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ABSTRACT

Some analysts see the expansion of the 1990s as uniquely long and strong. Moreover, according to one popular view, the noninflationary boom can continue indefinitely. To shed some light on this debate, this paper compares the 1990s systematically with two previous long economic expansions, using 31 variables on real activity, inflation, productivity, wages, profits, interest rates, stock prices, foreign trade, and fiscal and monetary policies.

Contrary to the popular conception, the cumulative gains in activity were greater in the 1960s and even in the 1980s than in the 1990s. This is because the recovery of 1991-1992 was unusually sluggish, and despite the fact that lately U.S. growth was indeed remarkably high and stable.

Inflation was decreasing or stable, a fact which is new for the post-World War II period (but not for the longer historical perspective). Disinflation or deflation abroad contributed much to this outcome, as did the new technologies. The declines of interest rates reflected mostly reductions in inflation and the national debt. Profit margins increased strongly.

Still, there are potential imbalances from overborrowing, overspending and undersaving, and rising current account deficits. Overvaluation in some parts of the stock market is probable and worrisome, but hard to evaluate.

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Introduction: The Surfeit of Questions and the Task Ahead

How does the expansion of real economic activity in the United States during the 1990s compare with its historical precedents in terms of length, strength, composition, and sources? Was it really unique, marking the onset of a new age of both higher and more stable growth with no significant inflation? How justified are the expectations of strong and lasting productivity-enhancing innovations? These and many related questions are prompted by what is widely viewed as a surprising combination of economic and financial, domestic and foreign events, which occurred recently and are still unfolding, as the millennium draws to its end. The essay is addressed to several of them.

The proponents of the view that the economy is undergoing a huge metamorphosis and entering a new era of indefinite prosperity believe, first, that the current American business expansion is indeed uniquely long, strong, and stable. Many see the main reason for past downturns in rising inflation and the reactions to it of markets and policy makers; they argue, second, that for various reasons inflation is no longer such a threat. The third and apparently most sweeping and important thesis being advanced is that the breakthrough to, and maintenance of, the expected "Golden Age" is to be the new information technology (IT).

By trying to answer the initial questions, I shall be dealing with all three of the above points. But still other related issues must be considered. Why did no other major market economy succeed as well as the United States in the 1990s? Was the latest upswing of the U.S. industry a special achievement and, if so, in what respects? Are there any useful lessons that other countries can draw from the U.S. example or model? Thinking about these matters necessarily involves an assessment of the roles of several major factors such as monetary and fiscal policies, domestic and international financial markets and disturbances, and global business cycle developments.

Yet even the mere recital of these problems raises the threat of an unmanageably large and complex task, which therefore needs to be defined more precisely and more

narrowly. The questions concern not only the unfolding and hence still hard-to-read past but also the unknown future. Hence good answers will only be reached in time, after much data collection and analysis. But arguments pro and con of the "new economy" are already forcefully presented and debated. So far, much of the popular discussion in the media has been limited to the realm of speculation and assertion, but increasingly the need for a more restrained and balanced analysis based on economic theory and history will be recognized and met.

The immediate incentive for writing the present paper was provided by the questions raised from the German point of view in a comprehensive study of "The Role and Contribution of Macroeconomic Factors to the Economic Upswing in the United States 1991-98."[1] This report concentrates on monetary, fiscal, and trade policies, demographic, productivity, price and wage developments. I shall attempt an independent evaluation of the same set of problems from the perspective of an American economist who is actively engaged on a current basis in monitoring the economies of more than a dozen countries around the globe.[2] There will be more emphasis here on endogenous factors in business cycle dynamics but also on the role of technology and limitations of the available data and measures. HDLS compare the developments in the 1990s with those in the 1960s and 1980s using mostly annual data; I prefer monthly and quarterly data for matching phases of the successive business cycles with comparably long expansions. Both approaches allow for paying attention to longer trends and structural changes, but monthly and quarterly data are more appropriate for the study of short and intermediate movements.

[1]Heilemann, U.; Döhrn, R.; von Loeffelholz, H.D.; and Schäfer-Jäckel, E. 1999.

[2] The task is part of my duties at the Foundation for International Business and Economic Research (FIBER) and The Conference Board (TCB) in New York.

2. The 1990s vs. 1980s and 1960s: Economic Activity and Inflation

2.1 A Weak Recovery and Late Upswing of Output and Employment

A simple but revealing way to evaluate the argument that the decade of the 1990s has produced unprecedented gains in real economic activity is to compare the cyclical patterns of total U.S. output and employment for the three long expansions of recent history. In each case, the value of the series at the initial trough of the expansion is set equal to 100, an arrangement that enables the user to make directly visual assessments of what happened at comparable stages of the successive developments. The recession years preceding the troughs of February (Quarter 2) of 1961, November (Q4) 1982, and March (Q1) 1991 are covered as well as the recoveries and expansions that followed. Chart 1 A shows the three patterns for the U.S. real Gross Domestic Product (GDP); Chart 1 B, for non-farm payroll employment.

The greater the rise of a series so measured, the larger is its cumulative gain during the particular expansion. For example, GDP increased from 6,658.4 in Q1 1991 to 8,897.7 in Q3 1999 (in billions of chained 1992 dollars; see right-hand scale). This amounted to a total output gain of 33.6 percent (see the index numbers on left-hand scale). But the thick line for the 1990s is the lowest of the three curves plotted, reflecting the fact that U.S. GDP increased overall as much as 48.2 percent between Q1 1961 and Q4 1969 and 35.5 percent between Q4 1982 and Q3 1990 (the shortest of the three expansions).

The slope of any of the curves represents the growth rate of the series in the particular period. In the first ten quarters of the recovery that began in Q1 1991, real rose very sluggishly, at rates at best half of those observed in the recoveries of 1961-63 and 1981-82. It is this initial sluggishness that accounts for the weak overall performance of the current U.S. expansion in terms of the total output amplitude. Even though since 1994 growth accelerated to match (or occasionally exceed) growth in the 1980s, the two lower curves in Chart 1A remained approximately parallel and the distance between them was

never eliminated. But the 1960s achieved the best growth record by far, particularly in the second half of the decade.

Chart 1B reaffirms and further strengthens this conclusion by showing that total non-farm employment in the U.S. failed altogether to grow in the first eighteen months of the recovery in March 1991 – September 1992. Indeed, the rate of unemployment continued to increase from about seven to nearly eight percent in this period (see Chart 2A), while employment in goods-producing industries actually declined.

All this was indeed very unusual. Typically, employment resembles production in growing fast in the early recovery stages, and unemployment falls fast. Yet in 1991-92 the U.S. economy was so sluggish that people were largely unaware that the recession is over. In retrospect, it is clear that this was an important, perhaps decisive factor that contributed to the defeat of President Bush in the 1992 election.

Again, it was the weakness or belatedness of the initial upturn that caused employment in the present expansion to lag well behind their historical counterparts. The overall employment increases were 19.4% in 1991-99, 23.8% in 1982-90, and 33.2% in 1961-69.

The length of the current business expansion in the U.S., viewed by so many commentators in the media as a unique achievement (whether of the private economy, government policies, or both), looks rather less impressive when the above facts are properly considered. The imminent duration record (surpassing the 106-month long expansion of the 1960s in March 2000) will be set in terms of national output but not in terms of employment. Further, the overall gains in activity (measured by the volume of production and, especially, employment) were so far smaller in the period since 1991 than in the expansion of the 1960s and even the shorter one of the 1980s.

In short, the claim that the U.S. economy has already attained the pinnacle of longest, highest, and broadest growth is at least premature. The effects of the sluggishness of the recovery in 1991-93, and of the 1995 slowdown, need to be taken into account. But it is

just as important to recognize that the impact of these events was by no means altogether or necessarily adverse. The slack production during the late 1980s and early 1990s can to some extent be ascribed to the reductions in inputs of labor and materials associated with the initial stages of the latest wave of technological innovation and corporate restructuring. The payoff on such "downsizing" tends to come years later, and it probably did in the second half of the 1990s.

2.2 The Late Downturn and Steady Decline in U.S. Unemployment

The unemployment rate tends to fall throughout business expansions, typically most strongly during their early recovery stages, and the more so the longer the phase. The decline ceases when a long expansion issues in a slowdown. This pattern prevailed in both the 1960s and the 1980s, as displayed in Chart 2 panel A.

In the past decade, the U.S. jobless rate moved differently. After rising from over five to nearly seven percent in 1990 and early 1991 (a period including a short and mild recession), civilian unemployment continued to increase for another year and a half and approached eight percent of the labor force. Only after this unusually long lag did the jobless rate turn down in a rather gradual fashion, but its subsequent decline was also unusually long and persistent, ending impressively at just above 4 percent late in 1999. The unemployment rate in the current expansion was consistently lower than during the 1980s but consistently higher than during the 1960s. There is no evidence yet of an end to the decline (which was interrupted by a flattening only once, in 1995).

The falling unemployment rate is usually associated with tightening conditions in labor markets and upward pressures on wages and unit labor costs. But the prominent feature of recent years was that the rates of unemployment and inflation declined simultaneously. This generally unexpected combination of events seems to have perplexed the proponents of the opposite relationship embodied in the analysis of the Phillips curve and the concept

and estimates of the "natural" rate of unemployment at which inflation has no tendency to accelerate. However, as discussed below, there are some explanations for the newly observed developments that are rooted in both a long historical record and contemporary international events, including the effects of crises and downturns, overcapacity, and deflation abroad. But special factors such as the effects on prices and productivity of rapid advances in computer hardware and software attracted considerably greater attention.

2.3 The Global Diminution of Inflation

Consumer price inflation in the United States fell sharply during the year centered on the March 1991 trough, stabilized in 1992-95, declined again but more gently in 1996-97, and changed little in 1998 and early 1999. It zigzagged and rose from about two to three percent later last year. In contrast, as shown by Chart 2-B, the trend of inflation was irregularly up in the 1960s, and down in the first half but up in the second half of the 1980s.

After decades of inflation dominating the post-World War II era, the low and stable or declining growth rates of the U.S. Consumer Price Index observed in the 1990s met generally with growing surprise and pleasure. Most people thought the expansion itself would necessarily bring on more inflation. Many economists, trained to think in terms of the Phillips curve (presumably in its expectations-augmented version), were hard-pressed to account for the long concurrence of falling inflation and falling unemployment rates. Some found the main explanation in good luck: the coincidence of favorable "supply shocks". Technological progress hastened the enormous decline in computer hardware and software prices, and increased greatly their importance. The new ways of marketing via the Internet strengthened the bargaining position of consumers/buyers, which led to lower prices, in part because the resulting sales were effectively tax-exempt. The strong dollar and weakness abroad helped by reducing the prices of imports, with large contributions from the declines in prices of industrial materials and commodities at large.

No doubt, all these factors have participated in helping to suppress U.S. inflation in recent years, but the analysis is far from complete and convincing. The decline of inflation in the 1990s was not just an U.S. phenomenon but widely diffused internationally, particularly in Asia and Europe. In some countries actually deflation prevailed, and not just in commodity prices, where it is not uncommon, but in the far more comprehensive indexes of producer and consumer prices. Economic historians have long observed waves of deflation alternating with inflation for periods preceding WWII, but the return of deflationary tendencies, which became increasingly evident in 1997-98, was a great surprise to the general public accustomed to see inflation as an unalterable rule of life.

When the long-run trends in prices were downward, inflation was weak or absent during business cycle expansions and deflation dominated during contractions. This is shown by data on U.S. wholesale prices for most of the second half of the 19th century (see Zarnowitz and Moore, 1986, pp.553-560). Expected inflation was then low and stable, since so was the actual inflation in the long run under the gold standard. The U.K. and U.S. economies may have been operating on the nearly horizontal parts of their nonlinear Phillips curves[3].

The episodes of deflation during the 1990s are related to major cyclical developments abroad. Thus Japan, after a long era of high growth with few serious setbacks, suffered a collapse of heavily overvalued real estate and stock prices, a sequence of financial crises and business recessions, and, perhaps worst, a protracted economic stagnation with repeated failures of institutions and policies. Along Asia's Pacific Rim, there was first a large wave of foreign capital inflows, then much malinvestment and overinvestment in short-term speculative ventures, weak but protected financial and other companies, and industries with excess capacity. Finally, in 1997-98, debt and currency crises undermined investor confidence and caused massive panic and capital flight. Exports

[3] The curve is assumed to have a negative slope that diminishes in absolute value to the right. That is, it is steep in the region of highest inflation and lowest unemployment rates, flat in the region of lower inflation and higher unemployment. This implies that inflation can rise indefinitely when excess demand increases sharply, whereas deflation is limited even in severe recessions characterized by excess supply. See Phillips, 1958, for the example of the relationship for the United Kingdom in the pre-World War I age.

slowed, risks rose, and profits fell. Slowdowns followed by recessions occurred since mid-1990s in Thailand, South Korea, Malaysia, and Indonesia. The devaluations in these countries caused initially rounds of price increases but in the wake of recessions prices dropped. Deflated imports from these countries as well as from China helped reduce prices in Europe and North America.

The inflation-restraining effects of the foreign crises and recessions were enhanced by globalization, a well-advanced process defined broadly as a trend toward increased international integration of output, input, and asset markets. The apparent results included reductions in the powers of U.S. corporations and labor unions to raise prices and wages, respectively. The surge of domestic demand helped the economy to weather the negative influence on exports of the foreign slowdowns and recessions. Expansionist monetary policy countermeasures and resilient optimism of investors helped to overcome challenges to the financial markets from crises abroad- which crested in 1998 when troubles spread to Russia and Brazil. Overall then, the net impact on the United States of the newly virulent business cycle developments abroad was to reduce inflation. Given the predominantly adverse macroeconomic effects of inflation (Zarnowitz, 1999), this effect was clearly positive.

However, the Asian recessions ended generally in late 1998 and were followed in some countries by substantial recoveries. Also, oil prices turned around and rose steeply and some industrial materials prices increased significantly as well. So the situation changed in that the deflationary forces weakened. Consumer price inflation in U.S. picked up but irregularly and as yet modestly. At the time of this writing (mid-January 2000), definite indications that inflation is about to become a real threat are still missing. This is so despite several frequent pre-conditions of a rising price level, notably tight labor markets, a boom in selected segments of the stock market, and high (low) personal spending (saving) propensities (about which more later).

3. Labor Income and Costs, Productivity and Profits

3.1 Modest Gains in Nominal and Real Wage Rates

Between Q1 1961 and Q4 1969 (35 quarters), the rates of nominal wages as represented by the index of average hourly compensation in the U.S. non-farm business sector (1992=100) increased by a total of 57.2 percent; between Q4 1982 and Q3 1990 (31 quarters), by 38.9 percent; and between Q1 1991 and Q3 1999 (34 quarters), by 26.2 percent. Here wages are gross –before taxes- and include fringe benefits.

As shown in Chart 3, panel A, the relative gains in wages were about equal in all three cycles, after the first nine quarters of recovery, but in 1993-96 growth of wages slowed greatly and the pattern for the current expansion fell below the patterns for the sixties and eighties. The gap remained sizable despite the acceleration of the rise in labor compensation during the period 1997-99.

The six-month smoothed annualized growth rates of the same series plotted in Chart 3, panel B, and provide confirming evidence. Growth of wages so measured had a downward drift in 1990-94, an upward drift and much smaller short-term variations in 1995-99. It was most of the time lower than the corresponding figures for the 1960s and 1980s.

When expressed in real terms to adjust for inflation, hourly wages rose strongly in the first six quarters of the recovery, Q2 1991 - Q3 1992, but in the next three years they actually declined slightly (Chart 4, panel A). After turning up and increasing slowly in 1995-96, the hourly compensation started rising much faster over the years 1997 and 1998 before slowing down again mildly in 1999. The corresponding patterns for the growth rates (Chart 4, panel B) demonstrate more directly how real hourly wages strengthened and stabilized since mid-1995.

The clear conclusion from these exhibits is that persistent growth in labor's compensation was relatively weak in the first half of the 1990s, in nominal and real terms. It is only in the last two years that gains in real wages came to exceed their counterparts in the late 1960s and 1980s, while gains in nominal wages continued to lag.

This is consistent with other related evidence such as the moderate growth rates of unit labor cost and of labor productivity (output per hour) in the U.S. non-farm business sector as well as the rising and strong corporate profit margins and price/unit labor cost ratios during the current expansion (as shown below). However, it is also important to note that total labor income increased much more in the nineties than did the wage rate because people worked longer hours. In the past eight years, the average workweek in manufacturing regularly exceeded 41 and occasionally even 42 hours, whereas the workweek varied mostly between 40 and 41 hours during the corresponding phases of the previous long expansions.

3.2 Productivity Ahead of Unit Cost of Labor as Both Grow Steadily

Growth of unit labor costs (ULC-GR) usually first increases and then decreases during recessions, and this happened in 1960-61, 1981-82, and 1990-91. Its decline tends to deepen during the early recovery stages, and this too can be observed in each of our three patterns in Chart 5, panel A. In 1991-93, ULC-GR fell from a peak of about 6% to near zero, then rose to 2% in 1994 and stabilized around that level in 1995-99. By contrast, in the 1960s and 1980s ULC-GR fluctuated much more and tended to rise in the later expansion stages.

Growth of labor productivity, i.e., of output per hour of work, is clearly procyclical but leading. That is, productivity growth as a rule starts declining in a late phase of expansion, well before the downturn in aggregate economic activity, as output slows more than employment; it also starts rising before the end of a contraction or recession.

Growth of output per hour or the average labor productivity as measured (call it LP-GR) fell during the 1990-91 recession about as much as in 1960-61 but recovered later and much less in this cycle than in those of the 1960s and 1980s (Chart 5-B). The movements of LP-GR in this expansion were generally much smaller than those in the two previous long expansions, and they had a much more steady and moderate upward trend. In 1996-99, LP-GR moved narrowly between 3 and 4 percent, that is, about 1 to 2 percent higher than UC-GR.

Chart 5 is consistent with the interpretation of much of the recent technological development as a substitution of computer inputs for labor inputs. Such a substitution represents movements along and around the production functions rather than the large upward shifts of these functions that would be expected of a general technological revolution (the subject will receive more attention below). The process reduced greatly the variability of growth of unit labor costs in the U.S. non-farm business sector and, at least so far, prevented the rise of ULC-GR that occurred in late stages of the previous long expansions. It also stabilized LP-GR and, again at least so far, prevented its decline in this cycle.

3.3 Long and Strong Rises in Profits and Profit Margins

Measures of corporate profits after taxes in constant dollars and of the ratio of domestic profits (adjusted for inventory valuation and capital consumption) to corporate domestic income display remarkably consistent and persistent increases during the present business cycle. These movements extended from the early years of the decade of the 1990s, which were sluggish but marked by extensive cost cutting ("downsizing"), through most of 1997, a year of strong growth. Total real profits then declined mildly in late 1997 and 1998 but rebounded strongly in 1999. The profit margin decreased mildly in 1997-99. The related ratio of the implicit price deflator to unit labor cost in the U.S. non-farm business sector had an even stronger and more persistent upward trend that accelerated most recently.

As shown further in the first two panels of Chart 6, corporate profit totals and margins in the 1960s were higher than in the 1990s during the first six years of expansion but later declined strongly, conforming to the usual pattern of lengthy leads at peaks. In the 1980s, the patterns for both series were considerably lower than their counterparts after the first three years of the expansion. The third panel shows the price-labor cost ratio much higher in the 1990s than in either of the two previous long expansions.

The rise in effective profits and profitability would be expected from the accompanying developments. Profit margins are associated positively with changes in real GDP and in productivity (output per worker hour), negatively with inflation, interest rates, and a measure of risk aversion - yield on new high-grade corporate bonds minus yield on long-term Treasury bonds. The corporate domestic profit to income ratio shows high positive correlation with the price to unit labor cost ratio, which can be viewed as a proxy margin measure.[4]

Now the recent evolution of these determinants of profits and margins has recently tended to be very favorable. Economic growth measured by change in real GDP was extraordinarily high in recent years. Output per hour of work increased significantly, though perhaps less than some would infer from the rapid progress in the digital sector of the economy. Unit labor costs moved up but stayed moderate, behind the rise in labor productivity. Inflation and interest rates declined much of the time. Finally, risk varied in a way that did not seriously threaten the generally high business and investor confidence bolstered by optimism about the new technology of information, communication, and entertainment ("eNTICE"). This is best evidenced by the boom in related segments of the stock market.

[4] For evidence and analysis, see V. Zarnowitz 1999.

However, none of this can be safely extrapolated. The recent declines in our patterns for the profit margin and price-ULC ratio series may serve as gentle admonitions in this context.

4. Changes in Financial Markets

4.1 Downward Trends Overwhelm Cyclical Movements in Interest Rates

Usually, the observed nominal interest rates show procyclical movements, i.e., they rise in expansions and decline in contractions. This presumably reflects in large part expectations of inflation which tends to be procyclical, too. Real interest rates, which are adjusted for expected changes in the price level to show true costs of borrowing, may not have a consistent and significant relationship with business cycles.[5] But the ex ante real interest rates, like the expected inflation rates, are not observable and can only be estimated with varying and often low reliability.

Moreover, interest rates, apart from the effects of actual and expected inflation, depend on a number of interacting factors whose relative importance varies over time. These include the shifting demand for and supply of credit and money; changes in monetary policy; changes in fiscal policy affecting government debt; the financial markets climate or changes in confidence of traders, investors and savers; and the relevant international variables, notably the interest rates abroad. In addition, there are always unpredictable events or "shocks" that influence the rates and their structure.

In addition to cyclical movements, interest rates show longer trends. These were upward in the 1960s and 1970s, downward in the 1980s and 1990s, reflecting similar trends in inflation rates. These movements were very large and approximately symmetrical, spanning rises from about two or four to fourteen or sixteen percent and declines back to low single digits. Recently, the trends overwhelmed the cyclical movements in the rates, producing declines during expansions.

[5] See, e.g., Mishkin 1981.

During the recession of 1990-91 and the first three years of the following recovery in 1991-93 both the 91-day Treasury bill rate (TBR) and the yield on new high-grade corporate bonds (NCB) drifted downward, then sideward (see Chart 7). In 1994, the third year after the initial trough of March 1991, both TBR and NCB moved up, but from 1995 through 1998 their trends were downward again, more gentle and smooth in the short than in long rates. In 1999, both patterns turned up mildly (TBR) from 4% to 5%, NCB from 6% to 7%+, approximately).

In contrast, in the long expansion of 1961-69, TBR rose from little over 2% to nearly 8% (after having declined from 4% during the preceding recession). NCB fell less in the recession-recovery period 1960-61 and rose less in the next three years but increased from 4% to about 9% in 1965-69. The patterns for the 1980s have the highest levels and the largest fluctuations, with longer trends first downward in 1982-87 and then upward and level (the ranges are 14% - 6% for TBR, 16% - 9% for NCB).

The recent declines in interest rates should also be related to the long and cumulatively large reductions in federal debt growth during the eighties and nineties. Changes in real economic growth and inflation combined with changes in fiscal policy to generate more tax revenue vs. government spending so that the huge federal budget deficit was gradually diminished and, by the late 1990s, eliminated. The cutbacks in government *dissaving* tended to raise national saving, even though the latter was at the same time adversely affected by a decrease in private saving. Lower governmental demand for credit helped to moderate the interest rates.

The striking differences in the cyclical patterns of interest rates in the sixties, eighties, and nineties are in large part explained by corresponding differences in the patterns for smoothed six-month growth rates in the U.S. Consumer Price Index. Inflation so measured declined strongly from about 7% in the last recession and initial recovery in 1990-91, stabilized in the 2 1/2 - 3% through 1996, declined below 2% in 1997-98, and finally rose irregularly close to 3%. In the sixties, inflation first varied irregularly at very

low levels (around one percent), then in the second half of the decade drifted upward to end up at about 6%. In the eighties, U.S. inflation had large fluctuations around a strong downward trend in the first half and around a lesser and tapering upward trend in the second half of the expansion.

4.2 The Declines and Inversions of Yield Spreads as Leading Indicators

Yields on short-term securities typically have larger cyclical movements than yields on long-term securities, and higher conformity to business cycles. The spread between the two yields rises during recessions and early recoveries when the short interest rate falls much faster and more than the long rate does, and it declines during expansions when the short rate rises much faster and more than the long rate does. But this assumes the typical procyclical behavior of interest rates, which also have some tendency to lag, particularly at troughs. Since the Fed started pursuing a strong counterinflationary policy and two back-to-back recessions occurred in 1980-82, interest rates decreased much of the time even during business expansions (along with inflation).

The spread calculated as the difference, 10-year minus 1-year Treasury bond yields, predominantly declined during each of the three long expansions compared: in the 1980s and 1990s when interest rates had downward trends as well as in the 1960s when they had an upward trend (see Chart 7C). For the spread to decrease when the interest rates generally are falling, the long-term rate must decline more than the short-term rate.

Chart 7C shows that the yield spread increased strongly from near zero to over 3 percent during the recession-recovery period 1990-92, then drifted down slowly back to near zero in 1998 before picking up a little in 1999. Its pattern for the 1980s runs mostly lower and shows much more volatility, falling steeply to below zero in the sixth and seventh year of the expansion. In the 1960s, the yield spread was generally much lower and declining gradually; it fell below zero twice, first in the sixth year of the expansion and again right before the peak.

Several studies have found the yield (interest rate) spread to be a useful leading indicator of business cycle turning points[6]. The early downturns in the spread produce long-lead signals; the episodes of inversion when the spread becomes negative occur much later, in the vicinity of the business cycle peak.

In an environment of low actual inflation and after expectations have adjusted to greater price stability, short-term interest rates should be more sensitive to the real-rate component. However, long-term interest rates may still be dominated by the inflation component so long as the expectations of price stability do not extend far into the future. Now suppose credit tightens, which may be the result of restrictive monetary policy or of greater caution of banks and capital markets; then short rates respond promptly and significantly by rising but long rates increase much less and, indeed, may decrease if expectations of future inflation do. This would result in a flattened or even inverted yield curve, i.e., yields on long-term securities fall relative to yields on short-term securities for financial instruments with otherwise similar characteristics (e.g., default-risk free Treasury bills and bonds).[7]

The reaction of the bond market to tight-money policy moves is favored in the literature as an explanation for the role of the yield spread as a leading indicator. But in the current expansion, so far at least, the Fed avoided seriously restrictive measures. The economy flourished and the stock market boomed, while the Fed's entreaties for more moderation were largely applauded and ignored. The yield curve never inverted, though it came close. A market-induced decline of the yield spread, which takes place while interest rates are falling or low, may not present much of a macro risk.

However, the combination of high short and low long yields, whatever its cause, means reduced profit margins for banks. And the latest fiscal policy of reducing supply of long-

[6] See in particular Estrella and Mishkin 1998.

[7] Note that this argument is consistent with the *preferred habitat theory* of the term structure of interest rates, which makes the long-term yield equal to an average of short-term yields expected to occur during the life of the bond *plus* a term premium that varies with the supply and demand conditions for that bond (the less general expectations theory uses only the first of the above two components). Usually, the yield curves are upward sloping as people prefer holding short-term bonds, which makes the term premium positive.

term Treasury bonds resulted in a rush to buy them, driving their prices up and yields down. This was surely an ill-timed move in view of the concurrent monetary policy of the Fed, which just raised its benchmark short-term rate. If continued, such apparently conflicting policies could produce a real yield inversion and do considerable harm.

4.3 Stock Prices Soar More than Profits

The Standard and Poor's index (1941-43=10), which covers common stock prices of 500 large and medium-size companies using their capitalization numbers as weights, provides a fair, though certainly incomplete picture of the U.S. equity market. (This index accounted for about two-thirds of the market value of over 5000 publicly traded stocks in 1991.) Chart 8A shows that the S&P 500 index rose quite slowly (just about 25 percent) in the four initial years of this expansion through 1994, but then nearly doubled in 1995-96 and doubled again in 1997-99 (increasing almost three-fold from the business cycle trough in March 1991 to January 2000). In the expansion of the eighties, the index made a bigger cumulative percentage gain before the October 1987 crash, then fell to the 1990s pattern and moved close to it for the remaining two and a half years. In the sixties, S&P 500 increased very gradually, and far less in the last five years of the expansion (1965-69) than in the corresponding stages of the two later cycles.

Corporate earnings (profits) of the S&P 500 companies rose much less than their share prices as the price/earnings (P/E) ratio increased from 14 to 33 in 1994-99 (after fluctuating in the lower half of the same range in the previous five years; see Chart 8B). In the eighties, this P/E ratio was generally lower and variable, swinging its way up from 7 to 20 in 1982-87, then dropping to 12 in 1998 and rebounding to 16 in 1988-90. In the sixties, P/E was stable, varying most of the time in the narrow interval from 15 to 20.

Many observers, including important policymakers, have for some time now expressed concerns that the U.S. stock prices have become greatly overvalued. Historically, P/E ratios above 20 were rare for S&P500 and followed by steep drops as in 1962, 1974, and 1987. But the index suffered no large and sustained declines in 1997-99, the period during which it climbed high into the suspected danger zone. Its drop in the summer

1998 was associated with crisis abroad (especially in Russia, following Asia) and very short-lived; its decline in 1999, more influenced by domestic factors, was slightly longer but a little smaller and also quickly overcome.

Thus, based on this evidence alone, it is not clear that the stocks in the S&P 500 index are on the whole seriously overvalued, particularly given the high growth of output and productivity and low inflation and interest rates. But it is interesting that the P/E ratio for the index seems to have hit a ceiling in 1998-99. Moreover, it is mainly the new technology and Internet stocks that have attained the highest valuations by far, and these companies are best represented by the soaring Nasdaq index. Here the prevailing explanation is investors' enthusiasm about long-term prospects for the new "digital economy"- - but this subject deserves a separate consideration.

5. The Concerns of Policy Makers and the Behavior of Policy Variables

5.1 Inflation and Money

Recurrent fears that the U.S. Consumer Price Index (CPI) will start rising seriously again dominated monetary policy in the nineties, judging from the tenor of official announcements. The actual behavior of the variables that the Federal Reserve can use to conduct its policy – the federal funds rate, the monetary base – suggests that keeping the expansion of total output and employment going was probably important as well.

During the recession of 7/90 – 3/91 and the sluggish recovery through 1993, growth of the monetary base (currency plus bank reserves) stayed very high, first varying countercyclically in the range of 7 to 12 percent, then rising to and flattening above 10 percent. Chart 9A shows, further, that the base growth (MB-GR) declined steeply in 1994-95 to a trough of just 1.0% in March 1996, then turned and moved up sharply to regain 10 percent at mid-1999. Late last year, MB-GR has soared at an explosively rapid

rate from 10 to 19 percent. The corresponding pattern for the 1960s shows generally rising but much slower and less variable MB growth rates, while the pattern for the 1980s consists of moderately high rates fluctuating around a slowly declining trend.

It is worth noting that the drop and upturn in MB-GR coincided with the times when the Fed first tried to counter the expected rise in inflation with a sequence of several quarter-point hikes in the federal funds rate and then, after the slowdown materialized around 1995, reacted by moving in the opposite direction of greater ease. The interest rate changes attracted all public attention, money supply changes almost none, but the large down-and-up movements of MB-GR should perhaps tell us something about policy changes – provided that the Fed still cares about these movements and is able to control them. It looks as though a lot of liquidity was provided in the second half of the 1990s through the ordinary channels of money and banking, with either active or passive Fed participation. Some monetarist economists expressed concern about the high rates of growth of monetary aggregates, but to little avail with respect to the public awareness of the subject matter. The great spurt of MB-GR last year was at times explained with reference to the Y2K problem, which means that it should have been strictly transitional and quickly corrected. The quick correction achieved early this year reduced MB-GR down to 8 percent.

To be sure, recent experience in many countries including the United States suggests strongly that money demand functions lack stability in the short run. Hence, comprehensive measures of money such as M2, M2+, M3, and L are all very difficult to control. For better or (more likely) for worse, monetary targeting for price level stabilization is no longer accepted as a promising strategy. What is actually pursued, instead, is inflation targeting and attempts to meet the target by means of influencing interest rates. But this strategy, which is now increasingly favored, faces difficult tasks of measuring and forecasting inflation, selecting its optimal rate(s), and assessing the effects of monetary policy actions. Inflation depends on its own past and responds to some leading indicators, but these relationships tend to vary over time, reflecting different conditions, shocks, and price/wage rigidities. How inflation reacts to interest

rate changes has also been quite difficult to estimate with the expected coefficients and an acceptable degree of precision.[8]

Chart 9B shows that M3-GR was very low, mainly in the range of +3 to –1 percent, in 1990-93.[9] From 1994 to 1998, this series increased strongly, from about 2 percent to 11 percent; then it dropped to 6 percent in mid-1999 and rose again to 9 percent in January 2000. This pattern, too, stands in contrast to those for the earlier long U.S. cycles. In the sixties, M3-GR was generally high and stable (between about 8 and 10 percent), except for a temporary decline in the sixth year of the expansion and a sharp drop in its last year. In the eighties, there was a large and fairly consistent downward trend in M3-GR.

In short, a highly fortunate composite feature of the U.S. boom of recent years was that money grew strongly, yet not excessively in the sense that no significant inflation was ignited. This supported the large expansion of domestic demand for goods and services as well as securities. While the general price level remained relatively stable, stock prices inflated rapidly in 1997-99 (recall section 4.3 with Chart 8). Despite Chairman Greenspan's early and recurrent worries about the market's "irrational exuberance" and more recently about its possibly overstrong "wealth effect" on consumption, the Fed evidently did little to influence the huge flow of money and credit feeding the seemingly insatiable demand for the currently popular equities.

5.2 Federal Receipts and Expenditures

Federal receipts increased steadily during the expansion Q1 1991 – Q4 1999 for a cumulative gain of about 78 percent. The four years of recovery through 1994 saw a rise of 26 percent only, but the boom that followed caused a surge in taxes totaling $553 billion or some 6.5 percent of the average GDP for the period. Recent changes in the levels and progressivity of the tax rates, and shifts of people into higher brackets, resulted in more of

[8] See Sims 1992, Cecchetti 1996 and Cecchetti and Groshen 2000, for evidence and discussion.
[9] M3 includes currency, checking deposits, NOW accounts, and travelers checks; small time deposits, savings deposits, money market mutual funds, and overnight repurchase agreements; large time deposits, overnight and term Eurodollars, and term repurchase agreements.

the federal income tax having been paid by well-to-do (30 percent in 1993, 40 percent in 1998, for those with over $200,000 of adjusted gross income).

Nonetheless, the federal receipts pattern for the 1990s shows no exceptional strength when compared with its recent counterparts. In 1961 - 69, tax revenues of Washington more than doubled, with the last four years of the expansions accounting for the lions' share of the gain. The pattern for the 1980s lies above and parallels that for the 1990s, but the two are not very far apart (on all of the above, see Chart 10A).

The big difference, so far as the federal budget is concerned, shows up on the expenditures side. In 1990 – 95, the current-cycle pattern either exceeded slightly or practically coincided with the earlier patterns, but thereafter the situation changed drastically. In the last four years covered (1996 -- 99), federal expenditures rose less than 12 percent, whereas the corresponding figures for the late sixties and late eighties were about 52 and 26 percent, respectively (Chart 10B).

5.3 National Defense and Government Budget Deficit

A major factor behind the observed contrast in the expenditure patterns was the drastic reduction of defense spending after the Cold War ended (recall also the role of expanding military spending on the Vietnam War during the 1960s). In 1990, 2.1 million people served in U.S. armed forces, but in 1999 that number dropped to 1.4 million. Military spending fell from about 5 percent of GDP to 3 percent.

Chart 11A traces the evolution of national defense expenditures in constant (1996) dollars during each of the three decade-cycles. The 1990s saw a steady decline from the high plateau around $450 billion to about $350 billion or by a bit more than 20 percent. The 1980s saw the opposite upward movement for over five years, then three initial years at the already noted plateau. In the 1960s, the real defense outlays were modest in the first half of the decade, expanding strongly in the second half on the road to Vietnam.

Indexing to the business cycle troughs is not done here; it would only emphasize the already strong contrasts shown.

The federal budget deficit exceeded 200 billion dollars in Q2 1991 and 300 billion dollars in Q3 1992 before turning down and getting ever smaller as a result largely of the rise in tax receipts and the slashing of military spending. The deficits declined steadily to less than 100 billion dollars in 1997 and were replaced since by surpluses that rose consistently in Q1 1998 – Q3 1999 from 25 to 134 billion dollars.

Chart 11B compares the federal government's budget surpluses or deficits in the three cycles using their ratios to GDP. In the sixties, the deviations from the zero line (balanced budget) were quite small on both the positive and the negative sides. In the first halves of the eighties and nineties, the patterns largely overlap, except in 1991-93 around the Q3 1992 nadir (deepest deficit ratio). Since 1996, the ratio rose strongly and steadily, from -2 to +1.5 percent, that is, from still large deficits to surpluses not seen for a long time.

The government claims much credit for having adopted a policy of "fiscal discipline", and it is indeed praiseworthy that its overall expenditures grew but slowly in the last five years. True, there is little clear evidence of a restraint in civilian spending. However, the logic of the U.S. political system is such that the government gets blamed when things go wrong and gets praised when things go right in the economy. It is difficult for the voters (and in general) to allocate the credit to skills and luck, to an administration or Congress and the private economy. What matters is that unemployment, inflation and interest rates stayed reasonably low, in part presumably due to successful fiscal and monetary policies.

6. New Returns and New Risks

6.1 The High-Technology Boom

Despite increases in interest rates, a huge rise in gasoline prices that followed output cutbacks by oil-producing countries, and numerous warnings of the risks of overvaluation, excess demand, further Fed interventions, etc., the demand for high-tech stocks continued to soar in an unprecedented fashion in the late 1990s. The boom in computer-related stocks, Internet, and bio-tech issues dominated market news even while the bulk of stock prices weakened, many suffering considerable declines. It is clear that great many investors and traders really believed that the new world of digital information, communication, and entertainment (our "eNTICE") technology guaranteed huge returns so far as the eye can see at no significant risks. Many probably still believe it, although as this is written Nasdaq is undergoing another serious decline that may or may not persist.[10]

There is no question about the importance of high technology of the present time for both the recent acceleration of real growth and the deceleration of inflation in the United States; but, as discussed in this paper, other forces contributed to these positive developments as well. Because of the difficulty of measuring the impact of technology and the associated productivity gains, it seems impossible to assess the input of this factor quantitatively with the currently available information.

The recent boom in technology-driven stock prices implies a widespread expectation that the breakthroughs in high technology will bring enormous advances in productivity. It is indeed most likely that substantial gains are being achieved on this front and that many more are to come. But the problem is that the currently available measurements show only a modest growth of U.S. output per hour in recent years, more often than not smaller

[10] The index fell on March 13, 14 and 15 by a total of 9.2 percent at the close of the third day. NASDAQ already fell twice earlier this year (by 9.8% and 8% on January 3-6 and 21-28, respectively) but scored a 30 percent rally in between.

than the corresponding measures in the 1960s, for example (see above, section 3.2 with Chart 5).

Fears that the overvaluation of many stocks, mainly in the high-tech area, represents a bubble waiting to burst have been expressed by many market analysts and economists who know the history of finance. However, rotation to stocks of older established companies may be occurring, which could soften the event to a sequence of less traumatic "corrections." Even a crash need not involve a cyclical downturn in the imminent future. But a significant slowdown of the economy, which is deemed necessary by many, notably including the Fed, could well occur and may turn out not to be as safe and beneficial as hoped for.

As argued in Zarnowitz 1999, long business cycle expansions raise employment and consumption, productivity and wages, profitability and investment – all highly positive developments. However, they also generate imbalances and have therefore proved not to be indefinitely sustainable. In particular, slowdowns that depress corporate profits and investment have often spelled the end of such expansions. Profit margins depend positively on growth rates in real GDP and in productivity of labor, negatively on inflation and interest rates, other costs, and risk (measured by the difference, yield on high-grade corporate bonds minus yield on long-term Treasury bonds). Business fixed investment shows similar dependencies, being especially sensitive to real growth and profits but also to the stock market, credit (funds raised by private nonfinancial borrowers), and again the risk proxy (negatively).[11]

In this expansion, not only business investment but also household investment in housing and outlays on durables and other consumption grew very strongly. Since mid-1999, the Federal Reserve raised its interest rates guideline and expressed repeatedly some worries that high consumer spending encouraged by the market boom may provide more fuel for inflation. The "wealth effect," that is, the role that changes in household assets have in influencing consumption, is a subject of relatively recent but growing interest. Stock

[11] For estimates and discussion, see ibid., pp. 74-82

ownership is spreading fast lately but other assets, notably housing, have been more important historically; and residential construction increased in the 1990s at a record pace.

Real consumption and real income reflected the strong growth trends and show the expected high correlation; the question here is whether the stock price index, with its much greater volatility, influences consumption, particularly of durable goods, significantly. The equation that follows shows a regression of real expenditures on consumer durable goods (CD) on real personal income (Y), and the Standard & Poor's 500 stock price index (S), cast in terms of two-quarter annualized growth rates to abstract from common trends. For 1960-99 (156 observations), we obtain:

$$CD_t = -2.6 + 1.9Y_t + 0.2\ S_{t-1}, \qquad R^2=0.468$$
$$(8.9) \quad (5.8)$$

As indicated by the t-ratios in parentheses, the wealth effect of S_{t-1} on CD_t is highly significant, but far weaker than the income effect of Y_t: about 2¢ in real terms, per an additional dollar of stock market value. As shown below, the personal savings rate declined and the personal debt growth rate rose substantially in recent years, but it is not clear that the stock market boom is mainly responsible for these worrisome trends.

6.2 Problems of Productivity Measurement

The proponents of the "new economy" vision assume that the growth rates of output and productivity are substantially underestimated in the currently available U.S. statistics. Unfortunately, there is no clear evidence that this is in fact so. One can readily think of sources of bias in either direction. Just to illustrate, employment hours may be understated to the extent that some people spend much extra time on productive but unpaid and unrecorded work with computers—which, other things equal, would result in underestimation of output and productivity. But there is also much concern about "cyber-slack", that is, shirking or neglect of duties by employees who use computers for private

pursuits, e.g., games or shopping—which would produce overestimation of hours and output.

It is well known that the measured growth in U.S. labor productivity slowed greatly between 1949-73 and 1973-90: from 3.3% to 1.2% per year, according to the Bureau of Labor Statistics, for example. A slight improvement to 1.3% in 1990-96 was followed by a larger but still not particularly impressive one of 2.0% in 1997-98. However, a recent well-received appraisal estimated that the average annual productivity growth in the 1990s was 1.4% for the total business sector and as high as 3.7% for manufacturing[12].

This would imply very low positive or even negative labor productivity growth for non-manufacturing. But this is judged by many analysts to be unlikely, particularly for those non-manufacturing industries which are intensely computer using. The latter include banking and generally the FIRE sector, i.e., finance, insurance, and real estate; wholesale and retail trade; airlines; legal, health, and business services, entertainment, and security investments.

In fact, computers are most highly concentrated in these service industries, which have been estimated to account for about 55 percent of value added but 77 percent of computer capital in the U.S. economy of 1991. In contrast, only a minority of manufacturing industries producing a minority of total manufacturing output use computers intensively.[13] The numbers quoted in this and the preceding paragraph appear to be inconsistent with the widespread perception that the rapid progress of information technology (IT) in recent years has brought a fundamental shift to much higher overall growth rates of output and productivity (the " new economy" paradigm). Moreover, if this is puzzling for the U.S. economy, which alone enjoyed a stable noninflationary expansion at least since the mid-1990s, it is much more puzzling yet for other countries where growth was much lower and more intermittent. Yet the computer revolution was

[12] See Dean 1999. See also McGuckin, Stiroh, and van Ark 1997.
[13] See the reference to McGuckin *et al.* in note 1. The manufacturing industries using computers intensively include non-electrical and electrical machinery, printing and publishing, instruments, and stone,

clearly a global phenomenon as the IT market expanded everywhere at rates much higher than those of economic output and employment.

Studies of U.S. manufacturing show that in both 1958-73 and 1973-79 those industries that used computers intensively had somewhat *lower* growth rates of labor productivity than those industries that used computers much less (the former group being defined as having more than 4 percent of total capital input in the form of computers in 1991). In 1979-90, however, this situation was reversed, with the computer-using sector's output per labor hour rising by a little over 3 percent, more than twice the number for the "non-using" sector. In 1990-96, the gap widened much more yet to 5.7% vs. 2.6% (McGuckin *et al.*, p.4). However, outside of manufacturing the measured productivity gains were very much smaller and still decreasing. For the U.S. economy overall, the sectors not using computers had gains of about 3.5% in 1947-73, 1.25% in 1973-79, and 0.4% in 1979-91; the corresponding numbers for the computer-using sectors were 2.5%, 1.2%, and 1.1%.

If these numbers were correct, their direct implication would be that manufacturers utilize computers much more efficiently than companies in the services sectors do. To reduce this apparent advantage substantially, output and productivity in services would have to be *strongly and increasingly underestimated.* The latter explanation is favored by several students of the problem who believe that unmeasured quality improvements result in understatement of output and/or overstatement of prices of services.

The undeniable fact that output of services is much harder to measure than output of goods has long been recognized. The related rich research on improved estimation has been productive and useful (e.g., the work by Griliches and Gordon on hedonic price indexes). But even under the strong assumption that computers have the same impact in services as in manufacturing, the implied increasing measurement errors explain only a part of the puzzle, though a significant one. The estimate by McGuckin and Stiroh is that

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clay, and glass. They account for about 8% and 12% of U.S. value added and computer capital, respectively.

the measurement error in 13 computer-intensive, non-manufacturing industries accounts for underestimation of aggregate labor productivity growth in the 1990s by about 0.3-0.5 percentage points per year.

The long, huge decline in quality-adjusted computer prices resulted predictably in a large-scale substitution of cheap computer inputs for the more expensive labor inputs. The process undoubtedly benefited business by reducing the overall (average and marginal) costs of production, distribution, storage and dissemination of all kinds of information. The productivity – enhancing effects of computers could very well be substantially weaker than these cost-reducing effects. The benefits to consumers are likely to be more mixed, some such as the ATMs being generally high, others such as telephone calls to businesses that run into complicated and slow computerized answering services being of questionable value. (Note that here both the positive and the negative effects are apt to end up unmeasured.)

Returning to the overall productivity of labor, its underestimation would imply either that the economy's output is larger than measured or that employment in hours is smaller than measured or both. Perhaps production of financial and other services grew faster than the official numbers indicate; but we really do not know that since our estimates of these aggregates are sadly deficient (better government statistics and more effective research in this area are greatly needed). As for hours of work, they are more likely to be under- than over-counted, which would be a source of bias in the direction of overestimating productivity.

6.3 Shifts in Saving, Deficits, and Real Interest Rates

The personal saving rate fluctuated with no clear trend in the range of approximately 7 to 9 percent of personal disposable income in the 1960s; around a downward trend in the 11 to 6 percent range in the 1980s; and along a much more regular and persistent downward

trend in the 9 to 2 percent range in 1992-99 (Chart 12A).[14] The accelerated drop in that rate in the last few years caused much concern and comment, but its sources are not difficult to discern.

First, higher taxes often result in lower savings, and federal tax receipts rose strongly and steadily in the second half of the past decade (see Chart 10A). Second, capital gains from appreciation of assets such as housing and stocks are not included in personal income but are probably treated as savings by many recipients. Third, the more assets a person or a family has, the less they need to save for further wealth accumulation and use: an old story but with increasing applications in an environment of spreading ownership of assets that tend to increase in value.

Whereas the personal saving rate declined, gross business saving, which is the sum of undistributed corporate profits and business depreciation allowances, increased to a high plateau of more than 15 percent of GDP in the late 1990s, as it did previously in 1983 - 85. At other times during the three long business cycles covered, business saving was lower, accounting mostly for 13 - 15 percent of GDP and declining in latter expansion stages (see Chart 12B). Not surprisingly, the relative strength of business saving reflects that of profits (cf. Chart 6).

Along with the rise in the volume and weight of business saving, federal surpluses began to replace deficits in 1998-99, that is, government *dissaving* was being eliminated in favor of increasing government saving (Chart 11B and text above). Both tendencies counteracted the depressing influence on gross national saving of the decline in the personal saving rate. We need to recognize that total gross saving and investment declined from about 22 percent of GNP in 1963 to 14 - 15 percent in 1993, then rebounded to approximately 18 - 19 percent in 1999.

[14] The personal saving rate is defined as percentage of disposable income left after all personal outlays on goods and services, interest on loans (excluding mortgage interest) and net payments to foreigners (the last two items are relatively quite small). Disposable income is personal income after income, estate, gift, and penalty taxes and miscellaneous fines (Social Security taxes are excluded from personal income).

The greater the supply of loanable funds from saving relative to the investment demand for such funds, the lower should be, other things equal, the real interest rate. Reductions of the structural government budget deficit (i.e., the one that would exist if the economy were at full employment) are expected to have this effect in particular.[15] The decline in the federal budget deficit in 1990 continued after full employment was in fact achieved and maintained, hence it was in all likelihood more than cyclical and, indeed, increasingly structural.

Meanwhile, the nominal interest rates were declining or stable most of the time, uncharacteristically for an expansion, but so was inflation (see Charts 2B and 7 above). Real interest rates, unusually high in the early 1980s, were predominantly decreasing but still rather substantial (in sharp contrast to having been very low in the 1960s and at times even negative in the 1970s). For example, high-grade corporate bond yields moved in the 1990s down from 9 to less than 7 percent, while inflation varied mainly in the 3 to 2 percent range, so the difference (a real rate) was about 5 - 6 percent. But the perhaps more important, though unobservable, *expected* real interest rate was probably lower because future inflation tended to be overestimated. Despite its major role in economic theory, the real interest rate is acyclical in the sense of having no stable pattern of cyclical behavior. This may be because different configurations of individual cycles and longer trends affect inflation and interest rates differently.

6.4 Public and Private Debt Changes

National (public) debt is in each period either augmented by a deficit or reduced by a surplus in the federal budget. The debt is an alternative to taxes in financing government expenditures. Using debt defers tax payments to the future and results in more *dissaving* (negative saving) by the government. However, the net effect of a substitution of debt for taxes would be nil if people reacted to it by saving correspondingly more in anticipation of higher taxes in the future (Barro's "Ricardian Equivalence Theorem").

[15] Note that the cyclical deficits rise (fall) in recessions (expansions), while the observed interest rates usually move in opposite direction (procyclically), with some lags.

Historically, the effects of government deficits and growing national debt have in fact tended to be mixed and modest. But in the 1980s, after taxes were cut and debt was increased strongly, real long-term interest rates rose sharply and the ratio of investment to GNP declined mildly. In the 1990s, all this was reversed, with generally positive results. This evidence agrees much better with the theory asserting that deficits and debt have some significant influence upon interest rates and investment than with the neo-Ricardian analysis.[16]

Chart 13 shows the evolution of the federal debt in terms of its six-month smoothed growth rate (panel A) and ratios to GDP (panel B). In the 1960s, Washington borrowed steadily but moderately most of the time, and the ratio of national debt to GDP) declined from 45 to 29 percent. In the 1980s, growth of the debt first climbed from about 10 to 25 percent during the recession and early recovery, then dropped, stabilized, and declined gradually back to 5 - 10 percent; the ratio of federal debt to GDP increased from 25 to 41 percent. In the 1990s, federal debt grew at mildly rising rates during the recession and initial recovery but then at steadily decreasing rates, from about 12 percent in 1992 to -2.5 percent at the end of 1999. The federal debt/GDP ratio increased from 40 to 49 percent between Q1 1990 and Q3 1993, then flattened and decreased back to 40 in Q3 1999.

Only several years (less than a decade) ago, scary long-term projections of rising deficits and the national debt were almost routinely made and a heated debate prevailed about who or what was to blame. Now the controversy is already under way about who or what gets the credits for the elimination of the deficits and what to do with the surpluses which are forecast to increase strongly in the long run. But the long projections are bound to fail because they ignore the unknowable changes in business cycles and trends, and the discussions generated much more heat than light and will probably continue to do so.

Chart 14 shows the changes in the nonfederal (private and state and local) debt, using the same format as Chart 13. In the 1960s, that debt grew at steady rates of about 8 to 10

[16] See Rock, ed., 1991, especially chapter 6 by Barro and chapter 10 by Blinder.

percent from around 90 to 100 percent of the concurrent levels of GDP. In the 1980s, growth of nonfederal debt was much higher and more variable, and the ratio of that debt to GDP increased from 110 to 143 percent. In the 1990s, like in the previous cycles, this growth pattern declined in recession; it then fell to a record low of 2.1 percent by mid-1992, but then started a long climb to 6 percent in mid-1995 to mid-1997 and 9 to 10 percent in most of 1998 and all of 1999. The nonfederal debt/GDP ratio stayed high and remarkably stable: from 140-142 in 1990 to 131-133 in 1994–97 and back to 140-143 in 1999.

Clearly, then, nonfederal (mostly private domestic) debt is huge, exceeding the current value of the nation's output by almost half of the latter, and creeping slowly upward. This is in contrast to the federal debt which is less than half the current-dollar GDP and has been gradually declining. Given these changes in its structure, the quality of the overall (public plus private) debt in the United States has most likely worsened. In addition, the quality of private debt may well have deteriorated as it usually does in prolonged economic expansions and stock market booms.

6.5 The Increasing Foreign Trade Deficits (Foreign Borrowing)

According to the well-known accounting identity, income equals expenditure on final product, hence subtracting consumption from both sides of the equation gives

$$S + T = G + I + NX,$$

Where S is private saving, T is net tax revenue (taxes minus government transfer payments), G is government expenditure on goods and services, I is total domestic investment, and NX is exports X minus imports M (net foreign investment). It follows that national saving (S+T-G) equals domestic plus foreign investment (I+NX). Also,

$$G - T = S - (I + NX),$$

i.e., the government budget balance (G-T) must be equal to (financed by) the difference between private saving and investment minus net exports.

G exceeded T, that is, the federal budget was in deficit, in each year since 1979 until very recently. S exceeded (I+NX) by the same amounts, of course. But much of the time since mid-1980s both private saving and domestic investment declined commensurately, and it was not through higher S that the deficits (G-T) were financed. Rather, the burden fell mainly on net exports NX, which were negative each year since 1960, except only for 1979-81. The excess of real imports over real exports – the foreign trade deficit or foreign borrowing – was particularly large in 1983–89 and after 1992.

The curves in Chart 15 refer to the ratio of real net exports (exports deflated with export prices minus imports deflated with import prices) to real GDP. NX/GDP (multiplied by 10 to make the changes in the small ratio more visible) has been moderately but increasingly negative in the 1960s; much more negative and V-shaped in the 1980s; and declining sharply from relatively modest values in the range of 0 to –15 percent in 1990–97 to nearly –30 and –40 percent at the end of 1998 and 1999, respectively. In January 2000, the nation's trade deficit jumped again to a record $28 billion, 25 percent above the 1999 monthly average. Imports, recently enlarged by bills for high-priced foreign oil, continued to show a much faster and steadier upward trend than exports.

The main reason for the swelling in the last few years of foreign trade deficits, hence of foreign borrowing, is that the U.S. economy grew much more quickly than its trade partners. There is also an inverse relationship between the major movements in NX and those in real exchange rates, which in turn show a broad positive correlation with real interest rates; but these rates have fluctuated in the past decade with no clear trends. The "twin deficits" debate is over: it is clear that NX can continue to be negative even when (G–T) turns positive.

In short, for the foreign borrowing (trade deficits) to fade, a reversal of long-observed relationships would be needed, which is unlikely to happen quickly soon. One would wish for an increase in S but not for I to be crowded out instead of NX; for more prosperity abroad but not for less prosperity at home. Yet in the long run foreign

borrowing (-NX) cannot pile up indefinitely without some adverse effects on the U.S. economy.

7. Conclusions, Lessons, and Outlook

7.1 Summing Up and Interpreting the Results

This paper has considered many aspects of the economy in a comparative analysis of the current and two recent business cycles in the United States. Here is a brief listing of its main results:

1. After nine years of rising national output, the present expansion is already the longest on record. However, the cumulative gains in real GDP and other measures of aggregate economic activity over the same number of periods since the initial troughs were greater in the 1960s and even in the 1980s than in the last decade. This is because the early recovery of 1991-92 was unusually sluggish, particularly as judged from stagnant employment and rising unemployment. In short, this expansion rates as the longest but not the strongest. But since 1996 U.S. growth was indeed remarkably high and stable.
2. Inflation was decreasing or stable during this expansion, a phenomenon new in the post-World War II era (hence surprising and much debated) but not confined to the U.S. The disinflation and, in some countries at times, deflation abroad contributed much to the recent declines in U.S. inflation through weaker prices of imports, materials and finished products. In addition, falling prices of computer hardware and software and the new Internet marketing helped to contain inflation. There has been a mild upturn in the CPI growth rate in the past year but there are still no clear signs of an imminent danger here. Yet the Federal Reserve, in a preventive counterinflationary policy, has raised its benchmark short-term interest rate repeatedly in 1999-2000.
3. In fact, since the upturns following the Asian recessions, the price of oil rose sharply and prices of some industrial materials such as metals rose moderately. The forces of

deflation weakened and those of inflation strengthened. Further, the U.S. labor market grew increasingly tight, so upward pressures on wages and through unit labor costs on prices stayed within bounds consistent with labor productivity which appears to have improved gradually and stabilized. The problem is that productivity growth is hard to measure and may be subject to serious estimation errors, especially in services, precisely the area where computers have become particularly important.

4. Interest rates, short and long, declined most of the time, reflecting lower inflation and reductions in the national debt. Along with higher growth rates of national output and productivity, these developments help explain the increases in profit margins and total after-tax profits in constant dollars. The ratio of prices to unit labor costs was upward trending at historically high levels. The yield spread first declined but then stabilized at low positive values, with more implications for the financial industry than the macroeconomy.
5. The long bull market transformed itself into an accelerating ascent in the second half of the 1990s, with stock prices rising much more than profits as the P/E ratio for the S&P 500 companies more than doubled. In particular, the new technology and Internet stock prices soared to unprecedentedly high P/E multiples. Despite some downward adjustments this year, they are still very high and viewed by many as greatly overvalued. But the dire predictions of an impending burst of the bubble proved wrong repeatedly. The boom in the stocks of the "new economy" revealed an unexampled resilience to interest rate hikes and warnings from the Fed; also, in many cases, an amazing belief that long-run future earnings will more than compensate for the lack of insufficiency of present earnings.
6. Monetary policy operated mainly through sequences of small (1/4 percent) changes in the federal funds rate, e.g., seven rises when inflation was deemed to be threatening in 1994-95 and five most recently in 1999-2000. When the economy slowed down in 1995, probably at least in part because of the preceding rate hikes, the Fed tried to keep the economy expanding with a string of downward adjustments in the federal funds rate. Judging from the results, the policy worked well, and it certainly met with widespread public approval. But much of the success was due to the private sector's incentives and achievements; the markets, especially the bond market which

generally moved in the directions desired by the Fed; and to combinations of domestic and international events that happened to benefit the U.S. economy. Despite its much-advertised worries that the economy is in danger of overheating, the Fed was cautious not to reduce the flows of money and credit that kept the business boom and the bull market going.

7. Federal expenditures rose relatively much less in the late 1990s than they did in the corresponding stages of earlier long expansions. This can be attributed in large part to major reductions in military spending. Federal receipts increased steadily during the expansion since early 1991 but particularly after 1994 due to a surge in taxes. As a result, federal budget deficits declined greatly and were eventually replaced since 1998 by increasing surpluses. The ratio of national debt to GDP declined from 49 to 40 percent between late 1993 and late 1999 (back to where it had been at the beginning of the past decade). The relatively restrained fiscal policy had generally positive effects on the U.S. economy.
8. While the government ceased dissaving and started saving in form of surpluses, the personal saving rate dropped very low, presumably because of higher taxes and very large capital gains on stocks (and housing that expanded strongly). Gross business saving, a total of undistributed profits and depreciation, increased from 13-14 to 15+ percent of GDP (back to where it had been in 1983-85).
9. The combination of high consumption, high borrowing, and low saving props up the economy's expansion on the demand side but worries a lot those who fear an inflationary overheating. Some Fed pronouncements now suggest a particular concern, namely that the wealth effect of the bull market on consumption is an important potential source of excess demand. But it is the stock market rather than the economy that may get overheated first, and much of the current boom in very volatile or illiquid securities involves investors and traders buying on credit. This is a highly risky and expensive type of borrowing: when the stocks, which serve as the assets backing the loans, fall in value, buyers on margin must put up more money to make up for the shortfall. The Fed, which has set the margin requirement at 50 percent since 1974, took no action so far to raise it, i.e., to increase the proportion of a

stock's purchase price to be paid down. Some estimates have the margin debt more than quadrupled as a percent of market value at online brokers since 1995.

For all but three of the last forty years of American history, real imports exceeded real exports, and did so most strongly after 1992 when the U.S. economy grew much faster than its trade partners. The resulting rise in foreign borrowing was long associated with the cumulation of federal budget deficits in the face of insufficiently growing private saving, but it continues after these deficits were eliminated. As long as the domestic expansion lasts and the dollar is strong, the trade deficits need not cause serious problems, but these conditions cannot be relied upon to persist without interruption forever.

Ideally, saving and exports should be increased so investment is not crowded out and net exports turn positive. Sooner rather than later, foreign borrowing needs to be brought under control, that is, the U.S. economy, like any other, must generate enough exports to pay for its imports. The current-account deficit, which refers to financial flows as well as the foreign trade of the U.S., rose from about one percent of GDP in 1991 to a record of 4.2 percent in Q4 1999. A continuation of this process would require a rise in foreign (portfolio and direct) investments in the U.S. that appears unsustainable to many (including Fed Chairman Greenspan).

7.2 Can Other Economies Follow Suit?

Because of its long noninflationary expansion and the resulting low unemployment, the U.S. economy is currently much admired and envied around the world. Thus, the question naturally arises what can other countries learn from the U.S. experience.

This is difficult to answer for the following reasons. First, when and how the current expansion ends is not known and not predictable with any confidence. Yet, the assessment of, and lessons from, the recent past will inevitably depend on these alternative futures. (Note, however that this is not to deny that the expansion has already

accomplished much that is positive, and that the technical progress under way will accomplish much more in times to come.)

Second, economies differ in many respects. The United States is the largest, on the whole more open externally and internally than the others, highly competitive, integrated, and flexible in its basic orientation towards profits, markets, and trade. Other countries cannot replicate these conditions; they can only take steps in the U.S. direction, which are likely to produce results only over considerable time.[17]

Third and last but not least, societies have different preferences, institutions, and policies. The more democratic a country is, the more its institutions and policies reflect its preferences. Thus, most Americans apparently value free enterprise and free markets highly, particularly at home; free international trade arouses more doubts. They are suspicious of government regulations and interventions. They want economic growth and prosperity most, and believe that the relatively unrestrained market system can deliver best on these goals. It may be that people in Germany (and elsewhere in Europe) place higher values than people in the U.S. on other desiderata, notably income equality, job security, and price stability. This would help explain why in Germany labor unions are stronger; why wages and other terms of employment are more influenced by policy and politics, less decentralized, and less responsive to unemployment and inflation; why industry and commerce are more regulated and more subject to selective subsidies and controls.

All these uncertainties and differences combine to reduce the extent to which other countries may be able and willing to follow the "American model" in the realm of economics and finance. But there is at least one policy program to which most modern nations would subscribe, and that is to reduce unemployment with as little adverse inflationary impact as possible. Recent developments are consistent with the view shared by many economists that this objective is best pursued in an environment of an open,

[17] The same applies to other international processes of this kind, e.g., to Japan that has long before its fall from grace in the 1990s served as a leading model economy to many smaller countries, particularly in Asia.

competitive economy with few impediments to the flexibility of wages and prices, mobility of labor, capital, and their products, dissemination of knowledge and technology.

This is a very general statement which has many specific applications. There are all kinds of imbalances and imperfections that constitute obstacles on the road to higher rates of employment and production with more stable prices, and they differ among countries; hence the ways to remove or at least reduce these obstacles must differ, too. For example, it will probably be increasingly important to attract people who have, or can acquire, the knowledge needed to apply and promote the new technologies, both by training at home and by immigration from abroad. What is required here is not only elimination of legal barriers to the desirable inflows of people and ideas but creation of an attractive climate of opinion in which such movements are welcome. This, one must recognize, is asking a lot and looking well beyond economics to political and social changes.

7.3 The Future Is As Uncertain As Ever

The most optimistic forecast, attributable to no one in particular but widely popular with great many investors and traders, is that the economy will prosper and the bull market for the new technology companies will continue indefinitely. There is a great deal of hyperbole, i.e., exaggerated advertising claims on behalf of the stocks involved. The other extreme is represented by the most pessimistic forecasts of now long-frustrated bearish investment advisers and commentators who see in the market an overblown bubble and an overdue crash. Most of these predictions are silent or vague on how the economy will fare then, but some anticipate much trouble.

The euphoric forecast postulates a truly new world and so denies that it can be invalidated by history; but, by the same token, it cannot be validated either. However, it is certainly true that long expansions of the past accompanied by great technical innovations gave rise to similar predictions of a demise of business cycles, which so far

have always failed. The somber forecasts of a stock market downturn can cite historical precedents but have been wrong on timing and weak on the interaction of the market with the economy. The regular annual and quarterly forecasts by business economists generally see continued expansion of national output and employment at least through the year 2000; actually, revisions to higher growth rates have been frequent lately (March 2000).

In terms of economic weather, then, the present time for the U.S. is sunny but, as so often, the future is cloudy. The expansion may last for considerable time still but it is bound to end. As Japan's example shows, even the longest and strongest expansions issue in downturns, sometimes but not necessarily bad ones.

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Charts 1 - 15: Comparisons of Three Long U.S. Business Cycles: 1960-69, 1980-90, and 1990-99

In all Charts: _____Thin line indicates the 1960s recovery beginning February 1961.
_____Medium line indicates the 1980s recovery beginning November 1982.
_____Thick line indicates the 1990s recovery beginning March 1991 (Q1).

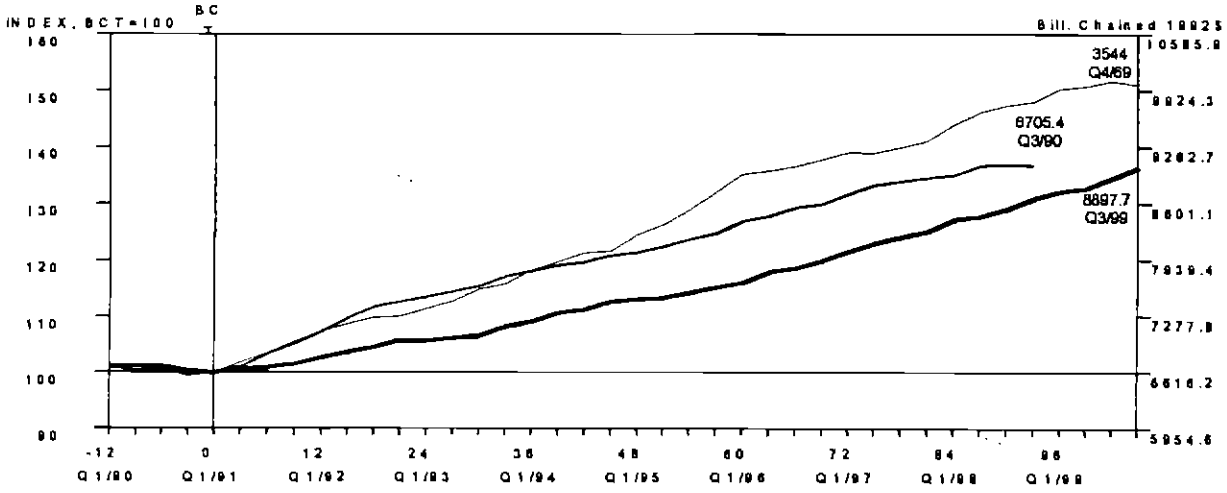
Charts 1 - 15: Comparisons of Three Long U.S. Business Cycles: 1960-69, 1980-90, and 1990-99

1. U.S. Output and Employment
    A. Real Gross Domestic Product
    B. Employees on Nonfarm Payrolls
2. Unemployment and Inflation
    A. Unemployment Rate
    B. Consumer Price Index, Growth Rate
3. Nominal Wages, Nonfarm Business Sector
    A. Index of Average Hourly Compensation – Levels
    B. Index of Average Hourly Compensation – Growth Rate
4. Real Wages, Nonfarm Business Sector
    A. Average Hourly Compensation/CPI – Levels
    B. Average Hourly Compensation/CPI – Growth Rate
5. Cost and Productivity, Nonfarm Business Sector
    A. Output per Hour, Growth Rate (LP-GR)
    B. Unit Labor Cost (ULC-GR)
6. Three Measures of Profitability
    A. Corporate Profits Totals
    B. Corporate Profit Margin
    C. Price/Unit Labor Cost Ratio
7. Short and Long Interest Rates
    A. Treasury Bill Rate
    B. New High-Grade Corporate Bond Yield
    C. Yield Spread (10-year minus 1-year Treasury Bond Yields)
8. Stock Prices and Price to Earnings Ratio
    A. S&P 500 Stock Price Index
    B. Price to Earnings Ratio (for S&P 500 Companies)

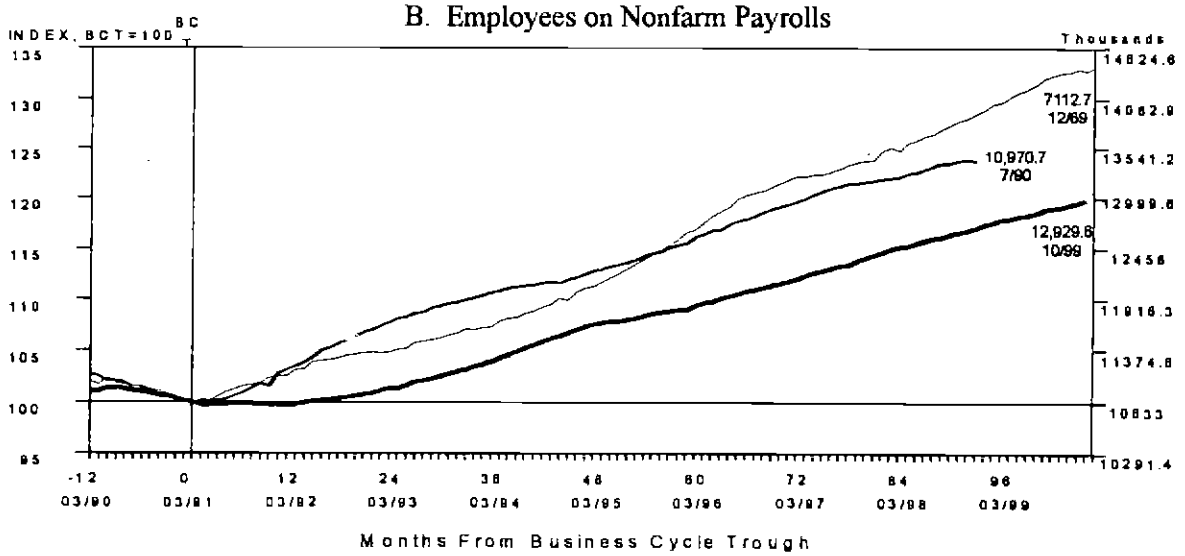
9. Monetary Base and Money Supply
    A. Monetary Base, Growth Rate
    B. Money Supply (M3), Growth Rate
10. Government Finance
    A. Federal Receipts
    B. Federal Expenditures
11. National Defense and Federal Budget Deficit
    A. Purchases for National Defense
    B. Government Surplus or Deficit Relative to GDP
12. Personal and Business Saving
    A. Personal Saving Rate
    B. Business Saving/GDP
13. Federal Debt
    A. Ratio of Federal Debt to GDP
    B. Federal Debt, Growth Rate
14. Nonfederal Debt
    A. Ratio of Nonfederal Debt to GDP
    B. Nonfederal Debt, Growth Rate
15. Ratio of Real Net Exports to GDP

Chart 1
U.S. Output and Employment

A. Real Gross Domestic Product



B. Employees on Nonfarm Payrolls



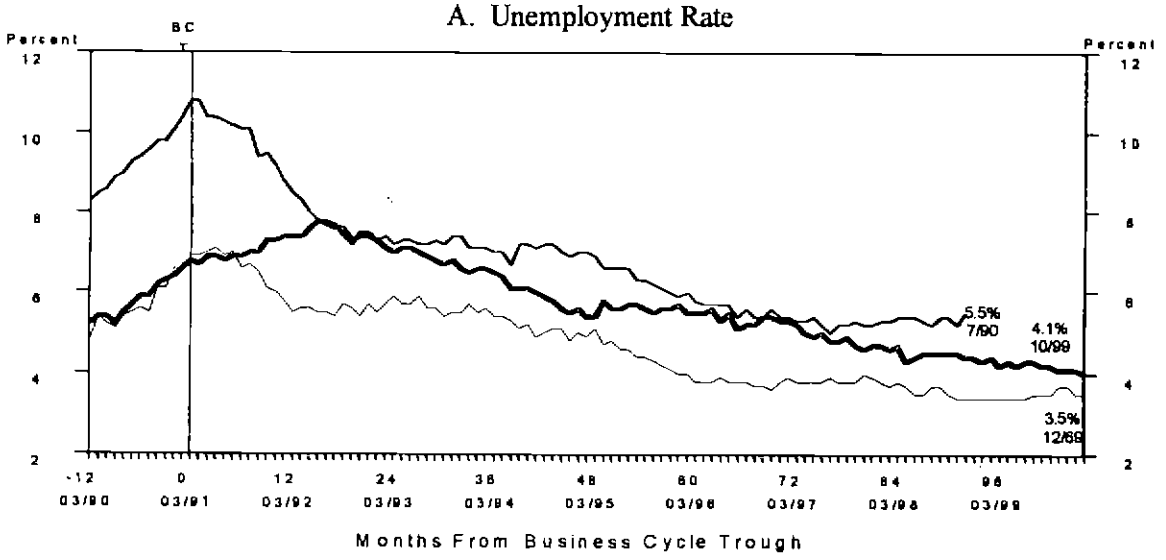
*Charts : _____ Thin line indicates the 1960s recovery beginning February 1961.

_____ Medium line indicates the 1980s recovery beginning November 1982.

_____ Thick line indicates the 1990s recovery beginning March 1991 (Q1).

Chart 2
Unemployment and Inflation

A. Unemployment Rate



B. Consumer Price Index Growth Rate

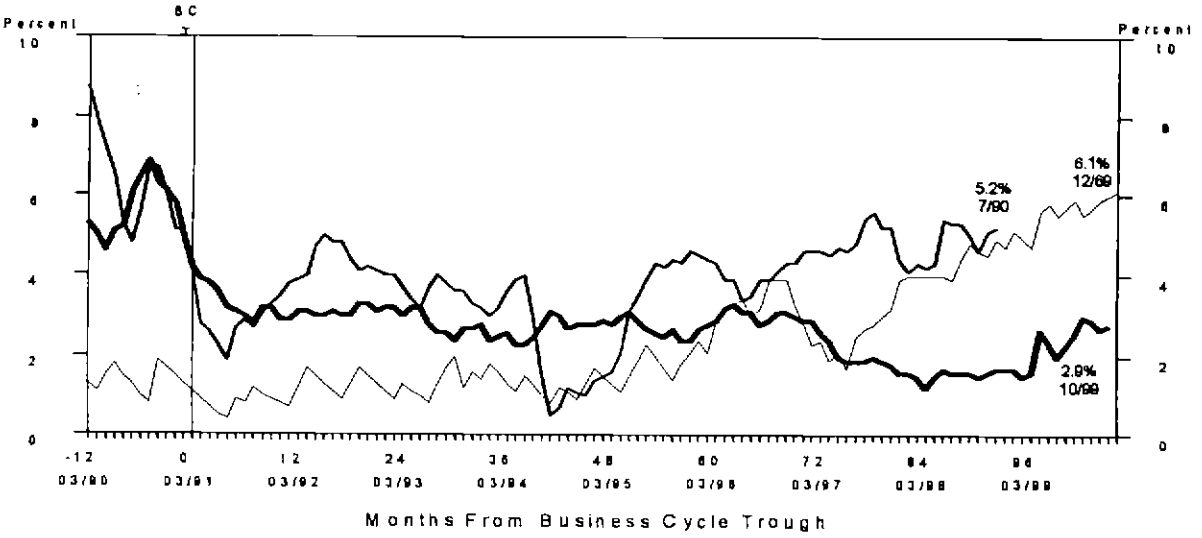
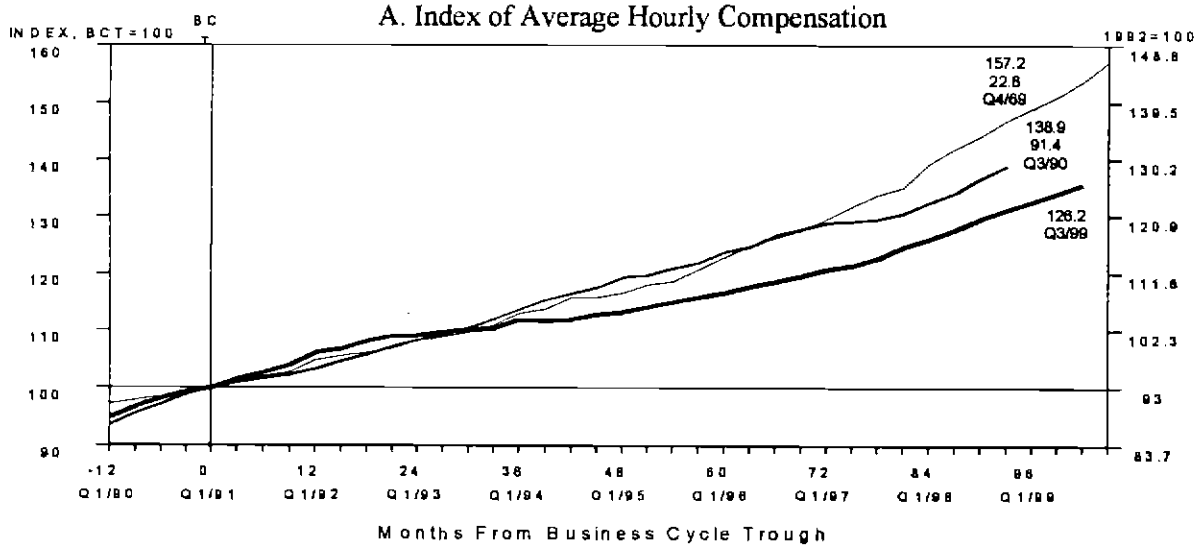


Chart 3
Nominal Wages, Nonfarm Business Sector

A. Index of Average Hourly Compensation



B. Index of Average Hourly Compensation, Growth Rate

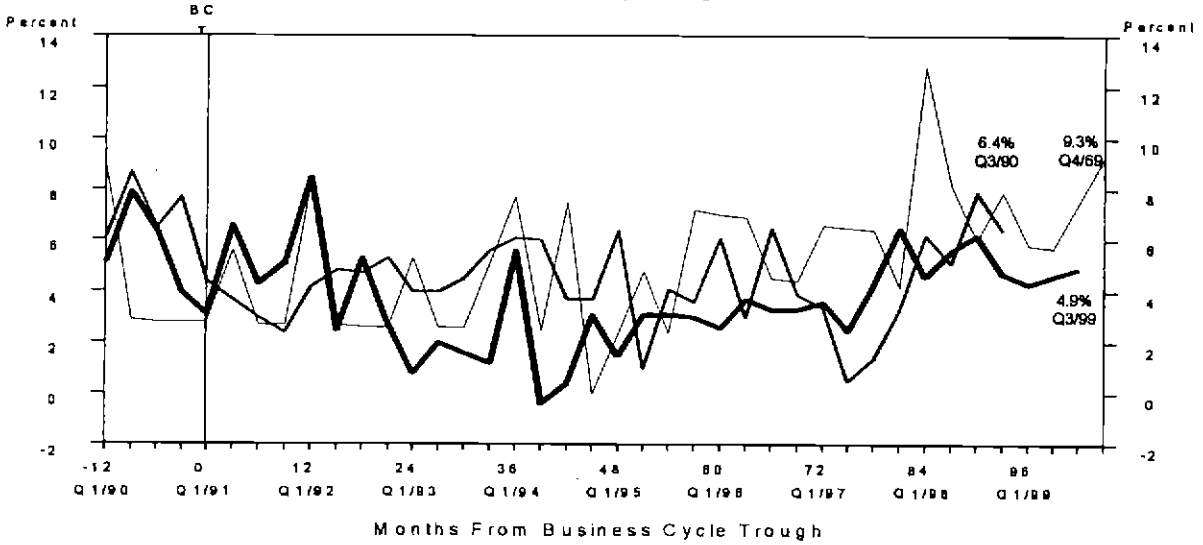
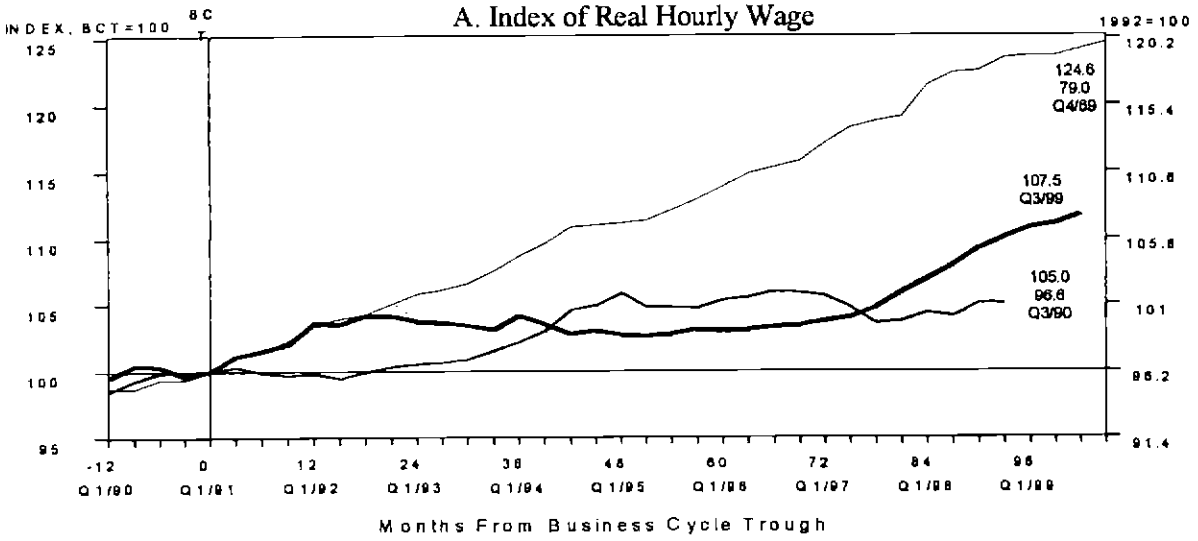


Chart 4
Real Wages, Nonfarm Business Sector



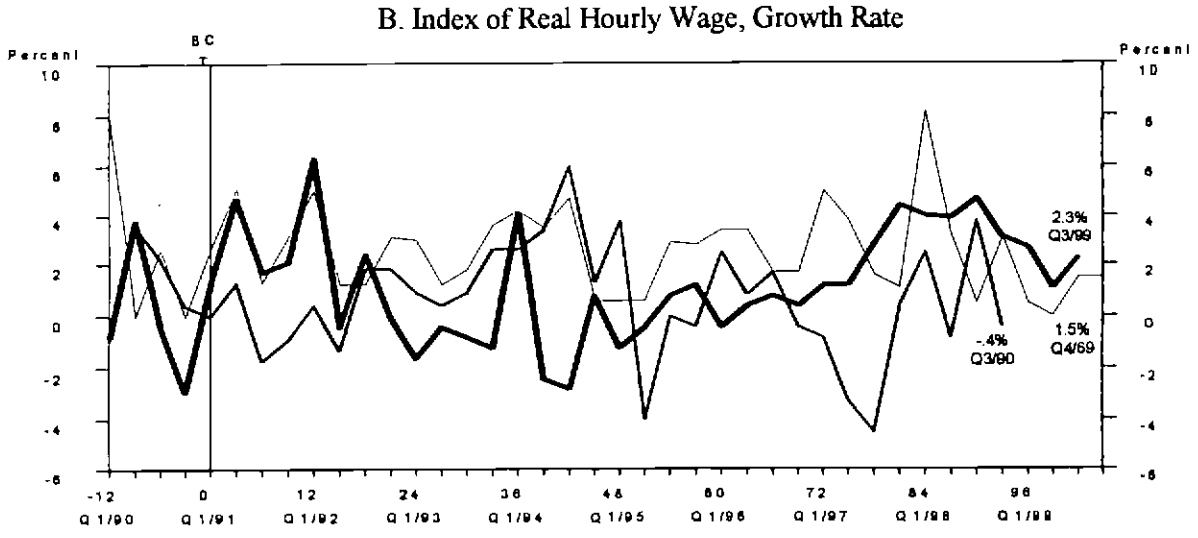
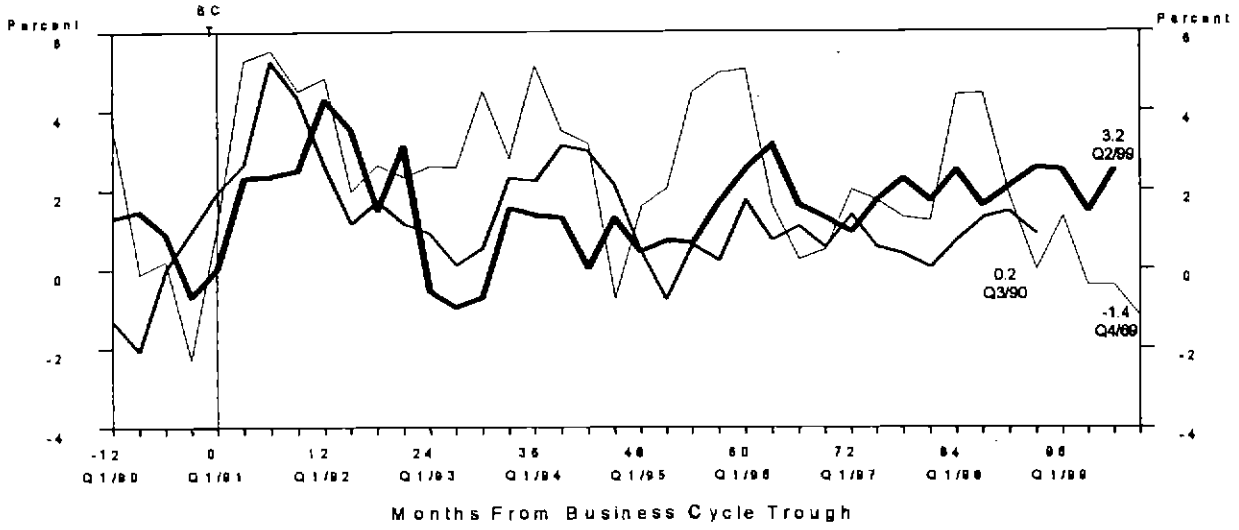


Chart 5
Cost and Productivity

A. Output per Hour, Nonfarm Business Sector, Growth Rate, (LP-GR)



B. Unit Labor Cost, Nonfarm Business Sector Growth Rate, (ULC-GR)

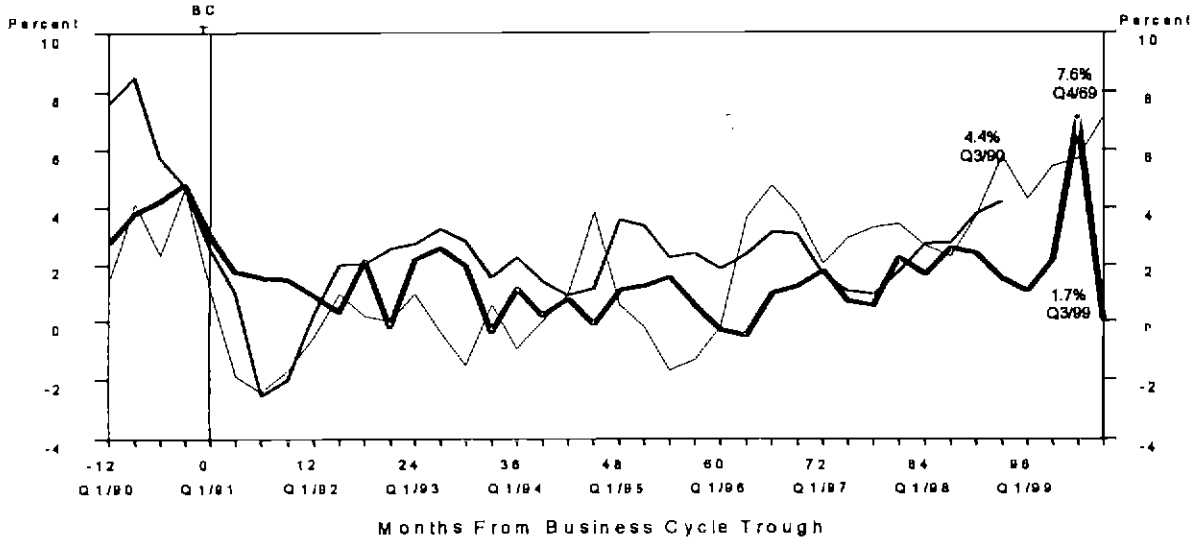
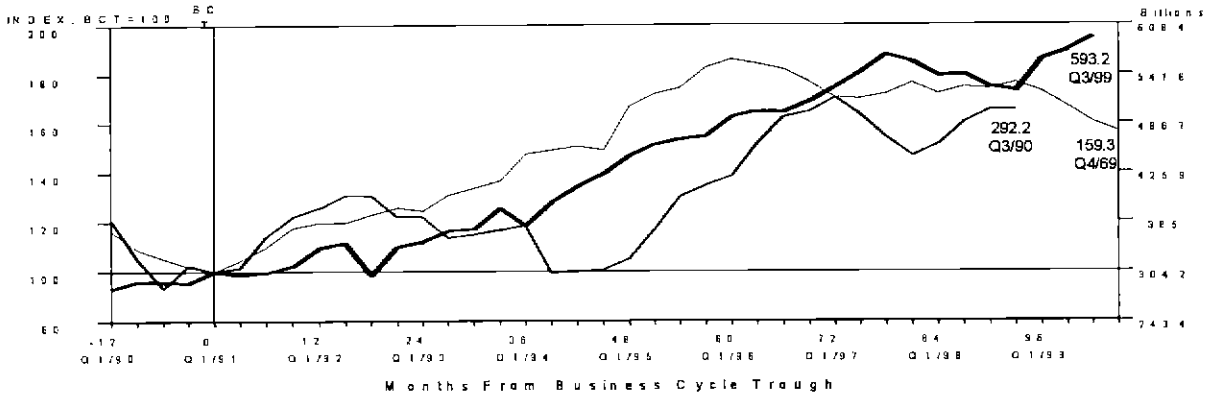
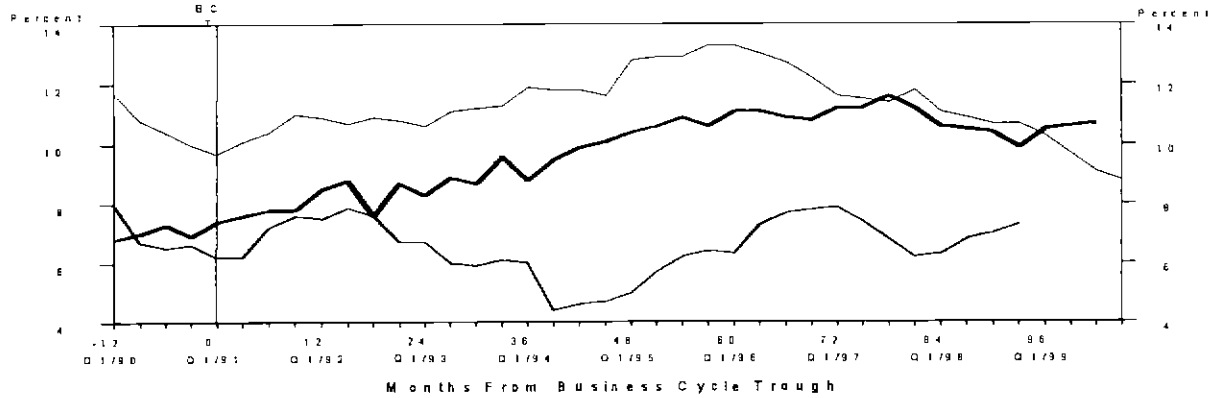


Chart 6
Three Measures of Profitability

Corporate Profits, Total



Corporate Profit Margin



Price/Labor Cost Ratio

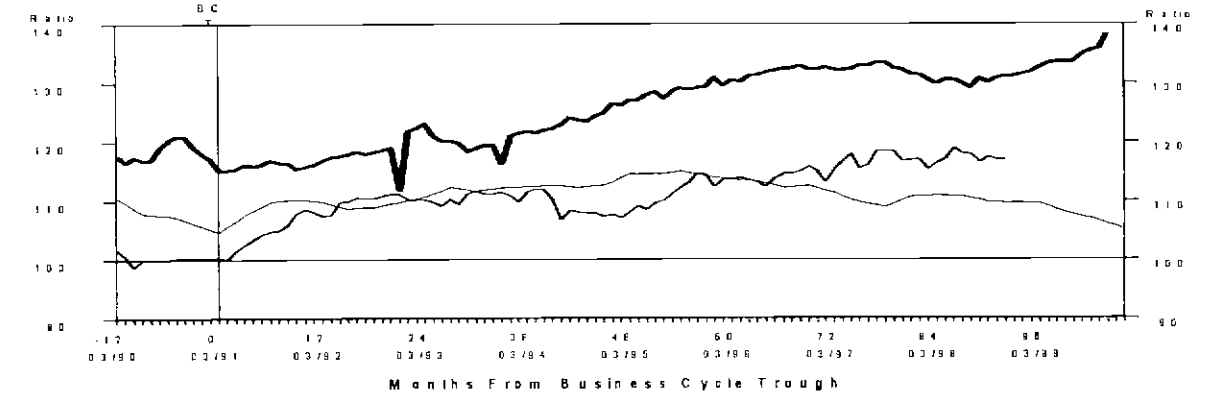
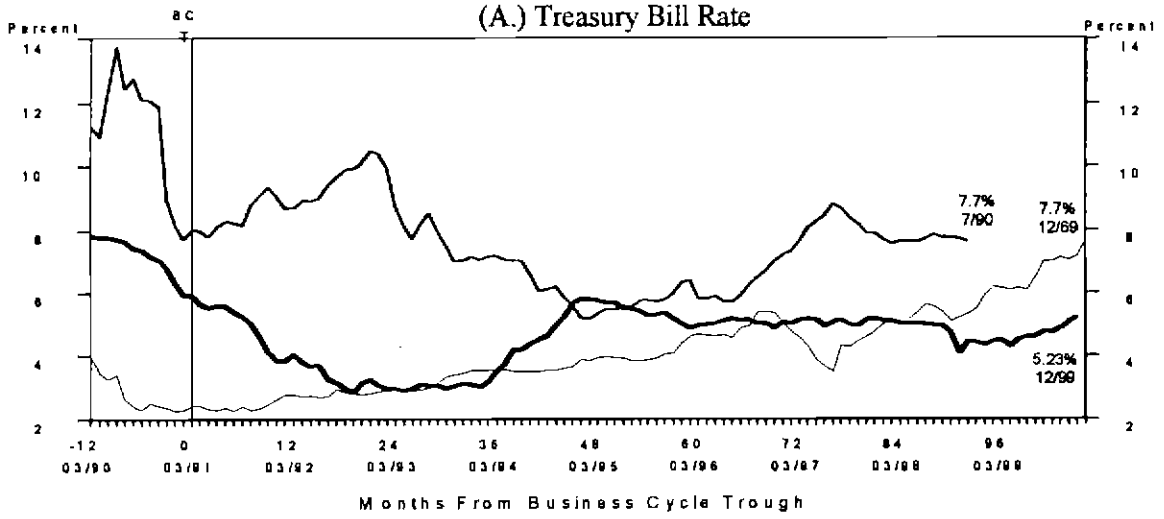
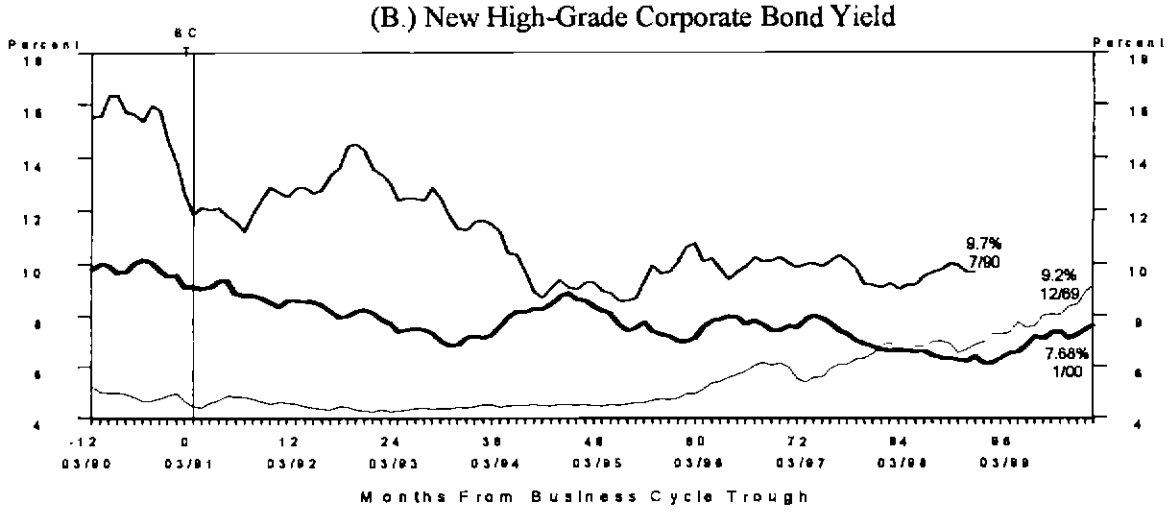


Chart 7
Short and Long Interest Rates

(A.) Treasury Bill Rate



(B.) New High-Grade Corporate Bond Yield



C. Yield Spread (10-year minus 1-year Treasury Bond Yields)

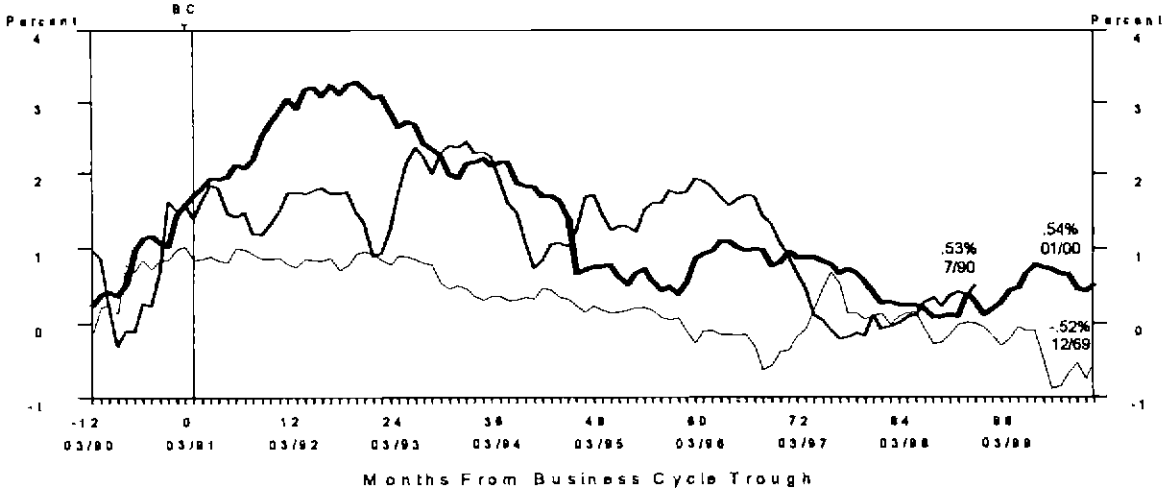
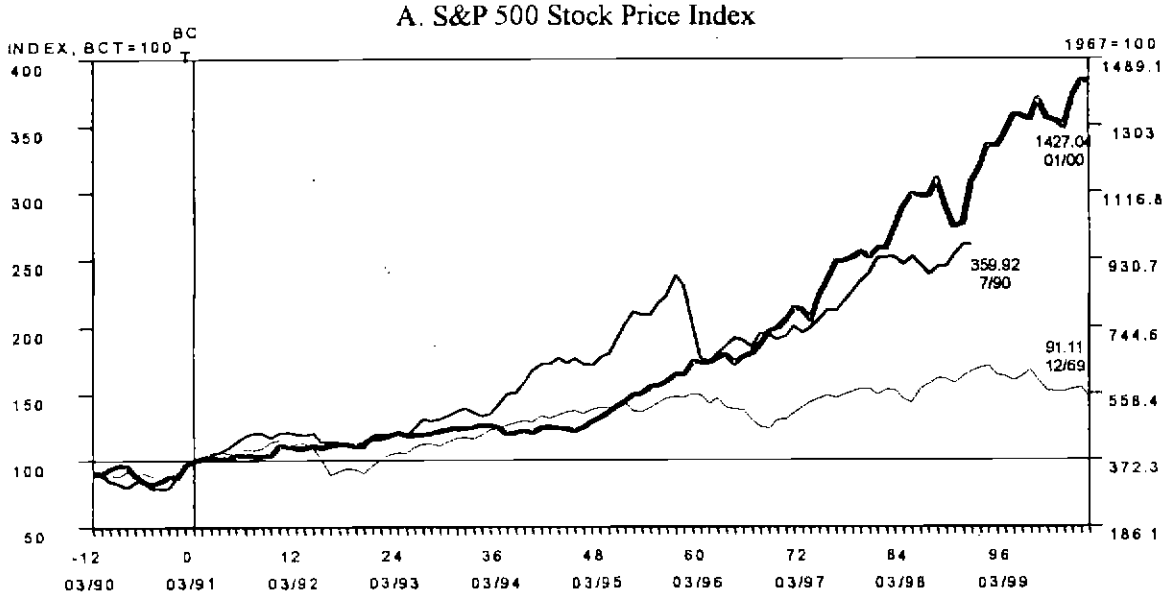


Chart 8
Stock Prices and Price to Earnings Ratio

A. S&P 500 Stock Price Index



B. Price to Earnings Ratio (for S&P 500 Companies)

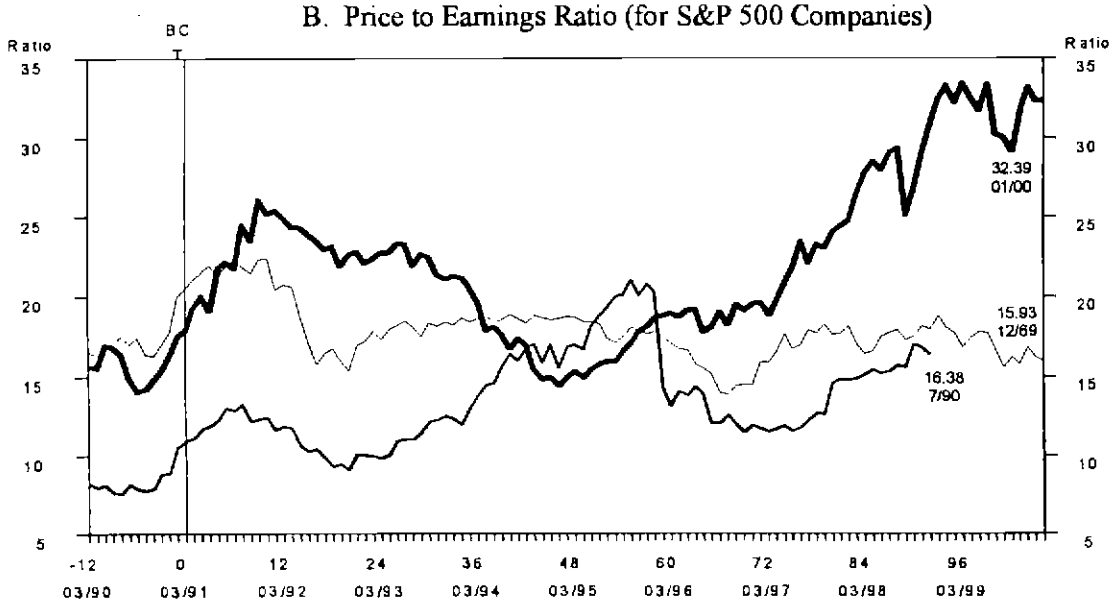
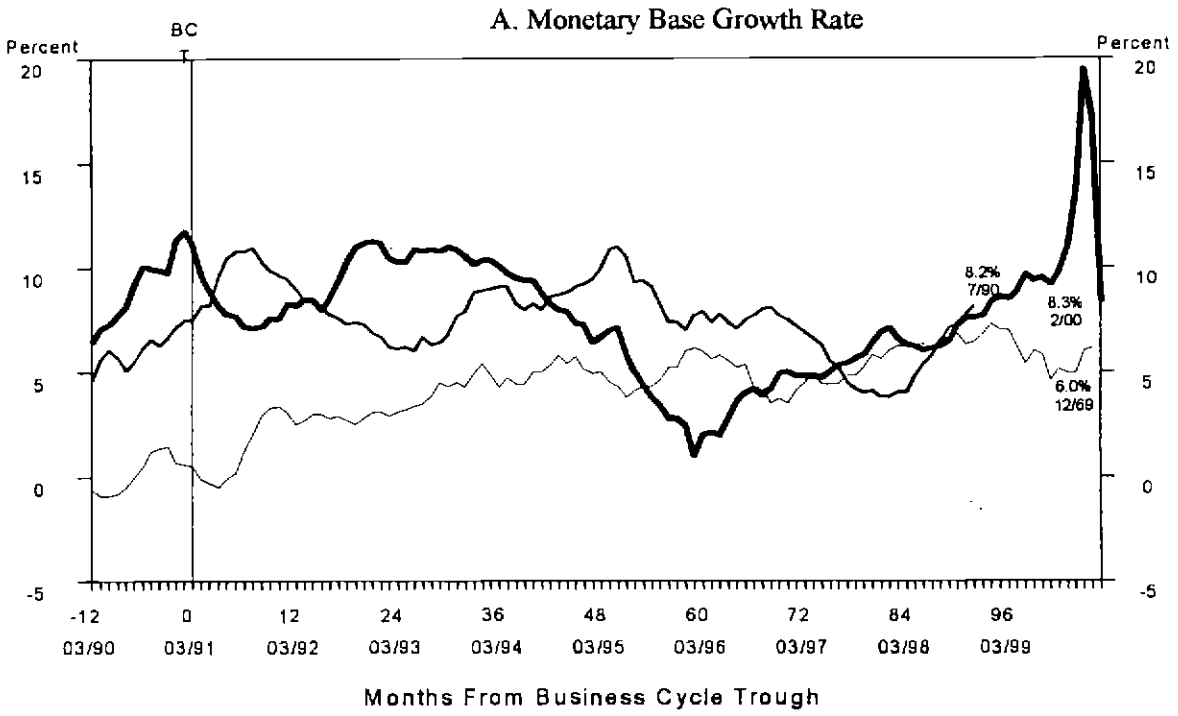


Chart 9
Monetary Base and Money Supply



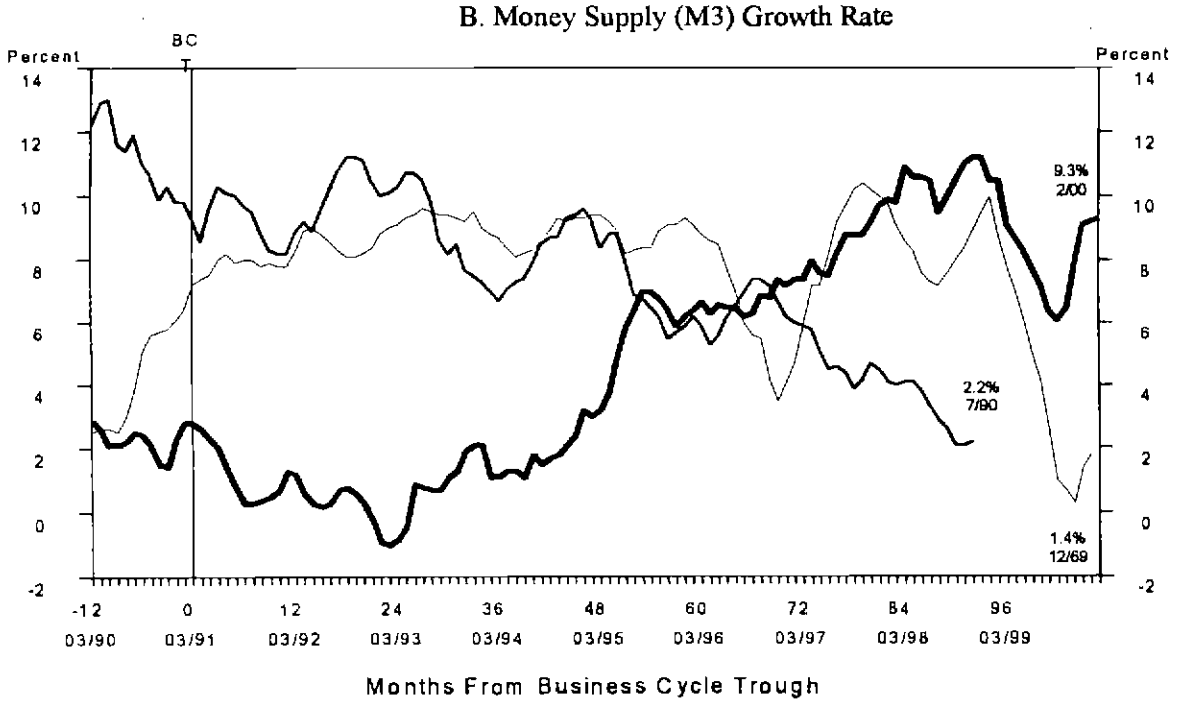
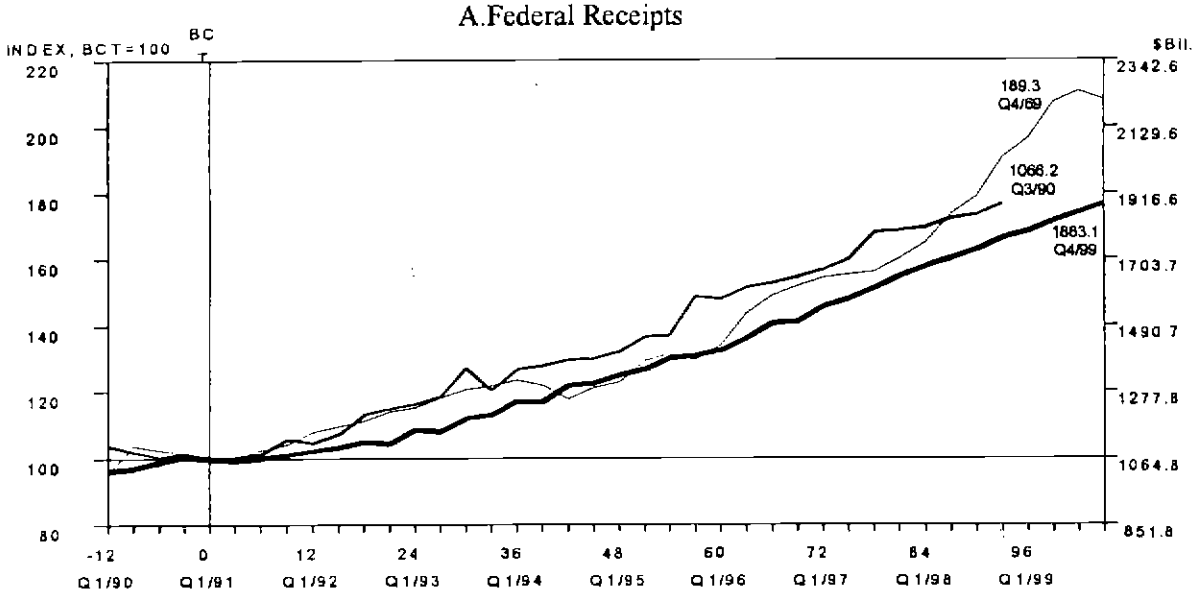


Chart 10
Government Finance

A.Federal Receipts



B. Federal Expenditures

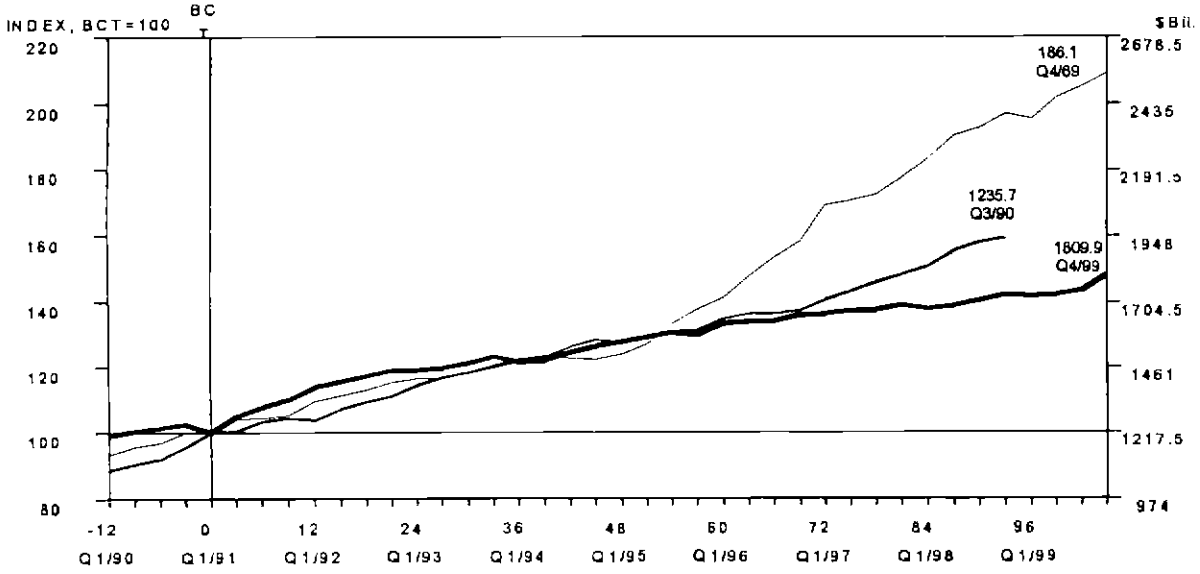
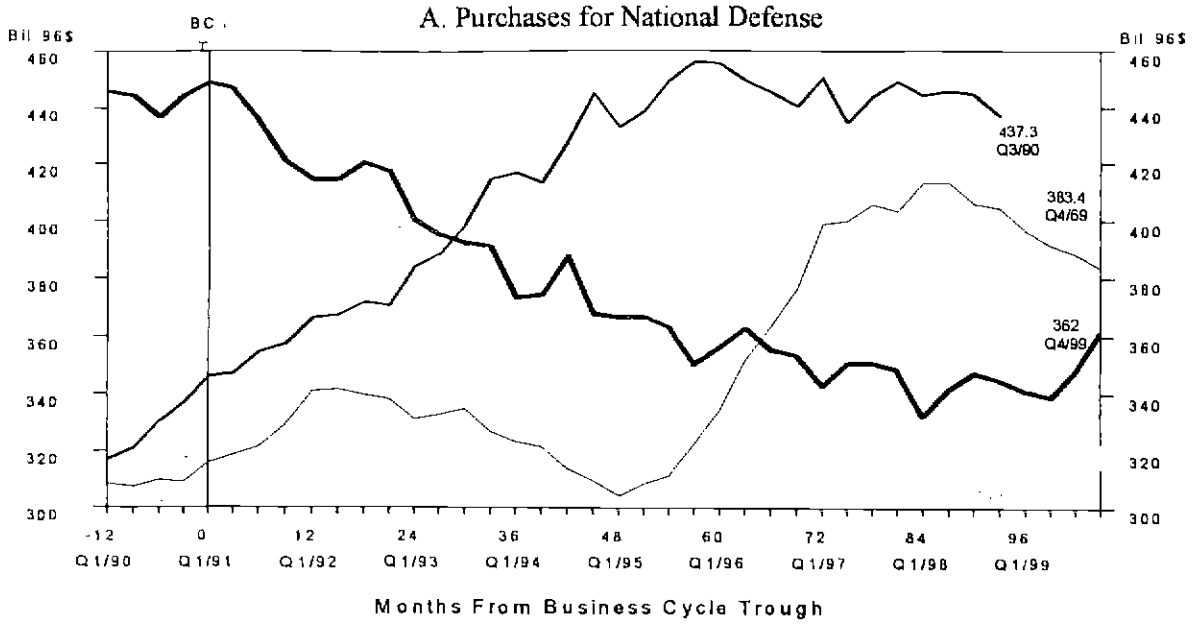


Chart 11
National Defense and Federal Budget Balance



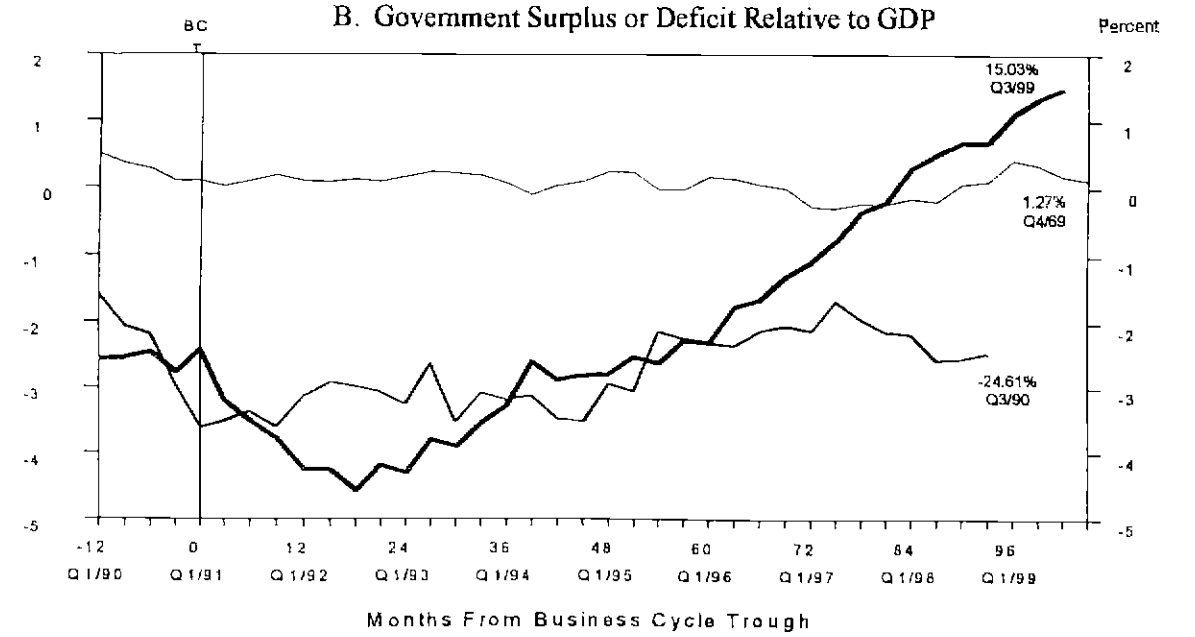
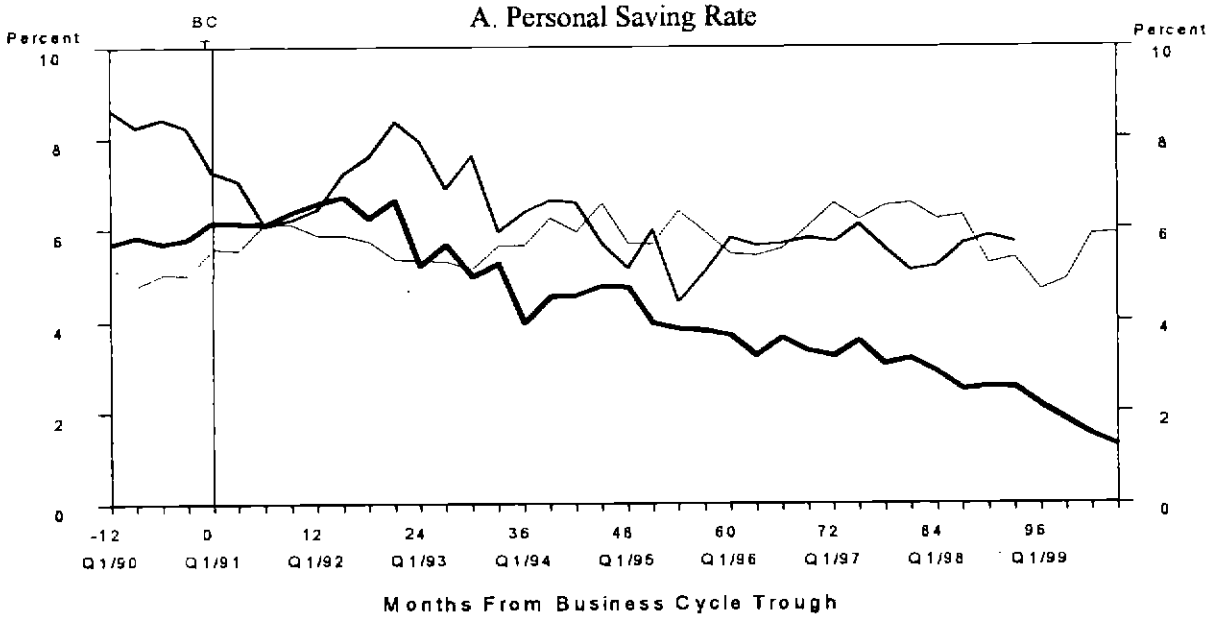


Chart 12
Personal and Business Saving



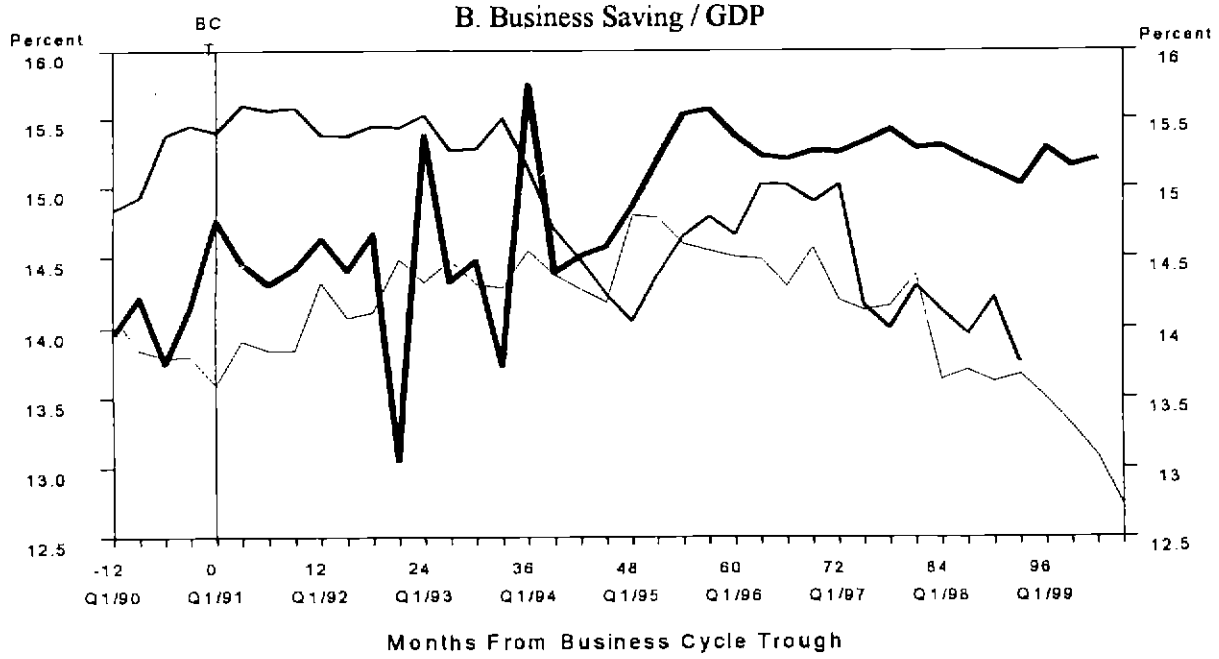
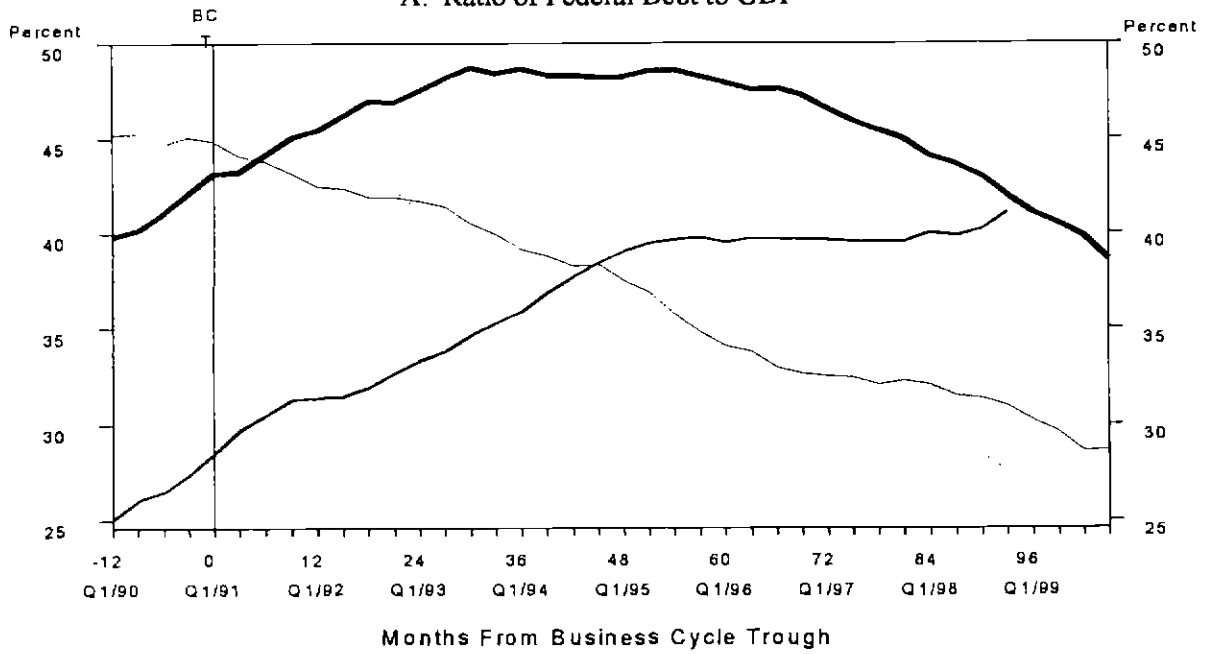


Chart 13
Federal Debt

A. Ratio of Federal Debt to GDP



B. Federal Debt, Growth Rate

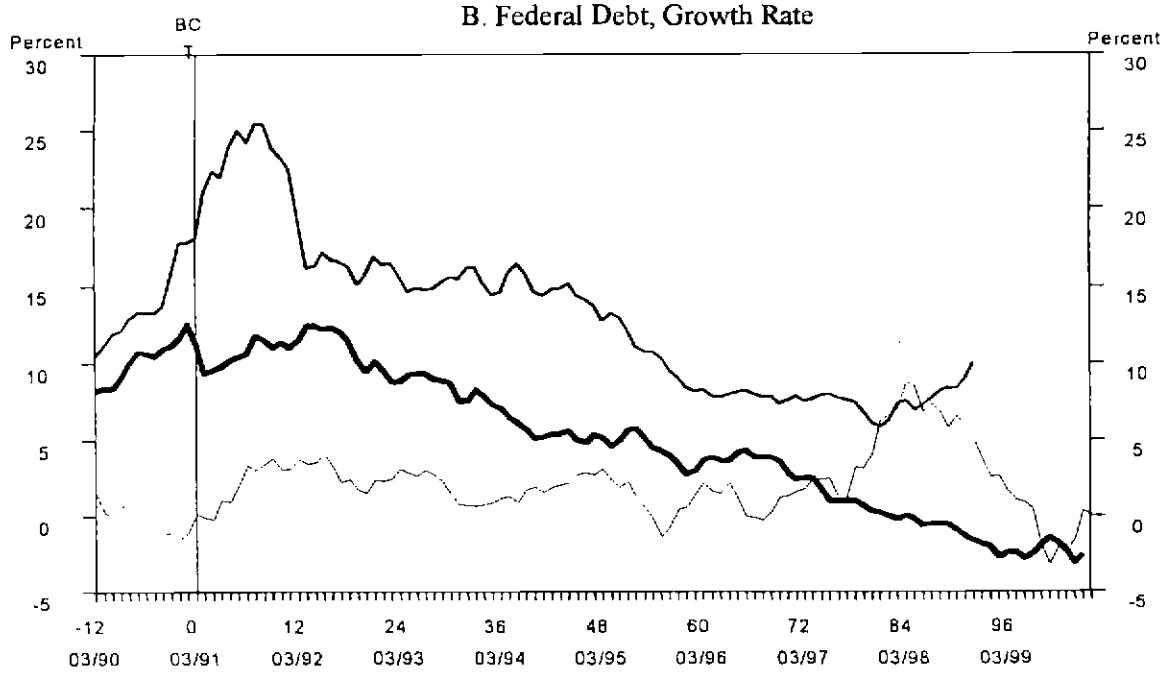
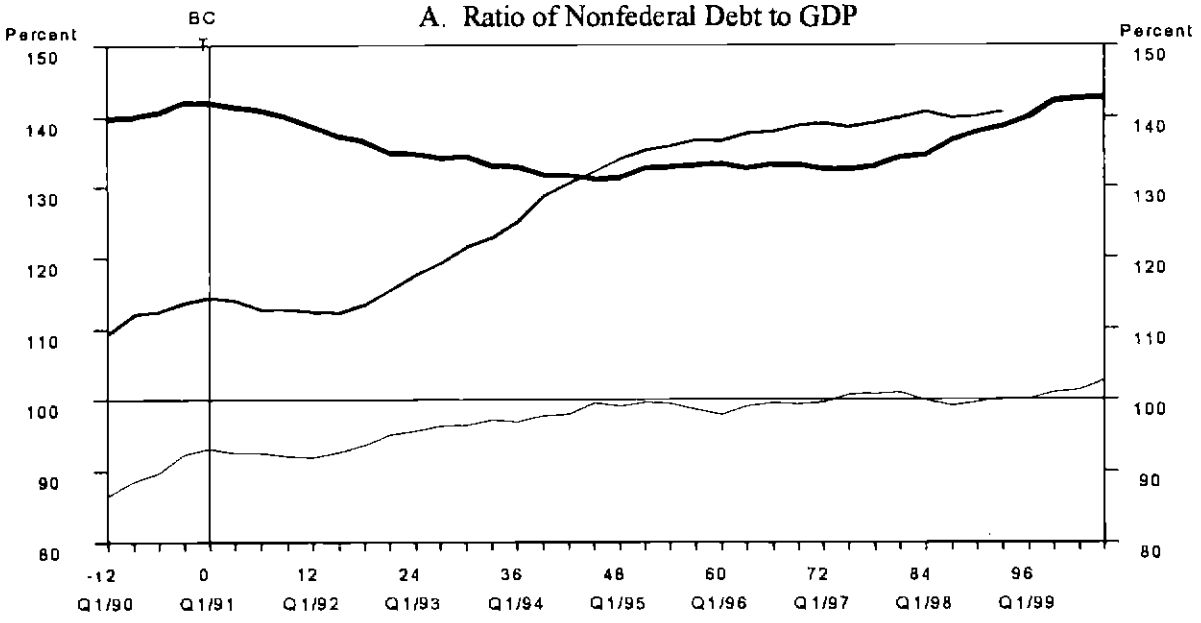


Chart 14
Nonfederal Debt

A. Ratio of Nonfederal Debt to GDP



B. Nonfederal Debt, Growth Rate

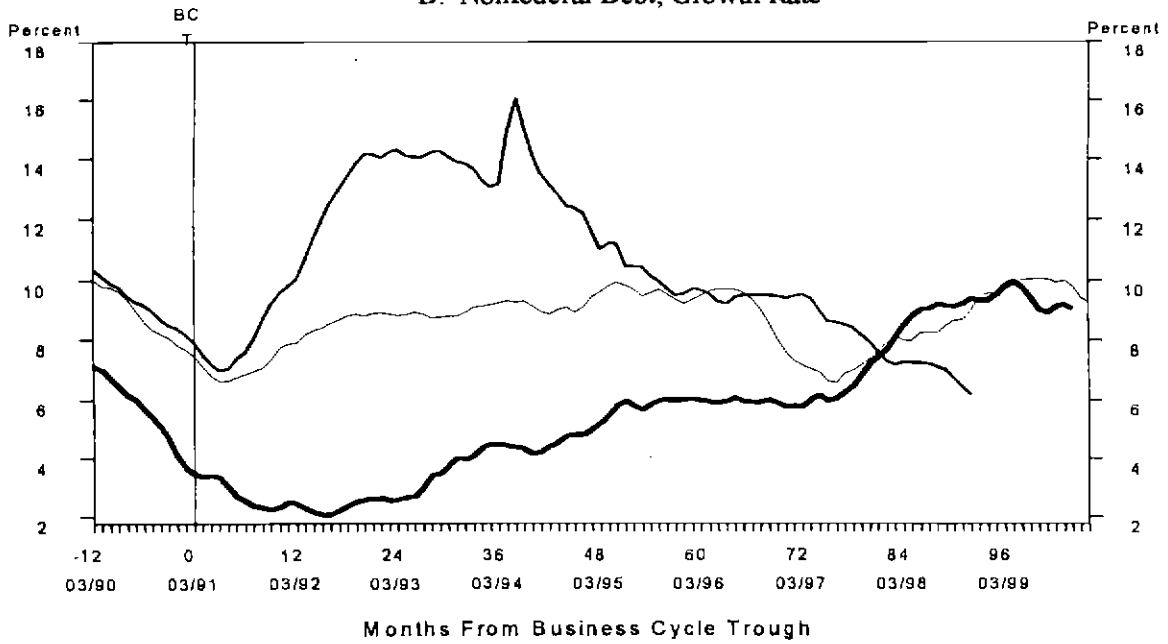
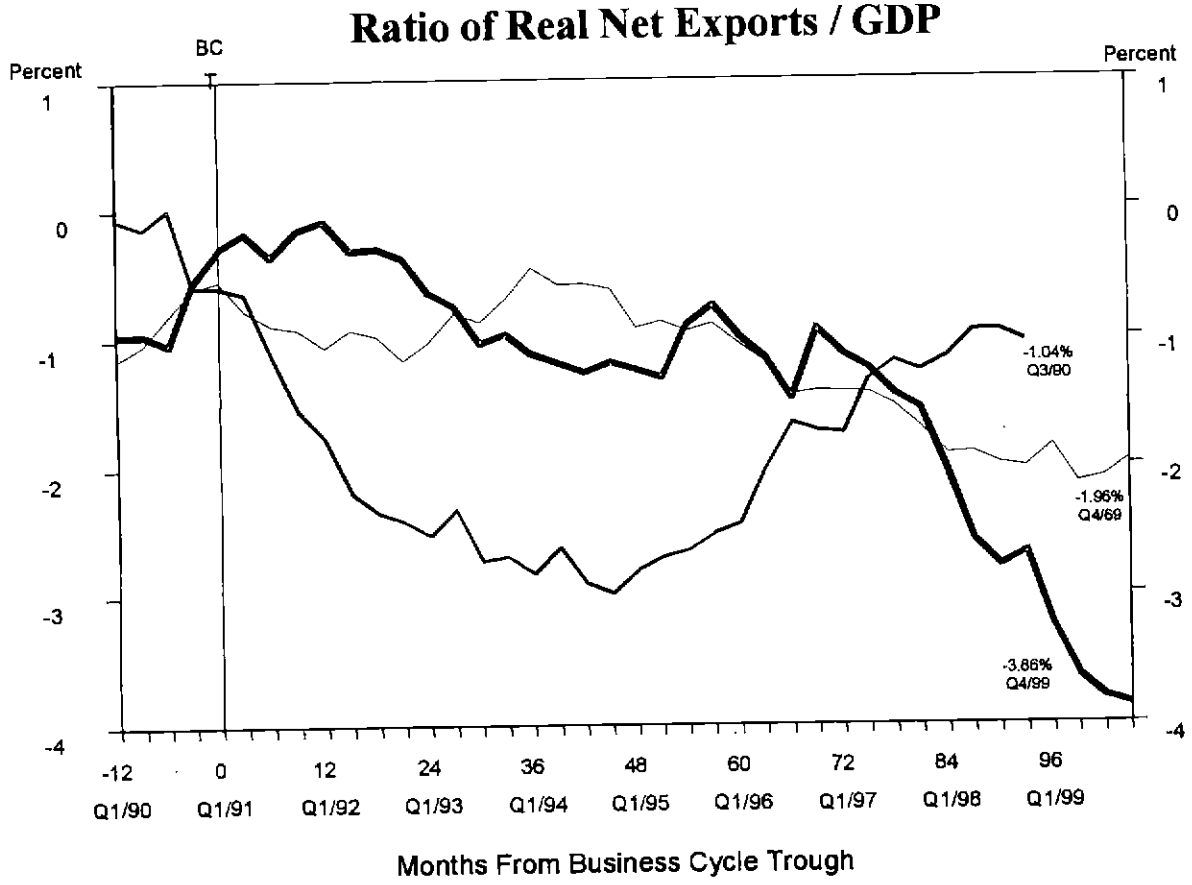


Chart 15


Ratio of Real Net Exports / GDP
BC
Percent
Percent
1
0
-1
-2
-3
-4
-1.04%
Q3/90
-1.96%
Q4/69
-3.86%
Q4/99
-12
Q1/90
0
Q1/91
12
Q1/92
24
Q1/93
36
Q1/94
48
Q1/95
60
Q1/96
72
Q1/97
84
Q1/98
96
Q1/99
Months From Business Cycle Trough