

LaRouche-Riemann model projects first-quarter downturn for the U.S.

by David Goldman

EIR staff have conducted a computer-based simulation of the behavior of the American economy during the next three quarters, under conditions of rising inflation and sharply rising interest rates. The conclusion of this simulation, conducted Oct. 23 and 24, is that real output will fall steeply during the first quarter of 1981, comparable to, but not as steep as, the second-quarter 1980 downturn.

This projection takes into account the predictable effect of the Federal Reserve's mid-October decision to impose a global tightening of credit availability. The effects of the decision are already evident in the Oct. 29 rise in the prime lending rate of money-center commercial banks to 14½ percent, and the spectacular rise in both short-term Treasury bill and short-term Eurodollar rates. In contrast to previous recessions, the corporate sector has not been able to improve its balance-sheet liquidity position. *EIR* has emphasized the state of illiquidity of the corporate sector is such that the debt-servicing requirements of industry are themselves sufficient to generate "excessive" new credit demand.

However, an important factor in the Federal Reserve's interest-rate stance involves the terms of financing of next year's \$120 billion-plus deficit of non-oil developing countries and deficit industrial countries.

As we report elsewhere in this issue, the Federal Reserve has determined to take a hawkish line on international lending in order to more strongly make the point it failed to put across at the International Monetary

Fund Annual Meeting in Washington, D.C. at the beginning of October. The concern of the American (and also British) monetary authorities is that international lenders, especially the Europeans and Japanese, will undermine the IMF's authority by continuing to finance such debtors as Brazil and South Korea. The United States and the IMF staff insist that the IMF must become the arbiter of all international credit, through IMF conditionality, IMF direct market borrowing to finance a much greater volume of loans (so-called cofinancing with the private sector), and other means. This position made no progress at the Washington meeting. The response of the Federal Reserve is to attempt to tighten international credit conditions to bring noncomplying lenders and debtors to heel.

*The bottom line is a prime rate above 16 percent by year end, and a high interest-rate level even if the economy dips off sharply. Federal Reserve officials, in order to make the political point more strongly, have departed from usual practice to telegraph their actions in advance. The formula for interest rates they cited in conversations with *EIR* is the rate of inflation plus 2 or 3 percent. That scenario constitutes a new input into our basic forecast.*

Projected results

The earlier forecast *EIR* published Sept. 2 took into account domestic economic conditions and foreign economic conditions only as they affected American trade. The assumptions behind the forecast can be summarized

Figure 1
Total economic surplus
 Billions of 1972 constant dollars

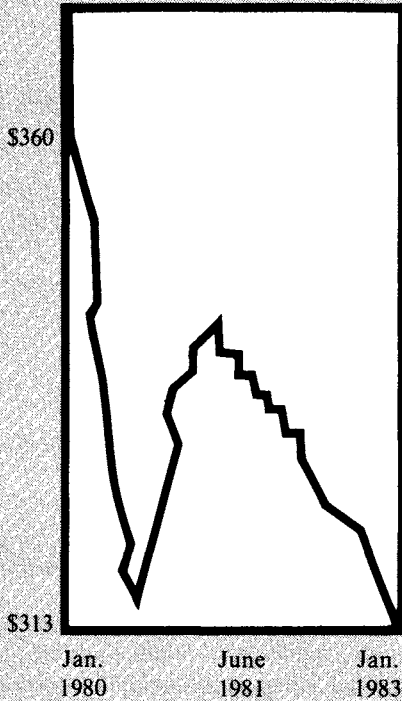


Figure 2
Tangible surplus production
 Billions of 1972 constant dollars

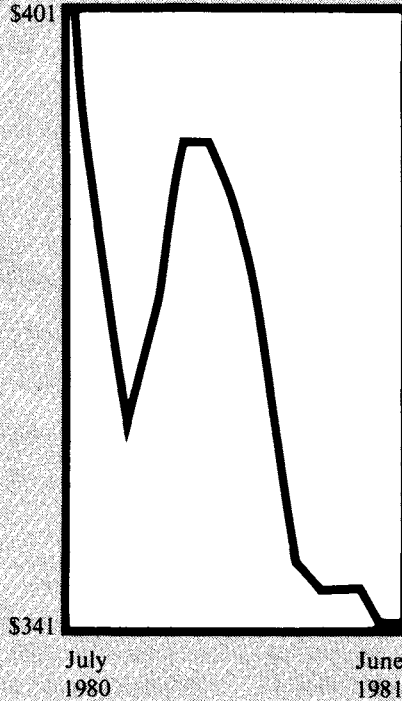


Figure 3
Variable capital
 Billions of 1972 constant dollars

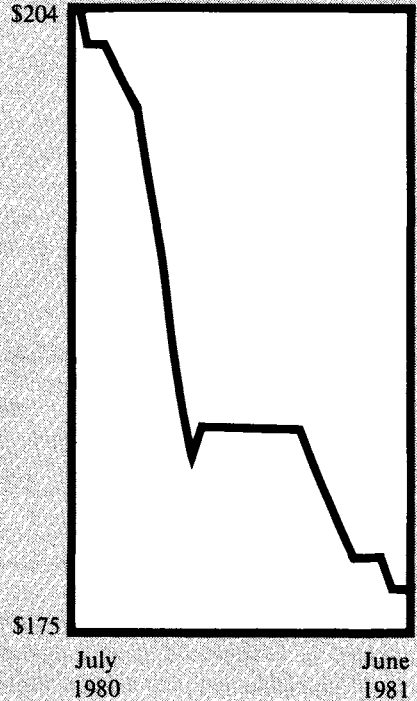


Figure 4
Circulating capital
 Billions of 1972 constant dollars

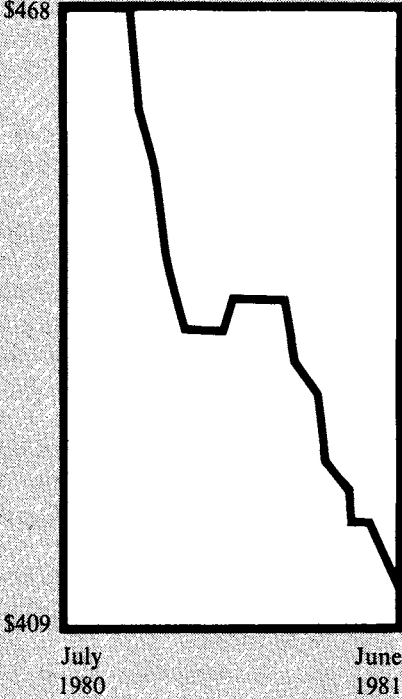


Figure 5
Net investible surplus
 Billions of 1972 constant dollars

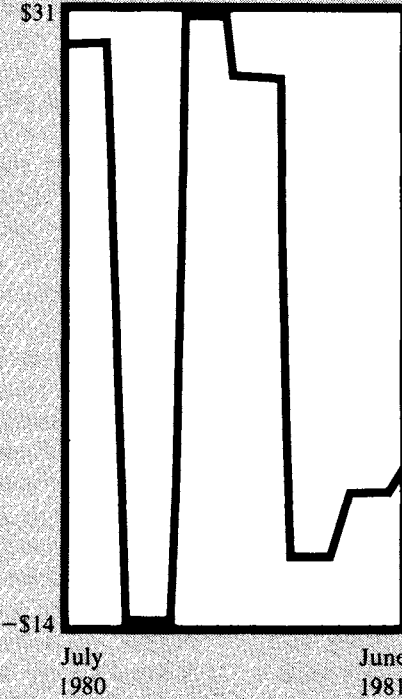


Figure 6
Free energy ratio

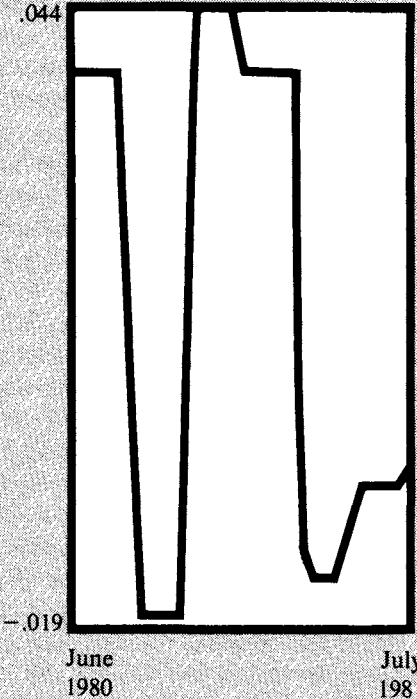
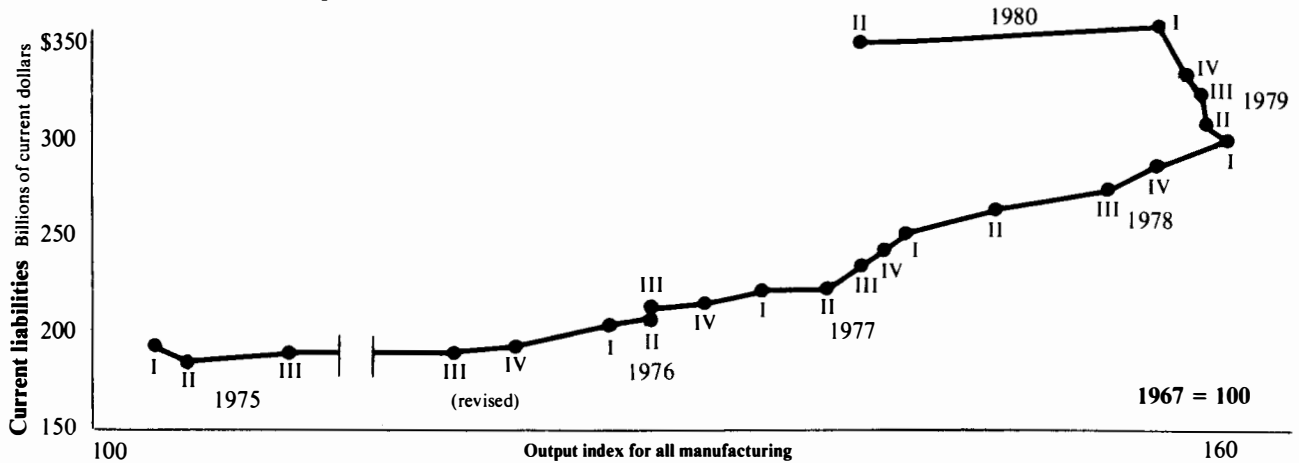


Figure 7

Ratio of debt to nondeflated output



Source: Federal Trade Commission, Federal Reserve Board

as follows. The LaRouche-Riemann model interprets the economy as a thermodynamic system, measuring variables of tangible output in the same way that a scientist would measure the temperature, pressure, and volume of a diesel engine. The model, rather than using the conventional definition of labor productivity, measures the work accomplished by a given volume of labor through a physical medium, the capital stock at a specific productivity. The model's productivity measure is the ratio of tangible output net of capital and labor maintenance costs, or "surplus," to labor inputs.

In physical terms, the second-quarter 1980 downturn provided the economy with a one-shot, temporary increase in productivity, i.e., a decline in real wages. Although the trend productivity of the economy continued to decline due to obsolescence and deterioration of the capital stock, the decline in real wages momentarily increased the apparent productivity of the economy faster than the underlying productivity fell. On the basis of these measurements, the model indicated a stabilization for the remainder of this year, followed by a further downturn in second-to-third quarter 1981 after the impetus of this "false" rise in productivity gave out.

Reproduced below, our original projection for *tangible economic surplus* (Figure 1) shows the same basic trend as the graph for *tangible economic surplus* produced during the Oct. 24 simulation (Figure 2). The actual third-quarter restabilization occurred more quickly than our original forecast had indicated, and the new forecast shows the "double dip" of this recession occurring earlier. However, the forecast is not dramatically changed from our earlier estimates.

As we have emphasized in the past, the LaRouche-Riemann model is an "underdetermined" system, in which political and other exogenous variables (such as sharp changes in the price of oil) must be entered by the user. Therefore, the model's forecasts are a combination of the computer-based capability to measure the interaction of the physical-system variables and the user's political assumptions. In the past year, the validity of the physical system analysis has been demonstrated through the only successful forecast of the first-half 1980 decline in output conducted on any of the computer models (see Economic Survey, Sept. 2).

Figure 2, or *tangible surplus production*, shows a drop of gross surplus from \$387 billion at the end of 1980 to \$341 billion by the second half of 1981.

Figure 3, or *variable capital* (net input of blue collar labor) shows a stabilization after the sharp second-quarter 1980 decline, followed by a further sharp decline at the end of the first quarter of 1981. Measured in terms of tangible consumer goods allocation, variable capital falls from about \$185 billion to about \$174 billion, in constant 1972 dollars.

Industrial consumption of raw materials, or *circulating capital* (Figure 4), falls from about \$468 billion to \$410 billion in constant 1972 dollars between fourth-quarter 1980 and second-quarter 1981.

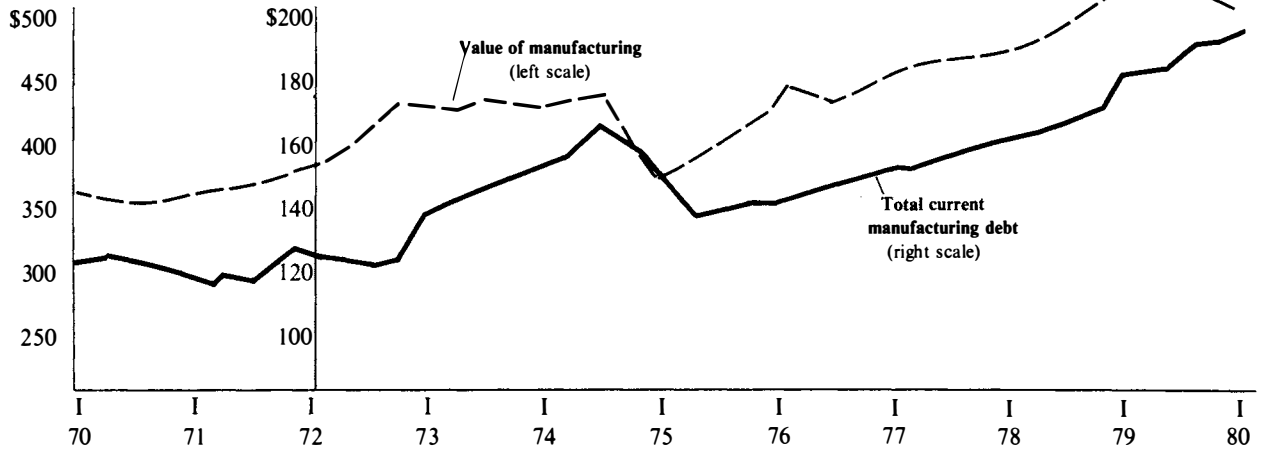
Net investible surplus (Figure 5), or the portion of surplus net of economic overhead expenses (education, health, military, service industry), falls from \$27 billion—barely above the zero mark—to about \$10 billion in the red during the first quarter of 1981.

The economy's key ratio in terms of the LaRouche-

Figure 8

Manufacturing output and liabilities

Billions of 1972 constant dollars

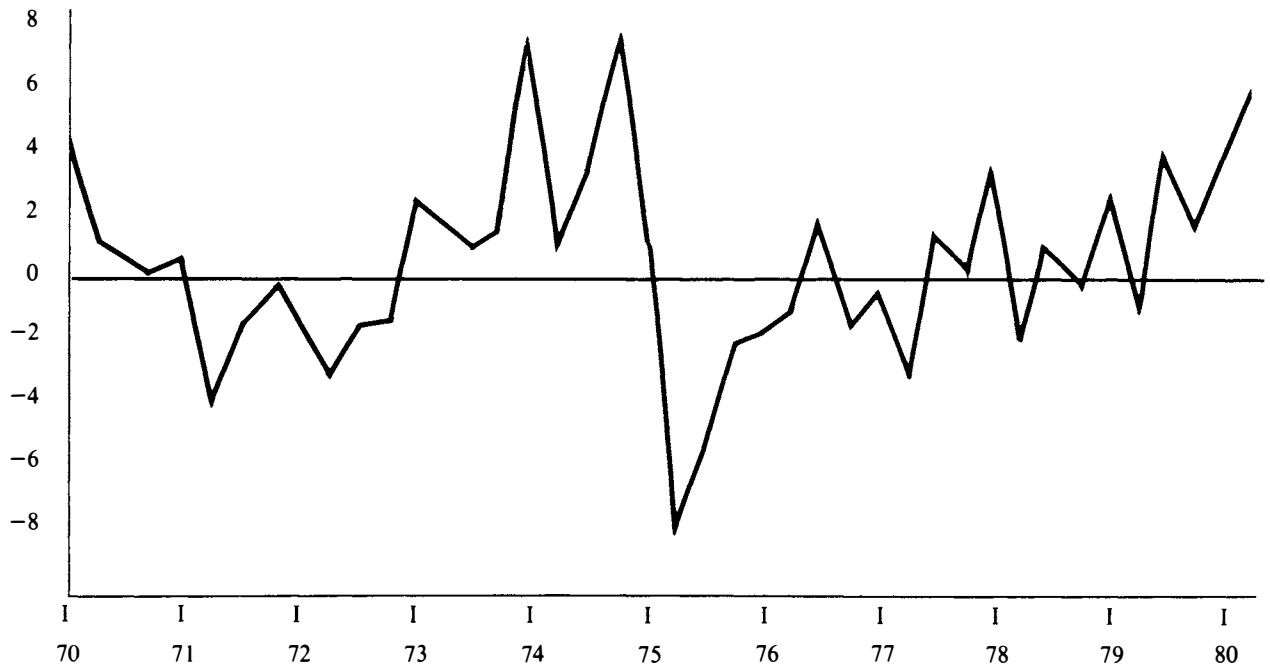


Source: Federal Trade Commission, Federal Reserve Board

Figure 9

Excess growth of debt compared to output

(Percent growth of deflated current liabilities minus percent growth of output, 1970-1980)



Source: Federal Trade Commission, Federal Reserve Board

Riemann model, the potential growth rate or *free energy ratio* (Figure 6), falls from its best level of about 4 percent at the end of the third quarter of 1980 to a range of *negative 4 to negative 7* percent by the second quarter of 1981.

The basis of our forecast

To simulate the economic effects of the expected additional margin of interest-rate increase, *EIR* employed a financial model of the American economy that interfaces with the LaRouche-Riemann physical system model. The financial model measures the change in interest rates, inflation, and credit flows associated with changes in output.

Figure 7, the debt-to-output ratio for manufacturing industry, makes clear the nature of the problem. Every productive-sector firm, and the productive sector as a whole, must pay out of gross revenues two categories of costs: expenditures for labor, intermediate goods, depreciation, and new investment; and overhead costs, including taxes, debt service, rent, and clerical salaries. The second group of overhead expenses is at best a deduction from industry's capacity to expand, and at worst a constraint on current output. Figure 7 gives a first-approximation picture of the present size of this constraint. In the six quarters preceding the second-quarter 1980 decline in output, debt first rose much faster than output, and then continued to rise sharply while output remained stagnant. At this point the curve becomes parallel to the vertical axis. In the second quarter, the Federal Reserve became alarmed at the rapid growth of credit and the accompanying 20 percent inflation rate, and introduced a 9 percent ceiling on growth of bank lending. Output then dropped sharply, while debt remained at the same plateau.

Unlike the 1974 recession, when inventory liquidation permitted corporations to reduce their short-term debt exposure, the level of debt was so high by mid-

1980 that no such paydown of debt could take place.

Figure 8 shows the same debt-to-output ratio, with debt adjusted by the GNP Implicit Deflator. Inflation-adjusted debt levels still rose sharply, indicating the extent to which taxes, rent, loss of operating income, and other factors constrained investment and even current output preceding the 1980 collapse.

Figure 9 displays the same data in a more usable format, plotting the percent increase in deflated debt *minus* the increase in deflated output. The results are striking: except for seasonal fluctuations, manufacturing industry has assumed debt only in proportion to its rise in output, *except* just prior to major recessions.

Figure 10 demonstrates the fashion in which debt-service costs provoke drops in output. It plots, in percentage terms, the ratio of current interest charges on outstanding short-term debt to total new short-term borrowings. Whenever this ratio exceeds 100 percent, indicated by the dotted line, industry is unable or unwilling to take on more short-term debt, and must find the cash to pay interest charges by reducing payments to the productive accounts (labor, intermediate goods, depreciation).

During the third quarter, short-term debt of industry rose by slightly over 20 percent per year. However, once the assumption of higher interest rates and higher inflation for the fourth quarter of 1980 and the first and second quarters of 1981 are taken into account, the financial model shows industry would require a 60 percent annual rate of short-term debt increase *merely to maintain existing output levels*.

EIR's political assumption is that the Federal Reserve will not permit that rate of new credit extension, and will choose to interdict the financing of the inflation component of this debt increase. This assumption was translated into an increase in nonproductive payments and programmed into the LaRouche-Riemann model, producing the results shown above.

