appropriate modifications, the concept of malinvestment is also relevant in the analysis of credit expansion during the recovery phase of the cycle. In a slack economy, no less so than in an expanding one, the policy trade-off implied by the twin natural rates is still in play—while issues of liquidity and capital adequacy in the financial sector tend to dominate the thinking of the Federal Reserve. The intended effect of a monetary stimulus, i.e., of low interest rates, is to saturate the economy with liquidity and increase investment generally and with it the level of employment. However, the effect of maintaining low interest rates and possibly lowering them still more would be to perpetuate or even to intensify the malinvestment that characterized the boom and hence to forestall a genuine recovery. This perverse resource-allocation effect was of particular concern early on to Hayek ([1928] 1975) and other Austrian economists.

The Entrepreneurial Component of the Market Rate of Interest

At root, the natural rate of interest reflects intertemporal preferences on both sides of the market for loanable funds. Intertemporal preferences can vary with the attitudes—with the time perspectives—of individual savers and, for the economy as a whole, with changes in demographics. It can also vary with changes in the perceived profitability of investment undertakings. Mises (1966, p. 539-541) dealt with these changes in intertemporal preferences in terms of "time preference" (on the supply side of the loanable funds market) and the "entrepreneurial component" (on the demand side).

Newly perceived profit opportunities stemming from technological advances allow for a sustainable increase in the rate of economic growth. Prospects for greater profits affect the demand side of the market for investment funds. Interest rates rise accordingly, calling forth additional saving to fund the investments. The higher interest rate, a new natural rate reflecting the change in underlying economic realities, requires no pro-active response by the central bank. However, the Federal Reserve typically does respond in such circumstances with monetary ease. It increases the supply of loanable funds, keeping interest rates from rising or causing them to rise less than they otherwise would have. This monetary ease is not seen as monetary stimulation but rather as monetary accommodation. The Federal Reserve accommodates growth, or, in terms reminiscent of the legislation that created the central bank, it accommodates the "needs of trade."

But at what rate of interest should the increased demand for credit be accommodated? Is it the rate that prevailed before the technological advances and the perception of the new profit opportunities that they afforded? Is it some other, higher or lower rate?—and if so, what rate and how determined? The only readily

defensible answer to these questions is that due accommodation is provided by the market itself. A higher rate of interest accompanies the increased demand for investment funds. Accordingly, taking advantage of the technological advances is limited by the increment of saving brought about by that increase in the interest rate. In other words, the new rate of interest, like the old one, is best left to market forces rather than to monetary policy. Both rates, before and after, are natural rates—although the very presence of a central bank make their natural-rate status difficult to verify. Probably the most that can be said is that if the Federal Reserve abstains from responding pro-actively to a technological advance, then the post-advance interest rate will be as natural (or as unnatural) and the pre-advance rate.

In historical episodes during which a sub-natural rate of interest is the result of the monetary accommodation of technological developments, actual market rates of interest may not seem particularly low—and may even be seen as high in comparison to the historical norm. This may be the case even assuming no increase in the actual or expected inflation rate. During such episodes, the rise in the natural rate of interest (due to the increase in the entrepreneurial component) is being wholly or partially offset by monetary accommodation. The dynamics of credit expansion are piggybacking on the dynamics of technology-driven growth. In terms of the equation of exchange (MV=PQ), both total output (Q) and the money supply (M) are rising. And absent any significant change in money's velocity of circulation, the net effect on the price level may be nil.

The equation of exchange, of course, was the launching pad from which monetarism of the 1960s and 1970s countered Keynesianism of the 1950s and 1960s. But that equation is blind to the misallocation of credit during the Federal Reserve accommodation of a technology-driven increase in the economy's growth rate. With interest rates in the sub-natural range, credit demands in interest-sensitive sectors of the economy are unnaturally strong. Labor and other resources are misallocated in those directions. The Fed does worry during this phase about the accompanying "asset inflation" though ultimately it leaves asset prices to be determined by market forces. But shouldn't the Fed's worries about asset prices being too high transform themselves into worries that interest rates, which the Fed does *not* leave for the market to determine, are too low?

The inattention to the effect of manipulating interest rates on the allocation of resources traces to the high level of aggregation that dominates the thinking of today's macroeconomics. Hayek's earliest work in monetary theory (Hayek, [1928] 1975) is an extended demonstration that the whole process of credit-induced boom and subsequent bust is concealed within the macroeconomic aggregates that populate the equation of exchange.

In principle an Austrian-style boom and bust can occur without there having been any change at all in the underlying non-monetary forces. Purely political considerations may motivate the Federal Reserve to expand credit, trading future price-level stability (and long-run growth-rate stability) for current decreases in the unemployment rate. This dynamic, spelled out in terms of an exploitable

short-run Phillips curve, characterizes the political business cycle theory associated with the Public Choice school and suggests a non-coincidental alignment of the business cycle with the election cycle. It is this theory that gives credence to the charge that Arthur Burns helped facilitate the re-election of Richard Nixon in 1972 and that Alan Greenspan played a similar role in the re-election of Bill Clinton in 1996.

In some instances of cyclical variation (and possibly in most), a full-bodied history of the economic conditions and policy objectives is essential to our understanding the particular nature of both boom and bust. Apart from the pure Public Choice scenario, increased central-bank credit is a response to a change in credit market conditions. Hence, important differences among historical episodes stem from differences in those underlying changes.

A Critical Comparison of Recent Historical Episodes

The Digital Revolution: The final decade of the twentieth century is a case study in credit misallocation during a period of technology-driven growth. In 1993, while still dealing with the fallout from the Savings and Loan crisis, the Federal Reserve kept the Fed funds rate low (around 3%). This rate was low both by historical standards and relative to most any plausible estimate of the natural rate. But during the rest of that decade, the ongoing maturation of the internet and of other aspects of the digital revolution were significant factors affecting credit markets and the economy's growth rate. Interest rates rose, registering the opposing effects of increased profit opportunities and Federal Reserve accommodation. The Fed funds target rate was kept in the neighborhood of 5% until the turn of the century, when worries about inflation led to stepwise increases to 6.5%, where the target rate remained during the second half of 2000. Actual inflation had remained in check in this seemingly "new economy," as it was came to be called, while the unemployment rate descended toward the 4% mark just before the turn of the century and then dipped below 4% a few times during 2000 (despite the higher Fed funds rate). The Fed funds target rate was dramatically lowered starting in early 2001 when worries about the weakening expansion dominated the Fed's thinking. The characteristics of the expansion and subsequent contraction were consistent with sub-natural rates of both interest and unemployment.

The unemployment rate was readily recognized as sub-natural on the basis of our notion of the natural rate, namely unemployment somewhere between 5% and 6%. Admittedly, the interest rates that prevailed during the mid-to-late 1990s cannot so easily be declared sub-natural. There is a much less specific notion or convention as to what the natural rate is, let alone how much it rises or falls in response to changes in underlying real factors. Newly perceived profit opportunities, which undoubtedly raised the natural rate during that period, are inherently difficult to quantify. And the difficulties multiply when we realize that the perceived profit opportunities are due partly to real factors and partly to

favorable credit conditions. Still, we can say that to the extent the increased demand for credit was accommodated by the central bank rather than by the market itself, interest rates were low relative to the natural rate and credit was misallocated in the direction of interest-sensitive undertakings.

This Austrian-style misallocation of credit misdirected resources into durable capital and early-stage production generally—but with investments related to the digital revolution being the particularly dramatic aspect of the credit-augmented expansion. The eight-month contraction that began in March of 2001, popularly called the dot-com bust, fits neatly into the Austrian story—with credit expansion having piggybacked on the digital revolution. The unemployment rate eventually rose above 6% as a significant portion of the formerly perceived profit opportunities vanished in the discoordinated economy.

The Housing Bubble: Recognizing the applicability of the Austrian theory to the dot-com boom and bust sets the stage for a revealing comparison of that episode with the more recent housing-led boom and bust. The similarity follows from the misallocation in both instances of credit and hence of resources. The differences derive from the contrast between the changes in the non-monetary forces that underlay the two episodes. While there were undoubtedly some technological developments underlying the most recent expansion, the most dramatic development was rooted in the federal government's policies affecting the market for mortgages.

Promoting home ownership beyond what the market itself would accommodate has a long history. Initiated by Hoover's "Own Your Own Home" campaign in the late 1920s, home ownership and was bolstered by Roosevelt's National Housing Act of 1934, which created the Federal Savings and Loan Insurance Corporation. Fannie Mae (1938) and then Freddie Mac (1970) with their *de facto* loan guarantees, became the heavy lifters. During the Carter administration, mortgage lending was deliberately extended in the direction of low-income, high-risk borrowers by the Community Reinvestment Act (1977), a critical piece of legislation that was strengthened in 1985 and again in 1999.

It was during the George W. Bush administration, however, that the mortgage-lending flood gates were opened wide. Federal guidelines on mortgage-lending practices were dramatically relaxed, allowing teaser loans and no down payments even in lending to those with the shakiest credit histories. Fannie Mae and Freddie Mac absorbed the riskiness of mortgage loans, the eventual losses to be borne in one form or another, of course, by the public at large. But during the early years of the twenty-first century, when the riskiness of mortgage loans were hidden away in those government-created mortgage institutions, the techniques of modern finance, involving mortgage-base securities and all manner of derivatives, allowed the proliferation of mortgage lending to infect the entire financial sector of the economy.

Contrasting Episodes: Significantly, the movements of interest rates (including changes in the Fed funds target rate) during the housing boom were qualitatively different from the movements during the dot-com boom. On the eve of the dot-com boom, the Fed Funds target rate was low in the wake of the Savings and Loan crisis and was then raised (from 3% to 5%) in a partial accommodation of increased demand for credit. On the eve of the housing boom, the Fed Funds target rate was low in the wake of the dot-com crisis and then was lowered still more (from 1.75 to 1.00%) as the Fed followed the market down in recognition of the increased supply of credit. This increased supply of loanable funds in US markets, typically attributed to a increase in world saving, was due in some part to an increased eagerness of financial institutions to supply credit to mortgage markets.

In summary terms, the dominant changes in the underlying real factors in the earlier episode took the form of an increase in the *demand* for credit, putting *upward* pressure on interest rates; the dominant changes in the underlying real factors in the later episode took the form of an increase in the *supply* of credit, putting *downward* pressure on interest rates. In the earlier episode, the Federal Reserved moved to counter the upward pressure of interest rates, causing actual interest rates not to deviate greatly from the historical norm. In the later episode, The Federal Reserve moved to reinforce the downward pressure on interest rates, causing the actual interest rates to be exceedingly low relative to the historical norm. Although the judgment, made retrospectively by economists of virtually all stripes, that the Fed funds target rate was "too low for too long" between mid-2003 and mid-2004, it was almost surely too low for too long relative to the natural rate in both episodes.

The contrast between the dot-com boom and the housing boom reveals differences in the relative severity of the subsequent busts and relative difficulties of the recoveries. In the earlier episode, there was something real and growth-rate enhancing that underlay the monetary dynamics. Technological advancements that sparked and fueled the digital revolution were real and positive developments that could translate into a sustainable increase in the economy's growth rate. The sustainability, however, was contingent of the increased growth being accommodated solely by increased saving at the new natural rate of interest. That is, abstracting here from the inflow of savings from abroad, the sustainability of the technology-led boom required that the reaction to the rightward shift in the demand for investment funds be a northeastward movement along the unshifted supply of funds, the consequent market-clearing rate of interest constituting the new natural rate.

Monetary accommodation during the dot-com boom shifted the supply of loanable funds rightward, countering the upward movement of market interest rates. To some extent the monetary injection substituted for genuine saving, but the net effect was to increase the supply of loans (i.e., of genuine saving plus newly created money). The Fed-bolstered increase in the growth rate, experienced generally throughout the economy and dramatically in the technology-enhanced

sectors, was the unsustainable component of the growth rate. When boom turned to bust, however, the subsequent economic contraction was cushioned to some extent by the underlying sustainable component of the increased growth rate. And the recovery phase was correspondingly robust.

There was also something real that underlay the monetary dynamics of the housing-led boom (real in the sense of non-monetary). But, unlike the technological developments that underlay the earlier episode, the government decreed mortgage-lending policies that gave rise to the housing boom were not a net positive for the economy. They were not growth-rate enhancing. Rather, they were market distorting. With Fannie Mae and Freddie Mac fully in play and with dramatically relaxed standards for credit worthiness in mortgage markets, housing and related sectors of the economy were favored at the expense of other sectors. Savings flowed in the direction of housing markets to take advantage of the artificially low riskiness. Had the Federal Reserve not added to the supply of loanable funds, borrowing costs in other sectors of the economy would have risen. With Federal Reserve accommodation, however, interest rates generally were lower—and lower still as the housing market took on the character of a bubble, about which the Federal Reserve remained agnostic, at least publicly, almost to the end. As the bubble began to weaken, posing a threat to the financial sector and other over-extended sectors, the Fed had to choose between (a) raising rates high enough to prick the bubble—a bubble that would, in any case, eventually pop on its own and (b) keeping rates low enough to extend the period of inter-crisis stability. True to its nature, the Fed chose to take credit for keeping the good times going a little longer rather that take the blame for bringing on the bad times.

When boom turned to bust in 2008 and the contraction began, there was no underlying, growth-rate enhancing component of the boom to serve as a cushion. At the same time the economy had to recover from a credit-induced misallocation of resources, it also had to recover from the mortgage-market distortions associated with socialized risk-taking and amplified by excessively lax standards for credit-worthiness. This circumstance alone suggests that, in comparison with the technology-led boom and bust, the contraction would be more severe and the recovery more difficult.

Predictably, the reaction of the Federal Reserve (beyond the rescuing of failing financial institutions) was to push interest rates still lower, reducing the Fed funds rate virtually to zero in late 2008 and more recently pledging to keep it near zero through 2013. While this strategy, as reinforced by "quantitative easing," has led to an enormous build-up of liquidity in the banking system, it has severely retarded the needed correction of the misallocations of labor and other resources that occurred during the boom. The claim is often made, in connection with both monetary policy and fiscal policy, that "the economy can't recover until the housing market recovers." But the Austrian perspective, with its attention to credit misallocation, suggests that the housing market will be the market that recovers last. Resources need to be moved out of housing and other interest-sensitive

investments and absorbed in other parts of the economy, allowing the growth in population eventually to absorb the excessive housing stock. All attempts by policymakers, both monetary and fiscal, to entice construction workers back into their construction jobs can only delay the recovery.

Summary and Implications for Reform

The Austrian theory is unique in recognizing that structural unemployment deriving from differential interest-rate sensitivities is an integral aspect of cyclical unemployment. This is not to deny that a post-bust self-reinforcing downward spiral of earning and spending can increase the severity of the contraction phase. Hayek recognized this aspect early on as a "secondary contraction," but he saw the distortion of credit markets and consequent misallocation of resources during the boom as the primary problem. And he recognized that the central bank's attempt to reverse the secondary contraction and hasten recovery by holding interest rates low can blunt the market forces that otherwise would reallocate resources in accordance with a newly emerging natural rate of interest.

Provoked perhaps by the Taylor Rule's track record, discussion has now focused on the Federal Reserve's interest-rate targeting and the prospects for identifying a more suitable target. The equation of exchange, MV=PQ, offers a virtual menu of possible targets but with no choices that are directly relevant to the issue of credit misallocation. Further, targeting the money supply (M) was effectively taken off the menu by the passage of the Depository Institutions and Monetary Control Act of 1980, after which the various monetary magnitudes all blended at the margins and with no discernable magnitude identifying itself as *the* money supply.

An unsigned opinion piece in a recent issue of *The Economist* suggested that the Fed should target nominal GDP, the dollar value of the economy's total output (rendered in the equation of exchange as PQ). The Fed "would set or be given a goal for how fast [PQ] should grow." The "generally preferred" inflation-rate target of 2% and "long-term potential growth of 2-3%" implies a PQ growth rate of 4-5%, a rate offered in the opinion piece as a "most likely" target rate. The very language in which this proposed re-targeting is set out is enough to kill all hope for this *Field of Dreams* operating procedure leading to long-run stability. The positive inflation rate (2%) has come to be "generally preferred" not because it promotes long-run sustainability but because it keeps the nominal rate high enough to allow for a significant rate reduction when the next downturn occurs. And the rough estimate of the economy's "potential growth rate" does not qualify as its "natural growth rate." In fact, there is no natural growth rate apart from the growth rate that corresponds to the natural rate of interest, which, in turn, reflects the underlying real factors and hence is subject to change. In the face of changing real factors, striving for 4-5% PQ growth by injecting new money through credit markets would virtually guarantee further episodes of boom and bust.

The seemingly obvious alternative proposal according to which the Fed should adopt the natural rate of interest as its target is, of course, all to facile. It misconceives the very nature of the natural rate. What would market rates of interest be in the absence of centrally controlled money and credit? It is only the market itself that can answer this question. And once the answer is so revealed, it needs no ratification by a central bank.

In any case, it is implausible that the Federal Reserve's policymakers, who could not tell whether we were in a bubble until it burst, could nonetheless determine the optimal policy for avoiding busts and then, once the busts come, for nursing the economy back to health. Even in an economy that is actually enjoying macroeconomic health, a central bank even of the most beneficent sort could only hope to do no harm. Our hope of achieving long-run sustainable growth must rest on the prospects for decentralizing the business of banking.

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