ARE MACROECONOMIC THEORISTS RATIONAL?

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Macroeconomics has developed over seventy years from John Maynard Keynes's *General Theory* to the currently fashionable mathematical models that feature efficient markets and rational expectations. In shaping a broad overview of that development, the gestation of this paper was contemporaneous with, but independent of, a parallel history and evaluation of macroeconomics (Mankiw 2006). Some comments have been included upon contrasting features of these two representations.[1]

Mankiw presents early macroeconomists (engineers) as dealing with practical problems, with the emphasis later shifting to theoretical (scientific) principles. He comments that, even though the new scientific emphasis undermines confidence in what policy can accomplish, business fluctuations continue to be analyzed upon the basis of the ISLM model. Mankiw's conclusion—that "science" has exposed "the limitations of the large Keynesian macroeconometric models and the policy prescriptions based on these models"—accords with the conclusions drawn here. Mankiw's positive outlook—that, in regard to macroeconomics as both engineering and science, "the recent emergence of a new synthesis . . . [is] . . . a hopeful sign that more progress can be made on both fronts"—is most definitely not.

RATIONAL ECONOMIC MAN

In its broadest meaning, the action taken by a rational economic man is guided by some consciously acknowledged purpose; and it allows for differential learning capacities and elements of oversight. In that broad context, while the rationality hypothesis allows for mistakes, it anticipates either error-learning corrective action and/or greater survival potential for those who make lesser and/or fewer errors. Irrational actions are uneconomic, because

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[1]In this regard, the presentation benefits greatly from a referee's comments.

they set aside options that are of greater value or incur less cost. Where psychologists provide evidence for irrational behavior, that is for psychology—not economics—to explain. To behave economically is to behave rationally; hence the notion of "rational economic man." Now, if economic man were omniscient, rational calculation would be relatively straightforward. Although a great deal of economic theory is structured upon full knowledge of relevant circumstances, no one suggests there are many (if any) practical cases where such conditions exist. Even so, there can be no denying that many insights are gained upon the basis of such theorizing.

More interesting and challenging is the notion of rationality where knowledge is limited; or where there is no calculation to show the optimal allocation of time and expense to extending relevant knowledge. Even in the face of pervasive uncertainty, it is possible with hindsight to identify mistakes. Then, in similar circumstances, it would be irrational to repeat those mistakes. In practical situations, the formation of rational expectations implies that an individual assesses a situation—not in full knowledge—but by his own judgment upon the basis of the information available. So, for illustration:

> Buses depart on the quarter-hour.
>
> I prefer to take one scheduled for 0900, but those on either side will do.
>
> I notice a new driver.
>
> The following day I am punctual for the bus at 9:00, but it has already left.
>
> The next day I arrive at 8:59 but, again, it has already left.
>
> On day three I arrive at 8:58, but (you've guessed it!) I am too late.
>
> Having checked the accuracy of my watch, I decide that the driver either is playing some childish game or is strangely erratic.
>
> So I break the pattern.
>
> I arrive a great deal earlier (at 8:50) and I catch the bus.
>
> Thereafter, I catch the bus on some days and on other days I miss it.
>
> If there has been some childish game, the driver must lose interest because, thereafter, the bus is more-or-less on time; and, more often than not, I catch it.

This series of events illustrates rational behavior; that is, action which is revised in order to eliminate systematic mistakes.

In the formal examination of rational expectations, theorists have assumed omniscient rational calculation and (as noted above) they have gained many insights from that logical presentation. Conclusions that have serious implications for macroeconomic policy follow, not from omniscience,

but from the weaker assumption that *systematic errors* are unlikely to persist. As with the above illustration, the hypothesis is that individuals recognize—and retrospectively adjust their behavior in order to eliminate—their mistakes (like generally missing a bus). Indeed, given perceived error patterns, it would be irrational for individuals not to react in such purposeful manner.

MACROECONOMICS

Macroeconomics is the attempt to provide a theory of national income determination and a basis for the implementation of aggregate demand management policies. Macroeconomics began with Keynes's *General Theory*; that is, from a set of arguments in support of state intervention to remedy the chronic mass unemployment of the 1930s. In that epoch, Keynes's emphasis was upon expedience: short-term palliatives that were "subject to all sorts of special assumptions and . . . necessarily related to the particular conditions of the time" (Keynes 1937, p. 122). Most certainly, Keynes's *General Theory* is not science: "incomplete as a matter of logic. Too many threads left hanging" (Mankiw 2006, p. 3).[2]

Subsequent to Keynes's death in 1946, macroeconomics became the subset of mainstream economic analysis that purports to explain the performance of a nation-state; not only in relation to employment levels, but also in relation to growth, foreign trade, inflation, and so on. Macroeconomic commentary is based largely upon changes in statistical measures of different categories of expenditure, the sum total of which is termed "aggregate demand." Whenever the volume of unemployed factors of production (whether factories, machinery, or workers, but especially the workers) is abnormally high, the situation is described as "a deficiency in aggregate demand."

Contemporaneously with Keynes, Friedrich Hayek was also engaged by the economic malaise of the 1930s. His engagement was scientific rather than policy-oriented. Hayek introduced the "knowledge problem" to economics; that is, the problem of achieving the most effective utilization of extensive, unorganized and uniquely specialized knowledge of particular circumstances and of special processes that apply at different times and in diverse locations. The general case is that "practically every individual has some advantage over all others because he possesses unique information of which beneficial use might be made"; and that the "various ways in which the knowledge on which people base their plans is communicated to them is the crucial problem for any theory explaining the economic process" (Hayek 1945, pp. 78–79).

[2]Harry G. Johnson offers richer commentary: "Keynes was . . . a brilliant theorist; but the theory was applied when it was useful in supporting a proposal which might win current political acceptance, and dropped along with the proposal when the immediate purpose had been served or had failed" (Johnson 1975, p. 115).

Although individual entrepreneurship is shaped by some unique understanding of a particular "locality," price signals bring cohesion to otherwise independent entrepreneurial activities. No single person oversees the whole field, but the "limited individual fields of vision sufficiently overlap so that through many intermediaries the relevant information is communicated to all" (Hayek 1945, p. 86). Market trading and price adjustments are key processes in coordinating economic activity; and monetary distortions to those price adjustments—if they are allowed to persist—can lead to widespread economic malaise. This is the essence of Hayek's monetary theory of business cycles, which represents the depression of the 1930s as a direct consequence of unwarranted monetary expansion during the late 1920s.

Sharply contrasting with Hayek's broad perspective, Keynes traced the implications for a market system *that has already gone wrong*: resources are underused because activities have become discoordinated. Adjustments of price-relativities are necessary, but those adjustments are compromised by the greater rapidity of quantity adjustments. Although this scenario is reflected in the Keynesian income multiplier, that mechanism drastically oversimplifies complex dynamics; and it particularly misleads in dealing only with real magnitudes (of income and employment) to the exclusion of market evaluations (that is, price relativities).

In the 1930s, Keynes sought quick remedies from policy; and it became a Keynesian truism that economic recovery relies upon a fillip to some category of aggregate expenditure. Some component of "aggregate demand" must be raised in order to initiate economic recovery. In the context of idle workers, silent machinery and (consequential) low costs of factor hire, so much must have seemed obvious in the dark years of the Great Depression. No point producing, if no one is buying. Keynes's particular focus was upon state expenditure to create something equivalent to (say) Egyptian pyramids or medieval cathedrals (see Keynes 1973a, pp. 131, 220) as an immediate panacea. In the longer term, if private investment were to prove chronically inadequate to keep the workforce fully employed, there might be a requirement for "a somewhat comprehensive socialisation of investment" (Keynes 1973a, p. 378).

Although Keynes's essential point—for state expenditure to be raised whenever private expenditures are inadequate to sustain full employment—runs counter to Hayek's perception of a vital economy, Hayek's ideas came to full maturity too late to take the attention of an economics profession won over by Keynes. Hayek's conclusion, that recession is the outcome of *too much* investment, incited particular rage on the political left (where the vast majority of modern Keynesians are located), because an overinvestment theory of economic slump is menacing to Keynes's longer-term vision of "a somewhat comprehensive socialisation of investment" (Keynes 1973a, p. 378).

Without a doubt, Keynes (and the Keynesians) won all the early battles, but the terms of the armistice are yet to be finalized: "there was a time when the new theories of Hayek were the principal rivals of the new theories of Keynes. Which was right, Keynes or Hayek?" (Hicks 1967, p. 203). Time has

brought serious questions to bear. In taking its cue from Keynesian theory, the state has grown large. Permanently so, it would seem. In western economies, it is typical that around 40 percent of GDP is committed to state expenditures of various kinds. An upper limit appears to have been reached, with the implication that pundits now look to private expenditures for economic recovery; either domestic consumption or exports must lead the way:

> the eurozone economy is getting even weaker and this downtrend is almost certain to continue in 2006. Starting with the figures, it is arithmetically impossible for Europe to have an economic recovery unless consumers spend more and save less . . . exports, at 12 percent of GDP, are simply not large enough to drive the eurozone economy as a whole. (Kaletsky 2006)

Of course, such commentary overlooks the extent to which macroeconomics is discredited:

> [w]e used to think that you could spend your way out of recession. . . . I tell you in all candour that option no longer exists, and that in so far as it ever did exist, it only worked . . . by injecting a bigger dose of inflation into the economy, followed by a higher level of unemployment. . . . That is the history of the last twenty years. (Callaghan 1976)

The experience of the U.K. is typical of western economies generally, and it contradicts Keynes's assertion that inflation occurs only when an economy approaches full employment (see Keynes 1973a, p. 295). Yet, there was a period during which Keynes seemed to have been vindicated. Evidence of a robust negative trade-off between inflation and unemployment (the Phillips curve) emerged from an analysis of U.K. data patterns for the period 1861–1957 (Phillips 1958); and it appeared to bring precision in the degree to which (according to macroeconomic theory) state expenditure might be expected to reduce unemployment. If mild inflation were tolerated, unemployment could be reduced permanently. Or so it appeared.

Subsequent work by Edmund Phelps and Milton Friedman shows that a tradeoff between inflation and unemployment rests upon either of two ideas (Phelps 1968; Friedman 1968). First that, in agreeing to employment contracts, individuals take less than full account of the declining value of currency (economists call this "money-illusion"); or, second, that individuals *systematically* underestimate the inflation rate and, in so doing, are likely to accept employment contracts that leave them disappointed. In either case, such behavior is justifiably categorized as "irrational."

Under the hypothesis of rational expectations, individuals may make mistakes in their evaluation of job opportunities; but they learn from their mistakes. There is no systematic tendency to err. On average, rational expectations are accurate which means that, when individuals incorporate their expectations of inflation into their evaluation of job opportunities, their earnings quickly adjust in line with prices. The implication is that any potential inflation-unemployment tradeoff is undermined, which was the experience of

the 1970s. The hypothesis of rational expectations delivers a plausible explanation for the breakdown of the Phillips curve.

When, in the context of rational expectations, the state persists in its attempts to expand aggregate demand, labor markets display the symptoms of costly and confusing reactions, as individuals continuously readjust their expectations and behavior. By that kind of experience, U.K. labor markets became so inefficient in the 1970s that a new word entered the vocabulary of economics: "stagflation." In 1980, for example, the U.K. inflation rate was 16.3 percent and unemployment 5.6 percent; something that Keynes denied was possible.

The Lucas Critique

Rational expectations—and the decisions and actions that follow—require some contextual knowledge. Whenever a particular context changes and/or whenever individuals' knowledge about relevant circumstances changes, expectations and decisions also change. It would be irrational, if it were otherwise. Contextual change is central to a "critique" from Robert Lucas that undermines the edifice of macroeconomic aggregate demand management (see Lucas 1976). The Lucas critique relates specifically to macroeconomic forecasting.

Although it was once commonplace to draw an analogy between meteorology and economics, weather forecasting is less problematic than economic forecasting. It is intrinsically more difficult to forecast the behavior of intelligent individuals than it is to forecast pressure patterns and temperature gradients. Once a forecast is made publicly, behavioral reaction is more likely from intelligent agents than it is from water molecules! And, having discovered coherence within weather patterns, meteorologists have shown little inclination to suggest ways in which "weather policy" might be implemented to improve weather welfare!

Macroeconomic theorists, much bolder than meteorologists, are ever ready to suggest ways for policy to enhance economic welfare: low unemployment, stable prices, and rapid economic growth (all, of course, within the constraints of sustainability and other environmental considerations). Here, there is little humility: economic forecasting has a poor record extending over many decades. For example, in October 1929, Irving Fisher (whose work brought advances in monetary theory and in the formulation and use of index numbers) made the bold forecast that he expected to see the stock market a good deal higher within a few months. The Wall Street Crash was just a fortnight away.

Accurate economic forecasts are demonstrably difficult to achieve. Anyone who is able to forecast accurately just one market price has an opportunity to become very rich indeed. The dynamics of spontaneously evolving social systems are complex and policy initiatives necessarily add to those dynamics. Beyond the direct impact of policy changes, the subsequent interactive adaptive

reactions of individuals (behaving rationally) must also be taken into account if forecasts are to have any prospect of success.

In the early 1980s Robert Lucas produced a devastating appraisal: economic forecasts are most unreliable when they are most needed; that is, when a change in economic policy is to be implemented. The "Lucas critique" is that, even if (a very big "if") individuals' expectations could be accurately forecast in the context of current policy structures, that "success" is undermined whenever that structure changes. New policy implies a new context in which decisions are taken, so that individuals' reactions are affected. Adaptive behavioral adjustments, continuously undertaken by rational individuals in reaction to adjustments to policy (and to everything else that occurs), effectively emasculate macroeconomic forecasting and (with it) aggregate demand management.

Every time policymakers implement changes on the basis of their analysis of individuals' past behavior, individuals alter their behavior! The implication is that, whenever (say) monetary policy is eased to allow a fiscal deficit to boost aggregate demand, rational individuals adapt their decisions to the context of the inflation that inevitably follows; and, from that process, the Phillips curve gives way to a coexistence of ineffective labor markets and general price inflation ("stagflation"). Just as it did in the 1970s.

What has been Learned?

With the "reputation" of the Phillips curve thoroughly discredited, the full paraphernalia of monetary and fiscal instrumentation are no longer routinely deployed to manipulate aggregate demand. Yet, adjustments to interest rates remain (inexplicably) as a central feature of macroeconomic intervention. The belief persists that it is possible to tailor interest rates to benefit the economy. For example, in the autumn of 2005, economic commentary called for an interest rate cut in the face of soaring oil prices. As time goes on, the recommendation is (as always) to tweak in the opposite direction. So common has this practice become that it is the foundation of another piece of macroeconomic theory: "the Taylor Rule" (Taylor 1993). Briefly, John Taylor noticed that monetary policy can be described by a rule whereby the short-term interest rate is varied positively with respect to inflation and inversely with respect to the "output gap" (that is, the difference between actual and potential output).

Now the price system is a proven means to secure economic efficiency across complex trading patterns; and oil prices are included. Interest rates are intertemporal prices that have a rightful place within the market system of spontaneous adjustments. The notion that one set of (oil) prices and another set of (intertemporal) prices are uniquely linked—such that when one set moves it becomes necessary to readjust the other—is simply bizarre! Yet this is the current state of macroeconomic policy.

When interest rates are manipulated, consumption and production patterns become misaligned. For example, an interest rate cut encourages consumers to bring their expenditures forward (so that saving falls), while it encourages producers to invest more for future consumption, even though that is not what consumers are asking for. By contrast, market-based interest rates allow the economy to grow at a sustainable rate. Artificially low interest rates set saving (too little) out of line with investment (too much) and direct the economy onto an unsustainable growth path. Investments are deployed in the wrong places, the wrong goods are produced and sustainable growth is compromised.

I Told You So!

As the principal academic rival to Keynes in the 1930s, Hayek had argued that macrotheorizing was dangerously simplistic:

> every attempt to find a statistical measure in the form of a general average of the total volume of production, or the total volume of trade, or general business activity or whatever we may call it, will merely result in veiling the really significant phenomenon, the changes in the structure of production. (Hayek 1935, p. 100)

and he continued to warn against allowing policy to be guided by macroeconomic theory: "I fear that those who believe that we have solved the problem of permanent full employment are in for a serious disillusionment" (Hayek 1978, p. 297). In a further prescient comment during the stagflation of the 1970s, Hayek's assertion was that "[t]he Keynesian dream is gone even if its ghost will continue to plague politics for decades" (Hayek 1975, p. 27). To be fair, the difficulty for politicians is that the electorate judges them largely upon the basis of economic performance; and, although the evidence is soundly against political intervention—the old adage goes "There is no situation so bad that government intervention cannot make it worse"—it is rare for a politician to accept that truth.

The economy is complex and macroeconomics is simplistic. Yet, macroeconomic analysis provides the only theoretical basis upon which to forecast the economic trends that are the stuff of politics. And, although there is a good living to be made by the more astute economists, macroeconomic analysis and forecasts are inherently implausible:[3]

> [t]he appearance and growth of unemployment in an inflationary period shows only too clearly that employment is not simply a function of total

[3]Lawrence Klein provides a detailed historical account of the development of macroeconomic forecasting models, over a period of almost forty years (Klein 1984). While the detail of the technical advances is impressive, not a single comment is offered upon the accuracy of the forecasts produced by those models.

> demand but is determined by that structure of prices and production that only micro-theory can help us to understand. (Hayek 1978, p. 282)

Complex microeconomic time-lapse relationships that exist between investment expenditures, sales of final goods and levels of employment are such that the macro-theoretical premise "that, in order to make new investment profitable consumers' demand must increase . . . is a . . . widespread fallacy to which the businessman is especially prone" (Hayek 1975, p. 45). The dependency of investment upon consumption expenditure applies specifically to replicating *existing* techniques; but it is not necessarily relevant to "investment which can increase productivity per head of worker by equiping a given labour force with *more* capital equipment" (Hayek 1975, p. 46). The first case is illustrated (say) by investment in a new shop together with an assistant to meet increased demand for confectionary; but, in the second case, investment in automatic dispensers might be appropriate to counter an increase in wage costs. This second type of investment would also be "encouraged by relatively *low* product (consumer good) prices (which make it necessary to save on labor costs) and discouraged by high ones" (Hayek 1978, p. 46). Indeed, Hayek's monetary theory of business cycles shows that a reduction in the prices of consumption goods increases the relative profitability of more capitalistic production methods; and *vice versa*. So, there is an additional reenforcing point: the most economically efficient method to raise output does not necessarily imply the use of greater (or indeed less) capital intensity. The detail needs to be considered. Yet, none of this is examined in Keynes's *General Theory*; nor is capital theory incorporated into modern macroeconomic analysis. Wherein lies part of the explanation for the implausibility both of the analysis and of the forecasts that emerge. There are other reasons for doubting macroeconomic theory.

First: the use of aggregate categories of expenditure—consumption, investment, exports etc.—relate to no decision-making agencies and, consequently, are a strange basis for social theory. Time series correlations between statistical aggregates are ten-a-penny and convey no insight into social outcomes, which derive from complex interaction between individuals and agencies. Second: Keynesian economics treats investment as a homogeneous category of expenditure rather than as a diversity of plans for future production. Third: the analysis is structured upon income multipliers that presume an abundance of freely available and productively useful resources relevant to the specific skill and capital requirements that become apparent only as the economy is manipulated toward full employment. However, neither labor nor capital is homogeneous, so there is no guarantee that the unemployed elements are of the required kinds. Fourth: whatever the plausibility of analysis that is based upon the assumption of *freely available resources*, it is not economics (which, least we forget, presumes scarcity!). On this particular and most fundamental of points, Hayek comments:

> [a]n analysis on the assumption of full employment, even if the assumption is only partially valid, at least helps us to understand the functioning of the price mechanism, the significance of the relations between different prices and of the factors which lead to changes in these relations. But the assumption that all goods and factors are available in excess makes the whole price system redundant, undermined and unintelligible. (Hayek 1972, p. 103)

Nothing commends the propagation of macroeconomic theory. The manipulation of expenditure totals and interest rates in the attempt to maintain full employment is demonstrably flawed. Most funadmentally, it does not work because the *essence* of economics is that—learning from their errors—individuals act rationally. The irony is that telling evidence against the hypothesis of rational expectations lies with the refusal of macroeconomic theorists to learn from their own errors. Quite simply, macroeconomic theorists are irrational . . . unless they are motivated by some hidden agenda. If their objective is not to eliminate errors in their analytical constructions, what might rationalize the behavior of macroeconomic theorists? Is their purpose to construct an analytical framework that meets with an interventionist ideology and is attractive to policy makers; one that delivers opportunities even for macroeconomic theorists to become policymakers themselves? Define their purpose and an answer might be found: "Are macroeconomic theorists rational?"

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