William Vickrey's Contributions to Economics

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William Vickrey's Contributions to Economics

This paper was written as the preface to a collection of William Vickrey's work that edited by Mat Forstatter.[*]

Economists are often portrayed as heartless—walking, machine-like creatures who weigh costs and benefits and, based on those costs and benefits, spew forth policy directives—do this; don't do that. That is not how anyone would describe Bill Vickrey. He was an economist with a heart. For him economics was not some abstract theory to be used to impress others and win debating points. Instead, it was a set of tools—an approach that, if used properly, would make society (and by society Bill meant the large majority of the population) better off. From his work in progressive taxation to his work on auctions, pricing theory, inflation, and macro stabilization policy, Bill always kept in mind that the goal of policy was to design actual workable policies.

Bill was not without his abstract moments—he delighted in thinking about abstract issues, and his meanderings into those abstract issues were often far ahead of his colleagues; they won him a Nobel Prize. But his heart was in applied policy—be it road pricing (where he worked both on schemes in which drivers would buy stickers and place them on their windshield, and more sophisticated schemes in which electronic devices would automatically charge drivers a varying congestion charge) or in changing an abstract idea I had about creating a market in rights to change prices into a practical plan designed around a set of growth warrants.

His first substantial contribution to the literature, *Agenda for Progressive Taxation*, was the epitome of applied policy; it reflected a deep understanding of the underlying theory of taxation and a solid command of the tax code. In it he spelled out not just why a progressive tax is needed, or how to institute a progressive tax in theory, but how to institute one *in practice*. It instantly became a classic.

Bill's blind spot was politics, and the politics of implementation derailed many of his practical policies. But, in many ways, that blind spot was his strength as well. Bill created simple, practical proposals that were administratively feasible, but were undiluted by political concerns. This kept them clear and clean.

This collection of Bill's writings is primarily concerned with macro policy issues, and thus includes some of Bill's lesser-known work. It is a collection that Bill would have wanted to get out to the public because he felt that a solid macro policy was necessary to create a foundation of equity and efficiency before one can even start talking about micro policy.

Bill began to focus on macro policy in the 1980s, and in his presidential address to the AEA, which is reprinted here, he argued that we need to approach macro policy in a fundamentally different way than we are currently doing. He argued that we need to focus on full employment and not be limited by an ambiguous and unimplementable concept such as the natural rate. In those views he was in broad agreement on most of the

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[*]Portions of this preface are based upon a talk delivered at the American Economic Association in honor of William Vickrey's Nobel Prize. That talk was reprinted in Challenge Magazine under the title: "Was Vickrey Ten Years Ahead of the Profession in Macro?" *Challenge*, Sept.-Oct. p. 72-86, 1998.

propositions that the Center for Full Employment and Price Stability has made its core focus. I attended that address and I remember overhearing two young economists sitting in front of me as they shook their heads and asked, “Who is this kook? Is he for real?” While the majority of macro economists would have been far more subtle and polite, they would have agreed in principle with that assessment. Somehow, the thought, in the 1980s and early 1990s, that you could expand the economy significantly below the then perceived 6.5 percent natural rate of unemployment qualified Bill as a kook.

Bill knew how the profession felt, and it didn’t bother him; after all, in micro, he had been considered a kook until the profession caught up with him. And, in transportation, he had roller skated to work back in the 1950s, predating by 40 years the roller blading craze. Being years ahead of the profession was a standard operating policy for Bill.

Bill's Early Work in Macro

Since it isn’t well known, let me briefly discuss Bill’s early work in macro. Many will be surprised to hear that there was any early work, but, in fact, in 1963 he wrote a macro text, *Metastatics and Macroeconomics*. In that book he set out his basic understanding of macro issues. The first thing one sees when reading that book is that Bill saw macro as an extension of micro; his 1963 framing of the macro problem in a general equilibrium micro perspective occurred years before others caught up with him and created New Classical economics. In the first part of that book he discussed metastatics, which he defined as an analysis of change through time in which uncertainty is excluded. In it he developed a general metastatic intertemporal equilibrium in a hypothetical futures economy “as a prelude” to dealing with macro issues.

Of course, Bill wasn’t much at marketing; entitling the book “Metastatics” was not a wise marketing move. Had he chosen “New Classical Economics with Rational Expectations,” which has essentially the same definition, he may have had more marketing luck.

Bill’s impatience with theorizing for the sake of theorizing shows up in that book. Bill’s interest in theory always flowed from policy issues. Thus, since he could intuit the policy result of his general equilibrium metastatic model—perfect markets working perfectly always lead to the conclusion that government should not intervene—he had no interest in expanding and formalizing metastatics as modern researchers have done. Instead, Bill saw metastatics as a logical, neat first step into the interesting issues of macro dynamics. This, of course, was the case of many early Keynesians, and if younger economists spent a bit more time reading the work of those economists on whose shoulders they are standing, and less time assuming their Keynesian predecessors were dumbbells who failed to understand metastatic intertemporal issues, the profession would be much further along in its understanding of macro than it currently is.

The point is that Vickrey, and many early Keynesians, saw nothing inconsistent between a dynamic interpretation of Keynesian economics and their view of metastatic general equilibrium. Such a perfect foresight equilibrium was so far from reality that to waste time studying it would violate the law of significant digits. Their interest was in dynamic inconsistency issues—issues that they recognized were beyond the mathematical tools available to them, and thus inappropriate for formal study. It is only now, in the 21st century, with the development of the science of complexity, that such formal work begins to make sense. And what that new work tells us is that Keynesian economics has a potentially solid theoretical foundation in a framework of intertemporal dynamics with uncertainty, just as Bill argued it did in his metastatics book.

Bill was not interested in exploring theory for theory's sake: He was essentially an economic engineer whose interest was policy; theory for Bill was a way to understand the economy so that he could design policies and new institutions to make the economy operate more efficiently and fairly. For Bill, economists were the economy's investment in institutional technological change.

Bill's interest in macro theory followed from his interest in policy, and in his 1963 book his reading of the macro policy was relatively clear. We had the tools to expand the economy, but we did not have the tools to see that that expansion resulted in real output growth rather than inflation, nor did we have an acceptable braking system to slow the economy down without causing a recession.

A Simple Idea

I am pleased that I had a small role in Bill's interest returning to macro. Bill was intrigued by a little paper I wrote in 1974 called "The Free Market Solution to Inflation." The idea in that paper was a simple one: Let's say that, instead of its current institutional structure, the economy had a different institutional structure in which rights to change nominal prices were rationed in the following way: Suppliers could lower or raise their nominal prices only if they found other suppliers who would agree to raise or lower their nominal value added weighted prices by an offsetting amount. Such an economy, I argued, could have no inflation problem.

Bill was intrigued by my simple idea. It was, for him, a major breakthrough in our understanding of the institutional structural change we needed in our real-world economy to solve the inflation problem. It would allow the level of inflation to be institutionally set, and, by doing so, would allow the economy to reach a preferable real equilibrium.

This view needs some explanation since it is quite inconsistent with the "natural rate" view of aggregate equilibrium, which has become the new orthodoxy. Bill, and most early Keynesians, did not accept the concept of a unique natural rate of unemployment. Bill saw the economy as capable of achieving a variety of unemployment equilibria. Which one it achieved was dependent on expectations, government policy, and institutions. Thus, Bill considered our economy a multiple equilibria economy. Unique equilibria existed only in an irrelevant-for-policy metastatic general equilibrium model.

Bill did not try to develop his model from micro foundations; the interrelationships in the economy were too complicated for that. Instead, he formulated his concept of aggregate equilibrium as a systemic concept—one in which the dynamic pressures pushing the price level up equaled the dynamic pressures pushing the price level down. Within the range of unemployment where our economy generally operated—between 4 and 8 percent unemployment—these inflationary pressures were only minimally affected by aggregate demand. Moreover, core inflationary pressures were subject to significant shifting around due to institutional changes and random events. Inflation was primarily a supply side/expectational phenomenon. In such a systemic model, equilibrium is still brought about by individual decision makers, but the connection between the market incentives they face and the aggregate equilibrium outcomes their decisions lead to are too tenuous for individuals to take their contribution to the aggregate equilibrium into account in their decision making; thus, individual rationality does not imply collective rationality.

The Short-Run/Long-Run Connection

The macro policy question for Bill was: What policies should we use to get the economy to a desirable equilibrium? His support of substantial deficits can be understood in this light. Bill believed that within the economy's standard operating range, a deficit, combined with expansionary monetary policy, would push the economy to a preferred short-run equilibrium. Doing so would create new patterns of trade, coordination, and technology, increasing productivity and thereby leading the economy to a preferred long-run equilibrium.

This short-run/long-run connection was central to Vickrey's, and early Keynesians', analysis of the economy, and underlay their support for expansionary aggregate demand management policy. The long-run equilibrium toward which the economy gravitated depended upon what short-run equilibrium government policy led it to.

Expressed in modern terminology: Expansionary aggregate demand policy influences the long-run equilibrium through its effect on the equilibrium selection mechanism. The unique equilibrium natural rate model misses that effect since it assumes away the need for an equilibrium selection mechanism.

If one accepts Bill's view of how a short-run expansion can lead to a preferred long-run equilibrium, Keynes's quip that "in the long run we're all dead" has been seriously misinterpreted. It should not be interpreted as meaning that we should forget about the long run; instead, it should be interpreted as meaning that the long-run equilibrium is dependent on the short-run equilibrium we choose. Specifically, in the 1930s, early Keynesians believed, I think correctly, that unless we dealt with the short-run problems, our economic system would not survive. Abba Lerner clarified this when he said, "In the long run we are simply in another short run."

To clarify their views further, what should be added to that is that the short-run equilibrium we find ourselves in, in the long run, depends on the short-run policies we adopt now. If Bill's views were right, throughout the 1990s we have been operating at lower output than was possible and economists' unique natural rate vision has cost our society hundreds of billions of dollars of forgone achievable output. This was the message Bill wanted to get out.

The Death of the Natural Rate Theory

For those of us interested in the spread of ideas, the introduction of the natural rate as the fulcrum for economic policy is an interesting case study. It caught on because it fit the data of the 1970s better than did the standard Phillips curve. It has, however, never provided an especially good statistical fit with the data, and in the 1990s, it failed miserably. In terms of predicting how much room existed for expansion in the 1990s, most economists, with the exception of a few such as Bill Vickrey and Bob Eisner, had serious egg on their face. Given recent experience it is clear that the natural rate theory has provided a false certainty about policy prescriptions. It should long ago have been declared dead, just as the false certainty of fine-tuning was declared dead some 30 years ago.

The Natural Range Theory

The death of the natural rate theory raises the question: What theory are we going to replace it with? I suggest a far less certain theory, one that reflects our actual knowledge of the economy. This theory might be called a *natural range of unemployment theory*--a theory that sees a range of non-accelerating inflation rates of unemployment equilibria as possible. This range is institutionally determined, and, for the United States, is somewhere between 3 to 4 percent unemployment on the bottom side, and 8 to 9 percent unemployment on the high side. The macroeconomic policy debate is primarily about what the appropriate policy should be within the range, with a secondary policy debate concerning the size of the range. Once the economy is outside this range, there is little policy debate.

I am attracted to this natural range theory because it is encompassing enough to accept both Bill's view of the economy and the current mainstream view. These views differ about the nature of the tradeoff within the natural range. Bill's view paralleled that of Abba Lerner's that, within this natural range, there was essentially no inflation/unemployment tradeoff. Alternatively expressed, within this range, the Phillips curve is flat, and aggregate demand has little effect on inflation. If this theory is true it suggests that the relationship between deviations of unemployment and inflation are nonlinear, and the statistical fit we get between increases in inflation and unemployment comes primarily from the extremes, not from small deviations.

This natural range theory is much more inclusive than the natural rate theory. It accepts, as Bill did, that current standard economic theories are relevant outside the natural range. Given the current U.S. economy's structural characteristics, below 3 to 4 percent total unemployment, aggregate demand creates inflationary pressure, and causes inflation. Above 8 to 9 percent unemployment, cutting aggregate demand will eliminate inflation and, depending on institutional characteristics of the economy, it may actually create deflationary pressures. But it also is consistent with Bill's view that within the 4 to 8 percent range, the standard relationship breaks down, and one must look elsewhere for ways to fight inflation.

Unlike the standard Phillips curve, or the natural rate theory, a natural range theory is consistent with both the 1970s and the 1990s experiences of the economy. The 1970s inflation was caused by major nominal upward price shocks, combined with wage- and price-setting institutions conducive to inflation, both of which became built into expectations of inflation. The 1990's and early 2000's lack of inflation, in spite of expanding aggregate demand, was due to (1) nominal downward price shocks, (2) wageand price-setting institutions experiencing significant international competition, and (3) the building of the above structural characteristics into expectations of declining inflation.

Dealing with the Inflation Problem

Bill's view does not mean that inflation cannot be a problem; it simply means that within the 4 to 8 percent range, inflation is a separable problem from unemployment. Within that range, inflation is best dealt with by means other than contractionary monetary and fiscal policy. Contractionary policies to fight inflation simply add to the misery index without significantly reducing inflation. Running contractionary aggregate demand policy to fight inflation is the modern equivalent to the practice of blood letting to cure diseases; it piles one misery onto another, without doing any significant good.

Unemployment, for Bill, was an immoral way of holding down inflation. Given our institutions, the burden of that unemployment was borne unequally by the poor and the less well-off, which meant that not only was it inefficient, it was also unfair. Thus, even if he were wrong in his assessment that reducing unemployment to less than 4 percent would not generate accelerating inflation, he said he would still advocate doing so. His answer to those who said that the result would be that government would be forced to change policy and induce a recession was: No; fighting inflation by keeping the poor and less well-off unemployed should violate society's collective normative judgment. He followed Beveridge in believing that it is society's job to create more positions than job seekers, so that firms do the primary searching for workers, not workers for jobs.

The appropriate policy, if an inflation were started, would be a change the institutions of the economy so that the lower unemployment rate is consistent with no inflation. You don't accept a normatively unacceptable rate of unemployment as an equilibrium.

The Free Market Solution to Inflation

It is here where my free market solution to inflation, later renamed MAP (the market anti inflation plan) by Abba Lerner and myself, came in. Bill saw MAP as the institutional change needed to guarantee that a true full employment—roughly 2 to 3 percent unemployment—could be reached in a way that was institutionally compatible with a non-inflationary economy. And it could do so in a way that was fully consistent with existing institutions.

To see why, consider the following questions: Assuming there were property rights on value-added prices, what would the price of raising price be, and what implication for the economy's natural rate would a positive price of raising price have? The answers are simple: By definition, assuming there were no inflationary pressures, the price of raising price would be zero. If there were a positive price of raising price, then MAP would be eliminating inflation pressure; the higher the price of raising price, the more inflationary pressure it would be eliminating.

To emphasize that the purpose of this program was to allow real growth, rather than to stop inflation, in his recent work Vickrey had started to call the rights to change prices "growth warrants." Here's how the growth warrants were allocated: All firms are allowed warrants equal to their level of value added at the initial starting period. Each year firms receive additional warrants equal to the average increase in productivity in the economy. Thus, all firms are allowed nominal raises in input prices consistent with a non-inflationary economy—that is, increases in growth warrants equal to the average total factor input productivity.

When firms hire additional workers, or invest more, they receive additional growth warrants equal to the value of those inputs in their previous use. This means that firms increasing their inputs would receive additional growth warrants, and firms decreasing their inputs without lowering their value-added price would be forced to buy additional warrants. This would create inflows of capital to growing firms from firms who were monopolizing—increasing their value added per input. That's why the plan can also be seen as a tax on monopolization.

A positive price of growth warrants would encourage hiring and price cuts. The MAP plan is a type of synthetic competition that modifies our current institutional structure so that it acts as if it is more competitive than it actually is.

There are many technical and practical issues that need to be answered before these plans can become reality. Concern about these issues kept many economists who supported the plan in principle from supporting it in practice. However, no serious attempt was made to deal with these issues. Bill felt that all of these practical and technical issues had answers—not perfect answers, but answers—and that a major effort should be undertaken to resolve them. It never was undertaken because, politically, such a major institutional change was not in the cards.

The higher the price of these growth warrants, the higher the cost in administrative expenses and misallocated resources. But the higher the price of these growth warrants, the lower the achievable unemployment rate. Thus, the imposition of this plan would present government with a new tradeoff—the systemic gain in aggregate efficiency against the administrative costs of the plan.

The plan has one other major advantage: It will allow a much more precise use of monetary policy. This follows since the price of growth warrants would give us a direct measure of the inflationary pressures in the economy. We would no longer need to operate monetary policy blind; instead we could set a monetary rule based on the price of these growth warrants.

Bill was much more of a visionary than I, and much more willing to argue that MAP was ready for prime time. I do not know whether MAP actually is workable in practice, or whether the politics of inflation control could ever change sufficiently so that it could be tried; however, I will argue that it should be explored in much greater detail than it has been. I will also say that there are large potential gains from it, and, it was precisely the type of actual policy that Bill could see working in practice that other economists could not.

Functional Finance and Vickrey's View of Deficits.

The second macro policy issue on which Bill differed from the mainstream profession's view was on the issue of budget deficits. In the 1990s there was much talk (by both Democrats and Republicans) about how bad deficits were, and very few economists objected to that talk. Bill did object. Since there remained substantial unemployment during those years that deficit spending could reduce, Bill felt that economists should point out that much of the political rhetoric on deficits was at best confused, and often just pain wrong.

Bill's approach to budget deficits can best be described as the functional finance approach. The functional finance approach sees deficits as neither inherently good nor bad. They should be judged, as should all macro actions, in relation to "the results of these actions on the economy and not to any established traditional doctrine about what is sound and unsound." (Abba Lerner, *Social Research*, 1943 p. 39.) Like most true functional finance supporters, Bill had an almost visceral reaction to fear of deficits based upon some of the false arguments against deficits that are generally made. Those arguments don't hold water logically, and Bill wanted the world to know that they did not hold water.

In the early 2000s the political views on deficits have changed, with Republicans urging large budget deficits, and Democrats urging who knows what. I suspect that Bill would have had mixed views of these debates. As he states in his paper "Budget-Smudget: Why Balance What, How, and When?" (reprinted in this volume) the affect of the budget on achieving full employment would be the most important to him, followed by issues of progressivity, growth, efficiency and equity. On full employment grounds, he would have supported the Republican deficit proposals, but on progressivity grounds, I suspect he would not have. He would have favored a significantly different mix of taxes, such as those suggested in his "An Updated Agenda for Progressive Taxation" (reprinted in this volume). Wherever he actually would have come out on that policy, his views would have been known, and he would be taking strong stands. That's why I pleased that Matt Forstater and the Center for Full Employment and Price Stability organized this book of Bill's writings. It is what Bill would have wanted.