Model shows 'in-width' military buildup is impossible for the U.S.

by David Goldman

EIR has employed the LaRouche-Riemann econometric model to test the assumptions underlying the Weinberger defense budget, and has found that these assumptions will lead the United States toward economic and strategic disaster. As we reported last week, the Weinberger strategy relies on the "in-width" deployment of *existing technology,* in the context of drastic cutbacks in all forms of federal government support for research and development and scientific education.

Weinberger's view is that American military power may be projected onto the globe by throwing into deployment whatever mothballed vessels and weapons systems happen to be sitting around. This is wrong, from a straightforward military standpoint. What is even worse is that the program fails on its own criteria. Without an "in-depth" infusion of effort into precisely those areas of the scientific budget that Stockman intends to cut, the proposed "in-width" buildup is economically impossible.

However necessary, defense expenditures are an economic overhead expense. Investment in industrial capacity for defense purposes may enhance the productive sector of the economy, but the output from that capacity is a pure tax on the productive resources of the rest of the economy. Except in a very indirect way, the apparent ability of the United States to *finance* defense expenditures tells us nothing about our ability to conduct a defense mobilization. Neither do conventional "econometric" models, which merely project past relationships between defense spending and economic output into the future.

The questions we have used the LaRouche-Riemann model to answer are:

1) What amount of *physical product* (plant and equipment, raw materials, consumer goods) must be invested in military-related sectors of the economy to produce a significant increase in defense procurement?

2) How *productive* are the military-related and non-military-related sectors of the economy now, and how productive can they be under the conditions prescribed by Stockman and Weinberger?

3) Can the economy afford to lose this margin of its output from the stream of civilian production?

4) Would such a program succeed?

The modeling method

The LaRouche-Riemann model, in its present generation, is unique in two respects. First, its data base views the economy from the standpoint of a production manager, measuring the quantities of tangible output required to maintain plant and equipment, provide raw and intermediate materials, make up the bill of consumption of goods-producing workers, and finally, to pay the nonproductive overhead bill of the economy: white-collar employees, government expenditures, office buildings, and so forth. It abandons the Gross National Product measurement, which is indifferent to investment, e.g., in gambling casinos versus steel mills.

Aggregate U.S. economy

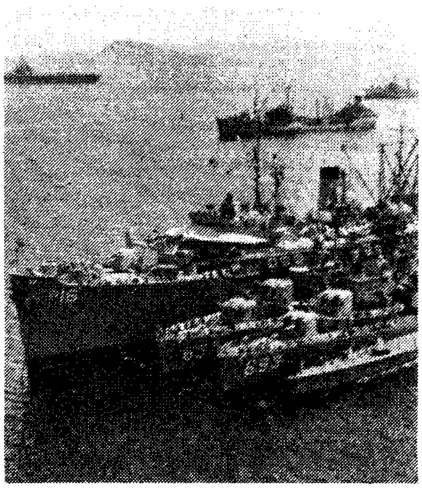


Figure 1

Gross surplus of U.S. economy

(billions of constant 1976 dollars)

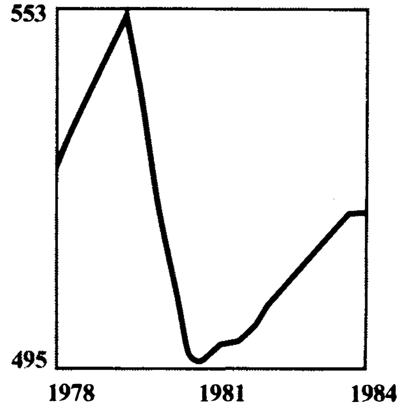


Figure 2

Consumption of productive workforce

(billions of constant 1976 dollars)

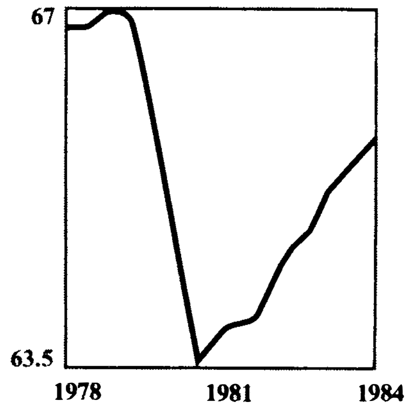


Figure 3

Aggregate net capital investment

(billions of constant 1976 dollars)

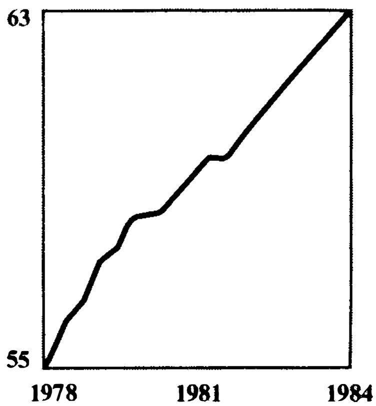


Figure 4

Raw materials and semifinished goods input

(billions of constant 1976 dollars)

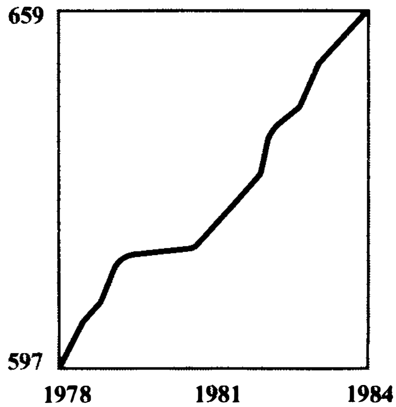


Figure 5

Ratio of surplus to consumption of productive workforce

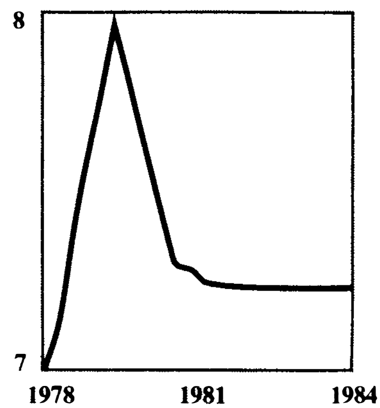


Figure 6

Reinvestible surplus of U.S. economy

(billions of constant 1976 dollars)

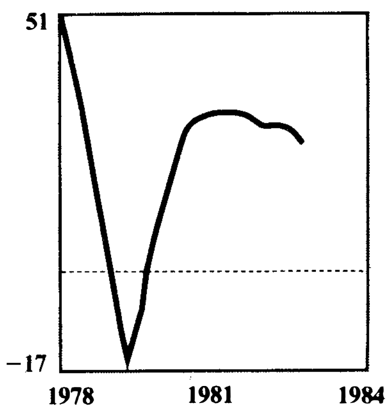


Figure 7

Ratio of surplus to total capital and labor inputs

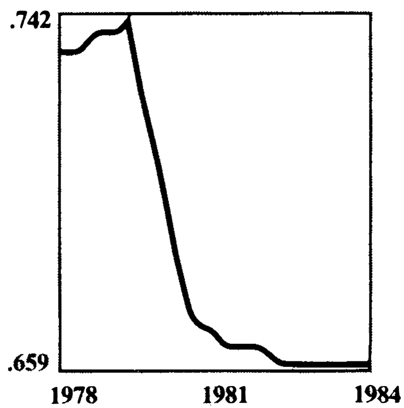
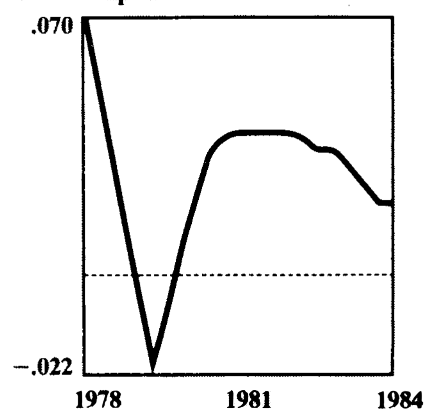


Figure 8

Ratio of reinvestible surplus to total capital and labor inputs



Secondly, it measures the characteristic ratios that describe the economy as a *physical process:* its capital intensity; its labor productivity; and its capacity to generate a *surplus* in excess of tangible production costs, as well as its ability to invest that surplus in further economic expansion. To simplify somewhat, the economic modeller converts political and business policy decisions, e.g., to invest in some sectors at the expense of others, to shift economic surplus from productive to overhead investment, and so forth, into changes in the cited and other *characteristic ratios.* The model then solves 150 simultaneous differential (rate-of-change) equations reflecting the interaction of 30 economic sectors to simulate the result of such policy decisions.

The present simulation shows that a concerted mobilization of resources for defense procurement employing existing technologies would *fail to reverse* the declining growth capability of the U.S. economy. By the end of a four-year program, it would produce a new economic downturn.

Our assumptions are based on the stated policy of Defense Secretary Weinberger and OMB Director Stockman. The model was programmed to reflect use of the existing technology base in the production process, i.e., no rise in the productivity of the physical system; unlimited budgetary and credit largesse for a procurement program enhanced by *$20 billion 1976 dollars;* and a mix of defense procurement from different industrial sectors based on the most recent available input-output data for the U.S. economy. It is further assumed that the program begins immediately, and that Federal Reserve monetary policy and OMB fiscal policy do not create additional economic disruptions in excess of the present still-severe recession.

These assumptions give Stockman and Weinberger the benefit of the doubt in all cases. The last assumption of an otherwise stable economic environment, conducive to defense production, contravenes available evidence that the economy is headed deeper into recession. The assumption that productivity (in the physical terms measured by the LaRouche-Riemann model) will remain stagnant is generous, considering that productivity *fell* by about 12 percent, by our measure, during the past two years (see Figure 5).

We summarize the result of the simulation by referring to the adjoining computer-generated graphs:

Figure 9

Relative weight of industrial sectors in military expenditures

Sector	Amount (millions)	Percentage of total	Output/ gross capital investment*	Increase in reinvestible surplus required to produce $10 billion additional output
Transportation equipment[1]	$17.8	.962	32.6	$1,2
Electrical machinery[2]	7.7	.962	28.1	775
Transportation[3]	3.1	.955	5.7	394
Chemicals	1.6	.898	16.4	835
Nonelectrical machinery	1.4	.971	27.8	345
Instruments	0.9	.936	25.0	63
Vehicles	0.8	.824	32.9	99
Construction	0.7	.754	33.4	33
Fabricated metals	0.6	.979	37.5	132
Total				3,

Notes:
1. Includes ordnance, guided missiles, aerospace.
2. More than 80% of defense $ for telecommunications equipment.
3. This is transportation companies, i.e., railroads, local mass transit, etc.

*Three year moving average. Correlation 1959-69.
Source: LaRouche/Riemann data base

Figure 10

Ratio of reinvestible surplus to total capital and labor inputs, 1978-1983

Sector	1978	1979	1980	1981	1982	1983
Transportation equipment	.0978	.0482	.0030	.0030	.0023	.0011
Electrical machinery	.0902	.0074	.0324	.0318	.0235	.0114
Transportation	.0416	−.0051	.0471	.0459	.0342	.0168
Chemicals	.0894	−.0278	.0384	.0378	.0284	.0141
Nonelectrical machinery	.0915	.0111	.0512	.0495	.0365	.0178
Instruments	.1347	.0261	.0283	.0280	.0178	.0077
Vehicles	−.0059	−.0299	.0588	.0564	.0404	.0193
Construction	.0479	−.0592	.0320	.0307	.0226	.0110
Fabricated metals	.0605	−.0917	.0305	.0294	.0218	.0107

Source: LaRouche/Riemann data base

Figure 9 documents *EIR*'s procedure for the defense-buildup simulation. The second column shows the percentage share of defense procurement of the most important defense-related industrial sectors. Column 3, labelled "output/gross capital investment," shows the result of a study of the relationship between output and capital investment. The correlations between these two series are mostly above 0.9, indicating an extremely close historical relationship. What this tells us is that to get more output from these sectors, we will have to invest in proportion.

For the most part, it shows that a small rise in investment will produce capacity for a very large rise in output, i.e., that most of the additional output costs will turn up in labor and raw materials. These data were employed to calculate the final column, labelled "increase in reinvestible surplus required to produce each sector's component of a $10 billion output rise." This established the precise amount of investment required to make up the simulated increase in the defense procurement budget.

Figure 10 documents the **growing inertia** of the economy under the simulated "in-width" buildup. The numbers listed for each sector (historical data through 1980, projections for 1981-83) reflect the **free energy ratio,** or **potential growth rate,** the critical ratio. The ratio for the total economy was shown in the series of computer-generated graphs.

What is striking is that the military-related sectors, the ones that obtain the *most* capital investment, nonetheless grind to a halt by 1983, due to the shrinkage of total economic "free energy." This is clear in all cases, especially so in the case of sectors that underwent negative growth during the 1978-1979 collapse. Vehicles for instance, had a negative ratio of −0.5 percent and −3 percent in 1978 and 1979 respectively. Under projected heavy defense procurement requirements the sector rises to a positive 5.8 percent growth rate in 1980, but falls rapidly to less than 2 percent in 1983. This is due to the lack of available resources from the rest of the economy to maintain the same production growth rates, i.e., the fizzling of the entire military buildup.

Figure 1 shows the behavior of total economic surplus (value-added in physical terms). Over 1980, surplus fell from an annual rate of $553 billion 1976 constant dollars to an annual rate of $495 billion; as the graph shows, a weak recovery began at the end of 1980. Under the simulated procurement program, surplus rises to an annual rate of $523 billion, recouping less than half of its previous losses by the start of 1984.

The increase in output occurs for the simple reason that a military buildup is a *tax* on some sectors of the economy on behalf of others, i.e., on mainly civilian producers to expand the output of mainly military producers. As might be expected, those industrial sectors that produce for the military are, by and large, the most technologically advanced, and hence the most productive. So a shift in resources toward military producers reduces the output of high-productivity sectors. This change in the production "mix" results in higher average productivity for the economy as a whole. But this is a one-shot affair. If the *product* of the military sectors remains outside the flow of production, as all defense goods do, the *net tax on the total economy* will ultimately drag the total economy down.

For example, the productivity of the total U.S. economy is about 7.8 on the LaRouche-Riemann model measurement, that is, we obtain 7.8 units of tangible surplus for every 1 unit of labor input. The respective productivities of the major defense-related producers are:

Transportation equipment	13.0
Electrical machinery	10.6
Transportation	6.4
Chemicals	15.0
Nonelectrical machinery	10.5
Instruments	11.5
Vehicles	9.6
Fabricated metals	7.2

Except in two cases, transportation and fabricated metals, the productivities of the major providers to the military are substantially higher than the average. Therefore, by taxing less productive sectors to expand more productive sectors, the economy receives a one-shot burst of momentum, although it is not sufficient to compensate for the total rise in overhead.

Figures 2, 3, and 4 show the volume of required inputs for the total economy, respectively labor (tangible consumption goods), capital investment, and raw and intermediate materials.

The final group of graphs shows the continued deterioration of the economy.

Figure 5 shows the value for productivity, pre-set according to the assumptions noted earlier. Because of the changed mix of economic activity, the effective productivity rate for the total economy is slightly higher.

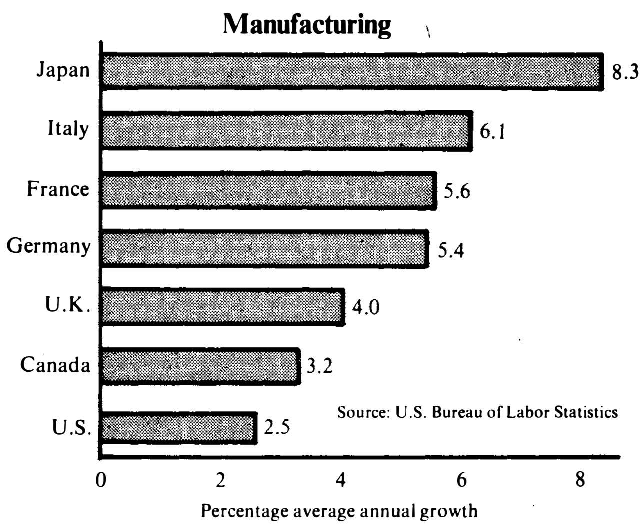
Figure 6 shows the volume of economic "free energy," the amount of *reinvestible surplus.* Immediately upon initiation of the military buildup, this category recovers slightly, but not nearly back to levels registered as of 1978. During 1982, it begins to fall. (It cannot be computed for 1983.)

Figure 7, the rate of gross surplus (surplus divided by all tangible input costs), remains below even recession levels, an unacceptably poor rate of economic functioning. This is due to sharply escalating real input costs, particularly on the raw materials side. A defense buildup would force the U.S. economy to crank up its old, energy-wasting, technologically backward processing industries to full capacity. The inefficiency of this basic industry would force down the crucial rate of gross surplus, a measure of "total factor productivity."

Figure 8, the "free energy ratio," or *potential growth rate,* is the most important in the series. It measures reinvestible surplus (gross surplus minus overhead costs) divided by total input costs. As the graph shows, the economy's rate of growth—after rising from a negative rate during 1979-1980—falls *continuously* through the period of the military buildup, to virtually zero (1.5 percent per year) at the end of the final year.

In summary, a substantial buildup in width would ruin the economy's future capacity to grow, and produce a crisis in the physical economy through underinvestment in the civilian economy by the end of the present administration.

International productivity ranking, 1960-1979



The recommendations

But does this grim forecast show that the United States is too far gone down Britain's economic path to defend itself? Not at all. It merely demonstrates that the Weinberger approach is incompetent on *economic* grounds, all strategic issues aside. But the strategic and economic issues, as *EIR* emphasized in last week's analysis of the proposed defense budget, are in reality susceptible of a common solution. The basis for the qualitative leap in productivity the United States requires is expansion of both basic research and technological applications. During the height of the NASA moonshot program during the 1960s, productivity growth per annum reached 6 percent, the highest the postwar U.S. economy ever achieved. This is the direct result of the rapid absorption by industry of electronic, metallurgical, and other advances produced through NASA.

Both economic and strategic considerations dictate a *basic overhaul of defense technology.* This presumes a crash program for the development of both particle-beam antiballistic missile systems and inertial confinement methods of achieving CTR fusion power. Both these goals require breakthroughs in the same area of basic physical research—the propagation of shock waves through a plasma—and theoretical and technological breakthroughs are mutually applicable.

The Soviets, who are now training six engineers for every one graduated in the United States, announced at this month's Soviet Party Congress that the basis of all economic policy under their direction will be basic scientific research. If we do less, we cease to be a superpower.

The computer simulation for this report was prepared by David Goldman, Dr. Steven Bardwell, Sylvia Barkley, and Richard Freeman.