



THE SLOW GROWTH TRAP

AND THE PUBLIC INVESTMENT CURE



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Introduction

This paper argues that the economy is stuck in a cycle of slow growth, stagnant wages, inadequate productive investment and institutional trauma resulting from the excesses of the 1980s. In such an economy, reducing public outlay as a strategy of increasing investment and growth will backfire. A drastic cut in the public sector deficit will only reduce demand without increasing productive investment. With slower growth, deficit and debt will only loom larger relative to total output. The more likely way to restore growth is to increase investment directly, through expanded public spending on infrastructure, technology, procurement and related capital outlays. With increased investment, the economy will again grow faster than the debt: public deficits will gradually diminish relative to Gross National Product (GNP), and past debt will become less of a relative burden.

Public policy therefore faces a clear choice: we can reduce the deficit in the hope that higher rates of private saving will restore investment, and hence growth. Or we can reduce the weight of the public debt by allowing the rate of inflation to rise. Or we can restore growth directly by increasing the rate of productive investment via public outlay. The first approach is based on a mistaken diagnosis of what afflicts the economy and of the relationship between savings and investment: it would incur further economic contraction and unnecessary austerity. The second approach would reduce the effective debt, but with unacceptable costs. The third is the policy of choice.

This paper distinguishes between the current recession and the longer-term problem of secular stagnation. It argues that the current

recession is not an ordinary business cycle downturn. but an intensification of a decade-long slide into structural stagnation. Because of the structural nature of the slow growth trap, ordinary countercyclical stimulus of demand is necessary, but not sufficient. In the near term, increased public investment financed substantially by debt is the remedy for both problems.

However, beyond the virtue of aggressive countercyclical public spending, there is also a case for public investment as a long-term strategy for restoring investment and growth generally. In an economy suffering from institutional damage and long-term stagnation, public debt can finance a higher rate of productive investment than the private sector would otherwise generate. Debt-financing can be justified, even if the deficit is already high, when new debt buys productive investment. Eventually, the government's deficit should be reduced to about the rate of economic growth, so that the ratio of debt to GNP stabilizes. But that reduction should come after growth is restored, not as a mistaken strategy for restoring growth.

In a deflated economy direct public investment has multiple, reinforcing benefits. First, as macroeconomics it does an end run around the failure of private firms and individuals to invest: it thereby raises the investment rate directly, which is the key to growth, and puts idle people back to work. Second, as research by Alicia Munnell, David Aschauer and others has suggested, public infrastructure investment is a necessary complement to private sector productivity growth, yet current basic investment in infrastructure has declined to a postwar low. Third, public investment offers structural, technology-forcing benefits as well. During the cold war era, this technology-push effect of public outlay occurred primarily in the military sector — and now needs to be civilianized. Finally, since an open global economy causes conventional fiscal stimulus to partially “leak” into purchase of imports, public investment has the added virtue of being spent mostly at home.

Beyond Deflationary Economics

There is now growing receptivity to a revisionist story of the cause and cure of America's economic woes. The new story has four elements — two macro, and two structural:

- The relationship between savings and investment:
- The relationship between public investment and private investment:
- The structural, as opposed to macroeconomic, sources of growth: **and,**
- The capacity of public investment to drive productivity growth and hence, economic growth.

The standard story begins with the familiar accounting identity: “savings equals investment.” It then leaps to the assumption that the rate of savings is what **drives** the rate of investment. In this account, America's economic performance is suboptimal because our private savings rate, already below Organisation for Economic Co-operation and Development (OECD) average, was further depressed by government “dissavings” in the 1980s. The urgent challenge, therefore, is to get the savings rate up, both by encouraging private savings and by reducing the public deficit.

Until very recently, this consensus was quite broad, running from moderately liberal neo-Keynesians of the Brookings variety to most orthodox conservatives. A well-intentioned and emblematic recent book by B. Douglas Bemheim (1991), took stock of all the usual reasons why Americans are reported to save too little, and concluded with a passionate plea for a “high profile, public campaign to promote more frugal behavior,” and as a first step “the federal government must make good progress toward bringing its own budget into balance” (Bemheim 1991, p. 121). This has been the message of countless recent books, tracts, and several political campaigns.

The supply-side/conservative version of this standard story has stressed

private savings and investment. In theory, by increasing the after-tax rewards to savings and investment, public policy could increase the incentives to save and to invest. The centrist version of the story has stressed the importance of reducing public deficits. For the most part, editorial opinion came to side with the latter view, and has chided both political parties for refusing to grasp the nettle of deficit-reduction: politicians presumably knew as a matter of economics what needed to be done, but lacked the political courage to do it. Even most liberal politicians, lacking a clear dissenting economic theory on which to base policy, have felt rather **guilty** about their cumulative failure to deal with the deficit. And this premise has been politically disabling. It has mooted any serious discussion of additional public investment.

The standard story was dubious economics all along, but there was little receptivity to a dissenting story until the current recession, which increasingly seems less an ordinary business cycle recession than a modest cyclical trough in a prolonged period of depressed growth. The slow growth trap is in many respects the legacy of the 1980s. Throughout the 1980s, America increased its public debt, but without increasing its rate of investment. The supply-side incentives rewarded wealthy investors, but failed to increase the rates of either public or private investment, or growth. The rate of net private investment actually declined during the 1980s, from rates of over 7.2 percent of GNP in the 1960s and 1970s, to about 5.6 percent in the 1980s, to less than 4 percent in the 1990s. The result was all too predictable: slow growth, and a rising ratio of public debt to GNP. This is only compounded by the fact that today's debt is carried at historically high real interest rates. The actual ratio of debt to GNP today is about fifty percent, less than half the postwar peak of 119 percent in 1946. But the ratio of interest payments to GNP is nearly twice what it was in 1946.

At some point, the recession/slow growth trap of the 1980s began to take on some of the characteristics of what Irving Fisher called a "debt-deflation depression" (Fisher, 1933). As Fisher observed, in the aftermath of a bout of speculative excess, the economy implodes. The market

downgrades the value of assets, and the earning power of those assets is then insufficient to amortize the debt which they carry. Interest costs then become a relatively greater burden, which is a drag on economic recovery. In the 1930s, both stock prices and real estate were affected. In the 1990s (so far) real estate has borne the brunt. This dynamic is intensified by the effect of asset-deflation on bank balance sheets as well as their regulatory treatment, which shrinks the base of bank capital and makes banks less able or willing to lend even to otherwise acceptable borrowers. In such circumstances, the ordinary tools of countercyclical fiscal and monetary policy are insufficient to restore growth. As S. Jay Levy and David Levy aptly summarize the problem, "The economy is suffering not from a short-term disruption in demand or an inventory overhang, but from having too much of the wrong assets built at the wrong time, bought at excessive prices, and paid for with too much debt" (1992, p. 2). During the 1980s, bigger deficits to stimulate consumption were the result of what conservatives had repackaged as supply-side economics. But the supply-side aspect of the experiment was the part that failed most spectacularly — since investment fell. The strategy was Keynesian only on the demand side. However, it was a giddy and irresponsible brand of "Keynesianism" that no Keynesian would ever sponsor. Deficit-driven consumption was sufficient to induce moderate rates of consumption-led growth for a time -but without increased rates of investment, economic growth eventually slowed.

In the absence of robust growth, this policy could only work for a few years. As the ratio of debt to GNP grows, interest costs eventually become a serious dram. The fact that a public deficit of over six percent of GNP coexists with an annual growth rate of barely two percent signals just how far this pathology has gone. In current circumstances, the large deficit is a misleading indicator of effective fiscal stimulus, because most of it is either interest payments on debt, or the savings and loan bailout — neither of which have much stimulative effect — or the cyclical result of recession itself. Even so, a recovery strategy relying on even larger deficits aimed at increasing

consumption demand would be less effective than larger deficits explicitly targeted at increasing rates of investment, for the ordinary mechanisms which translate increased demand into increased investment have been damaged and weakened.

The Monetary Imprisonment

On the monetary front, the Federal Reserve Board under Alan Greenspan has belatedly pursued a relatively easy money policy. This is surely desirable as part of a recovery package, but in present circumstances it is doubtful that monetary policy alone can bring about a sustained restoration of high growth. Short-term interest rates have fallen, but credit is still effectively tight because bankers, seeking to rebuild weak balance sheets, are reluctant to lend to any but the most creditworthy borrowers. This reluctance to lend is compounded by a belated regulatory crackdown on speculative lending, some of which has harmed innocent small-business borrowers.

Moreover, the spread between short-term rates and long-term rates is now at near-record levels. Because of the laissez-faire approach to the bond market, there is a danger that lower short-term rates might set off an “inflation premium” psychology, and actually drive up long-term rates. The logic of this dilemma is familiar: if financial markets believe that the Federal Reserve Board is courting inflation with an overly indulgent monetary policy, then investors will demand a premium before they tie up their money at fixed rates for twenty or thirty years. To some extent, this demand is less a fear of inflation itself than widespread doubt of the Fed’s own resolve to keep interest rates low over the long-term. Either way, however, monetary policy becomes a prisoner of the psychology of the bond market. Monetary policy is also constrained by an increasingly open global economy, since cheap money leads to a weak dollar making it difficult to attract foreign capital to finance the public debt.

There are alternatives to this imprisonment, but they require a more interventionist monetary policy as well as closer coordination between

monetary policy, financial regulation, and incomes policy. For example, the government could, as it did in Marriner Eccles' day, simply state what it would pay on long-term bonds, and invite – or coerce – the bond market to buy them if it cared to hold Treasuries. From early in the New Deal until the Korean War, the Treasury and the Fed set a maximum rate of 2 1/2 percent on long-term bonds. During the Korean war, the Fed began worrying about inflation and eventually negotiated a new “accord” with the Treasury in March 1951, which allowed rates to rise toward market levels. Alternatively, the government could issue more of its bonds at shorter maturities. Or the Fed could declare a long-term policy of relatively easy money. Today, however, the Treasury relies on auctions which allow the bond market to set rates on long-term Treasury securities. In the absence of an entirely different approach to monetary policy, which would include a commitment to very low interest rates, selective capital allocation, and **sectoral** approaches to restrain inflation. this imprisonment is likely to continue.

The Public Investment Cure

The paralysis of the usual tools has at least opened the door to a bolder set of policies. Obviously, if investment is what drives growth — but investors are sitting on their checkbooks because of debt overhang, depression in purchasing power and a perceived shortage of customers, and bankers have raised the hurdle defining qualified borrowers because of the same asset deflation and the damage to their own balance sheets — then there is only one reliable way to bridge over the economic short circuit, government must re-ignite investment directly, rather than offering futile and costly carrots to private investors. Most “public” investment soon flows through to private investment via procurement contracts and also has a beneficial multiplier effect on production generally.

This strategy may violate some idealized notion of the superiority of markets at allocative efficiency. But after the hundreds of millions of economically useless square feet of commercial **office** space, shopping malls

and condos generated by the allocative judgments of private entrepreneurs, as well as leveraged buyouts by financial manipulators not competent to manage the enterprises they acquired, the usual claim that private investors maximize efficient allocations of capital has lost some of its luster. Any of several alternative capital investments that government might have made would have been superior to a see-through office tower or an empty mall.

Just as an open global economy has constrained the power of fiscal and monetary policy, it has broken the link between productivity, investment and wages. During the era when the United States was a substantially closed economy, it was possible for increased productivity to be translated directly into increased wages — this was a provision of many union contracts — and profits, which in turn created a demand-side and supply-side basis for increased investment. But in an open economy, this circle is broken. Productivity may increase, but wages tend to lag behind productivity gains because of the relative weaker bargaining power of workers, and the pressure from lower-wage competitors. Moreover, domestic purchasing power partly leaks out into imports, which are not fully offset by foreign purchases of exports, because of our structural trade deficit. On both counts, the decline in real wages exceeds the slowdown in productivity growth, and leads to a sub-optimal level of investment. Here again, increased public investment can bridge over this shortfall.

The key point here is that the growth/productivity payoff is on the investment side, not on the savings side. And the key revisionist insight is that while savings may technically equal investment as an accounting identity after the fact, it is fallacious to presume that savings is what drives investment. Indeed, there is good evidence that America has suffered from an absence of perceived investment opportunities and actual physical investments, not from a shortage of investible savings. According to Federal Reserve data, commercial banks in the first 18 months of this decade shifted over a hundred billion dollars from commercial and industrial lending into Treasury securities, at a time when the rates paid on Treasuries were dropping

and the spread was barely sufficient to cover the banks' own cost of capital. Moreover, interest rates have been falling: neither indicator is consistent with the savings shortage hypothesis.

Differentiating Saving from Investment

Neoclassical economic theory assumes that, in the relationship between saving and investment, it is saving that drives investment. But it is equally plausible that the causality works the other way around. A high rate of investment leads to a high rate of real economic growth, which makes it possible for people to enjoy increased real earnings, and thus to save more. Conversely, if "liquidity preference" — a reluctance to invest risk-capital — increases in a deflated economy because of fears about the future, government can tax the idle savings of the wealthy and invest the proceeds in growth-enhancing activities: that will also increase growth and make any accumulated public debt less of a future burden on economic output. Alternatively still, government may increase public borrowing in order to increase public investment, which is an alternative way of channeling idle private savings into productive use.

Viewed in this sense, the problem with the policies of the 1980s was not mainly that deficits were increased. To a large degree, the problem was the composition of that increase. Deficits grew because the government decided to collect fewer taxes from the rich — which, despite claims, did nothing to stimulate investment. Deficits also increased because government decided to increase outlays on arms rather than on civilian public investment. Had the government increased deficits in order to increase investment directly, the deficits would have been far more benign and conducive to sustainable growth.

There is still intellectual power to the traditional liberal notion that low interest rates and high public spending, even when **financed** by deficits, make sense in a depressed economy. However, when **the** economy is also saddled with a large public debt that was the fruit of failed supply-side policies, simply

stimulating the demand side is not sufficient. For as the experience of the 1980s showed, how the deficit is generated and what the government spends money on, are at least as important as the size of the deficit.

Moreover, by viewing savings as nothing but the residual that is left over after consumption, the usual accounting practice sets up perverse incentives for policy. Given a savings rate perceived as too low, the only way to improve it within the conventional assumptions is to depress consumption. But depressing consumption during a “debt-deflation depression” will only retard output, intensify the deflationary spiral, slow growth, reduce the incentive to invest, and thereby make the burden of past debt all the more disabling.

A Savings *Shortage*?

Thus, the standard story is open to challenge, on both logical grounds, and also on grounds of faulty national income accounting. There are, in fact, several distinct accounting challenges to the statistical claim of inadequate national rates of saving. The first, associated with the work of Robert Eisner, argues that when adjusted properly for inflation, the public debt is less fearsome than generally claimed. Still, because the debt is financed out of current income, and at interest rates which are high by historic standards, the current level of debt, even when properly deflated, has relatively high real costs. About \$200 billion — more than half of the current federal deficit — goes to pay interest on past debt: this means \$200 billion of tax receipts or current borrowing not available to buy public goods and services.

A second adjustment has been suggested by Robert Blecker (1991a), building on work by Eisner and Paul Pieper and by Robert Lipsey and Irving Kravis. Blecker has noted that a large part of the measured fall in the net private saving rate since the 1960s can be accounted for by an increase in the rate of economic depreciation. That is, if changes in the nature of technical progress have led to a shortening in the useful lives of productive assets, these show up in the national income accounts as a charge against gross savings. This insight suggests that if any savings/investment problem exists, it is

because a shorter product cycle in a high-tech economy requires a faster consumption of assets and hence more savings to finance investment, and not because the real rate of private savings out of income has declined. Yet a defender of the standard story might accept Blecker's point, and still contend that the economy suffers from inadequate savings because the new circumstances demand more savings and investment than before.

A third revision in how to think about savings and investment is suggested in recent work by Fred Block (1991). Some of it co-authored by Robert Heilbroner (1991). Block criticizes the definition of savings as a simple residual (income minus consumption) and notes that the National Income and Product Accounts measure of savings omits three key sources: the net savings in public pension funds, "housing saving," and realized capital gains. The first two of these revisions are less striking than the third. Under a different policy regime, as for example in Sweden, public pension fund reserves would be segregated, on the model of a private pension fund, and would indeed lead to a true accumulation of socialized savings. However, in the United States, the surplus in the social security accounts has been effectively co-mingled with the rest of the federal deficit: the pool of "social security savings" is not a pool of investible funds, but an accounting entry. (As Block also notes, changes in the regulation of private pensions during the 1980s allowed employers to reduce their contributions to pension reserves, which actually did reduce the savings supply.)

With regard to housing savings, it is again true that the net worth of the household sector has indeed been increased by the long rise in real housing values. However, for the most part these "savings" are rather illiquid and generally not available for productive investment. Because of the tax treatment of gains in the capital value of housing, most people who realize a gain from the sale of a house simply invest the proceeds in a more costly house, and not in productive capital assets. By the same token, when households attempt to tap their increased home equity by borrowing against it, this consumes other financial savings, usually for consumption or for home

improvements. (Technically, it is illegal to use the proceeds of a home equity loan to invest in securities.)

However the final element in the Block-Heilbroner revision is more compelling. As Block notes, realizations of capital gains are not considered increments to savings in the National Income and Product Accounts. Theoretically, when a stock appreciates in value and changes ownership no additional savings or investment occurs; the value of a financial asset simply inflates. This also reflects the a priori insistence that savings, by definition, must come out of income withheld from consumption. But upon closer examination this view is misleading. Assume that Smith purchases a stock for \$100, which subsequently appreciates to \$200. At that point, Jones takes \$200 out of his savings account and buys the stock from Smith. The result is analogous to the effect of fractional reserve banking. Smith is suddenly a hundred dollars richer: he has an extra hundred dollars to consume or to invest. Jones, however, is no poorer. He has simply shifted the form in which he holds two hundred dollars worth of assets, and this will remain true as long as the market does not drop. In effect, an additional hundred dollars of investible liquidity has been created.

As Block and others (Steindl, 1990; Blecker, 1991) have demonstrated, much of the measured drop in private savings during the late 1980s must be the miscounting of capital gains. We know that the 1980s were a decade when wealth became more highly concentrated among the very wealthy, who derive most of their income from capital. We also know that the very wealthy have a much higher propensity to save than wage and salary earners. When a wealthy individual realizes a windfall capital gain, he spends only a fraction of the money: most of it is reinvested in some other capital asset. Therefore common sense suggests that financial savings could hardly have diminished during a decade when the stock market and capital gains realizations were rising and wealth was becoming more highly concentrated.

The most dramatic tip-off to this conclusion is the sharp drop in the measured rate of savings from 1986 to 1987. Because of the 1986 tax reform

act, which increased the taxation of capital gains, 1986 saw an unprecedented increase in capital gains realizations just before the higher tax rates took effect — a total of \$296 billion or 9.8 percent of personal income or twice the measured rate of household savings that year. Most of that windfall capital income surely flowed back into other financial investments, however in a sluggish economy it did not necessarily flow into new productive investment. During the ensuing year, it is likely that the households that enjoyed these capital gains did consume some portion of their windfall. However, in the national income accounts, all of this additional spending was assumed to have come out of ordinary income. That in turn had the mechanical result of reducing measured savings, since capital gains income is not included in the denominator. The abrupt fall in the personal saving rate in 1987 — from 6.0 to just 4.3 percent, is surely the result of this miscounting of spending stimulated by capital gains realizations.

A supply-sider eavesdropping on this analysis would seize it as a new justification for more liberal treatment of capital gains (we **await** the forthcoming editorial in the *Wall Street Journal* crediting Block, a Keynesian, for being an unwitting supply-sider). Indeed, if realized capital **gains** are truly increments to savings, and savings is what the economy needs, then more liberal treatment of capital gains is just the ticket.

However, if we look at what actually occurred in the **1980s**, this analysis should be no comfort to the supply-side: during the **1980s**, capital gains realizations indeed increased, but **of course** *productive investment did not*. What did occur was that purchasing power for most wage and salary earners stagnated or declined, government investment declined, private investment plateaued and declined, and predictably, growth petered out. Economically useless increments to the national debt then became an increased drag on the real productive economy. To repeat, the problem is not on the savings side but on the investment side. More capital gains realizations increased the wealth of the well-off — but did not spark investment.

Savings, "Dissavings" and Public Investment

A related challenge to Block and Heilbroner might be the usual claim that public borrowing is tantamount to "dissavings" since the financing of public deficits makes a big dent in private savings, however we measure it. But this is another mis-specification. As Heilbroner has observed, government deficit spending is not a source of savings or "dissavings." It is, rather, a use of savings. If a private corporation taps the national supply of savings to build a new factory, that is a use of savings. If a wealthy individual puts some of his assets into a speculative shopping mall, or gold-plates his executive washroom, that is also a use of savings. Some of these uses of savings can be legitimately scored as productive investment, some not.

By the same token, when government increases public borrowing, that is a use of savings. Whether that use of savings is actually converted into productive investment is an empirical question. If government uses public borrowing to build a pollution control facility, or to modernize a rail corridor, or to develop a more efficient semiconductor, that is a productive investment. It is difficult to know with precision how much of the public borrowing of the 1980s actually translated into productive investment. since the federal government lacks a capital budget, and the U.S. national income accounts generally count government spending as consumption. However, even a casual look at the pattern of government spending and borrowing reveals the following: first, the public debt increased because government decided to reduce its tax collections, not because it decided to increase its productive investment. Second, such increases to public and publicly-sponsored investment (procurement) that did occur during the 1980s were mainly military: civilian public investment declined.

So, as a matter of empirical fact, increased government borrowing during the 1980s did not result in increased productive investment. From the perspective of economic growth, this was economically sterile borrowing. However, this was the result of the policy choices and spending decisions of the **Reagan** and Bush administration, and not the inevitable consequence of

public borrowing. A different set of policy choices could have used government's power to incur debt to increase productive investment. Nor is it useful, or even sensible, to understand debt-financed public spending or investment as "dissavings."

Macro-Economics, Structural Factors, and Technical Progress

In recent years, standard economics has become more open to a more structural analysis of the relationship between savings, investment, technical progress and growth. Not very long ago, most mainstream economists would have agreed with the following three propositions:

- First, the main economic policy problem was the macroeconomic imbalance: and the nature of the macro imbalance was too large a public deficit and too small a private savings rate.
- Secondly, structural factors did not matter very much as determinants of growth. What drove growth was allocative efficiency — supply and demand, mediated by price signals— deploying productive resources to their optimal use, hopefully in the context of government macroeconomic policy that at least did no damage. Technological progress was exogenous, and something of a mysterious "black box": whatever technological inventions that were useful, or structural arrangements that were efficient, would be discerned and invented by market forces.
- Third, government investment, at most, should be confined to broad categories of "public goods," such as a well-educated workforce, highways, water and sewer systems and the like, and generic basic research. Efforts by public policy to improve upon the dynamics of allocative efficiency, by "picking winners," would worsen welfare, either by leading to economically sub-optimal allocations or resources, or - more narrowly - because our particular system of government was likely to make politically

corrupted decisions even if experts possibly had the wisdom to outguess markets.

There has been substantial revision of late, on all three fronts. As the economists' letter of March 30, 1992, organized by James Tobin and Robert Solow reminds us, conventional wisdom about deficits aside, the real macroeconomic challenge is to raise the rate of investment, not to reduce the deficit as an end in itself. And after more than a decade of research comparing the structural advantages and disadvantages of different forms of capitalism, there is a growing consensus that structural factors matter.

There is also a new interest in the details of technical progress, its wellsprings and its influence on economic growth. Standard neoclassical economics has had difficulty with this aspect of the story because it cannot readily be modeled. In a static model of the economy, increased capital investment is necessary to accommodate increased employment, but the trajectory of technological advance is not part of the story. In a more dynamic conception, capital investment is virtuous not just because it creates additional employment but because it generates technical progress over time, which is the real driver of long-term increases in living standards. When capital investment occurs at high rates over time, not only is full employment possible but technical progress is more likely. This is the connection between the macroeconomic and the structural sources of growth that has been largely neglected in the conventional conversation.

*The New **Structuralism***

From all parts of the political spectrum there is new respect for a structural view of what accounts for economic efficiency. The work of Laura Tyson, Ray Marshall (liberal), Paul Krugman (moderate), Paul Romer (conservative), as well as a voluminous body of case literature from the business schools by writers such as Michael Porter, David Yoffie, Richard Vietor, and others, suggests that what drives growth is not primarily macroeconomic virtue (high savings, low deficits), but how the different factors

of production come together. These elements include the nature of the system of education and training and its relation to production; the way labor interacts with management: the way the financial economy interacts with the real economy: how business interacts with government; and, how government policies and public investments influence and diffuse technical learning. There is a renewed respect for the institutional details of how American capitalism compares with its German and Japanese cousins on the crucial issue of the translation of savings into productive investment. A few examples of this new work suggests its breadth:

I. A forthcoming collection of papers edited by Michael Porter considers the famous “short-time horizons” that cause American investors to make speculative investments in the hope of quick payoffs, while their German and Japanese rivals commit capital more productively for the long-term (Porter, 1992). The 18 papers, by some of America’s most eminent economists, emphasize differences in the structure of capital markets, the interlock between banks and corporations overseas, the contingent nature of relations between suppliers and customers, investors and managers, executives and workers, in the United States. Macroeconomic imbalance is described as a contributing factor, but a small part of the story.

II. Work on strategic trade theory by Krugman and others noted that the modern wealth of nations is based substantially on nations’ ability to capture technologically advanced production: that the location of advanced production is partly arbitrary: and, it does not reflect traditional static comparative advantage, but involves technical learning, which once created is likely to be cumulative. First-mover advantages in, say, aircraft or semiconductors, produce high profits, “rents” that could be translated into high wages as what Lawrence Katz and Lawrence Summers have termed “labor rents” (See Katz and Summers), and which could also be invested in new innovation and technical refinement to allow the first mover to “slide down the learning curve” and stay ahead of the competition. Alternatively, aggressively mercantilist nations like Japan or Korea could discern the advantages of

techno-nationalism and practice neo-mercantilist policies in order to “shift profits” from the first-mover nation to the catch-up nation, and “capture advantage.”

However, despite this rather heroic revisionism, Krugman remains something of a traditionalist — on three counts. First, he conceives of this exercise as a zero-sum game. A few nations can practice strategic trade, but everybody cannot: for there are not enough rents to go around. Second, it would be better if everybody practiced strategic economic disarmament and agreed not to engage in strategic profit shifting. And finally, Krugman remains only the most cautious interventionist because as a neo-classical economist he is skeptical of the potential for benign collective action and wary of the likelihood that politically tainted government will allocate capital inefficiently.

III. A complement to the revisionism of Krugman is the “New Growth Theory” associated with the work of Paul Romer. Romer, a Chicago-trained economist now at the University of California at Berkeley, challenges the premise of neo-classical economics that technology is a largely unknowable black box. In Romer’s work, also known as “**endogenous** growth theory,” technical advance is what drives growth, and markets cannot possibly price investments in research or technology optimally. For Romer, the traditional concept of an “externality” — the private return not capturing all of the social return — only scratches the surface of why markets fail to invest adequately in technical advances. The real question is the relative degree of rivalry or cooperation in the exploitation of technical learning. If there is too much rivalry and knowledge remains narrowly proprietary, technical progress will not be diffused at a socially optimal rate. (Imagine, for example, if IBM had opted for a proprietary operating system and had refused to permit outside vendors to write software). But if diffusion is instantaneous, there will be no incentive to invest in innovation, for there will be no rents. As Romer notes, the existence of patents, copyrights, and trademarks is a commonplace but widely ignored manifestation of the need for policy choices to attempt to create balance between the incentives for proprietary innovation on the one hand,

and broad diffusion of that innovation on the other.

As Romer astutely observes, society's broad need to create incentives for innovation requires one set of pricing behaviors and investment decisions "ex ante." Before the fact, we want all the rewards (rents) to accrue to the innovator, so that he will endeavor to innovate in order to reap high profits. But once the innovation is available, it is in the interest of economic growth that the innovation be as cheaply and widely available as possible. There is no way for market pricing mechanisms to reconcile "optimal" pricing ex ante and ex post. Romer, in effect, picks up the traces of Schumpeterian economics, in which rents are a good thing, not a bad thing, and in which excessive, price-mediated competition can indeed be ruinous. The issue is not how to eliminate rents by competing them away — a circumstance that would lead to zero investment — but rather to think hard about the institutional circumstances in which rents will be used productively. In effect, Romer connects this Schumpeterian insight to other insights of institutional and industrial-organization economics, associated with F.M. Scherer and others — but in a mathematically formal fashion.

Obviously, technology policy and industrial policy, public investment, and the influence of public policies on how the factors of production come together, all have immense influence on how innovation is created and how it is diffused. The diffusion of technical learning — the real source of growth — is not necessarily a zero sum game. Technical progress stimulated by public outlay can enhance everyone's welfare — it can even improve on the "allocative efficiency" of market forces — *if we* can agree on rules that allow neither firms nor nations to play this game in a predatory fashion.

Critics of standard economics have long noted the disjuncture between macroeconomics — the study of aggregates — and micro-economics — the study of price setting by firms. But in the new synthesis now emerging, the challenge is the reconnection of macroeconomics not with price-setting but with the new structural economics that investigates how the factors of production come together. At the level of public policy, the challenge for

macroeconomics is to stimulate higher rates of investment (not savings). The challenge for “structural” (not micro) policy is to encourage the factors of production to come together in a more technically dynamic and efficient fashion, so that the investment is used more productively. In this new synthesis, traditional microeconomics (price theory assuming general equilibrium) can be substantially discarded as an intellectually sterile form of scholasticism in favor of a new institutionalism.

The innovators who have devised pieces of this emerging frame are gradually constructing an alternative paradigm, in which competition is normally imperfect, government-business links are highly salient, rents widespread, and first-mover advantages key (in such capital-intensive industries as telecommunications, aircraft, semiconductors, etc.) — and therefore laissez-faire approaches to trade, technology, and investment policy cannot possibly be optimal. Labor market policy is also an important part of this emerging story, and investment means not just physical capital but human capital as well.

Moreover, the relationship between higher rates of investment and productivity growth, and the goal of good jobs and high wages, also bear further investigation. It is possible to have increased rates of social investment and productivity growth, and still have an economy with too many low-wage jobs. While a more knowledge-intensive economy is generally consistent with higher growth and higher wages, the way that technology is diffused and how it translates into improved employment is by no means mechanistically determined. Labor market policy, and the relationship between public investment and the goal of upskilling the workforce, is the subject of a related and equally salient set of policy questions.

These various revisions add up to an emerging paradigm in which:

- Macroeconomics still matters, but in the current slow growth trap sensible macroeconomics begins by stimulating investment, not trying to increase savings.

- Public investment does not crowd out private investment, except during rare moments of very high growth and full employment: on the contrary, it often complements private investment.
- Public investment enhances overall investment, not just macroeconomically, but by enhancing and diffusing technical learning.
- Structural issues matter: these include not just the quality of inputs (workers, managers, machines, banks) but also the efficiency of the system that brings the factors of production together.

Where the debate is still encumbered by old assumptions is at the level of the appropriate policy interventions. Even if structural factors matter at least as much as macroeconomic ones, great skepticism still reigns about the capacity of government to intervene competently. It is to the specific policy interventions on behalf of investment-led growth that we now turn.

The Fiscal Politics of Investment-led Growth

With this reframing of macroeconomics and its relationship to structural issues as a prologue, the policy questions become much more concrete and tangible. If public investment, and public research and development outlay can indeed lead growth, then the real issues involve what sorts of institutional arrangements will increase the likelihood that government outlay will lead growth competently and wisely. This raises a host of policy questions.

Capital Budgeting

The first of these is the nature of public budgeting. It is easy enough to agree in principle to distinguish consumption from investment and that the federal government ought to have a capital budget, on the model of a private firm or a municipality. The more difficult challenge is the design of a capital budgeting schema that differentiates capital spending from current (consumption) spending in a fiscally defensible way, and integrates it with the

fiscal and macroeconomic responsibilities of the federal government. There have been three distinct efforts in this century to devise a federal capital budget. President Roosevelt proposed it in 1939. A budget commission recommended the idea again in 1965; most recently during the first Reagan administration then Treasury Secretary Donald Regan seriously pursued the idea, armed with support from the General Accounting Office.

Each time, the capital budgeting idea has fallen before objections that it would merely open the door to fiscal profligacy in which spending were redesignated “investment”. The history of municipal government is replete with examples of mayors who shifted current outlays onto capital budgets in order to avoid difficult choices of raising revenues or choosing among competing candidates for current spending. As Aaron Wildavsky wrote in his classic work, *The New Politics of the Budgetary Process*, “Economically, the idea has a great deal of merit. A separate capital budget would help focus on national investment needs (but) the immediate response of budgeters once provided with an operating and a capital budget, would in all likelihood be to transfer as many expenditures as possible from the operating to the capital budget” (1988, p. 422). This has remained the prevailing view.

Conceptually, one might define as a capital outlay a project that generates an income stream which eventually pays off the initial investment, such as the interstate highway system, or a federal hydroelectric dam. Thus, the debt that is incurred can be segregated from the general public debt. The more difficult case is a public investment adding to public infrastructure that arguably contributes to society’s overall productivity, but that lacks any self-liquidating “sinking fund” mechanism, and thus must be paid off or rolled over in the same manner as any other portion of the public debt. The softest case of all is a human capital investment, which presumably also makes society more productive, but leaves most traditional budget analysts skeptical on the ground that it is not a hard piece of physical capital.

In the current budget system, the Office of Management and Budget (OMB) does conduct a special analysis estimating what fraction of current

spending should be considered “investment,” though this has no effect on how national debt is accounted. For example, \$10 billion worth of science, technology and space programs are considered investments by OMB. Likewise, \$24.8 billion worth of transportation spending, and \$42.5 billion worth of education, training, and other social outlay is scored as human capital investment. In the narrowest category, “Direct Public Physical Capital,” the federal government in FY1993 will spend \$76.5 billion on defense capital, and \$20.8 billion on non-defense. All told, OMB considers 8.8 percent of **FY1993** spending as investment.

Public investment outlays, however counted, have declined during the 1980s. Public infrastructure investment for instance, dropped from 2.3 percent of GNP in 1960 to 1.14 percent of GNP in 1980 to 0.75 percent in 1990. Social investment declined, too (Congressional Budget Office {CBO} 1988, p. 130, and CBO 1992, Table 29-3). Looked at still another way, the net value of non-defense federal capital spending, after depreciation, increased about 60 percent between 1960 and 1980. Since 1980, it has been declining. In 1993, it will be slightly below 1960 levels (Budget Special Analysis, “Physical and other Capital Presentation, 1992, Table 29-3).

There are three distinct conceptual questions at issue: To what degree should physical and social infrastructure spending be put on a capital budget basis for purposes of segregating part of the deficit and public debt? To be considered part of a capital budget, must an outlay be self-liquidating? Should a capital outlay be subject to a dedicated revenue stream as fiscal insulation against being sacrificed to general deficit-reduction? Any budgeting schema is somewhat arbitrary, but we who advocate the use of capital budgets need to convincing answers to these questions, lest we invite the charge that public “investment” is nothing but the latest euphemism for deficit spending.

The Case for A Capital Budget

In constructing a serious capital budget, it would be necessary to refine OMB's criteria and then to truly segregate capital outlay from current

spending. Debt incurred for capital outlay can then be divided into two categories — that which is self-liquidating, and that which must be repaid out of general government financing. OMB makes a fairly arbitrary calculation of what is capital spending, based not on whether there is a dedicated revenue stream to pay off the investment, but simply based on whether the investment represents a long-lived asset. In the present budgetary schema, OMB can do this without serious regard to the consequences because its capital budgeting exercise has no fiscal impact with respect to the accounting or the management of the public debt.

As a general fiscal principle, one might contend that the current outlay portion of the budget ought to fluctuate over the business cycle, while the government may incur additional long-term debt as necessary for capital outlays: the capital portion of the debt, like the current portion, would be more or less stable as a fraction of GNP. There is no good a priori test of how much debt is sustainable. In past decades, a somewhat higher level of public debt coexisted with higher rates of growth and lower interest rates. That alone suggests that there is room for temporary increases in the ratio of debt to GNP if the debt is used wisely and result is to restore growth.

A related question is whether pools of social savings, such as the social security surplus, should be segregated and treated literally as investable capital rather than as an accounting claim against future payroll tax revenue streams that are essentially part of general government revenue.

If we are to have a capital budget, it is also necessary to build in the depreciation of publicly-owned assets. Capital outlays are not entirely net additions to the capital stock. Some large fraction of this expenditure goes to repair or to replace existing infrastructure. Nominally, this acknowledgment will compound the measured deficit problem, since it will underscore the need for even higher levels of public investment. But it is part of necessary budget reform if a capital budget is to be more than an accounting gimmick.

However we ultimately decide these questions, which are in part subjective and arbitrary, it is crucial to redesign the budget system so that we

can tell at any given moment how much of public outlay is going for consumption and how much for investment. Without this accounting reform, we are left with the surmise that **all** government outlay is by definition consumption, we are unable to differentiate virtuous debt from vicious debt, and public debate falls prey to the fallacy noted by Heilbroner (above) that all government deficit spending is “dissavings” rather than part social consumption and part social investment.

Should Capital Outlays Be Self-Liquidating?

Logically, if long-term outlays for capital investment must be self-liquidating, that leads to more dedicated revenue sources and even to separate classes of bonds. To some extent, this is currently the case, though many of the “off-budget” government loan programs, with de facto government guarantees, are not technically part of the national debt.

These are not limited solely to physical capital. It is possible for relatively soft, human-capital investment to be financed in a self-liquidating fashion, such as the present guaranteed student loan program, or the more sweeping Economic Policy Institute/Bluestone proposal (1990) for a post-secondary education loan entitlement that has been embraced by the Clinton campaign. Under that proposal, all high school graduates would have an entitlement to borrow to pay for a significant portion of their post-secondary-education costs, with the loan to be repaid as a fraction of their lifetime earnings. Thus, this portion of the human-capital budget would be **self-financing**, like a trust fund, and would be repaid by a workforce whose productivity had been enhanced by the additional education and training. At the same time, it probably does not make sense to finance all human capital and labor market spending in a self-liquidating manner, even it were all considered capital spending.

Dedicated Revenue Streams

The issue of whether public investment should be financed by dedicated

revenue streams is a well-worn debate. The advantage is that revenue sources such as highway or airport trust funds are somewhat insulated from current budget-cutting pressures, though even in these cases the administration has on occasion succeeded in freezing outlays. The disadvantage is a lack of flexibility and the risk that powerful political constituencies, such as the highway lobby, lock in uses of public investment that may be less than optimal.

However, as the evolution of federal transportation policy and the social security program, among others, suggest, the use of dedicated sources of revenue need not prove paralyzing. Permissible uses of the payroll tax and the tax on gasoline have changed over time as Congress revised public priorities. In principle, it ought to be possible to segregate sources of revenue and trust funds, for public infrastructure outlay purposes.

Public Infrastructure as a Permanent Countercyclical Strategy

Some economists have objected that public capital spending would not work as a recovery strategy because projects may simply take too long to gear up; that by the time big capital spending projects were fully on stream, a recovery might well have begun and the whole approach would turn out to be procyclical. This concern is misplaced.

First, while many projects indeed have long lead times, the shortfall in infrastructure-funding during the 1980s has left localities with tens of billions worth of pre-approved deferred maintenance and construction projects that could be started up in a matter of weeks. According to a February 1992 report by the U.S. Conference of Mayors, a survey of 305 U.S. cities revealed some 4,543 “ready to go” deferred public works projects, which would cost \$12.9 billion this fiscal year and a total project cost of \$26.7 billion. That figure is itself artificially depressed, because as the fiscal squeeze intensified, cities deferred project-planning as well as outlay.

Second, if public infrastructure funding were used as a permanent countercyclical strategy, states and localities could plan projects, get through

the local pre-approval process, and have such projects on the shelf, ready to go. A countercyclical infrastructure strategy could tie special federal debt-financing, or matching formulas, to local unemployment rates. For example, when local unemployment rates hit, say seven percent, federal capital funds could be released for a variety of local maintenance and infrastructure outlays, or federal matching-grant formulas could be sweetened, or additional tax-exempt or federally guaranteed bonding could be authorized.

Other critics have expressed concern that this approach might lead states and localities to hold back outlays, pending downturns, as a way of gaming the system and increasing their federal aid. This problem, however, could be addressed by conditioning counter-cyclical federal aid on a maintenance-of-outlay formula or “fiscal effort” index that would prevent or limit the ability of localities to manipulate the system.

Much of the expressed worry about long lead times is simply miscast. During the first six months of 1942, the War Department entered some \$50 billion worth of military contracts — more than the entire economy had ever produced in a single year. Tens of billions of dollars worth of infrastructure were constructed on a crash basis.

The plain fact is that federal infrastructure investment has declined, from a peak of 5.5 percent of all federal outlays in 1965, to just 2.5 percent of federal outlays in 1990 (CBO 199 1, p. 14). This decline has occurred during a period when public infrastructure has plainly deteriorated. So there is now a significant backlog, as well as an ongoing need for a higher trajectory of public infrastructure spending. These deferred needs are candidates for outlays that could spur a recovery, stimulate technological advance, and lead to a permanent higher rate of growth.

Countercyclical Private Investment

A countercyclical program of public investment could be complemented by a countercyclical program of private investment. The familiar federal investment tax credit is only one of many possible approaches. For example,

an alternative could be modelled on the Swedish investment reserve program. Under this approach, Swedish tax law permits corporations to set aside capital “reserves,” and to take a tax deduction against them. These reserves are normally held in blocked accounts. When the government perceives the economy, or a particular region, heading into a downturn, the reserves are then freed to be invested according to a set of fairly broad criteria, at the discretion of the private company. This strategy counteracts the normal tendency of private corporations to defer capital spending during recessions

(which is pro-cyclical and thus contributes to the deepening of recessions). A more highly targeted version of the traditional investment tax credit could also be part of this strategy.

Infrastructure Spending as a Technology Driver

For half a century, the U.S. commercial economy has derived immense benefits from federal investments in infrastructure. These include not just the infrastructure itself, but the cumulative technical knowledge derived from the investments. Federal outlay also stimulated technical innovation through civilian R&D subsidies, and through military contracts. Indirectly, public investment drives technology by providing assured markets for new generations of products, whether these be earth-moving equipment, jet aircraft or supercomputers. During the cold war, the overwhelming majority of these investments, of course, have been military or “dual use” technologies which the government has supported for military purposes. With the cold war winding down, however, the U.S. economy is at risk of losing the benefits of this unacknowledged industrial or technology policy.

It is here that the issues of conversion, technology policy, industrial policy, infrastructure policy and environmentalism all intersect. In a post-cold war era, there are several possible strategies for retargeting Federal military

outlays to preserve the immense public investment benefits that in the past have been accepted ideologically mainly as incidental spillovers.

The National Laboratories

Government could use public investment to accelerate development and diffusion of technology via redirecting the mission of the national laboratories. Under legislation enacted by Congress in 1986, and revised in 1989, both federally-run national labs, as well as contractor-operated national labs such

as Lawrence-Livermore and Los **Alamos** (which are run by the University of California for the federal Department of Energy) are now available for commercial, civilian purposes.

The legislation allows a private **firm** or consortium of firms to propose a “Cooperative Research and Development Agreement” (CRADA) with one or more of the national labs. Under a CRADA, the private firm contributes personnel or money, or both. For example, General Motors scientists are currently at Los **Alamos** under a 1990 CRADA to develop a commercial fuel cell for an electric car. CRADA proposals are reviewed by government scientists at the national labs for technical feasibility. The government and the private **firm** then negotiate about how the fruits of technical invention are to be shared. The typical CRADA gives any patents to the national lab, however the private company may get exclusive licensing for a period of, say, five years, depending on its share of the project costs.

The available funds for **CRADAs** are currently limited, but could be increased as the military need for the national labs decreases. Alternatively, as Rep. George Brown, the Chairman of the House Committee on Science and Technology has proposed, one or more of the national labs could be converted to exclusively commercial uses. It is also possible, either through the national laboratories or through new agencies of “industrial extension” to increase funding on diffusion of available technologies, so that manufacturing plants

benefit from current best practices. The Department of Agriculture, one of America's oldest and most successful agencies of industrial policy and social infrastructure, has historically spend about fifty percent of its entire budget on the diffusion of available knowledge. The national laboratories spend an estimated half of one percent of their budgets on diffusion of technology.

One benefit of this approach is that it lays to rest the concern that bureaucrats will be in charge of targeting technologies. As a technology policy, this approach is at the opposite end of the continuum from the stereotypical commissar picking winners and losers in a market vacuum. On the contrary, opportunities for technical breakthroughs are identified primarily by private-market firms, which also bring significant resources to the table.

Large Scale Technology/Infrastructure Projects

In addition to a relatively passive "market-led" strategy that waits for private industry to identify technological opportunities, government can also target broad candidates for public investment that would simultaneously serve public needs, create jobs, and accelerate technical learning and hence the competitiveness of domestic industry. In these cases, industry currently does not perceive investment opportunities because of the absence of markets that are unlikely to arise without increased public expenditure. Some examples are:

I. Targeting federal investment to advanced transportation systems

These might include conventional high speed rail and magnetically levitated ("Maglev") rail systems. Government could also invest in "intelligent highway" technology, and more efficient short-haul aircraft and related airport infrastructure. All of these investments could combine needed infrastructure with advanced technology, and would be the customers for new high-tech industries, in just the way that the Pentagon has stimulated defense industry in the past. The weakness in American production of rail technology and rail

cars is directly related to the weakness of the domestic market and the near absence of federal involvement. By contrast, the countries with strong rail production export industries — France, Germany, Japan — are those **where** national transportation policy uses public infrastructure to create a reliable domestic market.

II. **The use of regulatory and tax policy changes, as well as public procurement, to stimulate investment in optical fibre transmission lines**

Fibre-optic lines are the **next** generation of telecommunications. This technology was invented in the United States. However, a tangle of regulatory obstacles in the wake of the deregulation and breakup of the Bell System discourage regional telephone operating companies from accelerated investment in optical fibre lines, since it remains unclear whether they will be merely common carriers or will be permitted to offer consumers enhanced services. In addition, the interaction of tax depreciation policy and rate-base regulation policy encourages operating companies to depreciate capital assets, in this case telephone lines, very slowly, which may retard the rate of investment in new fibre-optic lines. Streamlining these tax and regulatory policies, in accord with a new national plan to install fibre-optic lines and complete conversion to digital switching would allow on-line access to databases, libraries, and enhanced services, to all homes and offices in the nation. The return to productivity would be enormous, as would the stimulus to the telecommunications industry.

M. **Development of cleaner electrical power**

The environmental crisis, all by itself, is reason enough for enhanced public infrastructure investment. A variety of power-generation projects are **worth** additional public investment. These range from fairly small-scale initiatives led by industry, such as the fuel cell project, to technologies developed by direct public investment, such as the artificial geothermal “**heat-mining**” technology being pioneered at Los **Alamos**. In this technology,

deep holes are drilled, water is forced down into dry hot rocks, and then piped back out as steam to drive turbines. The Department of Energy is also putting some public funds into development of photovoltaic technology, though less intensively than a counterpart Japanese project.

IV. Investment in improved waste disposal technology

Yet another obvious candidate for increased public investment is waste disposal. Conventional solid waste disposal is already overwhelming available landfills. More efficient technology for recycling deserves accelerated development. Likewise, we are falling behind in the modernization of municipal water and sewer treatment facilities. Under the Reagan and Bush administrations, federal aid for water and sewer treatment has dwindled to a trickle, while federal regulation of water standards has been expanded. Between 1972 and 1987, the federal Clean Water Act contained construction grants, typically on a 70-30 percent matching basis. States generally contributed 20 percent, leaving municipalities to come up with the last 10 percent. Federal aid during this period totalled about \$60 billion. But the construction grant program was eliminated by the Reagan administration in 1987.

New York City alone needs to finance over \$10 billion worth of clean water projects. Other cities are under court order to come into compliance with federal clean water standards, and simply lack the resources. EPA puts the cost of work in sewage treatment plants at \$83.5 billion over the next decade, almost none of which will come out of currently budgeted federal funds. EPA's regulations to reduce lead content in drinking water alone will cost municipalities over \$7 billion.

V. New federal and state agencies

In the area of technology policy, Congress has experimented with new institutions, such as the Sematech consortium. There have also been calls for a "civilian DARPA," and for expansion of the National Institute of Standards and Technology, which the Bush administration opposed and keeps funded at token levels. Another idea with currency is an industrial extension service. BY

the same token, large-scale infrastructure might require new capital-funding agencies, and the recapitalization of the banking system might require a new RFC. The institutional design of such agencies is beyond the scope of this paper.

The Infrastructure Pork Barrel

Traditionally, many economists have opposed national economic planning on the ground that it transgressed the market's allocative efficiency. Lately, there has been more acceptance **among** economists that markets do not always optimize capital outlays, and that research and development expenditures, in particular, have social returns that exceed their private return. The economists' critique has lately shifted ground, and it is now really more of a political science critique claiming that our particular system of government and politics is uniquely vulnerable to special interest group pressures and pork barrel politics.

A characteristic artifact is a recent book *The Technology Pork Barrel* (Cohen and Noll, eds. 1991). In this book, the authors begin by conceding that research and development outlays account for a significant fraction of economic growth, that R&D is a classic externality and that under-investment by private **firms** is pervasive. However they express skepticism that government can target public investment competently. The six case studies in the book are heavily weighted to projects widely held to have been tainted by interest group politics: The Supersonic Transport (SST); the space shuttle; the Clinch River Breeder Reactor; communications satellites; the Carter-era Synfuels Corporation; and, the Department of Energy's photovoltaics commercialization program.

With the exception of the photovoltaics commercialization program, this list generally is heavily weighted towards "big science" — that is, towards single large projects. One antidote against pork-barrel **politicalization** is **smaller-scale** projects: the CRADA experience to date at the national laboratories has been largely free of congressional pressures, because the sums are too small

and because the proposals are originated by private industry and are peer-reviewed by scientists for technical quality.

Another response, in the case of large-scale projects such as water and sewer grants, is that a benign kind of pork barrel is entirely appropriate. The entire nation needs a generation of investment in clean water, for example, and it is necessary substantively and politically for this public infrastructure to be broadly spread around. However, advocates of investment-led growth do need to give serious attention to the pork-barrel critique, and to identify approaches domestically and abroad that minimize the risk of political pressure to fund projects that do not otherwise pass muster on their merits. Ironically, the national antipathy to planning leads American programs to avoid objective criteria, which then all but guarantee that decisions will be made largely in response to special interest pressures.

International Implications

In a global market for capital and products, the idea of a public investment-led recovery collides with two international realities. One has to do with the global nature of money markets, and the partial dependence of the U.S. Treasury on foreign investment. Doubtlessly, nay-sayers will argue that a larger national debt, even for purposes more virtuous than those characteristic of the 1980s, will lead either to old-fashioned “crowding out,” with higher capital costs for domestic private industry, or to an over-valued dollar. But in recent years, there has simply been no capital shortage because there has been no pent-up demand for investment capital. Even as Japanese capital has been flowing out, the Treasury has had no difficulty selling its securities at surprisingly moderate interest costs.

A related concern is the “Mitterrand dilemma.” In 1981, the new French Socialist government decided to go its own way, and adopt a policy of ultra-Keynesian reflation at a time when the rest of the OECD was pursuing monetarist policies of contraction. The result was an increase of imports into France, a current account imbalance, pressure against the franc and

ignominious retreat. However, a public investment-led recovery sponsored by the U.S. would be quite different in two key respects. First, as the Reagan experience showed, the dollar is still different from the currencies of non-hegemonic nations. The U.S. has been able to run large deficits, without creating a flight from the dollar, since the entire world has a stake in the dollar not crashing. (In the early **1980s**, the **Reagan/Volcker** program had the opposite perverse effect — very high domestic interest rates and an over-valued dollar — however, this was the result of the Feds tight money policy, not the result of public deficits.) Moreover, because of the continuing global influence of the U.S., if the U.S. shifted to a strategy of higher growth led by public investment, other nations would likely follow suit. OECD labor economists have long recommended infrastructure-led growth as a job creation strategy in which relatively little of the new demand leaks out into imports, because most inputs of public infrastructure ordinarily tend to be domestic.

This raises a second concern. There is no practical way for infrastructure-led growth to be entirely consistent with conventionally defined free trade — especially when conversion of **military** outlay is a related policy goal. The fact that military procurement violates GATT-style free trade has never been a major issue, for it is normal for great powers to desire that their military purchases be substantially domestic. But in the context of conversion, competing foreign vendors can complain that a government is unfairly favoring a domestic producer. A good example is the recent controversy over the new subway line in Los Angeles. Initially, the **local** transit authorities recommended that subway cars be purchased from Sumitomo. Subsequently, a domestic manufacturer was able to get the contract by promising that many of the jobs would be located in Los Angeles, in a former plant that was a casualty of defense cutbacks.

In such circumstances, where public policy is attempting to ease the transition caused by a reduction in defense-related procurement, it is entirely legitimate to give preference to domestic producers. This does not mean only producers owned by U.S. investors. Foreign-owned firms should be able to

qualify as domestic producers if they have significant U.S. production, if they do research and development in the U.S., and if they do not discriminate against Americans in their hiring and promotion practices. But if an infrastructure program is intended to have conversion, employment or technological benefits for American companies, it must obviously decide what it takes to qualify as an American company.

Conclusion

The extreme claims of the supply-side era have been refuted by the practical experience of the 1980s. The supply-side experiment did serious damage to the economy: it also did intellectual damage by creating a debt-deflation trap which many serious people believed could be cured only by further retrenchment of the public sector and by greater economic austerity. But the slow growth trap will not yield to an austerity cure. The proper cure is to restore investment by relying initially on public expenditure.

In order for this to work, several complementary reforms are required — in the way we budget, in the way government stimulates technology, in the way the financial economy serves the real economy by channeling savings to investment, and in the way the different factors of production come together.

The first necessary reform, however, is intellectual. It may seem counter-intuitive to argue that the cure for a debt-burdened economy is a dose of more productive debt, but the alternative is another lost decade. We need new ways to think about the old chestnuts of economics — savings and investment, allocative efficiency and dynamic efficiency, the sources of technical progress, and the constructive impact of the public sector on the private economy. We need to reclaim the institutional tradition in economic thought, and examine in detail how the various structures of the economy fit together, and how public policy influences their efficiency. As the intellectual wreckage of supply-side era is swept aside, new thinking is required on all fronts.

This new theoretical work complements a growing resurgence of institutionalist interest in the dynamics of diffusion (Kelly and Brooks, 1989). The diffusion of a technical innovation is, of course, not instantaneous. And the circumstances of its adoption and refinement matter at least as much as the incentives for its invention. Japan scholars have observed that the blend of stability and flexibility in the *keiretsu* system allow that nation's corporations to rapidly diffuse best-practice manufacturing techniques (Dore 1986). As Kelley observes in a forthcoming study for the Office of Technology Assessment, the system of Pentagon subcontracting, which demands that even second tier suppliers be able to produce the most advanced components, functions as something of an inadvertent diffusion policy in the U.S. By the same token, regulatory policy influences diffusion. Before the break-up of AT&T, Bell Labs, as the creature of a regulated monopoly, was generally required to license its innovations, and served as a broad source of diffusion. Much of that has been lost with deregulation.

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Bibliography

Bemheim, B. Douglas. *The Vanishing Nest-Egg*. New York, NY: Twentieth Century Fund, 1991.

Blecker, Robert. *Are Americans on a Consumption Binge?* Washington, DC: Economic Policy Institute, 1991a.

Blecker, Robert A. "Low Saving Rates and the 'Twin Deficits': Confusing the Symptoms and Causes of Economic Decline." In Paul Davidson and J. A. Kregel, eds.. *Economic Problems of the 1990s*. Aldershot. Hants (UK) and Brookfield, VT (USA): Edward Elgar Publishing Co., 1991b.

Block, Fred. "Personal Savings: Concepts, Measures, and Results," unpublished paper, 1991.

Block, Fred and Robert Heilbroner. "A Second Paradox of Thrift: Liquidity and the Future", unpublished paper, 1991.

Cohen, Linda R. and Roger G. Noll. *The Technology Pork Barrel*. Washington, DC: The Brookings Institution, 1991.

Congressional Budget Office. *New Directions for the Nation's Public Works*. Washington, DC, 1988.

Congressional Budget Office. *The Budget of the U.S. Government for Fiscal Year 1993, Special Analysis*: Washington, DC, 1992.

Congressional Budget Office. *How Federal Spending for Infrastructure and Other Public Investments Affects the Economy*. Washington, DC, 1991.

Dore, Ronald. *Flexible Stability: Industrial Policy and Structural Change in the Japanese Economy*. Stanford, CA: Stanford University Press, 1986.

Fisher, Irving. "The Debt-Deflation Theory of Great Depressions." *Econometrica*, Vol. 1, 1933, pp. 335-357.

Katz, Lawrence and Lawrence Summers. *Can Inter-industry Wage Differentials Justify Strategic Trade Policy?* Cambridge, MA: National Bureau of Economic Research, 1988.

Kelley, Maryellen, and Harvey Brooks. "From Breakthrough to Follow Through." *Issues in Science and Technology*, vol. 3, 1989.

Krugman, Paul R. *Rethinking International Trade*. Cambridge, MA: MIT Press, 1990.

Levy, S. Jay and David Levy. *How to Restore Long-Term Prosperity in the United States and Overcome the Contained Depression of the 1990s*. Annandale on Hudson, NY: The Jerome Levy Economics Institute of Bard College, 1992.

Porter, Michael ed. *Capital Choices*. Washington, DC: Council on Competitiveness, 1992.

Romer, Paul M. "Two Strategies for Economic Development: Using Ideas and Producing Ideas," unpublished manuscript, 1992.

Stinedl, Josef. "Capital Gains, Pension Funds, and the Low Saving Ratio in the United States." *Banca Nazionale del Lavoro Quarterly Review*, June 1990, pp. 165-177.

Wildavsky, Aaron. *The New Politics of the Budgetary Process*. Glenview: Scott, Foresman & Company, 1988.