THE RECESSION AND AUSTRIAN
BUSINESS CYCLE THEORY:
AN EMPIRICAL PERSPECTIVE

How well is Austrian business cycle theory corroborated by empirical evidence? This question is addressed by examining the contraction of 1990–1991 and the expansion leading up to it. An overview of the Austrian theory of the business cycle permits the identification of several empirical propositions implied by the theory. Empirical data for several economic variables are examined for consistency with the patterns suggested by the theory. The evidence suggests a muted Austrian cyclical process at work in conjunction with other factors during the time period studied.

Compared with previous post–World War II recessions, the recession of 1990–1991 was not especially virulent. The standard array of macroeconomic data suggests a downturn substantially less severe than advertised. Yet the recovery has, by historical standards, been sluggish. Thus, even though the recent recession’s unemployment rate peaked at just below the post–World War II recession average (7.7 percent vs. 7.8 percent), that peak occurred 15 months after the recession’s trough, compared to a post-trough average of 3 months for other post–World War II recessions.


William N. Butos, Department of Economics, Trinity College, Hartford, CT 06006, telephone (203) 327-2448, telefax (203) 327-2257, thanks Steven Horwitz for suggestions in preparing this paper, three anonymous referees for their thoughtful comments, and especially Jeffrey Friedman for his invaluable assistance in bringing this paper to publication. All remaining errors are the author’s.
The atypical pattern of recovery has so dominated public discourse that little attention has been given to the causes and character of the recession itself. The aim of this paper is to provide an overview of the expansion during the 1980s and the downturn that followed. The major findings are that despite a generally declining rate of inflation since 1982 (which might otherwise suggest monetary policy restraint), federal policy actually engendered an unsustained expansion that required an economywide correction. This garden-variety “what goes up must come down” story, however, becomes complicated by a rather unusual confluence of other forces that affected the economy during the 1980s.

The Federal Reserve stimulated an economic expansion that began late in 1982. The combination of changes contained in the Tax Reform Act of 1986 and the Federal Reserve’s move toward monetary restraint beginning in the second half of 1986 (and continuing through the end of the decade) brought the expansion to an end in certain sectors of the economy. These corrections presaged the general contraction at the end of the decade. The prerecession and sectoral character of these adjustments meant that the expansion that began in November of 1982 required only a modest correction (by historical standards) during 1990–1991. Had the Federal Reserve continued fostering easy money throughout the second half of the decade, and if the massive readjustments in the real-estate market induced by changes in the federal tax code not taken place, the eventual downturn would have been significantly more pronounced.

The theoretical perspective employed here draws on the Wicksell-Mises-Hayek theory of industrial fluctuations, what is ordinarily called the Austrian theory of the business cycle (ATBC). In the next section the Austrian approach will be briefly overviewed for its major theoretical insights and for the kinds of empirical patterns in the data that would be consistent with it. Then I focus on the 1982–1989 expansion and the 1990–1991 recession. The empirical record reveals patterns generally (but not decisively) consistent with those suggested by the ATBC. The last section summarizes the main findings of the paper.
The Austrian Theory of the Business Cycle

The ATBC derives from Knut Wicksell’s monetary theory and Austrian capital theory. Wicksell’s contribution was to analyze the “cumulative process” associated with a divergence between the market rate and the “natural” rate of interest. The market rate of interest is the prevailing, observable rate that equilibrates the supply and demand for loanable funds. Wicksell’s “natural rate” is the rate consistent with full economic equilibrium in the sense of equality of ex ante (i.e., planned) voluntary saving and investment flows. It is also the rate that would be equal to the generalized rate of profit and the rate of return on the marginal unit of capital. Wicksell claimed that when the market and natural rates were equal, the economy would be in equilibrium and that the purchasing power of money would be constant.

Wicksell’s analysis indicates that if the natural rate is above the market rate, prices will rise. This “cumulative (price) process” occurs because the money stock must be continuously increased in order to keep the market interest rate below its equilibrium level. The disequilibrium brought on by the divergence in interest rates results in a cumulative inflation (if the market rate is kept below the natural rate) or a cumulative deflation (if the market rate is kept above the natural rate). Equilibrium is restored only when the market rate of interest is allowed to reach the level of the natural rate of interest. But the conditions consistent with monetary equilibrium per se were not primarily what intrigued Wicksell and his followers; rather, their central interest was the economics of monetary disequilibrium. Wicksell’s framework invites an analysis of what goes on when the two interest rates diverge and what happens to bring them back to equality, that is, the analysis of the path of the economy as a sequence of adjustments, what Ludwig von Mises called “step-by-step” analysis or what contemporary economists might refer to as “process analysis.”

Wicksell’s model was essentially a price-adjustment one; output was assumed to be fixed at full employment. Early on, however, Mises observed that a divergence between the market and natural rates of interest also necessarily affects the size and composition of output and relative prices in systematic ways. As initially developed by Mises and later by F. A. Hayek, the Wicksellian framework was augmented with Eugen von Böhm-Bawerk’s theory of
capital in order to analyze the effects on the "time allocation" of resources arising from a divergence in the two rates of interest. The resulting framework thus attempts to analyze business cycles by focusing on market distortions that primarily affect intertemporal resource allocation.\textsuperscript{10}

The ATBC attributes the initiation of a business cycle to a central bank-induced expansion in credit that depresses the market rate below the natural rate of interest.\textsuperscript{11} Austrian cycle theory is meant to explain business cycles of "intermediate" duration, ordinarily understood to involve a period of about 5-10 years, in contrast, for example, with "short" 1-3 year inventory cycles and to "long" growth cycles.\textsuperscript{12} The central claim of the ATBC, as Fritz Machlup observed, is that "monetary factors cause the cycle but real phenomena constitute it."\textsuperscript{13} According to the ATBC, the expansion of bank credit in the commercial loan market, by cheapening the cost of capital, redirects the allocation of resources toward more capital-intensive (or "roundabout") methods of production. By lowering the market rate of interest, the central bank increases the rate of profit in the "higher stages" of production relative to those "lower stages" that produce consumer goods. Thus, the expansion will involve the allocation of human and material factors of production away from less roundabout uses and toward more roundabout investments made profitable by the expansion of credit. According to the ATBC, this pattern of reallocation will raise the prices of capital goods relative to the prices of consumer goods.

The larger and longer the credit expansion persists, according to the ATBC, the more roundabout or "top heavy" the structural organization of production should become. Had these changes in the structure of production been induced by increases in the supply of voluntary savings, the fall in the market rate of interest would be fully compatible with the preferences of individuals. The decline in the market rate would then parallel the fall in the natural rate of interest, and the resulting reconfiguration in the pattern of resource allocation would represent a sustainable equilibrium. But if the market rate of interest is artificially lowered by credit expansion, the reallocation of resources thereby induced is not compatible with the underlying preferences of individuals. In effect, the quantity of capital individuals choose to make available for investment through their savings is insufficient to maintain the top-heavy capital structure. Accordingly, a corrective adjustment process must
eventually restore the economy to equilibrium. This corrective process—the recession phase of the business cycle—liquidates those investments that were made possible by the preceding credit expansion; it will be more or less severe depending on the magnitude of that expansion. The expansion comes to an end when commodity prices rise relative to producer good prices, signifying an increase in the profitability of less capital-intensive methods of production. During the downswing, both people and nonhuman resources become unemployed as firms liquidate unprofitable ventures, downsize, or go out of business. Once an unsustainable expansion of credit has occurred, a recession is necessary to move the economy back toward less roundabout methods of production, allowing human and retrievable nonhuman factors of production to be reabsorbed into a sustainable pattern of activity.\textsuperscript{14}

The ATBC gained wide popularity during the interwar years among academic economists, especially following Hayek's University of London lectures early in 1931 (which were published the following September as \textit{Prices and Production}). But the chronic nature of the Great Depression, especially in America, not only raised doubts about the ATBC but generated support for policy measures that were directly opposed to those implied by the theory. The final blow against the ATBC was delivered in 1936 with Keynes's publication of \textit{The General Theory}, which captured the imagination (even fervor) of most economists. With the flood tide of Keynesianism after World War II, the ATBC sank into obscurity, gaining only a small measure of respectability with the Austrian revival that began during the 1970s.\textsuperscript{15}

With significant exceptions,\textsuperscript{16} the ATBC has infrequently been used to analyze actual cyclical episodes. But since it was its perceived irrelevance in accounting for real-world phenomena that doomed it to a half-century of neglect, examinations of empirical data seem to be called for if the theory is to warrant revival.\textsuperscript{17}

\textit{The Recession of 1990–1991}

The 1990–1991 recession was preceded by one of the longest expansions on record. According to the NBER cycle chronology, the expansion that began late in 1982 lasted until mid-1990, a span of 104 months. During this interval, the average annual increase in real
(inflation-adjusted) GDP was about 3.6 percent, while the rate of inflation (measured by the year-to-year change in the implicit GDP deflator) plunged from 10 percent in 1981 to 4.3 percent in 1990. Also, the civilian unemployment rate fell from 9.7 percent in 1982 to 5.5 percent in 1990.\textsuperscript{18}

The ATBC, however, bids us to look more closely at several crucial indicators. Specifically, increases in bank credit and reductions in real interest rates\textsuperscript{19} are necessary conditions for the kind of expansion described by the ATBC. During the expansion, the ratio of producer goods prices to consumer goods prices should increase to reflect the increasing roundaboutness of production, and employment in capital-goods producing industries should rise. The initiation of a recession, according to the ATBC, should be signaled by an increase in the ratio of consumer goods to producer goods prices.\textsuperscript{20} As the recession gathers steam, the ATBC holds that the pattern of economic activity should involve not only higher unemployment rates, but rising interest rates and a disproportionate contraction in the production of capital goods relative to consumer goods.

\textit{Credit Expansion in the 1980s}

If monetary conditions are to set the stage for an Austrian cyclical process, bank loans must increase. Driving this increase is an excess quantity of bank reserves that enables lenders to increase their loans and lower the lending rate. In general, banks can only sustain such activities if the central bank increases the quantity of bank reserves.

The actual course of American monetary policy (in contrast to the Federal Reserve's intentions) may be seen by examining the quantity of reserves supplied by the Fed to the banking system. Bank reserves constitute the initial fuel enabling banks to make loans and create liabilities, thus affecting the pace of economic activity. Figure 1\textsuperscript{21} shows the path of total reserves from the early 1970s through early 1992.\textsuperscript{22} Until 1983, the average annual rate of growth in reserves was about 6.1 percent. From 1983 to 1987, however, reserves grew by an average rate of nearly 14.5 percent each year, indicating that monetary policy turned increasingly more expansive during the middle part of the decade.\textsuperscript{23} (Interestingly, as
Figure 1 shows, the growth in reserves was virtually flat between 1987 and 1989 but has increased greatly since 1990.24

When we look to bank credit, however, the data do not entirely seem to meet the conditions specified by the ATBC. As Figure 2 shows, commercial bank's industrial and commercial loans increased steadily until the end of 1989. Although these loans fall off rather sharply beginning in 1990,25 which is consistent with the ATBC, until that time they failed to expand as vigorously as might be expected given the increase in bank reserves.

Several factors may explain this result. First, the rapid increase in bank reserves relative to bank credit reflects the Fed's apparent desire to offset the strong decline in the income velocity of money, defined as the ratio of nominal GDP to the stock of money, which occurred between the end of 1983 and the end of 1986. Income velocity will decline if individuals increase their holdings of money relative to their incomes. This presumably is what happened as falling interest and inflation rates reduced the opportunity cost of holding money, and as an expanding array of interest-earning money assets became more widely available following the 1980 Depository Institutions Deregulation Monetary Control Act
(DIDMCA) and the 1982 the Garn-St Germain Depository Institutions Act.\textsuperscript{26}

Second, the third-world debt crisis induced banks with third-world loans to substantially increase their loan loss reserves—reserves set aside (not loaned out) to cover nonperforming loans. By 1992 approximately 50 percent of the $100 billion of debt held by U.S. banks was covered by loan loss reserves.

A third factor concerns the dramatic developments in the real-estate market during the 1980s. The data suggest that a significant element of the 1982–1990 expansion was real estate related. As Table 1 shows, in the 1980s commercial banks increased their real-estate loans at more than double the average rate of the other cyclical upswings. An important factor in accounting for the growth in real-estate loans was the 1981 Economic Recovery Tax Act (ERTA).\textsuperscript{27} ERTA provided substantially more favorable tax treatment of investment by accelerating depreciation schedules (15 years under ERTA compared to 40 years under pre-ERTA); reducing the asset lives of plant, equipment, commercial buildings, and rental housing; and
Table 1: Commercial and Industrial Loans & Real Estate Loans*

<table>
<thead>
<tr>
<th></th>
<th>Annualized Real Percentage Change</th>
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<tbody>
<tr>
<td></td>
<td>Comm'l. &amp; Indust.</td>
</tr>
<tr>
<td>NBER Expansions</td>
<td></td>
</tr>
<tr>
<td>Nov 1970–Nov 1973</td>
<td>16.0</td>
</tr>
<tr>
<td>Mar 1975–Jan 1980</td>
<td>1.8</td>
</tr>
<tr>
<td>July 1980–July 1981</td>
<td>7.3</td>
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<tr>
<td>Nov 1982–July 1990</td>
<td>4.7</td>
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<tr>
<td>Average</td>
<td>7.5</td>
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<tr>
<td>NBER Contraction</td>
<td></td>
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<tr>
<td>Nov 1973–Mar 1975</td>
<td>3.5</td>
</tr>
<tr>
<td>Jan 1980–July 1980</td>
<td>-8.5</td>
</tr>
<tr>
<td>July 1981–Nov 1982</td>
<td>6.8</td>
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<tr>
<td>July 1990–Mar 1991</td>
<td>-1.3</td>
</tr>
<tr>
<td>Average</td>
<td>-5.5</td>
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*Nominal values deflated by CPI (for commodities)

Sources: Federal Reserve Board of Governors and Bureau of Labor Statistics.

providing a more generous investment tax credit on equipment (but not structures). These provisions had the somewhat unintended result of greatly increasing the attractiveness of real estate relative to other kinds of investment. The net effect of ERTA's tax sheltering advantages for real-estate investment was to generate enormous activity in commercial real estate.27

Interest Rates in the 1980s

According to the ATBC, a business cycle expansion should be accompanied by falling real (i.e., inflation-adjusted) interest rates. The decline in real interest rates induces the capital-intensive expansion in economic activity associated with a cyclical upswing. This upswing comes to an end when the excessive expansion of bank credit ceases, creating a shortage of investable funds and causing interest rates to rise as firms attempt to effect their investment plans despite the lack of sufficient bank credit. The ATBC holds that real interest rates during the ensuing contraction should be above their levels during the expansion.

Figure 3 reveals a downward trend in both short- and long-term
rates during the 1980s. Nominal rates fell sharply as inflation was wrung from the economic system in the wake of the recession of 1980–1982. Ex post (i.e., realized) real interest rates climbed steadily from occasionally negative values in the 1970s and peaked in 1983–1984. Thereafter, nominal rates continued a general trend downward, although from 1987 to 1989 short-term rates increased sharply. After 1989 short-term rates in both nominal and real terms fell again. Currently short-term rates are at very low or even negative levels after adjusting for inflation. The pattern of movements in long-term rates is somewhat different, peaking in 1982–1984 and falling somewhat steadily thereafter.

The fall in nominal and real rates during the expansion of 1982–1990 seems to have been brought about by expansionary monetary policy. Monetary ease is suggested by the growth in total reserves (as noted above) and by a 13 percent annualized rate of nominal M2 growth between 1982 and 1989. Nevertheless, inflation rates fell and inflationary expectations seem to have eroded significantly throughout the decade. High money growth and re-

Figure 3: Nominal Interest Rates

![Nominal Interest Rates Graph](image-url)

Source: Federal Reserve Board of Governors; Moody's; Bureau of Economic Analysis.
duced inflationary expectations both act to induce lower interest rates and thereby help to account for interest rates moving in ways broadly consistent with an Austrian view of a cyclical expansion.

The path of real interest rates immediately preceding and during the 1990-1991 recession, however, does not provide unambiguously strong support for the ATBC. The ATBC holds that real rates should rise at the cyclical peak. As shown in Table 2 below, the inflation-adjusted rate on AAA bonds trends downward from the peak year of 1988 until the second quarter of 1990, which roughly coincides with the National Bureau of Economic Research's dating of the onset of the contraction. With the exception of the first

<table>
<thead>
<tr>
<th>Year (quarter)</th>
<th>Nominal AAA Bond Rate</th>
<th>Ex Post Real Rate</th>
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<tr>
<td>1988 (1)</td>
<td>9.56</td>
<td>5.96</td>
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<tr>
<td>(2)</td>
<td>9.81</td>
<td>5.41</td>
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<tr>
<td>(3)</td>
<td>9.96</td>
<td>4.86</td>
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<td>(4)</td>
<td>9.51</td>
<td>5.61</td>
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<tr>
<td>1989 (1)</td>
<td>9.67</td>
<td>4.77</td>
</tr>
<tr>
<td>(2)</td>
<td>9.49</td>
<td>4.89</td>
</tr>
<tr>
<td>(3)</td>
<td>8.97</td>
<td>5.17</td>
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<td>(4)</td>
<td>8.89</td>
<td>5.19</td>
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<tr>
<td>1990 (1)</td>
<td>9.49</td>
<td>4.79</td>
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<td>(2)</td>
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<tr>
<td>(4)</td>
<td>9.29</td>
<td>5.39</td>
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<tr>
<td>1991 (1)</td>
<td>8.93</td>
<td>3.63</td>
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<tr>
<td>(2)</td>
<td>8.91</td>
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<td>6.39</td>
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<tr>
<td>(4)</td>
<td>8.45</td>
<td>6.05</td>
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<tr>
<td>1992 (1)</td>
<td>8.28</td>
<td>5.48</td>
</tr>
<tr>
<td>(2)</td>
<td>8.28</td>
<td>5.58</td>
</tr>
<tr>
<td>(3)</td>
<td>7.98</td>
<td>5.98</td>
</tr>
<tr>
<td>(4)</td>
<td>8.02</td>
<td>5.72</td>
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</tbody>
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Nominal rates are averages of monthly values of Moody's bond yield index; ex post real rates were calculated by subtracting the quarterly percentage change in the GDP deflator from the corresponding nominal value.

Sources: Federal Reserve Board of Governors and Bureau of Economic Analysis.
quarter of 1991, real rates increased from the third quarter of 1990 to the third quarter of 1991. While this general pattern is consistent with the Austrian theory, the fact that real rates continued to rise for two quarters after the recession ended does not square well with the ATBC.

Overall, the level and movement of interest rates during the 1980s is ambiguous in its support of the ATBC. The evidence does not appear decisive enough to warrant confident conclusions. Indeed, as Figure 4 indicates, the movement of ex post real long-term rates seems to follow a path since 1971 that is not strongly consistent with that suggested by the ATBC. During the 1970s, for example, real long-term rates fell dramatically during the 1973–1975 recession and rose sharply during the first year of the 1975–1979 expansion before falling in 1976. On the other hand, the sharp increase in real long-term rates beginning in 1980 and continuing through 1982, followed by their leveling off and decline thereafter, are consistent with the Austrian cycle theory.

Figure 4: Ex Post Real Interest Rates (nominal rate minus percent change in GDP deflator)

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**Sources:** Federal Reserve Board of Governors; Moody's; Bureau of Economic Analysis.
In any case, there are clear pitfalls in making strong inferences based on the movement of calculated real interest rates. This is especially the case when the purchasing power of money is unstable, as has been the case during the past two decades. Inflation, because it creates unsystematic and unpredictable changes in relative prices, interferes with their informational role, thereby making economic calculation difficult. This applies with special force to "time markets," in which the efficacy of current decisions is decisively linked to a future made even more uncertain by inflation. As Figure 4 shows, for example, during the mid-1970s inflation-adjusted interest rates were actually negative, despite the fact that economic theory tells us that real interest rates should always be positive. Most likely, inflation "surprises" explain the anomalous path of ex post real interest rates during the mid-1970s. Conversely, the rather high ex post real rates of the early 1980s may have been caused by an excessive sensitivity to inflation uncertainties: investors burned by very low real rates of return in the 1970s required a very high nominal return to offset the risk of misforecasting future inflation. In short, despite rational behavior by market transactors, inflation may generate widely distorted market results. Not only inflation but other developments during the 1980s also may have affected the path and levels of interest rates during the 1980s. How such factors affect the validity of the ATBC will be discussed below.

*Prices and Production*

The monetary and financial data seem mixed in terms of their consistency with the ATBC. The picture is somewhat clearer when we look at the patterns of production and relative prices during the 1980s. According to the ATBC, the data should display disproportionately large fluctuations in capital and durable goods production relative to consumer goods production during the expansion and contraction of the economy and a procyclical movement in the ratio of capital goods prices to consumer goods prices.

Figures 5 and 6 use data on durable and nondurable goods production as a way to examine the pattern of greater and lesser capital intensive production. First, the data show that the production of durable goods correlated closely with cyclical movements in the
economy. Thus, for example, in Figure 5 the index of durable goods production declines markedly during the 1973–1975 and 1981–1982 recessions. Second, the data also show a larger variance of fluctuation in durable goods production compared to nondurable goods. Both of these patterns corroborate the ATBC's predictions about the magnified effect on capital-intensive production during the cyclical upswing and downswing that an artificial credit expansion induces.34

Figure 7 provides data that suggest the secular trend toward a service economy,35 but it is the fluctuations and turning points in employment in durable versus nondurable goods production that is of special interest to the ATBC. First, as Figure 7 shows, the cyclical variance in the ratio of total employment to employment in durable goods industries is greater than that for total employment to nondurable goods employment. This pattern is consistent with the ATBC because the theory calls for capital-intensive (i.e., durable goods) production and employment to undergo relatively greater fluctuation compared to less capital-intensive activity.
Thus, for example, the 1973–1975 cyclical peak to trough percentage swing for employment in durable goods–manufacturing industries was 11.3 percent but was only 8.2 percent for employment in nondurable goods–manufacturing industries. The pattern for 1973–1975 is typical for the entire period shown, though fluctuations in both ratios become more modest near the end of the decade, a matter discussed below.

Second, as Figure 7 indicates, the ratio of total private nonagricultural employment to employment in durable goods–producing industries increases sharply during all the contractions since 1973— as the ATBC would lead us to expect—with the exception of the 1990–1991 recession. While 1990–1991 may appear anomalous, a closer look at the data sustains a somewhat different interpretation. Thus, Figure 8 shows that prior to and during the 1990–1991 recession, employment in durable goods industries dropped significantly in absolute terms and relatively compared with employment in nondurable goods industries. For example, between 1989 and 1991, employment in durable goods industries fell by 10.4 percent, while
only by 2.2 percent in nondurable goods industries. Thus, even though (contra the ATBC) the ratio of total to durable goods employment did not rise appreciably during 1990–1991, the actual decline of manufacturing employment in durable goods producing industries supports the ATBC. Still, as Figure 8 indicates, the 1990–1991 recession evidences a smaller amplitude (measured from cyclical peak to trough) and a more gradual decline in durable goods industries employment than the 1973–1975 or 1981–1982 contractions. Overall, therefore, the evidence from 1990–1991 is consistent with the ATBC, but less so than in previous cycles.

A similar conclusion is also suggested by the data on manufacturers' new orders and shipments in nondefense capital goods industries. As seen in Figures 9 and 10, the pattern of new orders and shipments tracks overall economic activity reasonably well, falling during macroeconomic contractions and increasing during expansions, especially during the 1973–1975 and 1981–1982 recessions. In the 1990–1991 recession, new orders for capital goods decline, while shipments of capital goods generally level off but do not substan-
Figure 8: Employment in Manufacturing Industries (seasonally adjusted)


tially decline. According to the ATBC, new orders and shipments of capital goods should decline during a recession as resources are reallocated back toward less capital-intensive production methods. The movements in both these series are not inconsistent with the ATBC, though they are somewhat muted.

Finally, the Austrian theory holds that the ratio of capital goods prices to consumer goods prices should decline at the onset of the economy's downturn. It is important to recall that the ATBC's emphasis on relative price movements differentiates it from other business-cycle theories. Thus, evidence regarding such movements allows us to determine if the Austrian approach provides insight when other competing theories do not. The ratio's decline signifies the adjustment process of resource reallocation back toward less roundabout methods of production in response to higher rates of profit in consumer goods industries compared to capital goods-producing industries. As Figure 11 shows, the ratio generally follows this predicted pattern, peaking near the onset and then declining during the 1981-1982 and 1990-1991 recessions. The ratio does
Figure 9: Manufacturers' New Orders in Nondefense Capital Goods Industries

Source: Census Bureau.

Figure 10: Manufacturers' Shipments in Nondefense Capital Goods Industries

Source: Census Bureau.
not as closely follow its expected path during roughly the last 18 months of 1973-1975 recession, although its decline in mid-1973 is consistent with the ATBC. Overall, however, the ATBC's predictions are supported by the data.

What Happened in the 1980s?

The empirical evidence marshalled to examine the 1990-1991 recession provides positive but not decisive support for the ATBC. The cyclical process that began at the end of 1982 seems to have approximately followed a path consistent with the Austrian theory. Of special significance is the fact that this economic expansion (like that preceding the Great Depression) did not require price inflation. Indeed, the rate of inflation (as measured by the GDP deflator) fell sharply during 1982-1983 and generally remained within a range of 3-4 percent during 1983-1992, although it should be noted that inflation increased by about two percentage points between 1986 and 1989. When a recession finally took hold near the end of the
decade, the economy went through a contraction that suggests a kind of muted Austrian cyclical downturn. The empirical evidence, though not strongly supporting a typical Austrian cyclical downturn, is clearly not inconsistent with the patterns the ATBC suggests ought to show up. In short, an Austrian cyclical process may have been at work during the 1980s, but if so, other factors also seem to have been present.

It should not be surprising that the empirical evidence presented above does not corroborate the ATBC more decisively. Common sense and casual observation tell us that the economy’s path is shaped by many influences beyond those suggested by the ATBC. This applies in varying degrees to all cyclical episodes but perhaps with special significance to that of the 1980s. A brief look at some of these factors illustrates their importance in understanding the past cyclical process.

Roger Garrison’s paper in this issue is especially helpful because it explains how fiscal deficits and bank instabilities generated a supernormal risk premium that nonetheless was not reflected in market interest rates. This was accomplished by the Federal Reserve pushing nominal rates below what their true risk-adjusted levels would have required given the uncertainties caused by budgetary deficits and the increased riskiness of bank behavior under the aegis of banking regulatory policies. According to Garrison, actual economic risks were subsidized and externalized by a compliant Federal Reserve (given its ability to monetize Treasury debt) that abetted chronically large government deficits and perverse risk-inducing and risk-disguising federal bank regulations and policies.

The elements emphasized by Garrison are clearly important in understanding the special conditions underlying the expansion of the 1980s and accounting for the artificial lowering of interest rates. There are, however, other circumstances that also played significant roles during this past cyclical episode. An especially important one is the linkage between fiscal policy and economic activity by means of tax policy. As noted earlier, the 1981 Economic Recovery Tax Act (ERTA) significantly stimulated the commercial and residential real-estate market. The resulting real-estate boom led to serious overbuilding and price increases in real estate, especially in some geographic areas. The real-estate boom also contributed to the longstanding but deepening difficulties of the S & L industry as it
attempted to salvage itself by participating in an increasingly speculative and artificially sustained market. Though reeling from the recessions of 1980 and 1981–1982, and despite the fact that by 1983 perhaps half of them had negative net worth, the S & Ls continued to invest aggressively in real estate, encouraged by the perverse structure of incentives and support mechanisms for risk taking under federal deposit insurance and the various agencies administering the attendant collection of rules and regulations.

In 1986, however, the Tax Reform Act reversed FRTA’s provisions by extending the depreciation period for commercial real estate from 15 to almost 32 years and by eliminating the preferential tax treatment of capital gains. In addition, the 1986 Act reduced the top marginal tax rate from 50 percent to 33 percent, thus reducing the tax savings per dollar of deduction associated with depreciation costs or real-estate losses. The overall effect of the 1986 legislation was to eliminate the tax incentive to hold commercial real estate. This dramatic change in tax policy was the primary initiating factor in the collapse of the real-estate market that began in 1987. Changes in the tax laws plus the downward pressure on prices due to several years of excessive commercial construction and by asset selloffs from “resolved” S & Ls generated strong contractionary forces in the commercial and residential real-estate markets.

These effects rippled through the economy, creating large regional pockets of recession. The magnitude of these regionalized contractions tends to presage a somewhat more general slowing down in the overall economy by 1988–1989. This may be seen in the movements of such cyclical indicators as commercial and industrial bank loans (Figure 2), the Index of Industrial Production (Figure 5), the Index of Capacity Utilization in Durable Goods Industries (Figure 6), and employment in durable goods manufacturing industries (Figure 8). Although the NBER dates the recession to July of 1990, a downturn probably began at least one year earlier. This downturn, though not pervasive enough to qualify as an “official” recession, began with the collapse of the real-estate boom.

There may be, however, some irony in this story. Suppose that, as the ATBC holds, the economy had to go through a corrective process following the expansion of the 1980s. Even so, the precise pattern and manifestation of that process is not strictly determined a priori; instead, this process is shaped and contoured by the interplay of unique economic events and fiscal and monetary policies.
This seems to be the case for the 1980s cyclical episode in that one aspect of fiscal policy (the 1986 Tax Reform Act) may have inadvertently induced a mini-recession. The Federal Reserve, moreover, contributed to this contractionary environment, as reflected in the growth rate of bank reserves (see Figure 1) and as suggested both by the sharp decline in the growth rate of M2 in 1987 and by the large increases in the federal funds rate starting in early 1988. Fiscal policymakers simply (and laudably) wanted to lower marginal tax rates and remove tax shelters and loopholes. Meanwhile, in 1987 the Federal Reserve reacted primarily to an unexpected jump in inflation. The unintended consequences of this combination of fiscal and monetary policies allowed the economy to go through its necessary adjustment process but in a prolonged and relatively mild way. Ironically, the often mentioned "soft-landing" objective of discretionary fiscal and monetary policy may have been achieved; but, if so, it was fully inadvertent.

Despite these complexities, the economic data are not inconsistent with the patterns implied by the Austrian theory of the business cycle. Although this suggests that an Austrian-type cyclical process may have occurred during the 1980s, the "fit" was not tight for all categories of data examined here. The data are, however, well explained by a combination of the ATBC and other factors discussed above.

The significance of other influences is neither surprising nor inconsistent with Austrian economics. The cycle theory advanced by Austrian economists emphasizes that distortions in "time markets" lead to misallocations of resources. But it does not preclude or marginalize the possible role of an indefinite array of other circumstances, such as the S & L crisis, the underpricing of risk emphasized by Garrison, or fiscal policy and legislation. In this paper I have highlighted specific aspects of fiscal policy as important agents in accounting for the cyclical process during the 1980s. If there is a lesson here, it seems to have two parts: first, that breakdowns in economic coordination appear in many guises and arise from many causes; second, that the ATBC does indeed add to our understanding of the boom of the 1980s and the recession from which we are still recovering.
NOTES

1. The National Bureau of Economic Research (NBER) cyclical expansion and contraction chronology is used in this paper as a convenient way to present, discuss, and analyze business cycles. Doing so is not without certain hazards. See Murray N. Rothbard, America's Great Depression (Princeton: D. Van Nostrand, 1963), 1-7; and Charles Edward Wainhouse, "Hayek's Theory of the Trade Cycle: The Evidence from the Time Series" (unpublished Ph.D. dissertation, New York University, 1984), chs. 5, 6. This notwithstanding, the four NBER post-1973 contractions seem to correspond reasonably well to a broad array of empirical data typically associated with cyclical downturns. However, as discussed below, the NBER approach does not necessarily pick up all relevant cyclical patterns.

2. As reported in The Wall Street Journal of September 1, 1993, Department of Commerce figures released in August 1993 reflect substantial revisions over earlier statistics. The revised data indicate that growth in gross domestic product (GDP) during the recession decreased about 0.5 percent less than previously thought while the growth in GDP during 1992 was about 0.5 percent more than previously estimated. On the other hand, as reported in the Wall Street Journal of September 2, 1993, the Clinton administration recently lowered its GDP growth forecast for 1993 from 3.1 percent to 2 percent.

3. A variety of factors may explain the slowness of the recent recovery. Some of these are associated with legislation that increase labor costs or restrict the functioning of labor markets, such as higher social security taxes, the Americans with Disabilities Act, and the Family Leave Act. The Bush tax increases of 1990 also probably adversely affected the recovery, especially when it became evident that the tax increases were not going to reduce budget deficits and, as a result, that raising future taxes might again be promoted for deficit reduction.

4. The discussion here should in no sense be construed to suggest that monetary policymakers have the capability to "fine tune" the economy.


6. Defining the natural rate of interest when capital is heterogenous involves

7. But see Myrdal, n5 above; and Hayek, Monetary Theory and the Trade Cycle (Clifton, N.J.: Augustus M. Kelley, 1975), for criticism of the “constant price level” condition.

8. Note that a cumulative expansion (or contraction) implies investment greater (or less) than saving. Wicksell’s analysis gave rise to a whole class of cycle models during the interwar years known as “savings-investment” theories. In that sense, the ATBC is one species of a genus that included theories advanced by many leading economists of the time. See, e.g., Dennis Robertson, A Study of Industrial Fluctuations (London: P.S. King, 1915), and idem, Banking and the Price Level (London: P.S. King, 1926). John Maynard Keynes, A Treatise on Money (London: Macmillan, 1930); in addition to Myrdal, n5 above; and Lundberg, n5 above.


10. The explicitly “micro” orientation of the ATBC contrasts sharply with other standard business cycle approaches. For example, in The General Theory Keynes made “the theory of output as a whole” the domain for his theoretical inquiry. The resulting emphasis on economic aggregates to the neglect of their market level underpinnings forms much of the analytical approach of post–World War II macroeconomic economics. Among other things this approach tends to give credence to the “flat tire” theory of economy fluctuations popular with the early Keynesians: a recession is analogous to air escaping from a tire, while expansion and stimulative macroeconomic policy pumps the tire back up. It is also useful to note that “quantity theory” analyses employing MV = PQ type framework cannot treat questions of relative price changes (and hence of resource allocation) while retaining consistency in their aggregation structures. This particular
technical problem confronting monocommodity models is an implication of Hicks's "composite commodity theorem." See John Hicks, *Value and Capital* (London: Oxford University Press, 1939), 33-34; 312-13. My thrust here is that quantity theory comparative static exercises must assume relative price invariance to changes in the quantity of money.

Some qualifiers are necessary here: (i) as a theoretical matter, any significant and prolonged supply-driven increase in bank credit is sufficient to initiate a Mises-Hayek cyclical process; (2) following Mises, Hayek, and other Austrian theorists, I also assume that as a behavioral generalization modern economies are characterized by central banks which often engage in policies that intentionally or otherwise result in significant credit expansions; (3) the claim that a central bank can affect the domestic supply of credit via control over bank reserves does not imply that the quantity of credit and market rates of interest cannot be strongly affected by other players and institutions.


An anonymous referee has raised the issue of whether changes in credit flows resulting from an autonomous shift in individuals' intertemporal saving/consumption plans can be distinguished from those caused by central bank interventions. According to the ATBC, the conditions necessary to initiate an Austrian cyclical process require that the inverse co-movement of real interest rates and central bank-induced credit expansion are unrelated to the supply of savings. Wainhouse, in above, examines this by testing whether changes in savings were independent of changes in the supply of bank credit during 1959-1981. His findings support the hypothesis. Also see Gerald P. O'Driscoll, *Economics as a Coordination Problem: The Contributions of Friedrich A. Hayek* (Kansas City: Sheed Andrews and McMeel, 1977), 51-55, 70-82, for an excellent treatment of the ATBC.

It is no exaggeration to say that contemporary professional judgment sees the ATBC as clearly outside the mainstream. Despite the Austrian revival during the past 20 years, the cycle theory has not shared in a similar groundswell of acceptance or interest. Indeed, it has aroused strong criticism even from otherwise sympathetic "fellow-travelers." Leland Yeager, "The Significance of Monetary Disequilibrium," *Cato Journal* 5, no. 2 (Fall 1986): 369-99, argues that the ATBC should be excised from Austrian economics and replaced with a monetary disequilibrium theory of fluctuations. Yeager claims that the ATBC is "conceivable but incomplete" because it only "lamely" explains the depression phase, is "unnecessarily specific" in its suppositions, and is empirically uncorroborated (980). I do not address Yeager's points here. However, in a paper presented at the
Atlantic Economic Conference in October 1992, "The Consequences of Monetary Disequilibrium in Alternative Macroeconomic Theories," Steven Horwitz provides an insightful analysis of the compatibility of the ATBC and monetary disequilibrium theory.

16. Foremost among scholarly works analyzing cyclical historical episodes from an Austrian perspective are Murray N. Rothbard, America's Great Depression, n above; C. A. Phillips, T. F. McManus, and R. W. Nelson, Banking and the Business Cycle (New York: Macmillan, 1937); and Lionel Robbins, The Great Depression (New York: Macmillan, 1934). Benjamin M. Anderson's Economics and the Public Welfare (New York: D. Van Nostrand, 1949), though not explicitly Austrian, is broadly compatible with the ATBC. More recently, Wainhouse, n above, has produced an econometric study empirically testing ATBC during the 1959–1981 period. Wainhouse's unduly neglected work points out a significant problem in historical studies based on the ATBC: identifying empirically relevant correspondents to its theoretical concepts. A specific instance of this problem relevant to this paper is the dating of "Austrian" as opposed to "NBER" cycles. See n above.

17. The study here does not pretend to empirically test the ATBC. However, since the ATBC purports to offer an understanding of cyclical phenomena, the theory's central propositions should in some sense be reflected in the data.

18. The 5.5 percent rate of unemployment in 1990 was the lowest since 1973 with the exception of 5.3 percent in 1989. All data are from the 1993 Economic Report of the President (Washington, D.C.: U.S. Government Printing Office, 1993).

19. The economically relevant interest rate measure is the expected real rate of interest, defined as the nominal (or market) rate minus the expected rate of inflation. Since only the market rate is observable, empirically measuring the expected real rate requires making claims about investors' expectations of inflation. Moreover, since interest income is subject to income taxation (except, of course, for municipal securities), the actual after-tax interest return is the nominal rate times one minus the marginal income tax rate. On the other hand, since interest payments are typically treated as tax-deductible business expenses, the after-tax interest cost is also described by the preceding formula. Note that as the marginal rate of taxation falls, so too does the after-tax cost of and return on capital.


21. The data portrayed in all figures and tables are available on request from the author. The reader will find it helpful to keep in mind the NBER expansion/contraction chronology given in Table 1 when examining the charts.

22. Total reserves equal borrowed and nonborrowed reserves held by depository institutions. Borrowed reserves are created when the Federal Reserve lends reserves (generally "on demand") to depository institutions. Non-
borrowed reserves are created when the Federal Reserve buys government securities on the open market. Ordinarily, borrowed reserves are a small fraction (about 3 percent) of total reserves. Nonborrowed reserves more closely reflect Federal Reserve policymaking decisions. Although other non-Federal Reserve factors may affect the quantity of bank reserves (including Treasury operations and international financial flows), it is correct to assume that reserves are controllable by the Federal Reserve. How and why the Federal Reserve might choose to use or not choose to exercise this control raises several important questions pertaining to its formulation and implementation of short- and long-term policy. That analysis, however, falls outside the scope of this paper.

23. The data for nonborrowed reserves mirror very closely that for total reserves.

24. The possible significance of the slowdown in the growth of reserves in 1987–1989 will be discussed below. The average annual increase in total reserves from December 1990 until May 1993 was nearly 10.6 percent. The annualized rate of increase more recently has been even higher (e.g., 15.1 percent from January 1992 through January 1993 and 15.5 percent from January 1993 through May 1993). Federal Reserve Bulletin (August 1993, Table 1:20); and Monetary Trends, Federal Reserve Bank of St. Louis (June 1993). In addition, it is important to note that the aforementioned rapid increase in reserves has not been reflected recently in similarly large increases in the M2 measure of the stock of money. (See n29 below for a discussion of the various measures of money.) However, it is not necessarily the case that restrictive monetary policy is solely responsible for the slowdown in M2. The Federal Reserve directly controls only about 30 percent of M2. The remaining 70 percent is determined by portfolio decisions of the public and depository institutions. The low growth rate of M2 is mainly accounted for by low growth in its non-M1 components, i.e., those components the Federal Reserve does not directly control, and seems to have been related to a variety of factors, including increased flows away from low-interest-yielding savings-type accounts into bonds and equities, higher bank capital ratios as required under the new Basle Agreement, and higher recently legislated federal deposit insurance premiums. In addition, several researchers have claimed that excessive regulatory oversight beginning in 1989 created a “credit crunch” that seriously dampened bank lending. Weak credit demand associated with the recession is also cited by some as an explanation for the slowdown in M2. See, e.g., Kevin L. Kliesen and John A. Tatom, “The Recent Credit Crunch: The Neglected Dimension,” Federal Reserve Bank of St. Louis Review 74, no. 5 (September/October 1992): 8–36. It is important to recognize that those who claim that a credit crunch precipitated the downturn do not usually claim, in contrast to the ATBC, that the bust was the consequence of the Fed’s credit expansion.

25. Curiously, even though commercial and industrial (C & I) loans often
tend to lag behind the general pace of economic activity, they continue to remain below even their lowest 1990–1991 recession values. Thus, during 1992, C & I loans hovered around $600 billion; during 1993 they have fallen from $598 billion in January to $593 in May.

26. Compared with the 1970s, the path of the income velocity of M1 during the 1980s was highly irregular. Since the dollar value of output (i.e., nominal GDP) must equal the dollar value of expenditures for that output (i.e., the quantity of money times its velocity), erratic movements in velocity tend, other things equal, to make the quantity of money a less reliable predictor of nominal GDP. This, in part, accounts for the Fed’s decision in 1987 to cease concentrating on M1 as a monetary target and to start emphasizing M2. Some recent evidence, however, suggests that the expected relationship between M2 and GDP may also have changed during the past few years. Since 1990, the demand to hold M2 assets has apparently fallen (i.e., M2 velocity has increased) despite a decline in the opportunity cost of money as measured by interest rates on M2 assets. If so, the slow growth in M2 since late in 1990 (averaging about 2 percent) would not be as much a cause for concern as it would if the relationship between M2 and GDP were close and more predictable. See Joseph A. Ritter, “The FOMC in 1992: A Monetary Conundrum,” Federal Reserve Bank of St. Louis Review 75, no. 3 (May/June 1993): 39–49. I thank an anonymous referee for suggesting that I discuss this topic. For a useful overview of the 1980 and 1982 deregulation acts, see Thomas F. Cargill and Gillian G. Garcia, Financial Reform in the 1980s (Stanford: Hoover Institution Press, 1985), ch. 5.

27. For a discussion of the tax sheltering opportunities for real estate under different tax regimes, see Lynn E. Browne and Karl E. Case, “How the Commercial Real Estate Boom Undid the Banks,” in Lynn E. Browne and Eric S. Rosengren, eds., Real Estate and the Credit Crunch (Federal Reserve Bank of Boston Conference Series No. 36, 1992), 57–97.

28. Ex post real interest rates have been calculated by subtracting a measure of inflation from the same time period’s nominal rate. While the nominal rate is an observable magnitude, the actual real rate is not. Thus, the calculated real rate is an empirically constructed value whose magnitude depends upon the particular index of inflation. Different price indices generate different values for changes in the value of money. There are also serious methodological issues (that carry equally serious empirical implications) regarding the formation of inflationary expectations and hence the algorithms appropriate for subtracting inflation from nominal values. For example, the economically relevant expected real rate might be calculated by using a weighted average of past inflation rates to generate forecasts of future inflation. Other approaches could be used with correspondingly different empirical outcomes. Also see note above.

29. M2 is a measure of money comprising M1 (coins and currency held by the public, travelers checks, demand deposits, deposits in negotiable orders of withdrawal and automatic transfer accounts, and credit union share
drafts), plus overnight Eurodollars and repurchase agreements, plus sav-
ings, time, and money market deposit accounts under $100,000. M2 rather
than M1 is now widely used to gauge the quantity of money available for
transactions purposes. The Federal Reserve no longer uses M1 either as a
indicator or target of policy. The M2 number reported in the text is drawn
from data provided by the Board of Governors of the Federal Reserve.

The rather surprisingly low real rate for the first quarter of 1991 reflects a
drop in the nominal rate of .36 percent and a rather large increase in the
inflation rate of 1.4 percent. The strong uptick in inflation seems to have
been due in part to the lingering effects of high energy prices related to the
Gulf war.

Wainhouse’s more detailed analysis (in above) also finds mixed results
regarding the movement of interest rates during the post–World War II
period vis-à-vis Austrian cycle theory.

The path of nominal rates for AAA bonds actually provides stronger
corroborating evidence for the ATBC than the measure of constructed ex
post real rates presented in the text.

Roger Garrison, “Business Cycles or State Cycles? The Role of Govern-
ment in Two Boom-Bust Episodes,” CRITICAL REVIEW 7, nos. 2–3 (Spring-
Summer 1993): 259–76, argues that instabilities in the banking sector and
uncertainties regarding fiscal policy warranted higher interest rates during
the 1980s. This will be discussed below.

The prediction of a heightened cyclical variability of production in capital
goods industries compared with consumer goods industries is not, as an
anonymous referee points out, a claim that distinguishes the ATBC from
other business cycle theories. However, it is an implication of the theory
of capital underpinning Austrian cycle theory and, as such, we should
expect it to show up empirically if the ATBC is to be corroborated.

Between 1971 and 1992 total employment increased by 52 percent, by 2.2
percent in goods producing industries, and by 76 percent in service indus-
tries. 1993 Economic Report of the President, Table B-41.

Unemployment rates in durable and nondurable goods manufacturing
industries during the 1971–1992 period indicate a pattern fully consistent
with the discussion of employment in the text.

To examine how the ratio of capital goods to consumer goods prices move
over the cycle, Figure 11 uses the ratio of the producer price index (PPI) for
all industrial commodities to the consumer price index (CPI) for com-
modities. Strikingly similar patterns also emerge for many other series on
producer and consumer prices, such as the ratio of the PPI for all com-
modities to the CPI for all items and the ratio of the PPI for industrial
commodities to the CPI for all items. An anonymous referee also reports
that in an examination of more detailed ratios of producer and consumer
prices, 10 reveal patterns strongly supporting the ATBC’s predictions.

The extremely sharp increase in the ratio in 1973–1974 may be explained by
the correspondingly sharp increases in fuel prices, which fed initially into producer prices, and the relatively less severe and delayed increases in commodities prices during that same period. For example, the producer price index for industrial commodities shows a 22.1 percent increase in 1973 from the preceding year, compared to an 11.9 percent increase in the consumer price index for commodities. Moreover, the producer price index for fuel shows year-to-year increases of 10.7 percent in 1973, 33.3 percent in 1974, and 23.3 percent in 1975. Similar increases are found for the entire decade of the 1970s. Only in 1983 does the rate of increase in fuel prices begin to moderate. 1993 Economic Report of the President, Tables B-60 and B-61. This pattern in fuel prices may, in part, account for the general upward trend during 1973-82 in the ratio in Figure 11, although the concern in this paper is the pattern of turning points in the ratio.

40. Garrison, n33 above.
