Published by

AMERICAN INSTITUTE
for ECONOMIC RESEARCH

Great Barrington, Massachusetts 01230

RESEARCH REPORTS

Vol. LVIII No. 24 December 16, 1991

The Credit Crunch: Myth or Reality?, Part II*

Actual Sources of Credit Stringency

Now let me mention the factors which I believe are contributing to our problems — not to our credit "crunch" *per se*, but to our credit "stringency," which is a very different problem requiring very different solutions than the ones being offered. I would name four factors: First, the abandonment of supply-side policies, second, the persistence of boom and bust cycles, third, our destabilizing central banking and fiat money system, and fourth, the decline of the commercial banking system.

The Abandonment of Supply-Side Policies

For all its shortcomings, one overwhelming contribution of supply-side economics was its reemphasis on the production and increase of wealth rather than its redistribution. Supply-siders encouraged stimulative fiscal policy based on lower taxes and lower marginal tax rates, together with a steady, noninflationary monetary policy. The Bush Administration has in part abandoned this approach in favor of that old Keynesian medicine — punitive taxation, "demand management," massive deficit spending, and inflationary monetary policy targeted at interest rates.

The Tax Act of 1986 was beneficial in that it lowered marginal tax rates on individual incomes and dismantled many of the loopholes that directed investment into unproductive projects and tax shelters. But the 1986 tax legislation also shifted the tax burden heavily against business and sharply reversed the beneficial tax treatment accorded real estate investment since 1981. Both changes contributed to a slowing of the economic expansion. In many cases there was unwise real estate investment in the 1980's, and the 1986 tax changes ensured that we pay the price. The tax deductibility of installment interest also was phased out beginning in 1986, lowering the demand for such credit. The Tax Act of 1990 brought tax increases and very little in the way of promised spending cuts. Above all, the burdensome tax package passed a year ago accelerated what might have been a soft landing into a full-fledged recession. Recent proposals in Congress to once again "soak the rich" via tax policy suggest that even the supply-siders' achievement of lower marginal tax rates is at risk.

This increasingly burdensome fiscal policy has been coupled with a very loose monetary policy, the exact opposite of supple-side prescriptions. In the end, the only result we will get from returning to Keynesian notions is what we got when those notions prevailed in the 1960's and 1970's: stagflation. Keynesianism in those decades brought us stunted economic growth and high inflation, the opposite of what was achieved under supply-side influences in the 1980's.

The Boom and Bust Cycle

I would also cite the perennial "boom and bust" cycle as a major factor in our current credit stringency. Clearly, we are in the bust phase today. But as I believe busts are an inevitable result of the preceding booms, I believe it is far more fruitful for economists to focus on preventing booms. If they did so, they would not have to spend their time trying to prevent busts with their destructive nostrums. These economists would do well to consult Colonel Harwood's fine book, *Cause and Control of the Business Cycle*, because it offers a rare, accurate analysis of the problem.

The question in a boom, of course, is "Why do bankers go bonkers?" Everyone is witness to the familiar pattern. During booms, banks lend indiscriminately to *everyone*. But then comes the bust. During busts, it seems banks indiscriminately refuse to lend to *anyone*. Either way, the problem is that lending has become indiscriminate. During the speculative boom, business revenues and personal incomes artificially expand, and higher levels of debt are incurred against those cash flows. In the bust, business revenues and personal incomes contract, but debt levels do not. Credit stringency, not shortages, are the result.

Everyone is familiar with the decline in credit quality that accompanies a fall in revenues and incomes. But the boom-bust cycle is also characterized by a deterioration in credit that takes place during the boom. This deterioration is hidden, of course, by inflation and general euphoria. But it is there all the same. Business-cycle economist Geoffrey Moore identified this phenomenon over 35 years ago. In "The Quality of Credit in Booms and Depressions" (*Journal of Finance*, May 1956), he cited five trends in credit quality typical of the boom years: 1) a rapid increase in the volume of credit and debt, 2) a rapid, speculative increase in the prices of assets that are bought with rapidly increasing credit, 3) vigorous competition among lenders for new business, 4) a relaxation of credit terms and lending standards, and 5) a reduction in the risk premiums sought or obtained by lenders. He concluded: "Part of the overall deterioration in quality is due to more rapid expansion of credit, by less cautious lenders, borrowed by less sound borrowers, advanced on less adequate security."

Moore's credit trends are apparent in the boom of the 1980's. The more marginal lenders and borrowers enter credit markets when they might otherwise be excluded. It is precisely the more reckless lenders and borrowers, those who became most overextended during the boom, who complain most loudly during the bust. In the midst of credit stringency, even prudent lenders and borrowers may get

* This is the second and final installment of Richard M. Salsman's analysis of current credit conditions, the first of which appeared in ***Research Reports***, December 2, 1991. Richard Salsman is a Vice President and research analyst in the Financial Institutions Group of Citibank in New York City and an Adjunct Fellow at AIER. The views expressed herein do not necessarily reflect those of Citibank.

Season's Greetings
and
Best Wishes for the New Year

tarred by the consequences engendered by the profligate. But it is the latter group that is most pinched in the bust, and most vocal about obtaining political remedies for their voluntary indiscretions.

Observe also that people rarely complain about the original credit boom. We hear complaints of a "credit crunch" but never of a "credit flood." We hear cries against tighter lending standards during the crunch, but not against looser ones during the boom. Yes, there were complaints about how we became what *Business Week* called "The Casino Society." But there was rarely any criticism against the inflation of money and credit that made it all possible.

A free market system of money and credit cannot be held accountable for the self-destructive behavior of today's boom and bust patterns. Rather, Government intervention and the Fed's manipulations of money and credit are largely to blame. The irresponsible acceleration and deceleration in bank reserves, the money supply, and debt levels originates in Washington, not on Wall Street or Main Street.

What is the solution to a boom? On this point I confess some sympathy with the prescriptions of Andrew Mellon, the private banker and former Secretary of the Treasury, who said in 1930, "Let the slump liquidate itself. Liquidate labor, liquidate stocks, liquidate the farmers, liquidate real estate ... It will scourge the rottenness out of the system. High costs of living will come down. People will work harder, live a more moral life. Values will be adjusted, and enterprising people will pick up the wrecks from less competent people."

I hasten to add that I am *not* an advocate of Great Depressions. Nor do I believe Mellon's views actually "caused" the depression of the 1930's. But excesses are not overcome by still more excesses. That is how governments conduct policies in Latin America. The purging of excesses recommended by Mellon is a process the market will accomplish, if permitted to do so. As painful as such purges are, it is not the markets, but rather the prior countermarket distortions introduced by the banking and monetary authorities, that are to blame.

The Central Banking Apparatus

This brings me to the last factor in judging our credit stringency: our apparatus of central banking. As I argued in my book *Breaking the Banks: Central Banking Problems and Free Banking Solutions*, the underlying purpose of central banking is to finance unlimited government. By "unlimited government" I mean a government that spends well beyond its means, a government that engages in deficit spending, not because it produces prosperity, which is a Keynesian rationalization, but because it does not have the full financial support of its citizens. The electorate will not willingly pay in taxes the sums necessary to support high levels of spending, and the government dare not impose such a tax burden. The taxpayers would hold the government fully accountable for its excesses — and promptly throw the rascals out of office.

A monopoly on money appears to solve the government's tax dilemma. Instead of taxing to fill the deficit, or borrowing and causing a rise in interest rates, the government can simply print money to support its excesses. Not only is it off the hook with the taxpayers, but the resulting price inflation, and the rise in inflation-adjusted interest rates can be blamed on greedy businessmen and bankers, not on profligate politicians. The government's money monopoly — and its ability to deflect criticism to innocent scapegoats — is a racket of immense proportions.

The Government monopoly on fiat money began in 1913 when the Fed issued its notes in place of private bank currency and it was institutionalized when the Fed abandoned gold-convertible money domestically in 1934 and internationally in 1971. The Government's unlimited power to print money has evolved hand-in-hand with its unlimited power to deficit spend and intervene in the economy. Consider this view offered 25 years ago by Alan Greenspan, today's Federal Reserve Chairman. He wrote that "The abandonment of the gold standard made it possible for the welfare statists to use the banking system as a means to an unlimited expansion of credit."* The Austrian economist Ludwig von Mises observed further in his *Theory of Money and Credit*, "The suspension of specie payments entirely changed the state of affairs ... the government enters the scene with its government-made legal tender laws. The banks lose their independent existence; they become a tool of government policies, a subordinate office of the Treasury."

The alleged "independence" of the Fed from the Government has been a myth concocted over the years to obscure the shady dealings between the two. More recently the dependence has been openly flaunted. As then-President Nixon remarked when he introduced his new Fed Chairman, Arthur Burns: "I respect his independence. However, I hope that independently he will conclude that my views are the ones that should be followed." He turned to the nominee and said, "You see, Dr. Burns, that is a standing vote for lower interest rates and more money." Years later, Burns was asked by a German reporter about the extent of the Fed's independence, and answered, "If the Fed chairman didn't do what the president wanted, the Federal Reserve would lose its independence."

Is it any different today? When George Bush called Alan Greenspan into his office in October, he issued direct instructions to lower interest rates and inflate us out of the recession. The headlines in *The New York Times* read "As Election Nears, Bush Counts on the Fed." Greenspan agreed to the meeting and promptly fell for the trap.

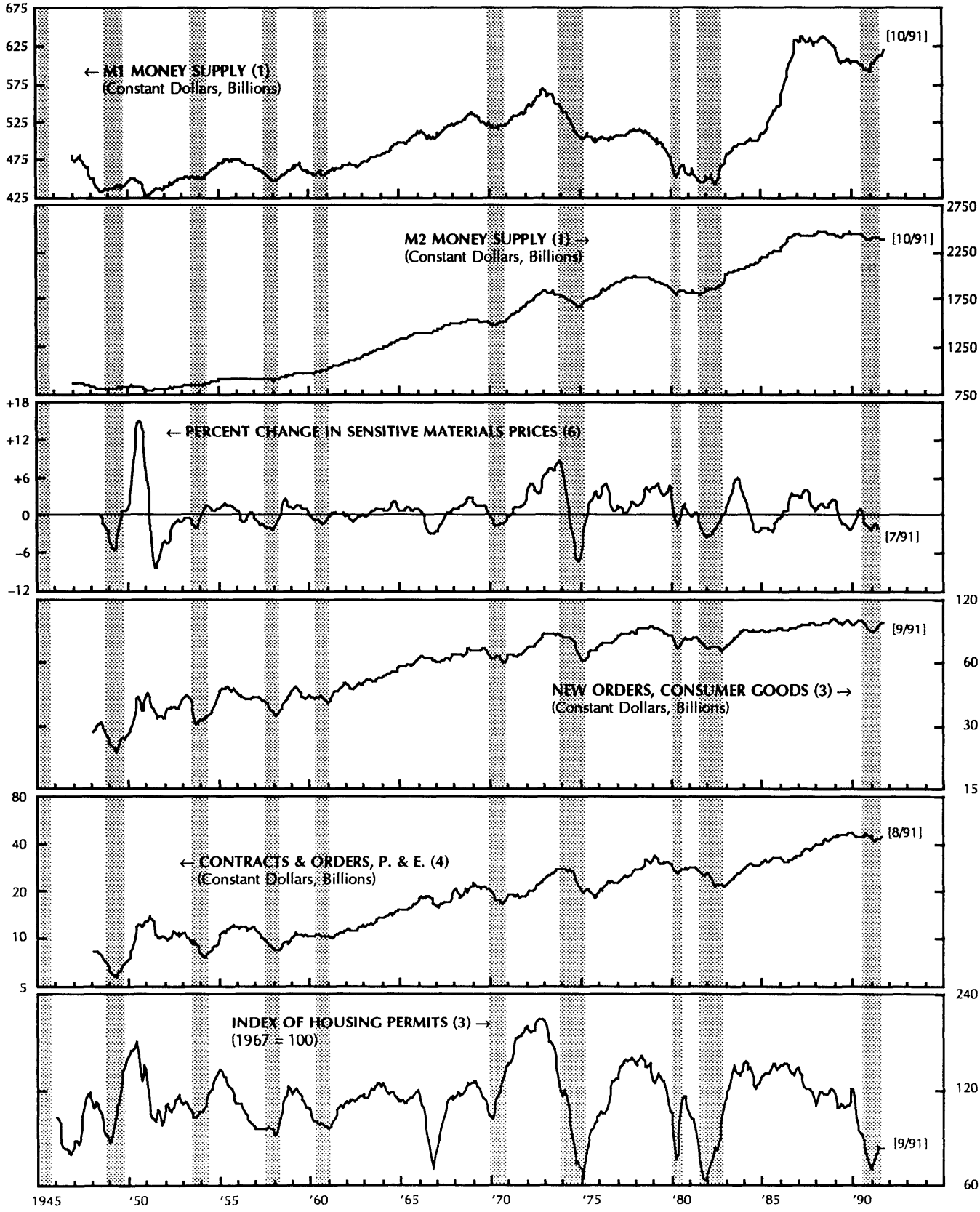
If central bank independence is a myth, what about the one that says central banks are dedicated to fighting inflation and protecting the currency? Readers of AIER's publications know it is not so. But prominent central bankers know it as well. Last month the governor of the Bank of England, Robin Leigh-Pemberton, said "inflation is the modern equivalent of clipping the coinage. Price stability, by contrast, is about honesty in economic policy." The central bankers would seem to know what they are doing. It is not necessary to guess hidden motives — it is enough simply to hear their expressed intentions. Former Fed Chairman Paul Volcker admitted at a 1990 symposium for Eastern European officials, "Central banks were not at the cutting edge of a market economy ... central banking is almost entirely a phenomenon of the 20th century ... central banks were looked upon and created as a means of financing the government ... if you say central banking is essential to a free market economy, I have to ask you about Hong Kong, which has no central bank at all in the absolute epitome of a free market economy. Yet it does quite well in terms of economic growth and stability." Mr. Volcker is correct that Hong Kong has done well — and so did the U.S. economy in the decades *before* the Federal Reserve was formed.

Our disastrous countermarket deposit insurance system is linked inextricably to the central banking regime. Deposit insurance is a scheme put in place because the Federal Reserve mismanaged the discount window in the 1930's and it is a scheme that has been expanded ever since in concert with the Fed's inflation of the money supply (which consists predominantly of bank demand deposits). What is worse, deposit insurance embodies a form of parasitism — as reckless banks fail, their depositors deplete the fund; then the fund must be replenished by the surviving, prudent banks. In effect, the bad banks and their depositors end up robbing the

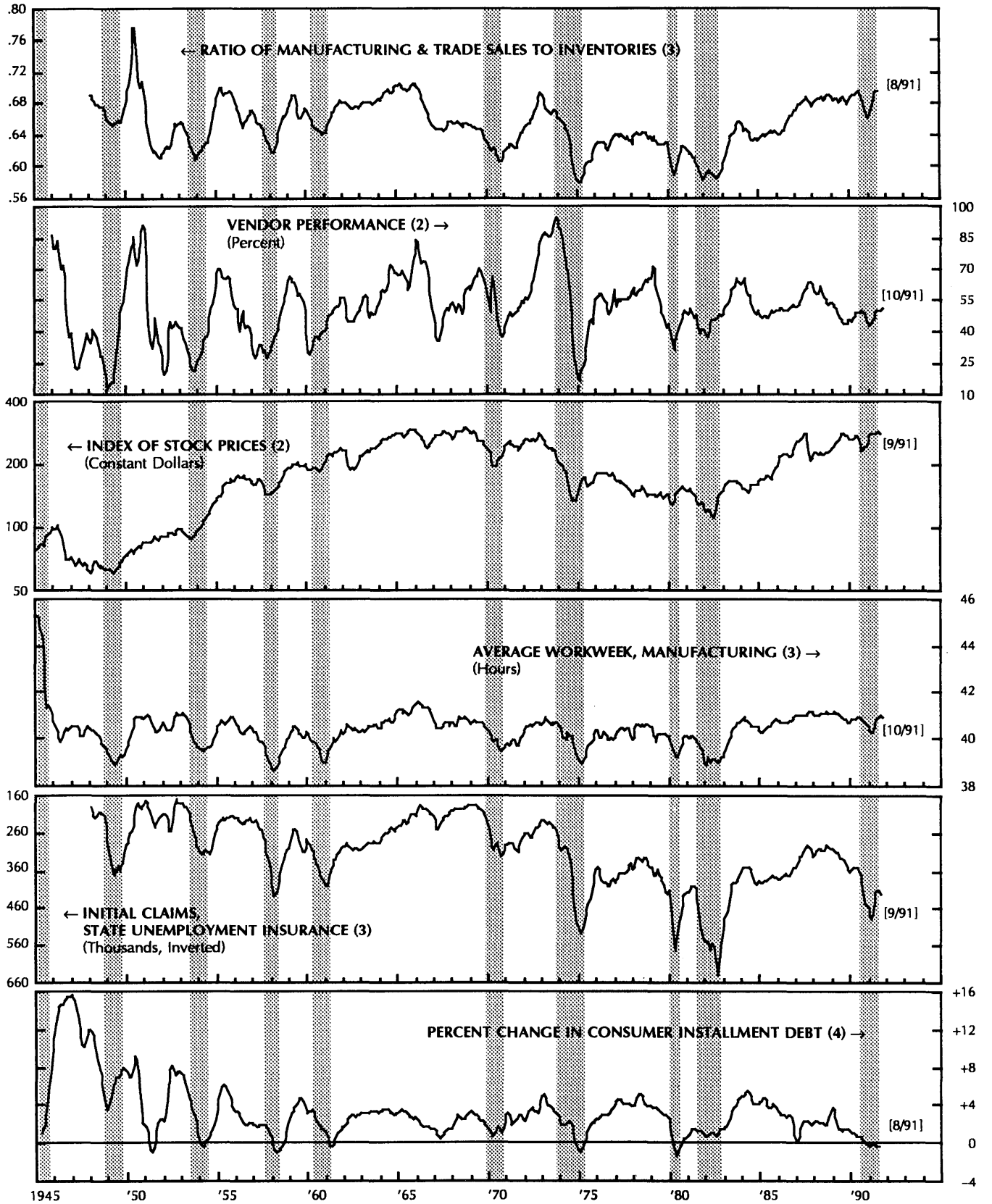
* "Gold and Economic Freedom," in *Capitalism: The Unknown Ideal*, by Ayn Rand, New American Library, 1967.

PRIMARY LEADING INDICATORS

Turning points in the primary leading indicators historically have preceded turning points in business cycles by 3 to 9 months. Most of the leaders hit their cyclical troughs 6 to 8 months ago, and eight of the twelve series are appraised as expanding. Unless these series "keel over" in the next couple of months, a "double-dip" recession is unlikely.



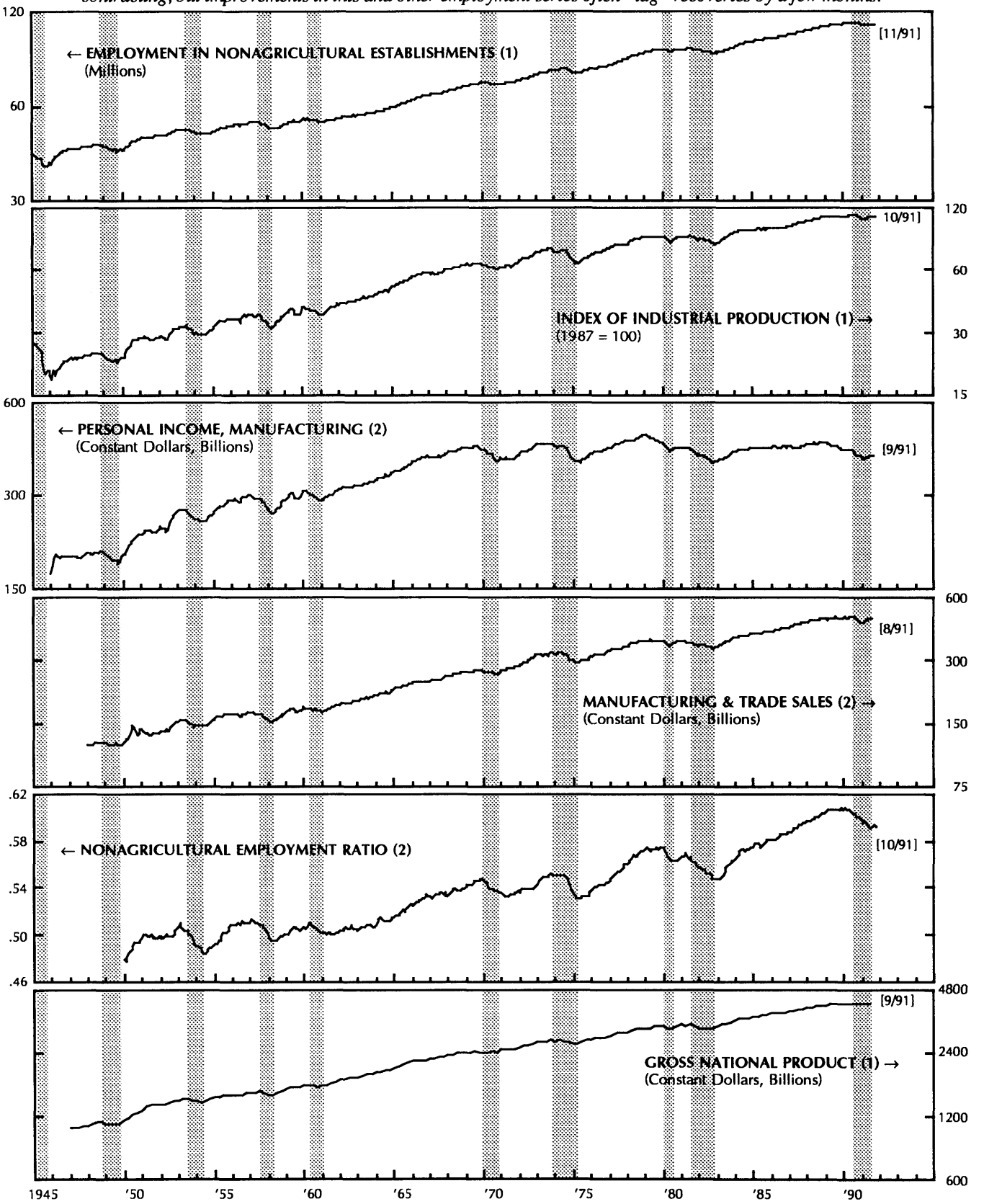
PRIMARY LEADING INDICATORS (Continued)



Note: The number in parentheses next to the name of a series is an estimate of the minimum number of months over which cyclical movements of a series are greater than irregular fluctuations. That number is the span of each series' moving average, or MCD (months for cyclical dominance), used to smooth out irregular fluctuations. The data plotted in the charts are those MCDs and not the base data. The number in brackets is the latest month for which the moving average is plotted.

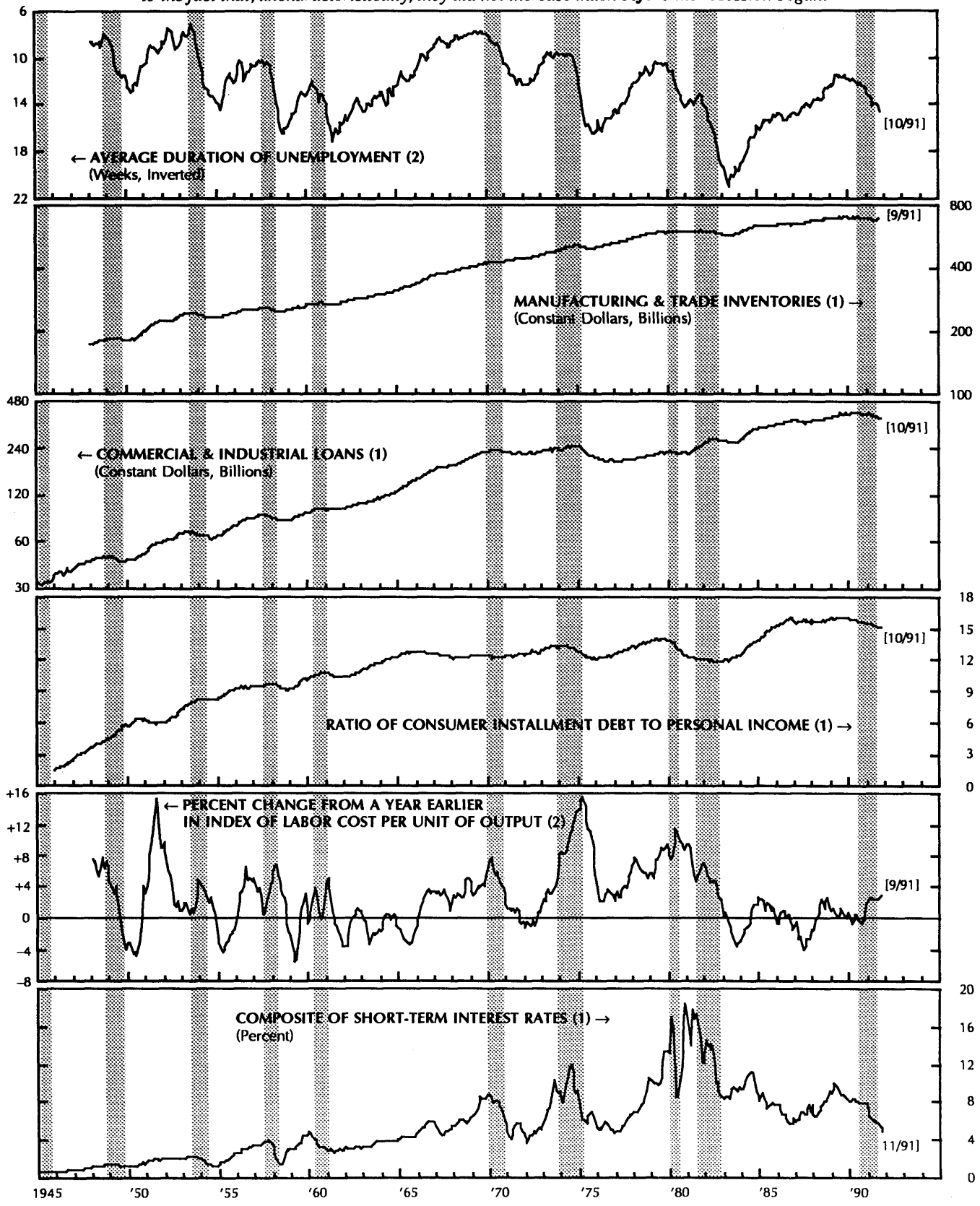
PRIMARY ROUGHLY COINCIDENT INDICATORS

The turning points in the roughly coincident series help identify the turning points of business cycles. Currently, most of the coinciders are above their recent troughs and expanding. Their rates of increase have been modest, however, compared with earlier recoveries (see, for example, ***Gross National Product****). The* ***ratio of nonagricultural employment to population*** *still is contracting, but improvements in this and other employment series often "lag" recoveries by a few months.*



PRIMARY LAGGING INDICATORS

These series typically peak after a recession begins and expand only after a recovery is well underway. Most of the laggers currently are contracting, with the exception of the 12-month ***change in unit labor cost.*** *Unlike earlier recessions, labor costs did not shrink significantly during the recent episode. This may be partly due to the fact that, uncharacteristically, they did not increase much* ***before*** *the recession began.*



good banks, bringing the whole banking system down in the process. But notice — this is *legalized* robbery, explicitly sanctioned by Government policy. It is a system that takes "*from each* according to his ability" and gives "*to each*, according to his need." In effect, deposit insurance is a direct application of Marxist theory. Is it any wonder that it bears the seeds of its own destruction?

It should not have taken 80 years to anticipate the collapse of such a parasitic scheme. Back in 1910, when earlier versions of Government deposit insurance systems were advanced, the President of the First National Bank of Chicago, James Forgan, asked the following: "Is there anything in the relations between banks and their customers to justify the proposition that in the banking business the good should be taxed for the bad; ability taxed to pay for incompetency; honesty taxed to pay for dishonesty; experience and training taxed for the errors of inexperience and lack of training; and knowledge taxed to pay for the mistakes of ignorance?"

In the final analysis, we should not be so surprised at the rise of corruption in banking, for central banking and deposit insurance *positively institutionalize dishonesty and corruption* — by its removal of gold from the system, by incessant and deceptive inflating (or "coin clipping" as Pemberton described it), and by a perverse, parasitical deposit insurance scheme.

The Decline of the Commercial Banking System

The fact is that the banks are broke. Not just a few, but many. Not just for now, but for a long time to come. The condition of most banks is deteriorating, and if you can find a few healthy survivors, good luck — they are now the exception, not the rule. At one time banks used to be the pillars of the community. Now they are the rotting foundation of a declining economy, more likely to fail than the corner grocery store.

In some ways, it is surprising to find the Government imploring the banks to lend money and bail the White House out of a recession. This is the same Government that has imposed capital ratio minimums on the banks — a policy that the banks can meet only by shrinking their balance sheets, that is, their lending, not by expansion. And how did the banks get to this stage of severe capital deficiency? By Government policy. However one looks at it, Government has not been the solution to our banking problem and our credit stringency — it has been the perpetrator.

What Is To Be Done?

The failure of central banking and fiat money is a failure that can be seen as a special case of the general failure of Government central planning. The fundamental difference between free banking and central banking is the difference between a free market and a system of central planning. More precisely, it is the difference between private planning based on economic profit and bureaucratic planning based on political expediency and leveling. Free banking supports the production of wealth through the private economy. Central banking supports the redistribution — and ultimately the destruction of wealth — through the welfare state.

The money and banking system is too important to our freedom and our economic prosperity to be left to political manipulation. The system should be placed on an objective foundation of gold and free market currency competition and removed forever from the subjective quicksands of political manipulation. It should be governed by the rule of law and contract, not by the arbitrary rule of men. We know this has been the most useful approach in every other branch of industry. It is time to discover it in money and banking — before it is too late. Free banking and gold offer an exciting, innovative, time-tested, and prudent alternative to the central banking system that has destroyed sound money and banking.

BUSINESS-CYCLE CONDITIONS

The AIER leading index "stalled" for a fourth month at 89, while the percent of coincident indicators expanding fell to 83 this month. Although the pace of recovery has weakened somewhat over the past 2 months, both scores suggest that continued expansion remains, statistically, more likely than contraction. Nevertheless, the Federal Reserve and the Bush Administration appear ready to deliver the "gift" of major economic interventions during the 1992 election year.

According to most measures of aggregate economic activity, the U.S. economy has been in a recovery for more than 2 quarters. However, that many people now apparently believe "the economy remains mired in recession" suggests how powerful anecdotal bad news in the media can be in shaping public opinion. Indeed, incessant media reports that focus almost exclusively on the negative aspects of business developments (many of which could be found at almost any stage of the business cycle) sent consumer confidence plunging to new lows last month, as reported by the Conference Board and the University of Michigan.

We cannot stress enough that monthly changes, even dramatic ones, in individual economic series often do not reflect cyclical trends. The monthly base data of most series fluctuate widely, and for this reason our statistical indicators reflect *moving averages designed to capture cyclical trends.* Although it cannot be ruled out that talk of recession eventually could become self-fulfilling, we would expect to see broad deterioration in the moving averages of our leading indicators some months in advance of another contraction.

Among the twelve primary leading indicators of business activity, the financial series were mixed during October. The *M1 money supply* series increased $6.0 billion at a

THE STATISTICAL INDICATORS

	Direction of Change in Base Data				Cyclical Status		
Primary Leading	Aug.	Sept.	Oct.	Nov.	10/91	11/91	12/91
M1 money supply†	+	+	+		+	+	+
M2 money supply†	–	–	+		?	?	?
Chg. in sensitive mat. prices	–	–	–		?	?	?
New orders, cons. goods†	–	+	–		+?	+	+
Contracts & orders, p. & e.†	–	–	+		?	?	?
Housing permits	–	+	+		+?	+?	+?
Mfg. & trade sales/inv.†	–	–			+?	+?	+?
Vendor performance	–	+	+	+	+	+	+
Stock prices†	+	–	–		+	+	+?
Average workweek, mfg.	+	nc	–	nc	+	+	+
Initial claims, unempl. ins.*	–	–	+		+?	+?	+?
Chg. in cons. instal. debt	+	+	+		–	–	–?
Percent expanding cyclically					**89**	**89**	**89**
Primary Roughly Coincident							
Nonagr. employment	+	+	+′	–	+	+	+
Industrial production	–′	+	nc		+	+	+
Personal income, mfg.†	+	–	+		+	+	+
Mfg. & trade sales†	–	+			+	+	+?
Nonagr. employment ratio	–	+	–	–	–?	?	–?
Gross National Product†q	+				–	+?	+?
Percent expanding cyclically					**67**	**100**	**83**
Primary Lagging							
Avg. duration of unempl.*	–	nc	–	–	–?	–	–
Mfg. & trade inventories†	–	+			–	–	–?
Com'l. & industrial loans†	–	–	–		–	–	–
Cons. instal. debt/pers. inc.	–	–	–		–	–	–
Chg. in labor cost/output	+	–	+		+	+	+
Short-term interest rates	–	–	–	–	–	–	–
Percent expanding cyclically					**17**	**17**	**17**

† In constant dollars. * Inverted. q Quarterly. nc No change. ′Revised.

Under "Direction of Change," plus and minus signs indicate, respectively, increases or decreases in monthly or quarterly data from the previous month or quarter, blank spaces indicate data not yet available. Under "Cyclical Status," plus and minus signs indicate expansions or contractions of each series as currently appraised; question marks indicate doubtful status when shown with another sign or indeterminate status when standing alone.

seasonally adjusted annualized rate of 12.4 percent, and the cyclical status of the series remains appraised as clearly expanding. (This and all other dollar-denominated series are reported in constant dollars.) After 4 consecutive months of decrease, the broader *M2 money supply* gained $3.9 billion, an annualized rate of 2.0 percent, but the cyclical status of the series remains indeterminate. The *index of 500 common stock prices* has fluctuated in a relatively narrow range since reaching a peak in August, and the cyclical status of that series was downgraded to probably expanding.

Consumer spending is the single most important ingredient in sustaining recovery. Although the disposable income of consumers increased $1.4 billion, or an annualized rate of 0.6 percent, in October, consumer spending dropped sharply by $11.4 billion at an annualized rate of –4.9 percent, following a new high in September. In contrast, after decreasing $7.3 billion over the past year, total consumer installment debt increased $0.8 billion in November. The moving average of the 3-month *change in consumer installment debt*, often interpreted as an indicator of consumers' willingness to spend by assuming new debt, increased for the third straight month, and the cyclical status of the series was upgraded to probably from clearly contracting last month.

As a result of sluggish demand, the manufacturing sector weakened somewhat this month. *New orders for consumer goods and materials* decreased $0.9 billion in October, but the *vendor performance* series increased for the third straight month in November. The cyclical trends of both series remain clearly expanding. The moving average of the *ratio of manufacturing and trade sales to inventories* series increased in September but remains appraised as probably expanding. Similarly, *contracts and orders for plant and equipment* increased $3.4 billion, or 8.4 percent, in October, while the 3-month *rate of change in sensitive materials prices* decreased for the third consecutive month. The cyclical status of both series remains indeterminate.

In the labor market, the *average workweek in manufacturing* was unchanged at 40.9 hours in November, and the moving average of the series remains appraised as clearly expanding. Although its base data increased in October, the moving average of *initial claims for unemployment insurance* (inverted) still is appraised as probably expanding.

The housing industry remains a bright spot in the ongoing recovery. In October, effective mortgage rates fell to 9.02 percent, the lowest rate since the 1970's. The drop in mortgage rates may have encouraged the sale of new single family homes, which increased 11,000 units, or 2.2 percent, and reduced the unsold inventory of these to 6.9 from a revised 7.2 months' supply. Total construction spending increased $3.6 billion, or 1.0 percent, and was concentrated in single family homes and public buildings and highways. Despite the increase, roughly 95,000 construction workers were laid off during November. The *index of housing permits* remains appraised as probably expanding.

As a result of one upgrade and one downgrade in our appraisals this month, the percentage expanding of leaders for which a trend is apparent was left unchanged at 89 (8 out of 9) from last month. In contrast, AIER's experimental cyclical score increased to 56 from a revised 54 last month. Both scores continue to suggest that near-future economic expansion is statistically more likely than contraction.

Among the roughly coincident series, the base data for *manufacturing and trade sales* increased in September, but the moving average of the series decreased and was downgraded to probably expanding from clearly expanding last month. The labor market weakened in November. According to the Labor Department's survey of households data, the *nonagricultural employment ratio* fell for the second consecutive month, and the series was downgraded to probably contracting from indeterminate last month. The survey of establishments data suggests that *nonagricultural employment* dropped 241,000, which canceled nearly three-fourths of the employment gains recorded since the series' trough last August. The series still warranted an appraisal as clearly expanding.

According to the Commerce Department's preliminary estimates, *Gross National Product* increased $4.1 and $24.5 billion, or a seasonally adjusted annualized rate of 0.3 and 2.0 percent, during the second and third quarters of 1991, respectively. Since GNP registered two consecutive quarters of increase, by definition, an "official" date that marks the turning point in this business cycle may soon be announced. However, the series remains appraised as probably expanding pending the release of the "final" GNP estimate.* As a result of the two downgrades this month, the percent expanding of coinciders for which a trend is apparent fell to 83 (5 out of 6) from 100 (5 out of 5) last month.

Among the primary lagging indicators, *manufacturing and trade inventories* increased in September, and the series' moving average was upgraded to probably from clearly contracting last month. The percent expanding of laggers is unchanged at 17 (1 out of 6) for the fifth consecutive month. Although four series hit new lows, we would expect the laggers to increase in coming months and so "confirm" that the economy has passed through a trough and is well into the process of recovery.

In fact, the market already has surprised a number of business analysts. For example, holiday retail sales, which were widely expected to be disastrous, so far have surpassed the expectations even of many retailers — largely because of aggressive discounts on merchandise. In this instance, market discipline appears to be fostering a revolution in retailing that has encouraged greater price flexibility and ought to benefit consumers and *accelerate* the flow of goods through the market.

Even so, the Federal Reserve again forced down interest rates in early December (the Federal funds rate dropped to 4.5 from 4.75 percent) and President Bush reportedly will announce a new "package" of fiscal incentives in his State of the Union address next month. Congress is debating various proposals, which include an investment tax credit, a reduction of the tax rate on capital gains, credits for IRA accounts, spending increases, and the like. At this time no one knows what measures may emerge from this new initiative. Some of them, such as capital gains tax reform, could be beneficial. But it seems clear that both Congress and the President now are prepared to reintroduce any number of distortionary tax breaks that were a principal target of the tax reforms of the 1980's and to retrogress toward the demand management policies that proved disastrous during the 1970's.

* The Department of Commerce recently replaced GNP with Gross Domestic Product (GDP) as a measure of the value of newly produced goods and services, and AIER also will adopt the latter series as a coincident indicator as soon as the historical data become available. The revised data for both series reflect a shift in the benchmark year from 1982 to 1987 constant dollars, and incorporate various changes that are intended to reflect structural changes in the U.S. economy during recent years. The GDP and GNP series are virtually identical except for a small component, "net factor income receipts from and payments to foreigners," that is excluded from the former.

PRICE OF GOLD

	1990	*1991*	
	Dec. 13	*Dec. 5*	*Dec. 12*
Final fixing in London	$372.00	$364.75	$359.50

Research Reports (ISSN 0034–5407) (USPS 311–190) is published twice a month at Great Barrington, Massachusetts 01230 by American Institute for Economic Research, a nonprofit, scientific, educational, and charitable organization. Second class postage paid at Great Barrington, Massachusetts 01230. Sustaining memberships: $16 per quarter or $59 per year. POSTMASTER: Send address changes to ***Research Reports***, American Institute for Economic Research, Great Barrington, Massachusetts 01230.