

# The Macroeconomic Considerations of a Public Investment Strategy



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When you arrive at Shanghai's Pudong International Airport, now about a decade old, you find yourself at the terminus of the world's fastest train, a magnetic levitation marvel designed in Germany that takes you downtown at speeds briefly touching 450 kilometers an hour. There is little vibration, not much noise. Only a monitor in the car and the landscape rushing past your window lets you know just how fast you are moving.

Similarly, at the Amsterdam, Paris, or Zurich international airports escalators just beyond customs take you directly to the train station where you can board the sleek *Très Grande Vitesse*, whose rights-of-way now span Western Europe, making major cities from the Mediterranean to the North Sea reachable in a few hours. There are almost no weather delays, no airport security lines, and the train leaves no carbon contrails across the sky.<sup>1</sup>

However, the international traveler arriving at JFK or LAX will find no such fast and efficient way of getting from the airport into New York or Los Angeles, or from city to city in the United States. Why does the United States lag behind when it comes to public transportation? The obstacles to good public transport are neither economic nor technological. The United States is not a poor country. There are no well-guarded secrets held by German railroad engineers. And although America's big cities are more widely spaced than Europe's, geographical distance is not a major impediment. Yet our major transportation corridors are clogged with automobile and truck traffic, our large airports are barely tied to mass transit, let alone to intercity trains, and in many places the only possible way to commute from suburb to city center is by car.

The problems with mass transit are emblematic of a much larger failing. The infrastructure of the United States is in dire need of repair and updating. Our roads, bridges, electrical grid, rail network, water and sewer systems, and public schools, libraries, and parks are inadequate, underfunded, and often poorly maintained. Exploding steam pipes, collapsing bridges, and broken water mains are everyday occurrences.

At the same time, we are facing a major environmental challenge. Left unchecked, global warming will likely lead to irreversible coastal flooding and desertification due to global climate change. Slowing this trend will require us to rely less on fossil fuels and more on renewables, and to establish and adhere to new patterns of energy use in daily life. And it will require us to adopt and observe a new set of rules for the uses of energy in future economic growth.

In order to meet this challenge and to address our future water, power, and transportation requirements, we need a new strategy of public investment. It is only by rebuilding and rewiring the country that we can become an environmentally responsible society while maintaining an acceptable standard of living.

In order to do so, we must overcome a number of obstacles. Some of these obstacles are bound up with federalism and our habits of public finance. Some are linked to interest group politics driven by powerful corporations. Some are the result of the systematic neglect of public capacity brought on by the assault on government by reactionary elites over the past generation. And some are what I would call intellectual landmines, planted by economists, who argue that if we pursue a strategy of major public infrastructure investment we risk blowing up the U.S. economy.

Do the laws of economics and the condition of the U.S. economy stand in the way of a new strategy of public infrastruc-

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ture investment? Are the financial hurdles insuperable, or even substantial? Would the private economy incur an unbearable burden? Would we face inflation, high interest rates, or a flight from the U.S. dollar on world currency markets? And,

to the extent that dangers of this type exist, what policies would be required to keep them under control?

This paper addresses these questions. However, I should say that in reaching my conclusions, I have made a number of (admittedly heroic) assumptions. I assume that a growing understanding of the parlous state of our infrastructure and, especially, of the threat posed by global warming will soon lead to consensus on the need for action. I assume that the federal government can organize a cooperative approach by Congress and state and local governments. I assume that the most vociferous opponents of a new strategy—the coal and oil companies, the automobile companies, aerospace manufacturers, and the airlines—can be overcome. And I assume that the relevant federal agencies can be rebuilt and staffed with competent professionals who enjoy access to the White House.

### Past U.S. Public Investment Initiatives

Contrary to popular myth, U.S. economic development has never been solely the result of private investment. The role of the federal government in public investment goes back to the beginnings of the Republic, to the ideas of Alexander Hamilton, who urged public works programs (especially the building of canals) and trade protection for manufacturing industry.<sup>2</sup>

The year 1862 was a milestone in the history of public investment. Congress passed the Morrill Act, which paved the way for the establishment of land grant colleges and universities, and the Homestead Act, and it removed impediments to the building of the transcontinental railroad. Franklin D. Roosevelt's New Deal marked another major chapter in the history of public investment, with such undertakings as the establishment of the Tennessee Valley Authority to bring electrical power to the rural areas of seven states along the Tennessee River and later the Manhattan Project to build the atomic bomb—a project that at its peak rivaled the automobile industry in size. The Grand Coulee Dam and the Golden Gate Bridge were built. These projects were debt-financed, and properly so. During the Great Depression (as at present), long-term interest rates were low and it made no sense for public authorities to fund capital investment programs by increasing taxes on current income.

After World War II, public policy was driven primarily by corporate interests—automotive, rubber, oil and asphalt, mortgage banking—which led to the explosive growth of suburbia and a population of home-owning commuters linked by the Interstate Highway System. Military research and development helped usher in the age of jet travel and the digital computer, microprocessor, and Internet revolutions. Meanwhile, the railroads, urban mass transit, and city centers declined.

The 1970s and 1980s were marked by fiscal crises and a systematic retreat from federal responsibility in the area of public civil engineering projects.<sup>3</sup> The New York City financial crisis of 1975 and the tax-limitation initiative Proposition 13 in California in 1978 marked this retreat. Since

California and New York City (with the country's second and third largest governments, respectively) had been major infrastructure builders, these events had a significant effect on total public capital formation.<sup>4</sup> During the recession of the early 1980s, fiscal crises and cutbacks were widespread, especially in the Midwest. Even at that date public officials were aware of major deficiencies in road and bridge infrastructure, which were widely noted.<sup>5</sup>

However, the Reagan years saw drastic cutbacks in the federal contribution to infrastructure. Major initiatives in water treatment facilities, rail transport, mass transit, and renewable energy were abruptly curtailed. Federal infrastructure spending peaked in 1980 at \$52 billion (in 1997 dollars) and had not returned to that level as late as 1994. By the late 1990s, according to a 1999 Congressional Budget Office (CBO) study, the share of federal infrastructure spending with respect to GDP was just over half what it had been in 1980.<sup>6</sup>

In 1983, Representatives Lee H. Hamilton and James Howard proposed the creation of a Federal Infrastructure Bank to provide funds on a revolving basis to states and cities, but the idea went nowhere. A similar idea was put forward late in the Clinton administration, but it and other proposals to foster higher levels of systematic infrastructure investment died with the arrival of the Bush administration in 2001. In 2002, as a recession once again pushed state and local governments into financial crisis, a small group led by New York investment banker Felix Rohatyn and California state treasurer Phil Angelides sought to engage the Democratic leadership of Congress in an initiative involving both federal guarantees for public infrastructure borrowing and revenue sharing to support the provision of basic services at the state and city levels. This effort foundered, partly due to political partisanship (the biggest states had Republican governors at the time) and to the distractions of the immediate post-9/11 era, and partly because of the maxims of fiscal orthodoxy. Congress was not ready to consider new departures involving the deliberate increase of public debt. It

was left to the Bush administration to foster economic growth with tax cuts and military spending, which yielded a successful but distorted economic expansion over the following five years.<sup>7</sup>

The failure to attend to public needs burst upon the public consciousness over Labor Day in 2005, when Hurricane Katrina struck a glancing blow at the levees protecting New Orleans, which had been neglected despite repeated requests from the Army Corps of Engineers for the funds to upgrade them. A vast disaster resulted, as the city was swamped and its population scattered; over a thousand people died in the rising waters. And the damage proved irremediable: two years later much of the city remains uninhabited, and the sections that molder prevent the recovery of much of the rest. The wreckage of New Orleans stands as a graphic rebuke to business-as-usual in America so far as public civil engineering is concerned.

### **Weaknesses of the U.S. System for Infrastructure Investment**

Broadly speaking, the present U.S. system for planning, financing, and executing civilian public sector investment suffers from five major deficiencies.

**It's too small.** Relative to the size of the economy, and to need, U.S. public infrastructure investment is insufficient. Existing roads, bridges, city streets, and water and sewer systems are not being systematically maintained, and such needed new infrastructure is not being built.<sup>8</sup> Mass transit is generally poor. Total spending on infrastructure peaked in 1958 at over 3 percent of GDP; it now stands at a little over 2 percent of GDP. The federal contribution to total infrastructure spending peaked at just over 1 percent of GDP in 1980; in the late 1990s, before the cutbacks of the Bush years, it stood at half that. Of these modest investments, a large and privileged fraction has always gone toward highways, leaving non-highway investments chronically short of funds. The results can be seen in deteriorating water systems, clogged ports, decrepit, slow, and unreliable rail lines, and an aging air traffic control system.

**It's too fragmented.** The U.S. system of government generates, in certain parts of the country, a complex maze of state and local public institutions able to influence the course of a major infrastructure initiative. In some ways, this can be a blessing; far too late, some cities (including San Francisco and Boston) were able in the 1960s and 1970s to stop the incursion of the Interstate Highway System through residential neighborhoods and historic districts. But it also makes the planning of ambitious projects daunting to the point of near-impossibility.

**It's distorted by anticompetitive private corporate interests.** In the 1940s, an automotive, rubber, and oil consortium set the U.S. transit system on its current path by buying and dismantling municipal street railways across the country. Such anticompetitive meddling in municipal and regional planning decisions by corporate interests remains rampant, fostering, for example, the building of toll roads instead of mass transit and blocking the building and extent of light rail systems (as we have seen recently in Central Texas). Communications companies have blocked municipalities from providing free broadband Internet access. The country's deregulated electrical power grid, much of which is privately owned, suffers from a lack of investment and maintenance, as evidenced by brownouts and outages, and is subject to price manipulation.

**It's distorted by the military's dominance of basic research.** Much, if not most, U.S.-led civilian public investment in the past 50 years has followed on advanced research conducted initially for military purposes. This is true with respect to energy (nuclear power), transportation (aviation and aerospace), materials science (semiconductors), computers (graphics interfaces, the mouse, and related technologies), and communications (the Internet). Subsequent civilian enterprise in all of these areas dwarfed and, to a degree, obscured their origins in military research. While there is no doubt that we have derived major benefits from the spin-offs of military technology, the emphasis on military research has distorted decision-making regarding

public investment. It is far harder to find the resources required for basic research when there is no military application involved. This fact helps to explain the relative lack of funding for research in energy conservation and renewable energy technologies in the United States.

**It's unresponsive to new needs.** We face a vast new challenge—global warming—which will require a reengineering of power generation, transportation, and the management of forests worldwide. The United States is by far the world's largest source of per capita greenhouse gas emissions. If we are to do our part to limit further environmental damage, we must bring our total emissions down by about half (to present European levels per capita) within a few decades, and by 80 percent or more over the next 50 years. This will mean, among other things, removing coal from the power-generation mix, greatly reducing our reliance on oil for heating and our consumption of gasoline, and retrofitting old buildings to make them energy efficient. However, our public assessing, planning, financing, and enforcement mechanisms are atrophied or functionally nonexistent.

### The Resources Required

Four types of resources are required for an effective program of civilian public investment on a scale required to prevent environmental disaster and at the same time ensure sustainable improvement in living standards in the decades ahead. These are:

**Real resources.** A program of national civilian public investment will place new demands on world supplies of cement, steel, oil and other core commodities, in competition with other countries engaged in similar projects of large-scale construction and reconstruction, notably China.<sup>9</sup> Planning can help avoid the potential for conflict over access to basic commodities, as well as mitigate the risk of global commodity price inflation.

**Financial resources.** With respect to infrastructure development, state and local governments are con-

strained by their taxing capacity and by the credit markets. A public financial mechanism, such as a Federal Infrastructure Bank or targeted revenue sharing, would release state and local governments from these financial constraints. A Federal Infrastructure Bank would be a powerful instrument for public planning and resource allocation.

**Technical resources.** Just as the Internet revolution created a demand for increased numbers of electrical engineers and software designers, a public investment initiative would require technical specialists in such fields as urban design, environmental engineering, energy economics, transportation systems, carbon sequestration, and the management of carbon trading markets. The nation's leading universities and research centers should be encouraged and funded to develop the expertise required to meet the challenges of rebuilding the nation's infrastructure while protecting the environment. Governments at all levels should be supported in their efforts to create institutional settings where the necessary work can be done.

**Planning resources.** The federal government will need a coordinating agency in the executive branch where decisions regarding the goals, objectives, and pacing of a public investment initiative can be made. The establishment of a cabinet-level Department of Climate Policy, which would put the emphasis in the right place, could help overcome bureaucratic and political obstacles, and move the federal budget process in the direction of expanded public civilian investment and capital formation. For its part, Congress should create an Office of Climate Policy Assessment to maintain professional oversight of the executive branch's efforts.

### The Major Macroeconomic Issues

Let us imagine that a new, large-scale civilian public investment initiative is undertaken, with new federal expenditures rising to 2 percent of GDP over a period of a few years, which is to say around \$290 billion a year in current dollars.<sup>10</sup> This sum is large enough to stretch the imagination and the

organizational capacity of the government—it would more than triple the present federal contribution to public investment—but not so large as to be beyond reasonable analysis. Let us assume, further, that this project would be debt-financed. This is appropriate for three reasons: (1) the work will create long-lived public capital assets; (2) present public deficits are small by historical standards;<sup>11</sup> and (3) the economy is not yet at full employment. Budget rules to the contrary are therefore to be overridden. What would be the macroeconomic implications of such a project?

For purposes of comparison, the scale of the anticipated expenditure is roughly half the size of the current national security budget, excluding the cost of the war in Iraq. It is roughly twice the annual cost of the war itself. It is also about the same, relative to GDP, as the surge in private business investment that accompanied the Internet/technology boom in the late 1990s. These comparisons can help us understand the potential impact of such an initiative on inflation, employment, interest rates, and the dollar.

**Inflation.** All wars are to some degree inflationary and the Iraq war has been no exception. However, the war's inflationary impact has been small: so far the underlying core rate of inflation in the United States has gone up by only about one percentage point relative to the very stable average levels of the past 25 years. A government program twice as large could be expected to have perhaps twice the effect, which is neither large nor negligible.

Some substantial part of the inflationary impact of the war is due to the pass-through of the tripling in the price of oil on world markets. However, an effective infrastructure program should have the opposite effect on the price of crude because it would reduce demand for oil. Since public policy would favor a high price for all carbon-based fuels,

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this would create the scope for new taxes on all such fuels to help finance an infrastructure investment program. Thus, an effectively structured program of new investment should have substantially less net inflationary impact than the war in Iraq has had.

Further, a well-managed program of peacetime civilian public investment is likely to be less prone to profiteering than wartime military procurement, for two reasons. First, requirements are less immediately urgent and so (in principle) contractor costs can be supervised more closely. Second, a civilian program, even if it has a strong technological component, arguably places less emphasis on scarce technical resources, which are especially prone to

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rising prices, than a comparable military program. This is because a civilian program can (and should) take into account the costs of alternative ways of achieving the same goals and seek out the lowest-cost methods. (Market-based emissions trading schemes, which have proved effective in reducing sulfur-dioxide emissions in local air sheds, have worked on this principle.)

Finally, a large program of civilian public investment would not be an add-on to the military budget and the Iraq war. With respect to energy security, such an initiative would serve the same purpose as is now being pursued by military means. If the program were phased in as our military commitment in Iraq was phased out, overall inflationary impacts would be substantially less—and even more so if this were to negate the need for aircraft carrier battle groups, the excess overseas postings of troops, and missile defense.

A large-scale public works program could be expected to push up costs in two areas. Prices for commodities related to construction—cement and steel, in particular—would likely rise. A supply strategy may be required to manage this effect. Labor

costs in the United States would also likely rise since the public sector is both a large-scale provider of middle-class jobs and a standard-setter for private sector wages. However, the risk of sustained inflation from this source is minor, because the wage-setting system of overlapping three-year contracts, which created inflationary inertia in wage settlements from the 1950s through the 1970s, no longer exists.

As the Internet boom decisively demonstrated, in the absence of a “transmission belt” of this type, high employment and even rising wages pose little serious additional risk of inflation. Rather, the immediate consequence of higher employment and scarcer labor is an induced increase in productivity growth across the board. That is, labor shortages and higher wage costs, within reason, tend to provoke a search for innovative ways to use labor more efficiently. The higher return to labor then becomes validated, after the fact, by productivity growth. (This is what economists call a “virtuous circle.”)<sup>12</sup>

In sum, there is no compelling reason to fear that a substantial public infrastructure investment program would be inflationary.

**Employment.** The Internet-technology boom raised the employment/population ratio in the United States to nearly 65 percent, a historic record, while reducing poverty to historic lows, including among minorities, youth, and women. Since then, the employment/population ratio has receded to around 63 percent, up less than a point from the trough of activity in late 2002, despite five years of subsequent economic expansion.

A public works initiative on a scale similar to the Internet-technology boom in its final phases should have approximately similar effects on total employment. The net effect would be to push the labor market back toward quasi full employment, with up to two-thirds of the active-age population employed. Labor in unskilled occupations would again become in demand.

As a generator of employment, a public investment initiative would have advantages that exceeded even those of the Internet boom. Its effects would be felt far more widely across the



country. It would initially benefit a different class of worker, with a considerably larger fraction of new employment going to skilled craft persons, construction workers, and other blue-collar trades. It would thus help to correct a job structure that has become increasingly bifurcated between small numbers of highly paid white-collar positions and large numbers of low-paid jobs in hotels, hospitals, and fast-food restaurants. This might have a particularly positive impact on minority communities and workers in currently depressed locations, as well as providing attractive employment to returning veterans. As the residential housing construction slump deepens, it would also help take up the slack presently developing in the building sector.

Against this, one has to weigh what may be a somewhat larger demand for raw commodities associated with large-scale public investment, and hence a larger leakage of demand overseas. However, on balance, construction jobs somewhat resemble the high end of employment in the science and technology sector in that they cannot be readily or entirely outsourced. They can, of course, employ immigrant labor, and the management of demand for immigrant labor should be part of the policy discussion surrounding the implementation of the program. Public sector wage standards are one way to assure that legal residents find the jobs on offer attractive.

**Interest Rates.** Critics assert that efforts to expand the scope of the public sector will drive up interest rates and crowd out private business investment.<sup>13</sup> The accusation is particularly likely to be heard when a proposal explicitly foresees the use of the credit market, deficits, and public debt to finance the expansion.<sup>14</sup>

Are these fears justified? There is a two-part answer to this question, the first related to economic theory, and the second to the specific conditions facing the United States in the world credit markets.

The theory of “crowding out” is based on a common misconception of the nature of savings in our economy, namely the idea that savings are a “pool,” fixed in size, from which the public and private sectors alike draw to finance their desired

rates of spending. No such pool exists. Rather, what we measure as savings is created *after the fact*, by the spending decisions of governments and private businesses. These decisions create income; the difference between income and consumption (the latter, strongly established by habit), is savings.

Historically, savings have tended to rise in good economic times and fall in bad economic times because the household sector had limited direct access to the credit markets. Thus a public budget deficit was practically required for an expansionary policy, and this gave rise to the idea that the public sector competes with the private sector for available funds. In the 1990s, however, the combination of a stock market bubble, a housing boom, and credit market innovations lifted this constraint, especially for upper-income households. The household sector was able to draw, to an unprecedented extent, on loans against home equity (or in some cases, against capital gains in the stock market) to finance current consumption spending. Personal savings went negative as the economy boomed.

A fall in personal savings was thus the counterpart of the consumption boom. The fall in savings also sent the federal budget into surplus: as spending rose, incomes rose, and tax revenues grew. This was, in effect, a “Keynesian devolution”: the economy moved toward full employment on the strength of spending fostered by public policy and, in some important respects, guaranteed by the public sector, but not carried out directly by government.<sup>15</sup> Thus the private (household and corporate) sector ran deficits that the government would, under other conditions, have been obliged to run.

Were the interest rate determined mainly by the pull of federal credit demands on a “pool of savings,” interest rates should have fallen as the federal budget went into surplus. That did not happen. Long-term interest rates remained around 7 percent throughout the period, and only declined toward present values after the Internet bubble burst in 2000. They reflected, in other words, the health of the economy as a whole, and the use of resources in relation to full capacity. After the NASDAQ collapse, and especially following 9/11,

long-term interest rates fell sharply, despite the strong movement of the federal budget into deficit.

If a public investment program (in combination with other policies) were so successful as to bring the economy up to full employment in the near term, it might have a modest effect on long-term interest rates. However, during our last experience with noninflationary full employment in the late 1990s, there were few complaints that long-term interest rates, which were then 200 basis points higher than they are now, were a constraint on private business activity. There is no strong reason to believe that in a new period of full employment this situation would be different. Moreover, the

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scenario of a return to full employment is optimistic. It is now clear that the depressing effects of the slowdown in housing and the fallout from the subprime mortgage crisis will be felt in a slower growth rate of real GDP—perhaps even in a recession. In these circumstances, a major public investment strategy is exactly what will

be needed to stimulate job creation and private investment. However, there is no reason whatsoever to fear that even a large public investment program would raise interest rates significantly.

We can conclude, first, that there is *no* direct connection between federal budget deficits or surpluses and long-term interest rates. Bond-financed public investment poses no significant threat to financial stability on that account. We can also conclude that long-term interest rates *may* be influenced by a combination of capacity pressures in the domestic economy and inflation expectations. However, this effect would be limited by the fact that the domestic economy is unlikely to be at full capacity in any event, and by conditions in the world economy, which determine total effective supply as well as the price for commodities and the value of the dollar.

**Financing Abroad and the Dollar.** This decade has seen the emergence of an unprecedented deficit in the current account and the accumulation of vast reserves of dollar-denominated bonds abroad, especially in China and Japan. The deficit in the external accounts is the accounting counterpart—the exact equal—of the sum of public and private sector deficits in the domestic economy. It is also the accounting counterpart—the exact equal—of the aggregate reserve buildup.

This phenomenon is often referred to as “borrowing from foreigners to finance current consumption,” but again the shorthand is misleading. When an American purchases a Japanese car, credit is created and extended by an American bank. Dollars then change hands, and Honda, say, ends up with an income in dollars, which it converts into yen. The Japanese central bank then uses the dollars (which earn no interest as cash) to purchase U.S. Treasury bonds (or some other yielding asset), on the open market. But America has in no sense borrowed from Japan to finance the purchase of a car. Rather, a bank loan made in the United States has created a dollar asset, which subsequently has been purchased by an institution (the Bank of Japan) that has no immediate use for it and merely chooses to store it in a liquid, interest-bearing form.<sup>16</sup>

The equilibrium of this system is neither balance in the U.S. current account, nor any particular given level of deficits. The equilibrium is, rather, whatever level of dollar reserves the rest of the world economy chooses to hold. And that level has proven to be highly elastic, owing to the growth of economic activity overseas and the behavior of the major foreign central banks.

Under this system, the Japanese and the Chinese central banks are passive receptacles into which U.S. Treasury bonds can be deposited, ostensibly for future use, but in fact and for practical purposes permanently. These dollar reserves are presently so large that there is no economic scenario under which they can be spent without causing them to lose a large part of their value. As such, neither Japan nor China has much choice

but to accept U.S. Treasury bonds, even at low long-term interest rates, and this both have been doing for some time.

Thus, a more-or-less stable condominium of major countries conspires, in effect, to support the U.S. current account deficit and low long-term interest rates because, for the present, they see it as the least bad alternative. This could change, and someday perhaps it will—particularly if the United States continues to lose its position as a trusted force for stability on the world scene.

But for the time being, the situation imparts considerable stability to long-term interest rates, and gives U.S. policymakers a considerable margin of maneuver. An expansion of the economy is, of course, certain to increase the current account deficit.<sup>17</sup> But so long as the basic policy of China, Japan, and similarly situated major players remains unchanged, the result will be largely what it has been so far: the continued accumulation of dollar reserves on their part, and on our part an unfettered capacity to make economic policy decisions. A political crisis, such as over Taiwan, or a war (such as with Iran), might force rapid change on the system. But there is no compelling reason to believe that purely economic considerations will do so in the short run, insofar as the situation has been developing for a decade, and they have not had this effect up until now.

This international financial structure is practically unprecedented—and precarious, in the sense that something bad could happen. But the fact that something bad could happen does not necessarily mean that it will. So long as the structure lasts, the most likely effect of a substantial public investment program on long-term interest rates in the United States is that they will not change very much.

## Conclusions

- What are the macroeconomic aspects of a strategy of a large-scale public civilian investment initiative, on the order of half of the present military budget, as an initial response to the need to rebuild our infrastructure and to meet the compelling challenges of climate change?
- The inflationary effects of such a program would be modest, controllable, and probably less than the inflationary consequences of the present war in Iraq.
- Such a program would have the potential to bring the economy to substantially the level of full employment last enjoyed in the late 1990s.
- The effects of the bond financing of such an initiative on interest rates can be disregarded; the effects of the movement toward full employment on long-term interest rates would be modest.
- The international financial system, though precarious, does not preclude action along the lines described.

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# Notes

<sup>1</sup> Since the TGV is powered largely by nuclear-generated electricity, this form of transportation has minimal carbon impact compared to travel by airplane.

<sup>2</sup> Elegantly documented by Frank Bourgin in *The Great Challenge: The Myth of Laissez-Faire in the Early Republic* (New York: HarperCollins, 1990). Bourgin's Ph.D. dissertation, which formed the basis for this book, languished for decades at the University of Chicago before coming to the attention of Arthur Schlesinger, Jr., who helped arrange for the book to be published and the author to receive his degree near the end of his life.

<sup>3</sup> Congressional Budget Office, *Trends in Public Infrastructure Spending* (Washington, D.C.: CBO, May 1999).

<sup>4</sup> As an economist on the staff of the House Banking Committee, I was involved in preparing the New York City bailout bill in 1976. On the overall impact of this era on infrastructure spending, I'm indebted to Matthew Wilson of Denver University.

<sup>5</sup> A 1983 survey published by the congressional Joint Economic Committee and titled *Hard Choices* contained a comprehensive survey of requirements for basic infrastructure improvements as understood at that time.

<sup>6</sup> CBO, *Trends in Public Infrastructure Spending*.

<sup>7</sup> In the Bush years, economic growth has been concentrated most strongly in a single geographic area of the country: the region of the nation's capital. This is the "Beltway bubble" from which most of the rest of the country has seen few benefits. See James Galbraith and Travis Hale, "The Changing Geography of American Inequality: From IT Bust to Big Government Boom," (Austin, Texas: University of Texas Inequality Project Working Paper No. 40, 2006).

<sup>8</sup> In March 2001, the American Society of Civil Engineers estimated that the shortfall in spending on infrastructure was on the order of \$1.3 trillion, or about the same as the Bush tax reductions of the same year; the ASCE later increased its estimate to \$1.6 trillion.

<sup>9</sup> In the short run, these activities will no doubt increase carbon emissions, especially as cement production is a very heavy emitter. This underscores the necessity for strong conservation measures in other sectors, the goal being to move to a sustainably low rate of emissions in the medium and long terms.

<sup>10</sup> Relative to need, this is a modest proposal. This program would take seven years merely to deal with the existing backlog of necessary infrastructure improvements. Given that a sensible program would tackle the backlog and the new requirements concurrently, actual elimination of the backlog would take even longer.

<sup>11</sup> Another paper would be required to deal with the role played in public debate by unjustified fears generated by forecasts of large budget deficits in the mid-term and in the distant future. These forecasts are highly misleading, for several reasons. First, they are based on conservative economic growth assumptions and ignore the pro-revenue impact of changes in policy that would move the econ-

omy toward full employment. Second, they take no account of Congress's capacity to impose higher tax rates should the need to do so actually become compelling. For these reasons, the deficit forecasts are rarely realized, and they are a poor basis for making judgments about the correct course of public spending and investment policies. Indeed, to the extent that they stand in the way of policies aimed at bringing full employment, they are counterproductive.

<sup>12</sup> The endogenous response of productivity growth to full employment, amply demonstrated in the late 1990s, is known as the Verdoorn Law.

<sup>13</sup> In a 2004 paper, William Gale and Peter Orszag offered the strongest evidence available of the effect of public budget deficits on interest rates. My analysis of their effort, "Breaking Out of the Deficit Trap: The Case Against the Fiscal Hawks," was published by the Levy Economic Institute, Bard College, and is available at [www.levy.org](http://www.levy.org). It shows that Gale and Orszag were not able to establish a significant independent effect of deficits on interest rates.

<sup>14</sup> The exact size of the increase in total deficits and public debt that would result from a program approaching 2 percent of GDP annually depends on the effect on nominal GDP growth. But even assuming no acceleration of nominal GDP growth, in the worst case the program would raise the deficit from around 2 percent to around 4 percent of GDP. If we simply assume a public budget deficit of 4 percent of GDP every year for 20 years, and the average growth rate of nominal GDP that has prevailed since 1984 (5.9 percent), this yields a rise in the debt/GDP ratio from 60 percent at present to around 68 percent in 2027. To put this figure in perspective, the value was around 125 percent in 1945. The lowest value seen in the postwar period was around 33 percent in 1980.

<sup>15</sup> See my paper, "What Is the American Model Really About: Soft Budgets and the Keynesian Devolution," Levy Economics Institute Policy Brief No. 72, available at [www.levy.org](http://www.levy.org).

<sup>16</sup> The case of China is similar, but with the distinction that until very recently the accumulation of reserves had little to do a current account surplus, which in China was quite small. Rather, the Chinese central bank largely accumulated dollars as a result of the forced conversion into renminbi of dollars flowing in to make asset purchases (mostly real estate, though also stocks). Again, the central bank was (and largely remains) a passive repository of U.S. Treasury bonds. In the past two years, China's current account surplus has played a larger role, though measurement questions persist; some part of the sharp rise in China's surplus may be disguised capital inflow, anticipating a revaluation of the renminbi.

<sup>17</sup> Correspondingly, it will increase the internal financial deficit. The exact balance of effects between the public and the private sector will depend on the private sector's willingness to take on new debt obligations. The level of the public sector deficit thus emerges as a largely *ex post* value: it is governed by the total level of activity in the economy, and the willingness of the private sector to finance that activity by expanding its debts. In recent years, the private sector's behavior in this regard has been highly variable, and as a result the public deficit is fairly unpredictable, with official forecasts often contradicted by the actual results.



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