AN ECONOMIC ANALYSIS OF THE REAGAN PROGRAM FOR ECONOMIC RECOVERY

A STAFF STUDY

PREPARED FOR THE USE OF THE

SUBCOMMITTEE ON MONETARY AND FISCAL POLICY

OF THE

JOINT ECONOMIC COMMITTEE

CONGRESS OF THE UNITED STATES

APRIL 24, 1981

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(II)

LETTER OF TRANSMITTAL

April 20, 1981.

Hon. HENRY S. REUSS,
Chairman, Joint Economic Committee,
Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: I am pleased to transmit herewith a staff study prepared for the Joint Economic Committee entitled "An Economic Analysis of the Reagan Program for Economic Recovery."

This staff study shows that the Reagan Program is internally consistent. Marginal tax rate and spending reductions, when combined with reduced money growth will not only reduce inflation and nominal interest rates but will increase employment, real saving, real investment, and economic growth. Just as important, it is shown that the theories upon which the Reagan Program is based are not "untested"; President Kennedy based his tax rate cuts upon precisely the same logic. A comparison of the predicted results of the Reagan Program with actual experience in the years following the Kennedy tax rate cuts reveals that Americans do respond to incentives; that reductions in marginal tax rates induce increased work effort, saving, and investment.

If marginal tax rate reductions were right for the 1960's—and they obviously were—they are absolutely essential as the 1980's begin. Inflation-driven bracket creep has reduced private sector growth at the same time as it has transferred resources to Government. The way to reduce inflation and unemployment and to increase economic growth is to return command of resources to the sole source of non-inflationary growth: the private sector. This can only be done in the context of an environment of policy stability—an environment in which the tax code is tilted toward saving, investment, and work, in which the growth of Federal spending is curtailed, in which regulatory burdens are minimized, and in which money growth is systematically reduced. Congressional support of the Reagan Program for Economic Recovery will provide such an environment.

This staff study was prepared by Dr. Timothy P. Roth of the committee staff. The careful preparation of the manuscript was accomplished by Juanita Morgan. The conclusions of this staff study represent the views of the vice chairman of the Joint Economic Committee and not necessarily all its members.

Sincerely,

ROGER W. JEPSEN,
Chairman, Subcommittee on Monetary and Fiscal Policy.

FOREWORD

By Senator Roger W. Jepsen

The Reagan Program for Economic Recovery is historic. In simplest terms, President Reagan's program focusses on breaking down the restraints to noninflationary economic growth that years of misconceived policy have put in place. Personal marginal tax rate reductions are designed to compensate for years of inflation-driven bracket creep and to increase the rate of return to work effort, saving, and investment. Accelerated depreciation is designed to encourage plant and equipment investment. Regulatory reforms focus on the need to use resources efficiently and to minimize the impact of regulatory mandates on production, employment, costs, and prices. And, finally, these supply-side initiatives are to be accompanied by a gradual reduction in the growth rate of the money supply. An Administration committed to an expansion of the supply side of the economy *and* to an anti-inflationary monetary policy has no precedent.

If the Reagan Economic Program is historic, it has also come—on Capitol Hill, if nowhere else—to be controversial. Some have claimed that it is not internally consistent; that a policy of reduced money growth cannot be reconciled with a fiscal policy based upon tax and spending cuts. Others have claimed that the tax cuts would be inflationary. Still others have claimed that the Program is based upon "untried economic theories" and that, therefore, it should be rejected.

This staff study comes to grips with these objections. It shows that the Reagan Economic Program is not only internally consistent but that the theories upon which it is based are precisely the theories upon which President Kennedy based his economic program. More than 17 years ago, President John F. Kennedy argued that, "The purpose of cutting taxes . . . is not to create a deficit but to increase investment, employment, and the prospects for a balanced budget." President Kennedy expected *his* tax cut program to have precisely the effects that President Reagan anticipates for his program.

Had he lived, President Kennedy would have seen his expectations realized. Relative to the 4-year period preceding enactment of his program, employment growth almost doubled; real output growth increased more than 37 percent; the growth rate of real saving increased more than 247 percent, and net investment growth increased almost 100 percent. It is no accident that, following the 1968 enactment of the income tax surcharge and the beginning of 13 years of "bracket creep," the pattern of accelerating growth was reversed.

The Kennedy tax cuts were the right program in 1964. The Democratic Congress knew it, the business community knew it and, above all, the American people knew it. The Reagan Economic Program is

the right program for the 1980's. I am convinced that the American people know this. Unfortunately, there are those in the Congress who have not learned the lessons of the Kennedy experience, who cling to the discredited idea that fine tuning is possible, and who persist in taking a myopic view of the world. They have not learned that this quarter's or this year's economic statistics are less important than the long-term health and vitality of the American economy.

I believe that this staff study lays to rest objections to the President's program; objections that threaten either to slow congressional action, or to result in the emasculation of what is a coherent, internally consistent policy package.

The Reagan Program for Economic Recovery will lead to lower inflation, faster economic growth, lower unemployment, increased productivity, and the restoration of hope for a better future for all Americans. It will, in short, put the American economy approximately where it was in the mid-1960's, after passage of the Kennedy program, the most prosperous period in recent American history.

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AN ECONOMIC ANALYSIS OF THE REAGAN PROGRAM FOR ECONOMIC RECOVERY

By Timothy P. Roth*

I. THE REAGAN PROGRAM FOR ECONOMIC RECOVERY

The essential features of the Reagan Program for Economic Recovery are easily summarized:

(1) Ten percent cuts each year over a 3-year period in personal marginal tax rates, coupled with an acceleration of business depreciation allowances.

(2) Substantial cuts in the growth of Federal on- and off-budget activity.

(3) A gradual reduction in the growth rate of the money supply.

(4) A systematic effort to reduce the burden, cost and intrusion of government regulatory activities.

THE INTENDED LONGRUN EFFECTS

The Reagan Economic Program differs significantly from traditional policy initiatives in that its focus is the long run. Indeed, one of its points of departure is that many of this nation's economic ills are attributable either directly or indirectly to attempts to "fine tune" the economy; attempts to smooth out short-term, cyclical fluctuations in the economy through "demand management." The pattern is all-too-familiar: "Expansionary" policies are put in place when unemployment rises, and "restrictive" policies are employed when inflation rises.

This stop-go pattern has run afoul of some hard realities. Most significant is that—as the recent empirical record will attest—high and variable inflation breeds high unemployment. In short, there is ultimately no "tradeoff" between inflation and unemployment. To opt for more inflation through "expansionary" policies is to insure higher future unemployment. Put another way, countercyclical "expansionary" policies are not countercyclical at all. Because they result in higher inflation, such policies inevitably result in higher unemployment. Add to all of this the problem of lags in implementation and effect, and the fact that the Federal Government does not at any cross section of time possess the information requisite to making responsible and

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appropriate discretionary policy decisions, and it is clear that "fine tuning" is—or should be—an artifact of the past.[1]

Recognizing all of this, the Reagan Administration has broken with the past. Its Program for Economic Recovery has as its central focus the acceleration of economic growth and a reduction in the inflation rate through an expansion of the supply side of the economy and moderation of money growth. Gone are allusions to smoothing out cyclical fluctuations in the economy through periodic pushes and pulls on the economic policy levers. In their place is a commitment to provide an environment of economic policy stability; an environment in which real, after-tax rates of return to work effort, saving and investment will be increased, inflationary expectations and policy uncertainties reduced, real incomes and wealth positions increased, and the share of Government in GNP reduced.

An understanding of the Reagan Program requires an appreciation of its longrun focus. Central to this is the *analytical* distinction between the short and long runs. In the short run (the focus of traditional demand-management policies), the Nation's stock of human and nonhuman or physical capital is, for practical purposes, fixed. In the long run, human and physical capital are variable.[2]

A convenient way of thinking about the objective of the Reagan Program for Economic Recovery is that it seeks to increase the growth rate of real GNP through an acceleration of the rate at which human and nonhuman or physical capital is accumulated.

The role of capital accumulation in the process of economic growth is well documented. Suffice it to say that, since 1948, growth of the Nation's stock of plant and equipment has made the most important contribution to GNP growth, followed by productivity and employment growth.[3]

Given the central importance of capital accumulation to economic growth, it is important to trace the intended effects of the Reagan Economic Program on investment and saving. This, in turn, requires that we take account of the fact that the U.S. economy, like all economies, consists of a web of interrelated markets. An economy, in short, is nothing more than an array of interrelated markets, each involving the demand for and the supply of a particular good or service.

Having said this, it is possible—indeed necessary—to identify and analyze four highly aggregated markets. The four markets typically

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[1] The efficacy of discretionary fiscal and monetary policies can be called into question in still another way. It is increasingly recognized that people's behavior patterns vary systematically with changes in government policies or rules of the game. This has many implications, not the least of which is that the coefficients underlying the econometric models frequently used to analyze macroeconomic policy questions are not invariant with respect to policy changes. This idea is central to what has come to be called the rational expectations hypothesis.

The notion that behavior patterns vary systematically with changes in government economic policy seems to be corroborated by the variety of instances in which econometric models have failed tests of stability of coefficients when new data is added. Given that behavior patterns *do* vary with policy changes, it follows that predicting the results of policy changes become manifestly more difficult. In these circumstances, frequent, discretionary policy changes become less desirable than the etablishment of a stable economic policy environment. See, for example, Thomas J. Sargent, "Rational Expectations and the Reconstruction of Macroeconomics," Federal Reserve Bank of Minneapolis *Quarterly Review*, Summer, 1980.

[2] Human capital is nothing more than the stock of knowledge and skills possessed by the Nation's labor force. Nonhuman or physical capital is the Nation's stock of plant and equipment.

[3] See, for example, Barbara M. Fraumeni and Dale W. Jorgenson, "The Role of Capital in U.S. Economic Growth. 1948–1976," in George M. von Furstenberg, ed., *Capital, Efficiency and Growth*, Cambridge, Ballinger, 1980.

analyzed are the labor market, the commodity market (or the market for goods and services), the money market, and the bond market (or the market for financial assets including both bonds and equities).

From Walras' Law, we know, however, that if three markets are "in equilibrium" in the sense that demand equals supply, then the fourth market must also be in equilibrium.[4] This enables us to analyze the effects of policy initiatives while taking explicit account of only three of the four markets. With this in mind, we shall limit our discussion to the labor, commodity, and money markets.

The Labor Market

The Reagan Program is designed to increase both the demand for and the supply of labor.

LABOR DEMAND

The demand for labor is a derived demand. At the firm level, the amount of labor demanded—typically measured in man-hours—is dependent upon the contribution of a unit of labor to revenue. This, in turn, depends upon how many additional units of output an extra unit of labor will produce and upon the extra revenue these extra units of output are capable of generating.

The amount of output an additional unit of labor is capable of producing—the marginal product of labor—is determined by the firm's technology. Technology, in turn, is determined by the stock of human and nonhuman or physical capital at the firm's disposal. The extra or marginal revenue which additional units of output are capable of generating is determined by the properties of the demand curve for the firm's product.

Anything that enhances the marginal product of labor—that increases its "productivity"—increases the demand for labor. In addition, anything that increases the demand for the firm's product also increases the demand for labor.

As has been emphasized, the objective of the Reagan Economic Program is to increase the economy's growth rate through an acceleration of the rate of capital accumulation. Among the desirable results of such an outcome, other things equal, would be an increase in the demand for labor.

The Administration proposes to provide an environment which is congenial to capital accumulation. Reductions in personal marginal tax rates accompanied by a reduction in inflationary expectations will increase the real after-tax rate of return to investment in human capital. Critical to all of this will be the perception that the tax rate cuts are *permanent*, that the Federal Government is sincere in its efforts to reduce its command over resources, and that the Federal Reserve follow a steady policy of gradual reductions in monetary growth. In such an environment, the incentive to acquire new skills, to conduct R. & D. activities and, in general, to look beyond the immediate future will be enhanced.

And, if all of this will be congenial to investment in human capital, it can hardly be less so for physical capital.

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[4] See, for example. Don Patinkin, *Money, Interest and Prices* (New York: Harper & Row, 1965), p. 229.

As is well known, policy uncertainties, high and variable inflation rates, and a tax code in which depreciation is based upon historical rather than replacement cost have combined to reduce the growth rate of real net plant and equipment investment from 7.9 percent during the 1960's to 3.06 percent during the 1970's. To reverse this trend— a trend that is particularly troubling in view of the rapid growth of the Nation's labor force—the Administration proposes to eliminate policy uncertainties, to concentrate on the reduction of inflation, and to provide for more rapid depreciation of physical assets.

This policy package will serve not only to improve firms' cash flows; it will push down the discount rates used to convert future dollars into present value terms. In short, by reducing uncertainties and expected inflation, the Administration's Program will make investment in longer term projects such as R. & D. and plant and equipment more attractive.

The intended effects of the Reagan Economic Program on the demand for labor are, therefore, unambiguous: Insofar as the Program stimulates investment in human and in physical capital, it will increase the productivity of labor. It follows that the Program will increase the demand for labor measured, as customarily, in standard units such as man-years.[5]

LABOR SUPPLY

The determinants of labor supply are many and complex. It is safe to say, however, that the quantity of labor supplied is positively related to the real wage; that is, other things equal, an increase in the real wage will result in an increase in the quantity of labor willingly supplied. On the other hand, the quantity of labor willingly supplied at any real wage is related to the individual worker's wealth position.

Wealth is simply the present value—or the value today—of anticipated income from all sources. The sources of income, in turn, are human and nonhuman. That is, an individual can receive wage or salary income through the rental of the services produced by his stock of human capital. But the same individual can receive income from nonhuman sources such as dividends and interest. Anything that increases the present value of anticipated human and/or nonhuman income increases wealth. And increases (decreases) in wealth decrease (increase) the labor willingly supplied at any real wage.

The Reagan Economic Program is designed to reduce expected inflation and to increase real, after-tax rates of return to work effort, saving, and investment. In short, it is designed not only to increase after-tax wages but to increase wealth positions as well.

The fact that the Reagan Program will change both the real after-tax wage rate *and* workers' wealth positions means that the Program will have three effects on labor supply: a substitution effect, an income effect, and a wealth effect.

The substitution effect results from the fact that a cut in personal marginal tax rates alters the relative prices of work and leisure. In

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[5] While emphasis has been placed upon the positive effects of the Reagan Program on the productivity of labor—and hence on the demand for labor—the Program will increase the demand for labor through another channel. Because it will cause economic growth to accelerate and because it will increase real disposable incomes, the Program will increase product demand. This, in turn, will push up the demand for labor.

particular, a tax rate reduction increases the relative price of leisure: Each hour of work forgone results in a larger amount of income forgone. The substitution effect is always negative; that is, an increase in the relative price of leisure will result, other things equal, in a reduction in the amount of leisure taken. The substitution effect will therefore be associated with an increase in the quantity of labor willingly supplied.

The income effect of the Reagan Program is not, however, unambiguous. The increase in the after-tax real wage means that a given amount of after-tax income can be secured with less labor than before. Some workers may, in these circumstances, opt to work less. For these workers, the income effect would more than offset the substitution effect. These workers would supply less labor at any real wage than before. Whether enough workers would respond in this way to cause the *total* amount of labor supplied at any real wage to decrease is an empirical question. While this is not a matter of *a priori* logic, this much can be said: To argue that marginal tax rate *reductions* induce a negative income effect—that is, the associated increase in the return to work effort results in a decrease in work effort—is to argue that tax rate *increases* induce a positive income effect. This is the same thing as saying that because tax rate increases reduce the return to work effort, they induce additional work effort. On this logic, society could be made better off—in the sense of stimulating work effort and productivity—by increasing taxes. The logic of this position could hardly be taken to be persuasive.

If the income effect is ambiguous, the wealth effect is unambiguous. Those workers whose wealth positions are enhanced as a result of the Reagan Economic Program will, other things equal, supply less labor at any real wage.[6]

The effect of the Reagan Economic Program on workers *already in the labor force* depends on the relative strengths of these three effects. There is at least as much reason to suppose that the *net* effect on their labor supply will be positive as it is to suppose that it will be negative. In any case, the amount of labor supplied at any real wage will not be determined solely by workers already in the labor force.

U.S. labor force growth, during the 1980's, will be among the most rapid of the industrialized countries. A reasonable expectation is that the Nation's labor force will increase at between 1.0 and 1.5 percent per year during the 1980's—partly as a result of demographic trends and partly as a result of the increasing participation of women in the labor force.

Personal marginal tax rate cuts are all the more important in the context of a growing labor force. Labor force entrants must, after all, make career decisions based upon a comparison of the benefits and costs of alternative human capital investments. Personal marginal tax rate cuts will serve to increase the present value of incremental future income. They will, in short, increase the "profitability" of investment in human capital. This, in turn, will accelerate the rate at which human capital is acquired and this, in turn, will serve to increase the economy's growth rate.

[6] There is evidence, however, that the wealth effect is negligible. See, for example, Robert E. Lucas, Jr., and Leonard A. Rapping, "Real Wages, Employment, and Inflation," in Edmund Phelps, ed., *The Microeconomic Foundations of Employment and Inflation Theory* (New York, Norton, 1970), esp. pp. 265–267.

On balance, the combination of the Reagan policy initiatives and ongoing demographic and other trends will assure that the amount of labor willingly supplied at any real wage will increase into the foreseeable future.

In summary, both the demand for and the supply of labor will increase under the Reagan Program. It seems reasonable to suppose, however, that labor demand will increase faster than labor supply. This is because the increase in labor supply will reflect a substitution, an income, and a wealth effect. The increase in labor supply will, in short, be a *net* effect.

The point to be emphasized, however, is that we expect employment to rise. The positive effect of the Reagan Program on investment in both human and nonhuman capital will insure that the demand for labor will rise appreciably. Even if we were to assume that the *net* effect of the substitution, income, and wealth effects is negative—that is, that the quantity of labor willingly supplied at any level of the real wage decreases—we expect labor demand to rise more, pulling employment and real wages up.

The Commodity Market

The acceleration of capital accumulation contemplated in the discussion of the labor market implies an increase in investment spending in the commodity market. Indeed, one of the key objectives of the Reagan Economic Program is to eliminate the consumption bias that has become so firmly entrenched in the U.S. economy. The objective, in other words, is to encourage saving and investment.

High and variable inflation rates and high marginal tax rates have been largely responsible for the decline in the national saving rate.[7] Based upon the expectation of continuing, high inflation, anticipatory buying has become chronic. When combined with inflation-driven bracket creep, the effect on saving has been devastating. Savers who purchased stocks and bonds now often pay tax rates of 100 percent or more on their real returns. Add to this the inherent riskiness in an inflationary environment of business investment, and savers respond not only by saving less but by altering the form of their saving. It is no accident that, while stock and bond prices ratchet up and down, the prices of housing, precious metals, and works of art rise relatively relentlessly.

The Reagan Program is intended to increase saving in three ways. First, the proposed personal marginal tax rate reductions are intended, in part, to compensate for the effects of bracket creep on real after-tax rates of return on saving and investment. In this way, the Reagan Program will revivify both saving and investment.

Second, the tax rate reductions are intended to increase the wealth positions of the Nation's taxpayers. In and of themselves, tax rate reductions will increase future incomes and the present value of increments to taxpayers' future incomes. Thereby, permanent tax rate reductions increase taxpayer wealth. In the context of an economic program designed to reduce the expected inflation rate, the prospect is for even larger increases in wealth positions. As expected inflation

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[7] See, for example, "Investment and the Growth of Productivity," *Morgan Guaranty Survey*, September 1979, p. 12.

winds down and as policy uncertainties are wrung out of the system, the discount rates used to convert future income streams into present value terms will also fall, further increasing the present value of future income streams. The effect of the Reagan policy initiatives, in short, will be to increase wealth.

The increase in wealth can be expected to have beneficial effects both on saving and on investment. Regarding the former, the increase in wealth is expected to result in an increase in saving at any level of real income. This is not a universally accepted view. There are those who would argue that an increase in wealth will result in a decrease in saving. This view is based on the assumption that, in the aggregate, there is a maximum amount of wealth we wish to acquire and that the need for saving decreases as we approach this maximum. We reject this view. Intuition and experience suggest that there is no limit to the stock of wealth demanded.

Third, at any cross section of time, consumption is partially determined not only by current prices but by anticipated prices. A critical feature of the Reagan Program is that it is designed to reduce inflationary expectations. This, as we have argued above, can be expected to reduce anticipatory buying and to increase saving. It is, after all, well known that one of the reasons that the saving rate has fallen is the anticipation of higher prices and an expected erosion of the purchasing power of savings.

The expected effect of the Reagan Program on investment is less controversial. Because it will reduce both inflationary expectations and policy uncertainties, the Program will reduce nominal interest rates. In the process, it will reduce the discount rates used to convert future dollars into present value terms. It will, in short, increase the present value of given anticipated net revenue streams—the income streams generated by investment in human or in physical capital.

But the Program will not simply reduce discount rates. Lower expected inflation will serve to reduce anticipated cost streams. This, coupled with accelerated depreciation, will result in a reduction in anticipated costs and, given anticipated revenues, in an increase in *net* revenue streams.[8] With discount rates decreasing and *net* revenue streams increasing, more investment projects will be undertaken. Put another way, the quantity of investment desired at any level of the interest rate will rise.

In summary, the Reagan Program will reduce the consumption bias which inflation, the tax code, and stop-go economic policies have built into the system. Rather than encouraging consumption, the Program will encourage saving and investment. The result will be an increasing share of saving and investment in GNP and, as a result, faster real income growth. The faster growth track will make possible increases both in real consumption *and* in real saving and investment.

The Money Market

It is useful—if perhaps a bit artificial—to think of the demand for money as having two components. The transactions demand for money—the demand for money emanating from the need to finance

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[8] Of course, there is every reason to suppose that anticipated revenue streams will increase as well.

transactions—may be thought of as being dependent upon the level of real income. The asset or speculative demand for money may be characterized as a function of the interest rate. The quantity of transactions balances demanded at any level of real income may, in turn, be thought of as being dependent upon wealth and, particularly important from the point of view of the Reagan Program, upon the prevailing tax structure. The same is true of the quantity of speculative balances demanded at any level of the interest rate. These balances also depend upon wealth and tax rates.

The essential characteristic of the Reagan Program is that it will increase both after-tax returns to saving and investment and wealth positions. On the one hand, these changes should impel a reduction in the quantity of speculative balances demanded at any level of the interest rate. This is so because the increases in after-tax returns and wealth will result in increased demand for financial and other assets. The demand for bonds and equities will rise. The public will reshuffle its financial portfolios to hold less money and more bonds and equities. On the other hand, the Program also is designed to reduce both inflationary expectations and policy uncertainties. These changes will tend to raise the speculative demand for money by reducing interest rates and hence the opportunity cost of holding money. On balance, however, this latter effect would appear to be relatively small. For it to be large, the interest elasticity of the demand for money would have to be large.

The effect of the Program on transactions balances is expected to be symmetric. That is, the quantity of real transactions balances demanded at any level of real income is expected to fall. One of the principle reasons for this is the expected decline of "off-the-books" activity. A primary catalyst to the growth of the underground economy—variously estimated at anywhere from $100 to $200 billion—has been the growing tax burden. As inflation-driven bracket creep has pushed more and more taxpayers into higher tax brackets, cash transactions have become increasingly common. Reduced personal marginal tax rates will serve not only as an incentive to work harder but to conduct more activities "on the books." As a result, reported income will rise for any level of money holding, which is the same thing analytically as a reduction in money demanded for transactions purposes. In the same vein, the switch from "off-the-books" to recorded transactions will impel a switch from currency to demand deposits in money holding. Presumably, the latter are more efficient transactions instruments. This reinforces the conclusion that money demand will fall.

In summary, it is reasonably argued that the Reagan Program will cause the demand for money to fall. It follows that, with real GNP rising and the demand for real cash balances falling, velocity—the ratio of GNP to money demand—must rise. This, too, is a key feature of the Reagan Program.

The effect of the Reagan Program on the real stock of money is that, to the extent that the Federal Reserve does gradually reduce the growth rate of the nominal money supply, the real stock of money will decrease. This is because prices do not respond immediately to changes in money growth. Thus, as money growth is reduced, the real stock of

money—the nominal money supply divided, for example, by the GNP deflator—will fall.

The implications of the Reagan Program for the money market are, therefore, that both the demand for and the supply of real cash balances will fall.

THE PREDICTED LONGRUN EFFECTS

The discussion to this point has centered on the effects of the Reagan Program on the labor, commodity, and money markets. The effects have thus far been defined in terms of changes in the demand for and supply of labor, shifts in the saving and investment functions, and changes in the demand for and supply of money.

Changes in the demand for and supply of labor, commodities, and money, in turn, have implications for employment, real GNP, real wages, real saving, real investment, and other variables of considerable importance. The implications for these variables are explored in the technical Appendix. The vehicle by which the analysis proceeds is a general equilibrium model designed not only to represent the labor, commodity, and money markets but to clarify the interrelationships among these three markets.

Because the technical exposition contained in the Appendix is somewhat tedious, it is useful here simply to summarize the essential features of the analysis.

The analysis is an exercise in comparative statistics. That is, the model is used to define the conditions prevailing within each market *prior* to full implementation of the Reagan Program. Then, on the assumption that the Program is fully implemented, the model is used to characterize the new situation within each market.

In the Labor Market the inital situation is characterized by an initial real wage rate, employment and output or real GNP level. The situation following the implementation of the Reagan Program reflects the longrun adjustment of labor demand and labor supply to the policy initiatives. Increased labor demand and supply result, in the new situation, in an increase in the real wage rate, as well as increases in employment and real output.

In the Commodity Market, the initial situation is characterized by an initial level of real saving and real investment. The situation following implementation of the Reagan Program reflects the longrun adjustment of saving and investment to the policy initiatives. The combination of an upward shift of the saving function and the higher level of real GNP (determined in the labor market) results in an increase in real saving. The increase in real saving is, in turn, accompanied by an increase in real investment.

In the Money Market the initial situation is characterized by an initial level of real transactions and speculative money balances and by an initial real stock of money. The situation following implementation of the Reagan Program reflects the longrun adjustment of money demand and supply to the policy initiatives. In the new situation, the real stock of money is smaller, as is the level of real transactions and speculative money balances. This, coupled with an increase in real GNP (determined in the labor market), implies an increase in the velocity of circulation of money.

The workings of the model demonstrate that the Reagan Program is not only internally consistent, but that it will produce, in the long run, the following effects:

An increase in employment,

An increase in real output,

An increase in real wages,

An increase in real saving,

An increase in real investment,

A reduction in money demand accompanied by an increase in real GNP, implying an increase in velocity,

A reduction in nominal interest rates, and

A reduction in the price level (relative to what it would be in the absence of the Reagan Program).

II. A COMPARISON WITH HISTORICAL EXPERIENCE

THE REAGAN PROGRAM FOR ECONOMIC RECOVERY AND THE KENNEDY TAX CUTS

While there are differences, there are some key similarities between the policy initiatives proposed by the Kennedy Administration in 1963 and those proposed by the Reagan Administration.

In a speech delivered on December 14, 1962, President Kennedy laid the foundations for his 1963 program. His point of departure was that:

Our present tax system exerts too heavy a drag on growth—that it siphons out of the private economy too large a share of personal and business purchasing power—that it reduces the financial incentives for personal effort, investment and risktaking.

President Kennedy pressed this theme in the *1963 Economic Report of the President:*

The main block to full employment is an unrealistically heavy burden of taxation. The time has come to remove it. . . .

Tax reduction . . . sets off a process that can bring gains for everyone, gains won by marshalling resources that would otherwise stand idle—workers without jobs and farm and factory capacity without markets. Yet many taxpayers seem prepared to deny the nation the fruits of tax reduction because they question the financial soundness of reducing taxes when the Federal budget is already in deficit. Let me make clear why . . . reducing taxes is the best way open to us to increase revenues. . . . until we restore full prosperity and the budget-balancing revenues it generates, our practical choice is not between deficit and surplus but between deficits born of waste and weakness and deficits incurred as we build our future strength.

In his Special Message to Congress on Tax Reduction and Reform of January 24, 1963, President Kennedy added this:

The purpose of cutting taxes . . . is not to create a deficit but to increase investment, employment, and the prospects for a balanced budget.

It was in his Special Message that President Kennedy described the details of his new policy initiative:

Individual tax brackets were to be reduced from 20 to 91 percent to 14 to 65 percent.

There was to be a net tax cut of $10.3 billion.

The corporate tax rate would be reduced 5 percentage points to 47 percent.

The maximum capital gains rate would be reduced from 25 percent to 19.5 percent.

Tax deductions for expenditures on machinery and equipment used directly in research and development activities would be introduced.

The President's proposals were incorporated, with some modifications, in H.R. 8363, introduced on September 24, 1963, for consideration by the House of Representatives by the Chairman of the Committee on Ways and Means, Wilbur Mills. Mr. Mills stressed that—

> The purpose of this bill . . . is to remove the private sector of the American economy from its high-tax straitjacket. The purpose . . . is to breathe into our free enterprise system that additional vitality that we . . . concluded it requires if it is to do the job required of it today.

Mr. Mills went on to say that—

> The idea . . . that tax reductions will provide the rate of growth we need in this country . . . and that tax reductions, after a brief transitional period, will actually increase revenues above the levels that would have been achieved in the absence of tax reductions are not new or novel ideas as some would suggest.
>
> Not only is this notion subscribed to by most of those to whom I have talked in the business and financial world but also by many, many others as well . . . This view was also held by, and demonstrated by the actual experience of, the Republican Secretary of the Treasury Andrew Mellon during the late twenties.
>
> . . . I have reached the conclusion that this bill will provide a sufficient increase in the gross national product so that the larger revenues derived from this additional income will result in the Federal budget being balanced sooner than would be the case in the absence of this tax cut.

President Kennedy did not get everything he wanted, but his initiative did have positive results. In its February 26, 1964, tax reduction bill, Congress:

> Reduced individual tax rates to a range of 14 to 70 percent,
> Reduced the corporate tax rate to 48 percent, and
> Liberalized the 7 percent investment tax credit introduced in 1962.

Whatever else is said about it, this much is clear: the *intent* of the Kennedy initiatives has much in common with that of the Reagan Economic Program. The purpose, simply stated, was to accelerate economic growth by reducing disincentives to work effort, and to saving and investment. If there is a substantive difference, it is that the Kennedy initiatives placed no emphasis on the need to reduce money growth and the growth of Federal spending. Beyond this, largely because much of the growth of regulatory activity was still in the future, there was no mention of the need to reduce the regulatory burden.

The Effects of the Kennedy Policy Initiatives

Because of the similarities between the Reagan Economic Program and the policy initiatives actually undertaken in 1964, it is possible to undertake an experiment. Reduced to its essentials, the experiment involves a comparison of the *predicted* effects of the Reagan Economic Program with the *actual experience* in the years immediately following the 1964 Kennedy initiatives.

The predicted effects of the Reagan Economic Program are outlined on page 10. Our objective is to compare these qualitative predictions—predictions centering on the *direction* of effect rather than upon actual magnitudes—with the direction of effect of the Kennedy Program on certain key variables.

It is recognized that there is no one-to-one correspondence between the Kennedy initiatives and the Reagan Program. We recognize also that the general economic environment is different in 1981 than it was in 1964. Nevertheless, the experiment is a heuristic device. It is, after all, the *direction* of effect on key variables that is at issue, not single valued estimates of those variables.

With this in mind, we turn to a consideration of each of the variables singled out for consideration on page 10.

Employment

The Reagan Economic Program is predicted to increase employment.

Between the end of 1947 and the end of 1963, civilian employment rose in the United States at a compound annual rate of 1.08 percent. In the years immediately preceding the 1964 policy initiatives (January 1960 to December 1963), employment rose at a 1.19 percent annual rate. *During the period following the Kennedy initiatives (January 1964 to December 1967), employment growth rose to 2.35 percent.* In contrast, after the income tax surcharge was imposed in 1968, employment growth fell to an annual rate of 1.56 percent (December 1967 to December 1971).

Real Output

The Reagan Economic Program is predicted to increase real output or GNP.

Between the end of 1947 and the end of 1963, real GNP increased at a compound annual rate of 3.63 percent. Between January 1960 and December 1963, real GNP grew at 3.64 percent, roughly its secular rate. *During the period following the Kennedy initiative real GNP growth accelerated to 4.99 percent.* Significantly, during the period immediately following the imposition of the income tax surcharge, real output growth fell to 2.64 percent.

Real Wages

The Reagan Economic Program is predicted to increase real wages.

The data on real wages affirm that real wages rose during the period immediately following the 1964 Kennedy initiatives. The growth rate was, however, below the secular growth rate. Between December 1947 and December 1963, real wages rose at an annual rate of 2.44 percent. Between January 1960 and December 1963, real wages rose at the somewhat slower rate of 1.93 percent. *During the period following the Kennedy initiative, real wages increased at an annual rate of 1.64 percent.* And, finally, during the following 4 years (December 1967 to December 1971), real wages rose at an annual rate of 1.59 percent.

The decline in the *growth rate* of real wages after 1963 reflects the interaction of demographic and economic phenomena. In the three years before the Kennedy tax cuts, the labor force participation rate of males declined 1.9 percentage points, while the female participation rate rose 0.6 percentage points. In the 3 years following the Kennedy tax cuts, the male participation rate declined only 1 percentage point while the female rate rose 2 percentage points.

Increased labor force participation was accompanied during this period by an acceleration of labor force growth: Between December 1947 and December 1963, the civilian labor force grew at a 1.2 percent annual rate. During the 4-year period immediately following the Kennedy tax cuts, the labor force growth rate accelerated to 1.87 percent and to 2.12 percent during the period extending from December 1967 through December 1971. It seems reasonable to conclude that the combination of increasing labor force participation and accelerating labor force growth served to dampen the rate of increase of real wages

during this period. In any case, the point to be emphasized is that real wages grew during the period following the Kennedy tax cuts. This is consistent with the predicted results of the Reagan Program.

Real Saving

The Reagan Economic Program is predicted to increase real saving.
The growth rate of real saving between December 1947 and December 1963 was 5.49 percent. Over the 4-year period immediately preceding the Kennedy initiatives real saving's growth rate *fell* to 2.33 percent. *During the period following the Kennedy initiative the growth rate of real saving accelerated to 8.09 percent.* During the period immediately following the imposition of the income tax surcharge, the growth rate of real saving fell to 1.52 percent.

Real Investment

The Reagan Economic Program is predicted to increase real investment spending.
Between December 1947 and December 1963, real gross investment spending increased at a 3.69 percent annual rate. In the years immediately preceding the Kennedy initiative (January 1960 to December 1963), the real investment growth rate rose to 3.74 percent. *During the period following the Kennedy initiative, the growth rate of real investment spending accelerated to 5.49 percent.* During the period following the imposition of the income tax surcharge, the growth rate of real investment spending dropped to 2.94 percent.

The *net* investment data is even more dramatic. Between December 1947 and December 1963, net investment increased at an annual rate of 0.018 percent. In the period immediately preceding the Kennedy initiative, the growth rate increased to 8.72 percent. *But during the period following the Kennedy initiative, the growth rate of real net investment accelerated to 17.25 percent.* During the subsequent 4-year period, net investment growth fell to a *negative* 5.37 percent.

Income Velocity

The Reagan Economic Program is predicted to increase the velocity of circulation of money.
During the 3-year period immediately preceding the Kennedy initiative, income velocity—the ratio of GNP to money demand—rose at an average annual rate of 2.95 percent. *During the period immediately following the Kennedy initiative, velocity increased at an average annual rate of 3.79 percent.* After the imposition of the income tax surcharge in 1968, velocity's average annual growth rate fell to 1.57 percent.

Nominal Interest Rates

The Reagan Economic Program is predicted to reduce nominal interest rates.
The behavior of nominal interest rates during the post-Kennedy initiative period is not consistent with the model's prediction. The reason for this is, however, not difficult to find. Whereas the Reagan Economic Program contemplates a gradual *reduction* of the growth rate of the nominal money supply—and hence reduced upward pres-

sure on interest rates—money growth accelerated during the early to mid-1960's. In 1960 M1B grew at a 0.04 percent annual rate. By 1964 it was growing at a 3.9 percent annual rate, and by 1966 it was increasing at a 4.56 percent annual rate. The effect of this increasingly rapid money growth was to put upward pressure on nominal interest rates. A policy of steadily reduced money growth—as contemplated by the Reagan Economic Program—would have the opposite effect.

The acceleration of money growth during the early and mid-1960's caused both nominal interest rates and prices to rise. While they were essentially stable during the 1960-to-1964 period, nominal interest rates rose from 4.4 percent in 1964 to 5.51 percent in 1967—an increase of 25 percent. During the 1960-to-1964 period, the GNP deflator rose by 5.9 percent, or 4.07 percentage points. Between 1964 and 1967, it rose 8.6 percent or 6.29 percentage points.

The point to be emphasized is that the rise in nominal interest rates during the post-Kennedy initiative period is associated with increasingly rapid monetary growth. And it is precisely because the Reagan Program emphasizes *reduced* monetary growth that we can be confident that nominal interest rates will fall rather than rise.[1]

The Price Level

The Reagan Economic Program is predicted to reduce the price level (relative to what it would be in the absence of the Program).

Between January 1960 and December 1963, the GNP deflator rose from 67.6 to 71.67, a 1.5 percent annual rate. During the 4-year period following the Kennedy initiative, the price level—again as measured by the GNP deflator—rose from 71.67 to 79.06 percent, a 2.5 percent annual rate. During the subsequent 4-year period the rate of price increase accelerated to 4.98 percent.

As in the case of nominal interest rates, the post-Kennedy initiative price experience is not consistent with the predicted Reagan Program results. But, as before, this is easily explained: The growth rate of M1B was accelerating during this period. The result was a steady—and predictable—increase in the price level. The Reagan Program contemplates steady, gradual *reductions* in the growth rate of the nominal money supply, accompanied by supply-side initiatives. This will insure that upward pressures on the price level and on interest rates will be reduced.

The essential point is this: The Reagan Economic Program will act to increase both the demand for and the supply of goods and services. The effect on output and employment is unambiguous: Both will increase. The effect on the price *level* hinges on the *relative* shifts of demand and supply curves. The model predicts that the price level will fall—not in the sense of an absolute reduction, but relative to what it would be in the absence of the Reagan Program. This is equivalent to saying that the rate of price inflation will be less under the Reagan Program than it would be without it. The logic of this is precisely that the Program will shift both demand and supply curves, and that supply increases will serve to dampen future price increases.

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[1] Traditionalists would argue that the rise in interest rates after the Kennedy tax cuts helps explain the rise in velocity during the 1964-to-1966 period. On the other hand, the contribution of rising interest rates to changes in velocity is not quite so significant as some might suppose. As interest rates continued to rise after 1967, the rate of rise of velocity actually declined.

III. CONCLUSIONS

The predicted effects of the Reagan Program are positive: Employment, real output, real wages, real saving, real investment, and income velocity are all predicted to rise; nominal interest rates and the rate of price inflation are predicted to fall. There is no question that, were this to happen, Americans, collectively, would be better off.

Because these predictions are made *a priori*—before the Reagan Program is fully implemented—a test of the predictions must be based upon a comparison with historial experience. The relevant historical experience is, of course, a period in which similar policy initiatives were undertaken.

The 4-year period following the 1964 Kennedy initiatives is such a period. This is not to say that there is a one-to-one correspondence between the Kennedy initiatives and those proposed by President Reagan. Indeed, as has been emphasized, there are two substantive differences: (1) Whereas President Reagan emphasizes the need to reduce the growth rate of the nominal money supply, M1B growth accelerated both before and after the Kennedy initiatives, and (2) President Reagan's Program contemplates a systematic effort to reduce the share of government in GNP—through a reduction in spending, a reduction in off-budget activity, and a rationalization of regulatory activity.

No attempt has been made here to develop single-valued estimates of future employment, real output or anything else. The purpose of the model is to predict the *qualitative* effects of the Reagan Program. Our interest has centered on the *direction* in which such variables as employment and output will move once the Reagan Program is implemented.

A comparison of the predicted effects with the post-Kennedy initiative experience is reassuring. Employment, real output, real wages, real saving, real investment (both gross and net) and income velocity all behaved as predicted. Interest rates and the price level behaved differently than expected—but only because monetary policy both before and after the Kennedy initiative was inflationary. Were monetary policy to have been less inflationary (or, as some might say, less accommodative), interest rates and the price level would have behaved differently.

On balance, the evidence suggests that the Reagan Program for Economic Recovery will work. But it will work only if it emerges intact. The personal marginal tax rate cuts must be perceived to be multiyear; they must not emerge as a one-shot, 1-year, business-as-usual tax cut. In short, if expectations are to be changed, if work effort, saving, and investment are to be encouraged, and if wealth positions are to be increased, personal marginal tax rates must be cut over some finite time horizon. The Kemp-Roth proposal does precisely that.

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Business tax cuts and a reduced regulatory burden are equally critical. Improvement in cash flows is essential if investment is to be encouraged. Government policy can improve cash flows directly and indirectly—directly through accelerated depreciation and a commitment to cost-effective regulatory activity, and indirectly through a commitment to reduced monetary growth (and, therefore, reduced inflation) and reduced Federal activity in the credit markets.

The Reagan Program is a coherent, internally consistent policy package. Its focus is long-term economic growth rather than counter-cyclical "fine tuning." It will succeed—provided the American people are not denied its benefits by a Congress dominated by policy inertia, by a myopic view in which this quarter's or this year's statistics are more important than the economy's long-term health and vitality.

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APPENDIX

The effects of the Reagan Program have been defined in terms of changes in the demand for and supply of labor, shifts in the saving and investment functions, and changes in the demand for and supply of money.

The implications of these changes for employment, real GNP, the price level, and other variables of interest can be explored by means of a system of graphs designed not only to represent the labor, commodity, and money markets but to clarify the interrelationships among these markets.

The model consists of 11, interrelated graphs, labeled I through XI. We shall consider each in turn.

Graphs:

Graphs:

V

VI

VII

VIII

IX

X

XI
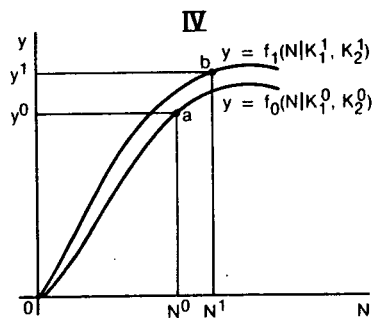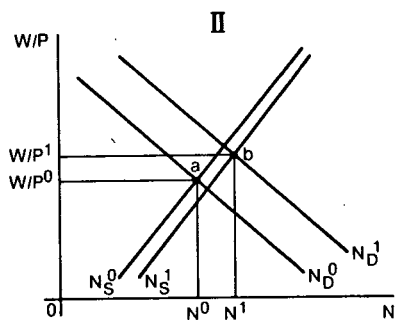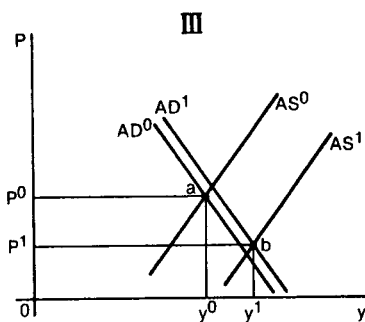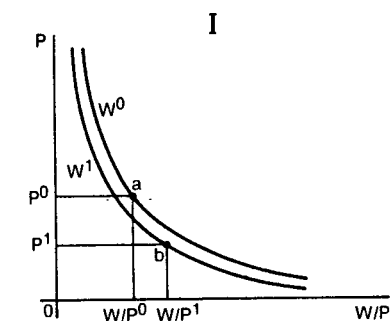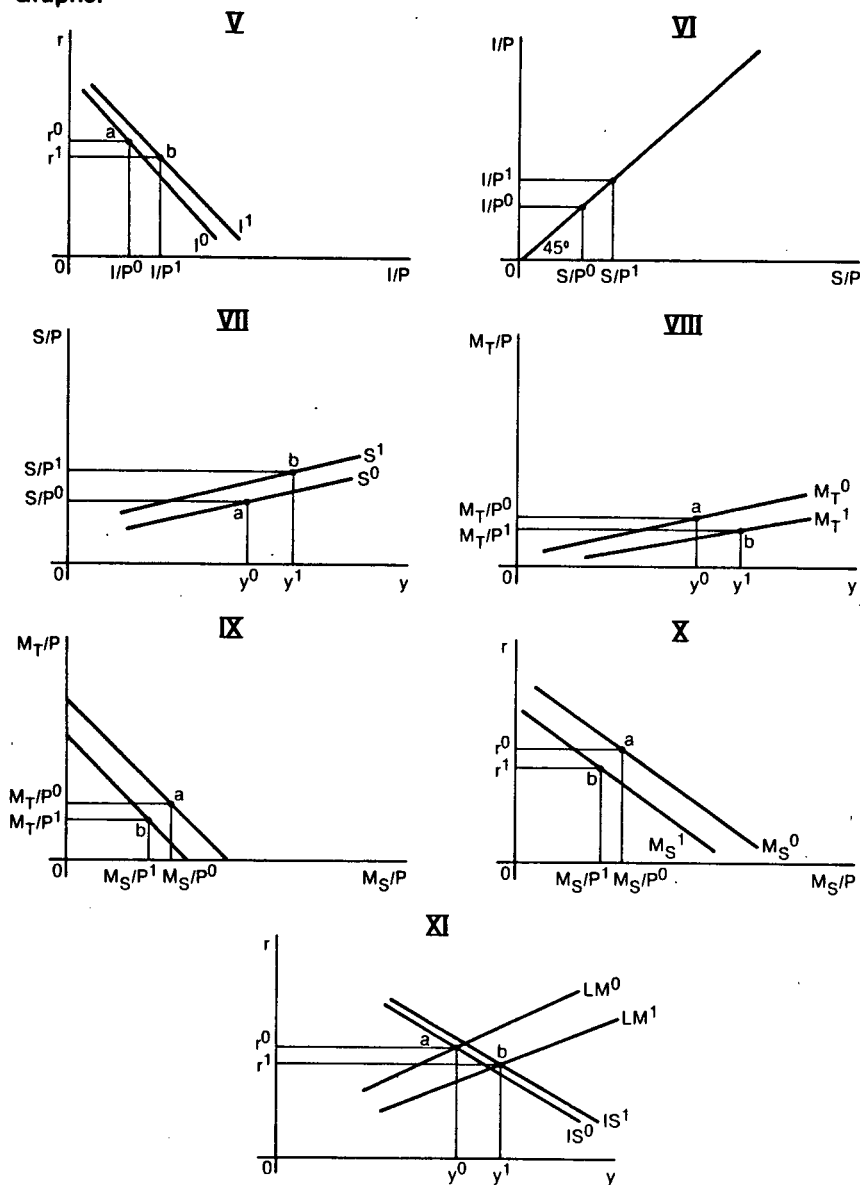
Model Description

GRAPH I

The vertical axis in Graph I shows increasing values of the price level, P, where P is the GNP deflator. The horizontal axis measures the real wage, which is understood to be the nominal or money wage, W, divided by P, the GNP deflator. The rectangular hyperbola running through point "a" denotes the initial level of the nominal wage rate, W_0, which yields, for differing levels of P, alternative values of W/P, the real wage.

GRAPH IX

The vertical axis in Graph IX measures real transactions balances, M_T/P. The horizontal axis measures real speculative balances. The latter is understood to be nominal speculative money balances, M_s, divided by the GNP deflator, P. Speculative money balances reflect an asset demand for money; a demand for money that is related, in Graph X, to the level of the interest rate.

The negatively sloped line running through point "a" is a constraint that shows the partitioning of real money balances between transactions and speculative holdings. At the vertical intercept, all balances are held for transactions purposes. At the horizontal intercept, all balances are held for speculative purposes. Any point on the line satisfies the money market equilibrium condition: at any point on the line, the sum of real transactions balances, M_T/P plus real speculative balances, M_s/P equals the real supply of money, $M°_{ss}/P$. The nominal money supply, $M°_{ss}$ is determined by the Federal Reserve.

GRAPH X

The horizontal axis in Graph X measures real speculative balances, M_s/P. The vertical axis measures the interest rate, r. The negatively sloped line running through point "a" labeled $M°_s$ reflects the assumed inverse relationship between the interest rate and the quantity of real speculative balances desired: increases in the former are accompanied, other things equal, by a decrease in the latter.

GRAPH XI

The vertical axis in Graph XI measures the interest rate, r, while the horizontal axis measures real GNP, denoted y.

The negatively sloped line running through point "a" and denoted $IS°$ is the locus of points showing equilibrium combinations of the interest rate and real GNP in the commodity market. It represents, in other words, the various combinations of r and y such that, given $I°$ in Graph V and $S°$ in Graph VII, saving equals investment. The condition that saving equals investment is, of course, the equilibrium condition for the commodity market. When satisfied, it implies that the market is in equilibrium in the sense that aggregate demand for goods and services equals aggregate supply.

The positively sloped line running through point "a" denoted $LM°$ is the locus of points showing equilibrium combinations of r and y in the money market. It represents the alternative combinations of r and y such that, given $M_T°$ in Graph VIII, $M_s°$ in Graph X, and $M_{ss}°$ in Graph IX, the money market is in equilibrium. That is, at any point on $LM°$, the sum of real transactions balances demanded plus real speculative balances demanded equals the real money supply.

The Initial Situation

To determine the impact of the Reagan Program, we will compare the economy's performance at an initial equilibrium to its performance in equilibrium after fully adjusting to the Reagan Program. The initial equilibruim may be summarized as follows:

Point "a" in Graph II yields the equilibruim employment level, $N°$, and the equilibrium real wage, $(W/P)°$.

The equilibrium employment level, $N°$ determines, via point "a" in Graph IV, the equilibrium or full employment level of real GNP, $y°$.

The full employment level of real GNP, $y°$, when introduced in Graph VII determines, via point "a", the associated level of desired real saving, $(S/P)°$.

If equilibruim is to obtain in the commodity market, desired real investment spending $(I/P)°$, must equal desired real saving, $(S/P)°$. But, from point "a" in Graph V, we know that this amount of desired real investment spending will emerge if and only if the interest rate equals $r°$.

Turning to the money market, the introduction of $y°$ from Graph IV into Graph VIII yields, via point "a", the associated desired level of real transactions balances, $(M_T/P)°$.

Then, from Graph IX, we determine that, given the initial constraint line, if desired transactions balances are $(M_T/P)°$, desired real speculative balances must be $(M_s/P)°$. Yet, from Graph X, we know that the public will desire to hold this amount of speculative balances if and only if the interest rate is $r°$.

$r°$—established in Graphs V and X—and $y°$—established in Graph IV—determine point "a" in Graph XI. This is the combination of interest rate and real GNP such that the commodity and money markets are simultaneously in equilibrium. But, because the level of real GNP, $y°$, was determined by the intersection of $N_D°$ and $N_S°$ in Graph II, we know that the labor market is also in equilibrium. It is in this sense that the initial situation is one of "general equilibrium."

The point of general equilibrium is also represented in Graph III. The aggregate demand curve, $AD°$ intersects the aggregate supply curve, $AS°$ at point "a". Point "a", in turn is associated with the real income level, $y°$, and with the price level, $P°$.

The aggregate demand curve, $AD°$ can be derived in Graph XI. The procedure is as follows: holding $IS°$ constant, consider a series of hypothetical changes in the price level. Increases in the price level will shift the LM curve to the left; decreases in the price level will shift it to the right. The resulting intersections of $IS°$ with the family of LM curves defined for different price levels results in a locus of points showing an inverse relationship between the price level and aggregate demand. The locus of points, denoted $AD°$, is shown in Graph III.[1]

The aggregate supply curve may be derived as follows: assume the aggregate production function f_0 in Graph IV. This is the same thing as assuming the labor demand curve, $N_D°$ shown in Graph II does not shift. Next, consider a series of hypothetical shifts in the labor supply curve, $N_S°$.

Shifts in N_S are assumed to result from hypothetical changes in the price level. Increases in the price level are associated with rightward shifts of N_S; decreases in the price level with leftward shifts. The logic of this follows from the notion that increases (decreases) in the price level induce increases (decreases) in labor force participation. Changes in the price level result, therefore, in changes in the quantity of labor willingly supplied at any real wage.[2] The resulting intersections of $N°_D$ with the family of labor supply curves defined for different price levels generates a locus of points showing a direct relationship between the price level and aggregate supply, y. The locus of points is denoted $AS°$, and is shown in Graph III.[3]

Finally, it should be noted that the equilibrium price level, $P°$, and the equilibrium real wage $(W/P)°$ determine, at point "a" in Graph I, the equilibrium level of the nominal or money wage rate, $W°$.

After the Policy Changes

We start by assuming that the economy is initially in equilibrium; that is, that labor, commodity, and money market conditions are as described at point "a" in Graphs III and XI.

We next assume that the Reagan Economic Program is implemented in its entirety. The question is, what effect will this have on the economy? This is the same as asking, what happens in the labor, commodity, and money markets? As before, we consider each market in turn.

In the Labor Market, the improved investment climate can be expected to result in an increase in the stock of human and nonhuman or physical capital. This will result in an upward shift of the aggregate production function in Graph IV from f_0 to f_1. The shift means that a given amount of labor can produce more output.

The shift of the aggregate production function in Graph IV results, in Graph II, in an upward shift of the labor demand curve (from $N°_D$ to N'_D). If this were all that were to happen, employment, real output, and the real wage would all increase. But it is not all that will happen. At the same time as N_D increases, the amount of labor willingly supplied will also rise. The outward shift of the labor supply curve in Graph II from $N°_S$ to N'_S reflects the assumption discussed

above that the *net* effect of the substitution, income and wealth effects, coupled with entry of new workers into the labor force, is an increase in the amount of labor willingly supplied at any real wage. The *relative* shifts of N_D and N_S reflect the additional assumption that the demand for labor will rise faster than the supply of labor—an assumption made in recognition of the fact that the Reagan Program's effect on labor supply is a *net* effect.

The shifts of the labor demand and supply curves in Graph II mean that the equilibrium real wage and employment levels will be determined by point "b." In this event, both the real wage and the employment level will rise; the real wage to $(W/P)'$, and the employment level to N'. The new employment level results in a higher level of real GNP, y', determined by point "b" on the new aggregate production function, f_1, shown in Graph IV.

Turning to the Commodity Market, the effect of the Reagan Economic Program will be to increase the desired level of real saving at any level of real income. In graphical terms, the initial saving function, S° in Graph VII, will shift up to S'. The effect on investment will be symmetrical; that is, the Reagan Economic Program will cause the amount of desired real investment at any level of the interest rate to increase. This is illustrated in Graph V by a shift of the investment function I° to its new position, I'.

The new saving and investment functions imply an upward shift of the *IS* curve in Graph XI. The new *IS* curve, denoted *IS'* in Graph XI reflects the shifts of the underlying saving and investment functions. (See Graphs VII and V.)

The introduction into Graph VII of the new, higher level of real income, y', enables us to determine the level of real saving implied by the Reagan policy initiatives. (y', it will be recalled, was established in the labor market by Graphs II and IV.)

S', the new saving function, tells us that if real income is y', real saving will rise from its initial level, $(S/P)^\circ$, to $(S/P)'$. Then, if the commodity market is to be in equilibrium, real investment must rise by an equal amount. It must, in fact, rise from $(I/P)^\circ$ to $(I/P)'$. As drawn, the new investment function, I', shown in Graph V tells us that if this level of real investment spending is to be realized, the interest rate would fall from its initial level, r° to r'. Of course, a more pronounced rightward shift of I° would be consistent with an increase in the rate of interest. The important thing, however, is that investment measured in real terms increases.

In the Money Market, the Reagan Economic Program is expected to have the following effects:

(1) A decrease in the quantity of real transactions balances demanded at any level of real income (represented in Graph VIII by the new transactions balances function, M'_T);

(2) A decrease in the quantity of real speculative balances demanded at any level of the interest rate (reflected in Graph X by the new speculative demand function, M'_S); and

(3) The reduced growth rate of the nominal money supply results, given the lags in the adjustment of the rate of inflation, in a reduction in the real stock of money (reflected in Graph IX by the leftward shift of the constraint line).

The combination of reduced money demand and a reduced real stock of money is associated with a rightward shift of the *LM* curve in Graph XI. The new *LM* curve, denoted *LM'* in Graph XI reflects the shifts in the underlying functions shown in Graphs VIII, IX and X.[4]

The introduction of the higher level of real income, y' (determined in Graphs II and IV) into Graph VIII yields, given M_T', the new level of desired real transactions balances $(M_T/P)'$.

From Graph IX we know that the new level of real transactions balances can be reconciled with the reduced real money stock only through a reduction in the

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[4] As drawn, Graph XI shows the interest rate falling. This reflects the fact that the *LM* curve shifts further to the right in this analysis than does the *IS* curve. This is not a necessary result. Graph XI could be drawn to reflect an increase in the nominal interest rate, as could Graph V. Graph XI would yield an increase in the nominal interest rate if the *IS* curve were to shift further to the right than does the *LM* curve. This result could be obtained if the investment function, I°, in Graph V were to be shifted further to the right than I'. This, in turn, would require that we contemplate a larger shift in the investment function relative to the saving function than we have assumed. In any case, while the reader might conclude from this that the effect of the Reagan Program on nominal interest rates is indeterminate, the point to be emphasized is that the Program's effect on real saving and real investment is unambiguous: Both will rise.

quantity of real speculative balances held. The speculative demand function M'_s in Graph X tells us that the required real speculative balances will be forthcoming if and only if the interest rate falls to r'—the same r' revealed in Graph V to be required if the commodity market is to be in equilibrium.

The combination of y' and r' determines point "b" in Graph XI. Point "b" is the point of intersection of IS' and LM'. y' and r' are therefore the levels of real income and interest rate required if the commodity and money markets are to be simultaneously in equilibrium. Moreover, because y' was determined in Graph IV by N', the employment level at which the demand for and supply of labor are equal, y' and r' must be consistent with labor market equilibrium. Point "b" in Graph XI is therefore representative of the general equilibrium that obtains *after* the Reagan policy initiatives.

As before, the point of general equilibruim is also represented in Graph III. After the Reagan Program is implemented, the relevant aggregate demand and supply curves will no longer be AD° and AS°. In the case of AD, the shift of IS to IS' in Graph XI results, given a series of hypothetical changes in the price level (and resulting shifts of the LM curve) in the emergence of a new aggregate demand curve, denoted AD' and shown in Graph III.

In the case of AS, the shift of the aggregate production function, in Graph IV, from f_0 to f_1 results, given a series of hypothetical changes in the price level (and resulting shifts of the N_s curve) in the emergence of a new aggregate supply curve, denoted AS' and shown in Graph III.

AD' and AS' intersect at point "b" in Graph III, yielding the new price level, P'. P' is, of course, the price level associated with LM' intersecting IS' at point "b" in Graph XI. The economy's new general equilibrium is summarized, therefore, by point "b" in Graph III, and by point "b" in Graph XI.

Finally, the new equilibrium price level, P', and the equilibrium real wage $(W/P)'$ determine, at point "b" in Graph I, the equilibrium level of the nominal wage rate, W'.

The predicted longrun effects of the Reagan Economic Program may be summarized as follows:

An increase in employment,

An increase in real output,

An increase in real wages,

An increase in real saving,

An increase in real investment,

A reduction in money demand accompanied by an increase in real GNP, implying an increase in velocity,

A reduction in nominal interest rates, and

A reduction in the price level (relative to what it would be in the absence of the Reagan Program).

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