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# 3 Facts and Factors in the Modern Evolution of U.S. Economic Fluctuations

In the 1970s and the 1980s the old problem of the business cycle once again moved to the forefront of the economic profession's active interest. Among the most intensely debated issues is that of continuity versus change in cyclical behavior. Are business cycles all alike? Have they changed in any systematic way and, if so, why?

The purpose of this chapter is to review in a selective and critical way the recent developments and literature bearing on these questions. I examine the hypothesis that the U.S. economy was cyclically less unstable after World War II than before and concentrate on the role of structural, institutional, and policy changes.

## 3.1 Have Business Cycles Moderated?

### 3.1.1 Problems with Old and New Data

The main novelties in the post-World War II business cycles include a shift toward longer expansions and shorter as well as shallower contractions in aggregate output and employment, combined with a persistence of inflation during peacetime recessions (see chapter 2, sec. 2.2.1; and Zarnowitz and Moore 1986). How well documented are these developments? What are their principal sources, consequences, and implications? Substantial work on these questions has been done in the last few years, much of it published in voluminous proceedings from a 1984 NBER conference (Gordon 1986a).

The earliest influential statement that a significant "progress towards economic stability" is under way was made by Burns (1960). Later data confirmed in large measure Burns's analysis and projections, according to the new NBER studies (Gordon 1986b).

However, Romer (1986a, 1986b, 1986c, 1986d, and 1987a) presents new

annual series for GNP, 1869–1918, and the unemployment rate, 1890–1930, and argues that the greater stability of the U.S. economy in the postwar era compared with the pre-1930 era is mainly a “figment of the data.” She constructs estimates for the postwar period imitating the procedures used by the creators of the historical estimates (Kuznets 1946, 1961; Shaw 1947; Lebergott 1964) and shows that her artificial data are about as volatile as their series. She then produces her own series for selected periods before the Great Depression, using regression index methods that in effect force the prewar data to reflect certain postwar relationships. Not surprisingly, these rearranged series are considerably smoother and have smaller cyclical amplitudes than the corresponding original estimates, being in both respects more similar to the postwar data.

It is certainly true, and well known, that the information-gathering and measurement techniques available to the pioneers in U.S. historical statistics were inferior to those that we have now. Yet it does not necessarily follow that simply imposing the recent patterns on the old data will improve the latter. Just to mention some of the assumptions that must hold true for Romer’s methods to be applicable; her unemployment revisions require that the output-employment relations in each sector, the cyclicality of labor force participation rates, and the sectoral composition of employment all be the same in both the pre-1930 and post-1948 periods (Weir 1986). Yet at least some of these assumptions have already been falsified by the data. The same goes for the Romer GNP series where, for example, the elasticity of GNP to commodity output in terms of deviations from trend is taken to be the same before 1918 as after 1948. The implicit theorizing behind these calculations ignores the structural and other changes that occurred in the economy over the past century (see sec. 3.3). More fundamentally still, Romer’s estimation procedure precludes any possibility of stabilization, thus making her conclusion inevitable and prejudging the issue in question (Lebergott 1986).

In support of Romer’s position (but not her approach), it can be said that much of the direct historical evidence consists of cyclically sensitive series, which would indeed exaggerate the fluctuations in the economy at large, as noted in chapter 7 (Zarnowitz 1981). Although not overlooked by Kuznets and others who created the basic macroeconomic series for the United States, this problem of a possible bias results just from lack of data and so has no real solution short of introducing new pertinent historical information.

Regrettably, no one can create comprehensive historical time series where the required data simply do not exist. But several considerations suggest that the problem is less critical than it appears. (1) Monthly indexes of commercial and industrial activity exist for the United States in trend-adjusted form since 1834, without trend adjustments since 1882. They have a broad coverage in terms of the industries and processes important at the time: manufacturing, mining, agricultural marketings, construction, railway freight ton-miles, electric power, foreign-trade volume. The sectors worst represented, notably pri-

vate and government services, played a much smaller role in earlier times than in the last four decades. (2) Historically, business contractions used to be accompanied by declines in financial and nominal aggregates or indexes: security prices, bonds and shares traded, interest rates, business failures (inverted), bank clearings, and commodity and wholesale prices. The evidence from these series tends to confirm the evidence from indexes of real activity with regard to the identification and dating of business cycles. (3) Further support for the historical chronology of business expansions and contractions created by the NBER comes from accounts of contemporary observers (business annals), the directional consensus of series on real and financial activity and prices (diffusion indexes), and chronologies independently derived by others (Burns and Mitchell 1946, ch. 4; see also chapter 7). All of this information also helps to compare business cycles and rank expansions by their vigor and contractions by their severity.

### 3.1.2. Evidence for Changes in Volatility

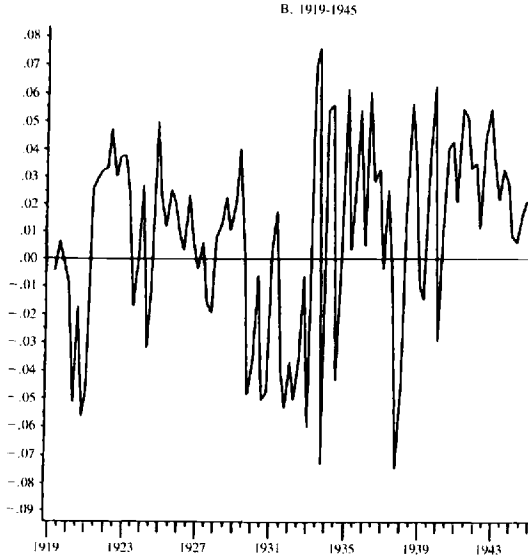
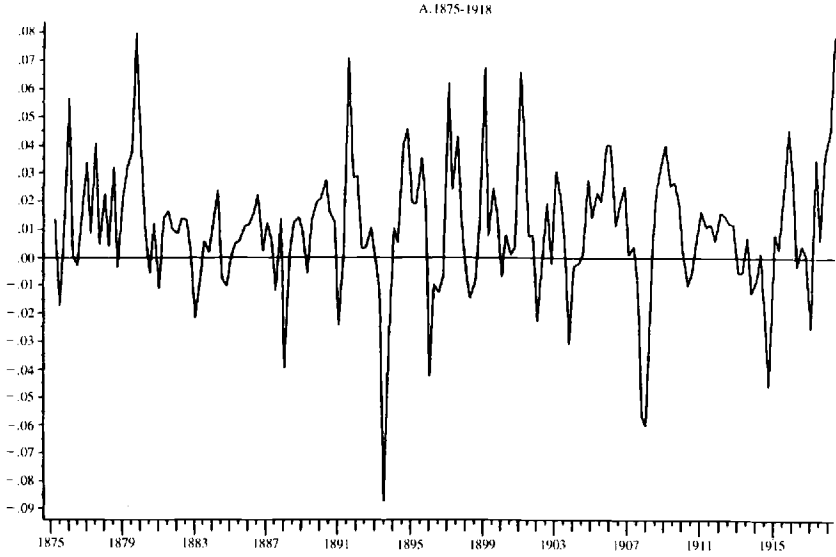
Figures 3.1–3.3 help us compare the variability of real GNP, the wholesale price index, and money supply, M2, over three subperiods of the last century: 1875–1918, 1919–45, and 1946–83. To concentrate on short-run relative changes and counteract heteroscedasticity, series of log differences are used.

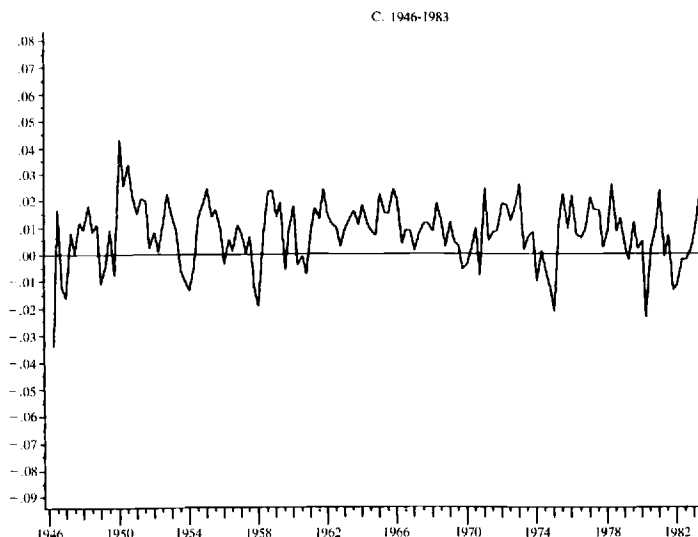
The graphs and the associated descriptive statistics (table 3.1) provide strong indications that the rates of change in output, prices, and money ( $q$ ,  $p$ , and  $m$ , respectively) all tended to be much less volatile after 1945 than in either of the two earlier eras. Thus, the standard deviations for 1875–1918 are about 1.5–2 times larger and those for 1919–45 are 2–3 times larger than their counterparts for 1946–83 (table 3.1, col. 4, lines 1–12). The coefficients of variation (ratios of standard deviations to means) yield identical rankings of the subperiods (cols. 4, 5, and 9). The interquartile ranges give similar results.

The averages of  $q$  and  $m$  do not differ strongly across the subperiods, whereas the averages of  $p$  do, reflecting the mixture of inflation and deflation in 1875–1918, the prevalence of deflation in the interwar period, and the persistent inflation of recent times. For  $q$ , the medians exceed the means, and the skewness measures (not shown) are negative throughout. For  $m$  and  $p$ , the distributions are skewed negatively in the 1920s and 1930s only (cf. cols. 3 and 6.)

Besides having generally larger fluctuations,  $q$ ,  $p$ , and  $m$  also show higher proportions of negative signs in the first decades covered than in the last four. The curves in figures 3.1–3.3 fall much more often and further below the zero level in 1875–1945 than in 1945–83. In the latter period, aggregate level declines were relatively infrequent for real GNP and rare indeed for the broad indexes of producer (and consumer) prices and measures of the stock of money.

The quarterly changes in the rate on prime commercial paper ( $i$ ) show great



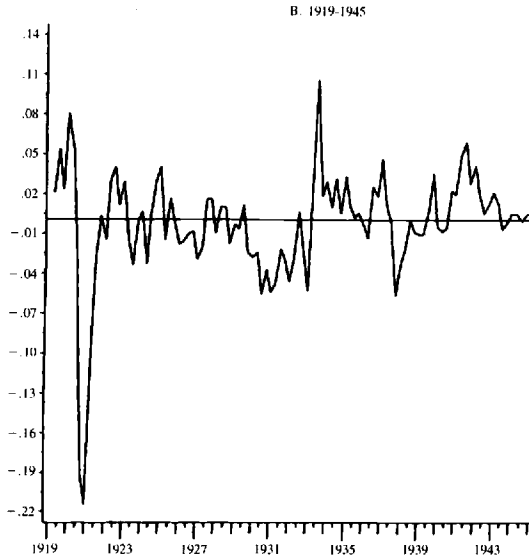
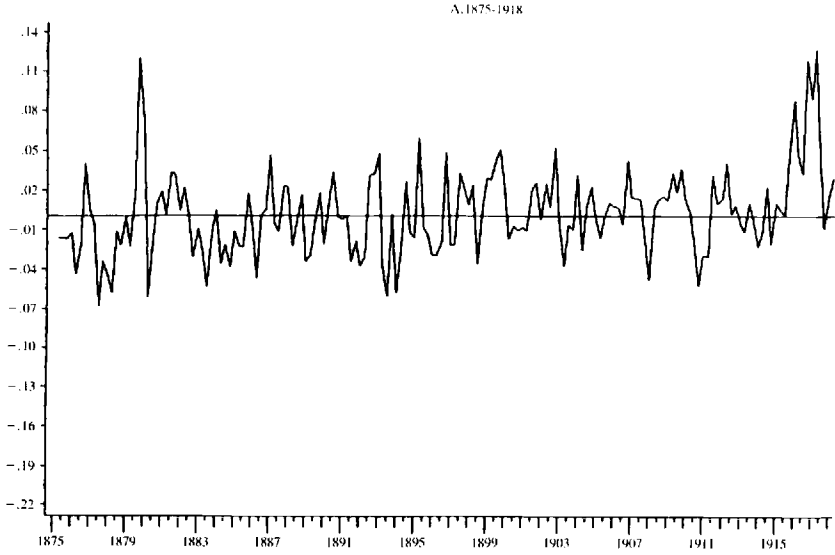


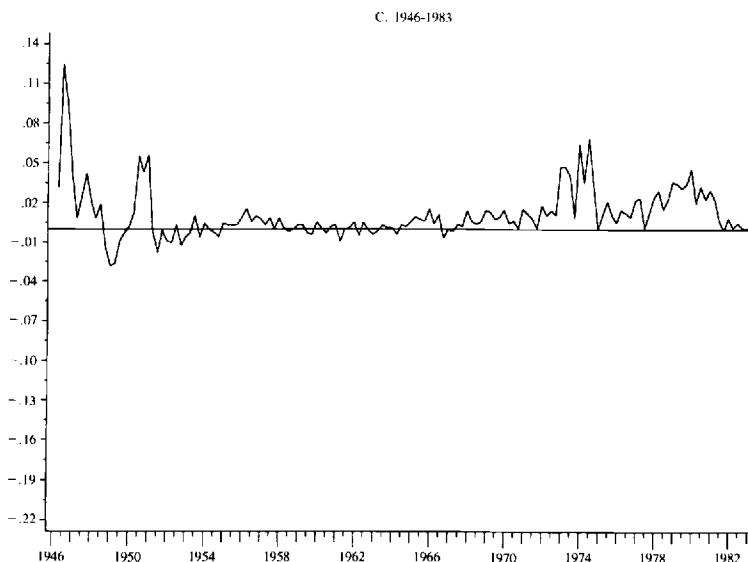
**Fig. 3.1** Quarterly changes in real gross national product, log differences, 1875-1983

volatility in 1875-1918 and more persistence in the two later periods (fig. 3.4).<sup>1</sup> A very conspicuous feature here is the sharp contrast between the amplitudes of  $i$  in 1933-53 and thereafter. This reflects the strong heteroscedasticity of interest rates: the higher their levels, the larger their changes. Clearly, too, the very high variability of the nominal interest rates in the second half of the post-1945 period is closely related to rising inflation, recurrent attempts to disinflate, and the resulting instability of inflationary expectations. In 1875-1945 inflation did not persist in peacetime but alternated with deflation. Indeed, it is only in the last quarter-century or so that expectations of a "secular" inflation developed, driving up interest. The short-term sensitivity of the price level declined, but recessions and major slowdowns typically induced temporary reductions in the rate of inflation, which helped to make the recent movements in the general level of interest rates decidedly procyclical.

According to standard deviations of  $i$ , the variability of short-term rates was somewhat greater in 1946-83 than in 1875-1918 and was lowest in 1919-45 (table 3.1, col. 4, lines 13-16). The corresponding measures for log differences show a nearly perfect tie between the three subperiods, with standard deviations of about 0.13 for each of them. Thus, logarithmic transformations remove virtually all of the observed heteroscedasticity.

1. This is probably due to the effects of the dissolution of the gold standard and/or the founding and activities of the Federal Reserve System (Barsky et al. 1988). The series on the 4- to 6-month paper is used here because of its homogeneity over the entire period 1890-1980 (Gordon 1982a, p. 1114). The data for 1875-89 are for the commercial paper rate in New York City (Macaulay 1938, pp. A141-61); the data for 1981-83 are for the 6-month paper (*Federal Reserve Bulletin*).





**Fig. 3.2 Quarterly changes in wholesale (producer) price index, log differences, 1875–1983**

### 3.1.3 Evidence for Changes in Cyclical Behavior

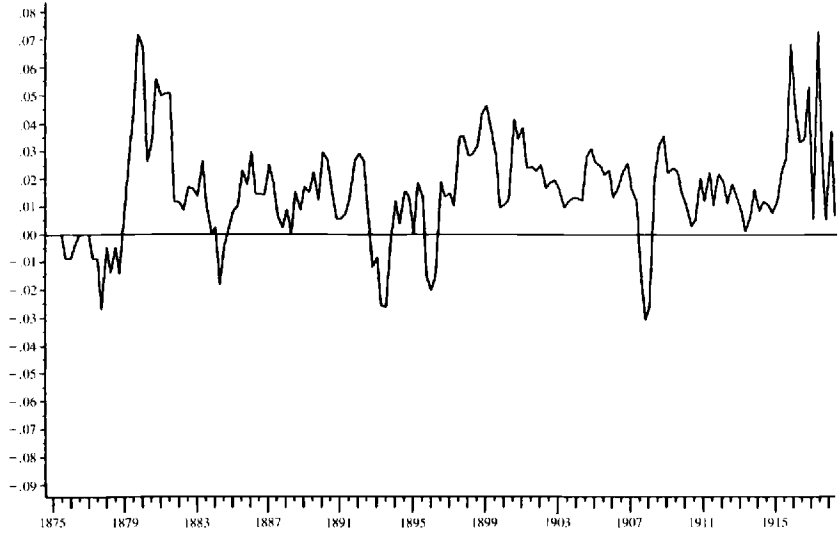
The measures discussed in the previous section are based on variations over short unit periods such as quarters or years, not on variations over intermediate periods of varying length that are characteristic of business cycles. They therefore reflect strongly the influence of short erratic movements and are probably better viewed as estimates of volatility than of cyclicity. Moreover, they do not distinguish between expansions and contractions in economic activity. To examine changes in the durations and magnitudes of cyclical fluctuations, there is still no alternative to the reference cycle method applied in the historical NBER studies.

No *systematic* changes over time can be detected in the total duration of business cycles, which averaged about 4 years, give or take a few months, before and after World War II. But the relative length of cycle phases changed dramatically: in 1885–1945, for example, business expansions were less than twice as long as contractions; in 1945–82 they were 3–4 times as long (see Zarnowitz and Moore 1986, tables 9.1 and 9.4). Or to put it differently, the proportions of time in contractions averaged more than 30%–40% in the six decades beginning in 1885 but only 20%–25% in the four decades following 1945. This finding does not depend significantly on the incidence of wars or the few doubtful links in the chronology that may represent slowdowns, rather than absolute declines, in macroeconomic activity.

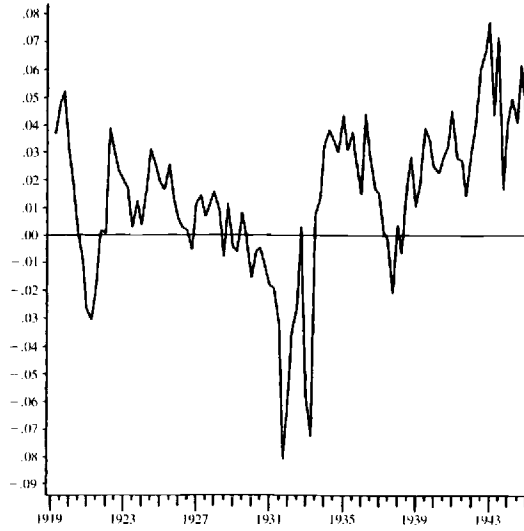
Judging from the average percentage amplitudes of cyclical declines (*C*)

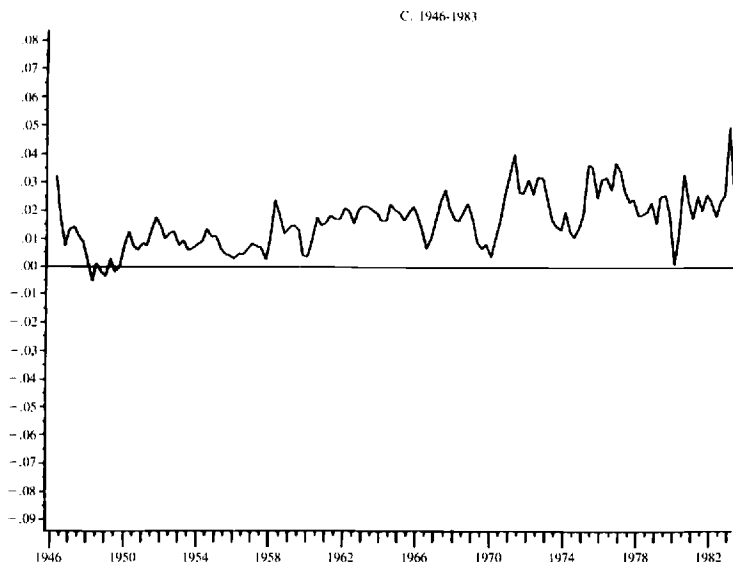


A. 1875-1918



B. 1919-1945





**Fig. 3.3** Quarterly changes in money supply (M2), log differences, 1875–1983

and rises ( $E$ ) in industrial activity and employment, contractions became not only much shorter but also much milder in the post–World War II cycles. Expansions also moderated greatly but less than contractions, so the  $E/C$  amplitude ratios increased. The employment ratios for 1885–1912, 1912–45, and 2.3, 1.8, and 5.0, respectively.<sup>2</sup> These changes are large and quite unlikely to be statistical artifacts, although they may well be overstated because of the differences between the historical and recent data.

Table 3.2 lists the average durations and amplitudes of fluctuations in the levels of the four variables whose quarter-to-quarter variability was examined above with the aid of figures 3.1–3.4. Also included here is the series of current-dollar GNP estimates, which helps to document that prices and values were historically no less cyclical than quantities. However, GNP had no declines after 1960, nor did the wholesale price index after 1967 (lines 3, 6, and 9).

The shift toward longer expansions and shorter contractions can be seen clearly by comparing the post–1945 duration measures for nominal and real GNP, prices, and interest rates with their counterparts for the pre–World War I and interwar periods (col. 5–6). History shows that monetary aggregates had declines associated with major business contractions, which are few and far between, and only slowdowns marking the milder recessions. Indeed, M2

2. Excluding marginal recessions and wartime, the corresponding average  $E/C$  ratios are 2.2, 1.2, and 3.7.

**Table 3.1 Estimated Variabilities of Changes in Output, Prices, Money, and Interest: Selected Statistics for 1875-1983 and Three Subperiods**

Line (1)	Period <sup>a</sup> (2)	Mean <sup>b</sup> (3)	Standard Deviation <sup>b</sup> (4)	Coefficient of Variation <sup>c</sup> (5)	Median <sup>b</sup> (6)	Interquartile Range <sup>b</sup> (7)	Range <sup>b</sup> (8)	Rank of Subperiod <sup>b</sup> (9)
				<i>Real GNP (log differences)</i>				
1	1875-1918	.99	2.37	2.40	1.04	2.40	16.72	2
2	1919-1945	.75	3.56	4.76	1.19	4.38	15.09	1
3	1946-1983	.78	1.18	1.52	.87	1.47	7.71	3
4	1875-1983	.85	2.42	2.83	.91	2.27	16.72	
				<i>Wholesale (Producer) Price Index (log differences)</i>				
5	1875-1918	.28	3.28	11.59	0	4.28	19.49	2
6	1919-1945	-.20	4.11	20.53	.33	3.60	32.13	1
7	1946-1983	1.13	1.96	1.74	.58	1.43	15.24	3
8	1875-1983	.46	3.18	6.92	.46	2.78	34.18	
				<i>Money Stock, M2 (log differences)</i>				
9	1875-1918	1.60	1.84	1.15	1.45	1.99	10.40	2
10	1919-1945	1.42	2.77	1.95	1.63	3.10	15.76	1
11	1946-1983	1.64	.96	.59	1.67	1.40	5.53	3
12	1875-1983	1.57	1.89	1.21	1.62	1.90	15.76	
				<i>Commercial Paper Rate (changes)</i>				
13	1875-1918	-.00	.82	n.a. <sup>e</sup>	0	1.02	5.64	2
14	1919-1945	-.04	.40	n.a.	0	.16	2.80	3
15	1946-1983	.06	.92	n.a.	.09	.46	8.49	1
16	1875-1983	.01	.78	n.a.	.01	.60	8.49	

Source: See text and fig. 3.2.

<sup>a</sup>Year dates of the first and last turning points of the series during each period.

<sup>b</sup>Identified according to specific cycle peaks and troughs dated by inspection of the charts of the series. Only complete upward and downward movements (called "rise" and "fall," respectively) are counted.

<sup>c</sup>Measured from trough to peak for rises and from peak to trough for falls.

<sup>d</sup>Col. 9 = col. 7 ÷ col. 5. Col. 10 = col. 8 ÷ col. 6.

<sup>e</sup>Only one cyclical decline in the level of M2 occurred in the period 1946-83, dated 1948:1 (peak) to 1949:1 (trough).

<sup>f</sup>The entries in cols. 7-10 are average amplitudes of absolute (not percentage) changes.

(and M1) had no declines of any cyclical persistence at all after the 1948–49 recession (lines 10–12). The period 1918–38 featured the longest and the post–World War II era the shortest and least frequent cyclical downswings in all cases (as well as for several other related variables that were examined).

For all but one of these series, too, the declines were on average the largest in the interwar and the smallest in the post-1945 era (col. 8). The exception is the commercial paper rate, where these ranks are reversed. The same relationship applies to the per-quarter amplitudes of fall (col. 10). The differences in size among the average rises are relatively smaller and less systematic across the variables (cols. 7 and 9). Worth noting, however, are the large percentage amplitudes of expansions in income, output, and prices during the interwar period and in interest rates during 1946–83.

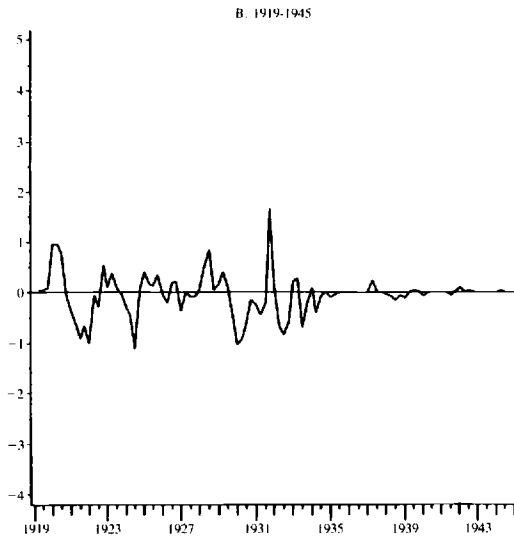
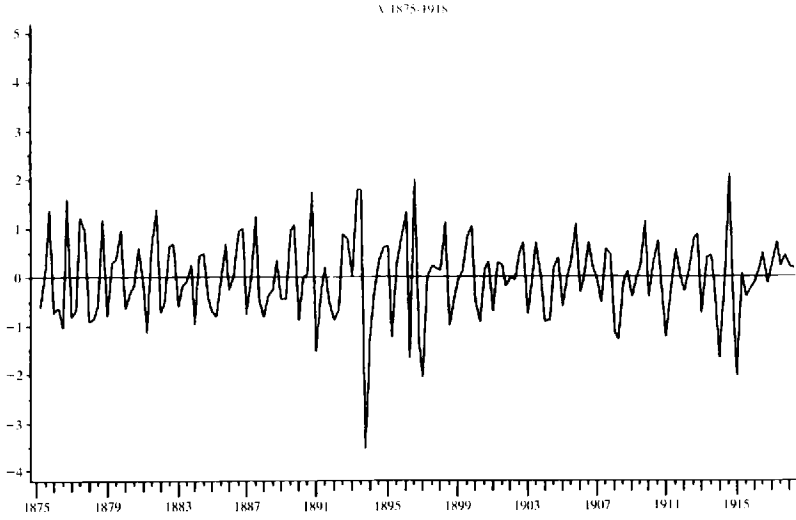
### 3.1.4 Qualifying and Interpreting the Results

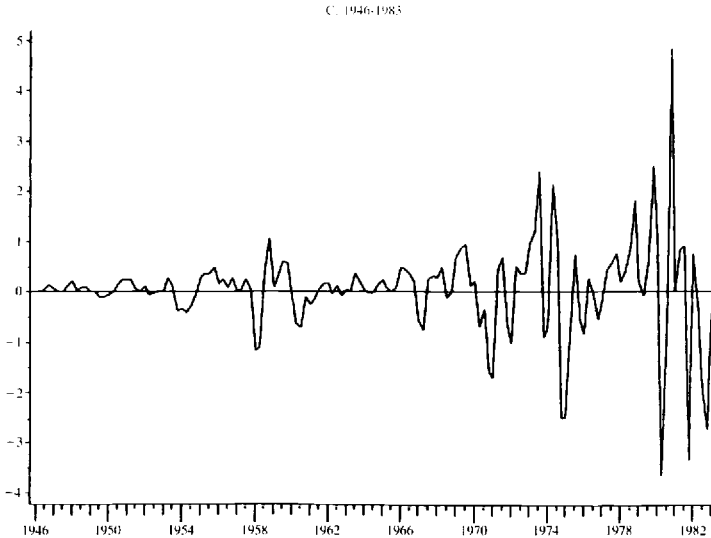
The main point emerging from this examination of the data is that the hypothesis of reduced cyclical instability in the last 40 years receives broad support from independently compiled series on several principal aggregative variables. The underlying historical data come from well-known sources: for real income, Gallman and Kuznets; wholesale prices, Bureau of Labor Statistics; money, Friedman and Schwartz; interest rates, Macaulay and the *Commercial and Financial Chronicle*. Balke and Gordon (1986a) present quarterly series on levels of these (and other related) variables.

The least dependable of the historical estimates under review are probably those for quarterly real GNP. Balke and Gordon obtained them by interpolating the annual series with the index of industrial production and trade from Persons (1931) for the period 1875–1930 and the Federal Reserve industrial production index for 1931–45. The method of interpolation is state of the art and well employed, but the quarterly series used as interpolators have, inevitably, limited and selected coverage.<sup>3</sup> However, comparisons of more reliable annual output series produce qualitatively similar conclusions (Baily 1978, esp. pp. 13–18).

The detrended real GNP series had standard deviations of 2.1 in 1950–80, according to current Department of Commerce data, and 3.4–4.5 in 1872–

3. The interpolation procedure follows that of Chow and Lin (1971), assumes that the quarterly errors are subject to an AR(1) process, and allows for a constant and a linear time trend (Gordon and Veitch 1986, pp. 328–35). The index of industrial production and trade is based on bank clearings outside New York City, 1875–1914; pig iron production, 1877–1918; imports of merchandise, 1903–14; gross earnings of leading railroads, 1903–14; employment, 1903–18; cotton consumption, 1915–18; net ton-miles of freight, 1915–18; electric power production, 1919–30; index of volume of manufacturing, 1919–30; railroad car loadings, 1919–30; construction contracts, deflated, 1919–30; and index of volume of mining, 1919–30 (Persons 1931, chs. 7–10, passim). The uneven and spotty nature of the compilation, especially before 1903, is beyond question, yet there is no way to quantify the errors of the resulting estimates. Other available indexes of business activity have similar shortcomings and none is demonstrably superior to others (see also chapter 7).





**Fig. 3.4** Quarterly changes in commercial paper rate, 1875–1983

1928, according to the Gallman-Kuznets-Commerce estimates (Balke and Gordon 1986b). The corresponding Romer figure for 1872–1928 is 2.8, much smaller than the others but still significantly above that for 1950–80. Standard deviations of annual changes in real and nominal GNP, business fixed investment, and civilian employment were 2.1–2.4 times larger in 1891–1914 than in the post-World War II period, according to a list of estimates in Schultz 1986 (p. 61). For nonfarm aggregate hours worked, manufacturing production, steel production, and money supply (M2), the corresponding ratios are 1.7–1.8. These comparisons are based on relatively reliable data and they exclude the perhaps uniquely volatile interval between 1914 and 1945.

It is also useful to examine changes in long and reasonably consistent series on individual production series in physical units, as did Romer (1987b). Here standard deviations of first differences in the logarithms of data on 11 agricultural goods, 14 mineral products, and 13 manufactured commodities are presented for the prewar (1889–1914), interwar (1922–39), and postwar (1947–84) periods.<sup>4</sup> The prewar-to-postwar ratios for these measures average 1.2, 1.1, 1.5, and 1.2 for farming, mining, manufacturing, and all products, respectively. The corresponding statistics for the interwar-to-postwar ratios are 1.8, 2.0, 1.4, and 1.8. I interpret these results to indicate a tendency for these series to show less volatility in the post-World War II era than in the quarter century before World War I and the highest volatility in the interwar years. In

4. Data on refined sugar production are not available for the interwar period, and data on beer and distilled spirits production are influenced by the end of Prohibition in 1933–34. Hence, the measures reported in the text exclude these three series from the manufacturing group.

**Table 3.2** Durations and Amplitudes of Cyclical Movements in Estimates of Nominal and Real GNP, the Price Level, Money Stock, and Short-Term Interest Rates: Pre-World War I, Interwar, and Post-World War II Periods

Line (1)	Period <sup>a</sup> (2)	No. of Cyclical Movements <sup>b</sup>		Average Duration in Quarters <sup>c</sup>		Average Percentage Amplitude <sup>c</sup>		Average Percentage Amplitude per Quarter <sup>d</sup>		
		Rise (3)	Fall (4)	Rise (5)	Fall (6)	Rise (7)	Fall (8)	Rise (9)	Fall (10)	
1	1878-1914	10	10	10.0	4.6					
2	1920-1938	4	5	10.5	6.0	24.4	- 8.1	2.4	- 1.8	
3	1948-1960	3	4	12.3	2.8	37.2	- 21.2	3.4	- 3.5	
						28.0	- 2.2	2.3	- 0.8	
4	1878-1914	12	12	8.9	3.2	17.3	- 5.1	1.9	- 1.6	
5	1919-1938	4	5	11.0	6.0	30.1	- 14.1	2.7	- 2.4	
6	1948-1982	7	8	16.3	2.6	20.9	- 2.5	1.3	- 1.0	
				<i>GNP in Current Dollars</i>						
				<i>GNP in Constant Dollars</i>						
				<i>Wholesale Price Index</i>						
7	1876-1914	11	10	6.6	6.9	12.1	- 11.8	1.8	- 1.7	
8	1920-1939	4	5	8.2	8.6	15.4	- 21.6	1.9	- 2.5	
9	1948-1967	4	5	12.5	5.0	8.7	- 4.8	0.7	- 1.0	
				<i>Money Stock (M2)</i>						
10	1878-1908	4	4	26.0	3.2	82.3	- 5.9	3.2	- 1.8	
11	1920-1938	2	3	22.5	8.7	48.3	- 14.4	2.1	- 1.8	
12	1948-1949 <sup>e</sup>	...	1	...	4	...	- 0.9	...	- 0.2	
				<i>Commercial Paper Rate<sup>f</sup></i>						
13	1875-1913	10	10	9.1	6.0	2.7	- 2.8	0.3	- 0.5	
14	1918-1937	5	6	5.6	7.7	1.8	- 2.4	0.3	- 0.3	
15	1946-1983	9	9	11.2	5.1	4.3	- 3.4	0.4	- 0.7	

Source: See text and fig. 3.2.

<sup>a</sup>Year dates of the first and last turning points of the series during each period.

<sup>b</sup>Identified according to specific cycle peaks and troughs dated by inspection of the charts of the series. Only complete upward and downward movements (called "rise" and "fall," respectively) are counted.

<sup>c</sup>Measured from trough to peak for rises and from peak to trough for falls.

<sup>d</sup>Col. 9 = col. 7 ÷ col. 5. Col. 10 = col. 8 ÷ col. 6.

<sup>e</sup>Only one cyclical decline in the level of M2 occurred in the period 1946-83, dated 1948:1 (peak) to 1949:1 (trough).

<sup>f</sup>The entries in cols. 7-10 are average amplitudes of absolute (not percentage) changes.

my view, the overall evidence clearly supports this ranking,<sup>5</sup> even though Romer herself prefers to stress that the prewar-postwar differences are small.

Moreover, it is important to recognize that moderation of business cycles does not necessarily require a diminution over time in fluctuations of individual products or even industries. Even with no change in the dimensions of these movements, a shift in the relative importance from sectors characterized by large fluctuations (such as manufactured goods) to sectors characterized by small fluctuations (such as services) would reduce the overall instability of the economy. As shown elsewhere and below, the structure of the economy has indeed undergone a major shift of this nature (Zarnowitz and Moore 1986).

Other developed economies have followed similar historical trends. In Sheffrin 1988, estimates of the dispersion of annual growth rates in output for six European countries are all larger for 1871–1914 than for 1951–84, but generally not by much. Backus and Kehoe (1988) add several countries for which relatively good annual data on national income for the period are available. They find that the standard deviations of detrended long output series were 1.1–2.5 times larger in the pre–World War I years than in the post–World War II years for Australia, Canada, Norway, Sweden, and the United Kingdom. Comparable ratios for series of log differences tend to be somewhat larger. The corresponding estimates for the United States are 1.8–2.1. The variability of output in most countries was much higher in the interwar period than in the postwar period, with ratios ranging from 1.2 to 3.6 for log differences. (For the United States, the figure is 3.1.)

In sum, there are good reasons to agree with Weir (1986, p. 365), whose conclusion from comprehensive tests and a critique of Romer's results is that "to the simple question of whether cyclical fluctuations around trend in GNP and unemployment have become smaller since World War II the data are more than adequate to deliver a definitive answer: yes." Similarly, Balke and Gordon (1986b, p. 3), after presenting a new regression index for real GNP, 1869–1908, based on Romer's "backcasting" method but using in part different and additional data, find "not a shred of evidence to support the view that the greater volatility of real GNP before 1929 is 'spurious.'" My own view is that the historical series are indeed more likely to err in the direction of too much than too little volatility. But this bias is (1) not all necessarily "cyclical"; (2) partly offset by shifts in weights that tend to favor the cyclically more stable sectors; and (3) almost certainly too small overall to refute the hypothesis of a significant stabilization in the postwar period (relative not only to the interwar but also to the pre–World War I era).

5. For example, when medians are used, the prewar-postwar ratio for all comparable 35 series is still 1.2, and the interwar-postwar ratio is 1.5.



## 3.2 What May Have Caused the Changes in Cyclical Behavior?

### 3.2.1 A List of Hypotheses

In section 3.1, I argued that the hypothesis of reduced economic instability is supported by a comparative analysis of a variety of pre- and post-World War II data for the United States. What are the possible sources of the observed moderation of the business cycles?

Several explanations have been proposed or are possible. They can be identified briefly and grouped broadly, as follows.

- I. Structural changes in the private economy
  - A. Shifts toward cyclically more stable components of demand
  - B. Shifts toward cyclically more stable industries, occupations, and incomes
- II. Increase in the size of government, a sector that does not decline in recessions
- III. Institutional changes
  - A. Rise of the fiscal “automatic stabilizers”—procyclical income taxes, countercyclical transfer payments and welfare benefits
  - B. Postdepression financial reforms such as federal insurance programs for bank deposits (combined with discretionary lender-of-last-resort actions), savings and loan accounts, and mortgages
  - C. Private stabilizing arrangements—pension plans, maintained corporate dividends
- IV. Discretionary policies (fiscal or monetary or both) resulting in the following effects (which can be interpreted as a change in the propagation mechanism [see factor V below] or smaller shocks to the economy [see factor VIA below]):
  - A. Reductions in the variability of aggregate demand (nominal GNP)
  - B. Reductions in the variability of aggregate supply in response to the greater stability of demand
- V. Gains in learning and confidence:
  - A. Consumers and entrepreneurs learn from history (which reflects the operation of factors I–IV above) to expect less cyclical instability in the future
  - B. Their greater confidence leads them to modify their behavior in ways that help stabilize the economy
- VI. Smaller shocks to the economy
  - A. Decreased shifts to aggregate demand (nominal GNP) due to countercyclical and counterinflationary discretionary policies, institutional and structural changes, and gains in confidence (factors I–V above)
  - B. Decreased shifts in aggregate private demand (consumption, invest-

- ment, exports) due to greater stability in preferences and/or accumulation of wealth and capital
- C. Decreased shifts in aggregate supply due to greater stability in technical progress and/or in expectations of profits
- VII. Gains in technology, information, and knowledge
  - A. Reduced inventory fluctuations through better management techniques (using advances in economic models and data production and analysis)
  - B. Fewer major policy errors and better guidance from economic advisers and forecasters
- VIII. Changes in the flexibility of wages and prices
  - A. Past business contractions aggravated by deflation and deflationary expectations
  - B. Stickier money wages and prices in the postwar era
  - C. On balance, the greater stickiness makes for more stability

### 3.2.2 Some Observations and Plan of Procedure

The above list is purposely inclusive and there are some overlaps, as indicated. Some of the hypotheses are widely accepted (notably III), some are much discussed and very controversial (II, IV, and VIII), and still others are mere possibilities, little explored and perhaps remote (VIB, VIC, and VII). All are at best partial, more than one may be valid, and none need be dominant. Hence the proper strategy is not to test them against each other but rather to consider that they may apply in some combination. Ideally, one would wish to quantify the contributions of all factors that prove relevant, but this very ambitious goal is well beyond our present reach.

The last set of hypotheses in the list (VIII) concerns matters of great analytical importance and difficulty. They are treated separately in chapter 4.

The next section of this chapter deals with the first two topics in our list, that is, structural changes and the expansion of government. In section 3.4 I examine the third set of hypotheses, and in section 3.5 I look at the role of macroeconomic policies and related changes in the behavior of private agents (hypotheses IV and V). I shall have little to say about the other possibilities listed under VI and VII. The last section of the chapter sums up the results.

## 3.3 Structural Changes and the Size of Government

### 3.3.1 Components of Expenditures

Real consumer expenditures on durable goods have large fluctuations, most of which correspond well to business cycles, allowing for some tendency to lead (see table 3.3, lines 1 and 7, for a summary of the interwar and postwar evidence). In contrast, consumption of nondurable goods and services shows

**Table 3.3** Summary Measures of Cyclical Conformity, Timing, and Amplitude for Selected Components of Private Consumption and Investment, 1919-41 and 1947-83

Series (1)	No. of Business Cycle Turns Matched (Missed) <sup>a</sup>		No. of Specific Cycle Turns Matched (Extra) <sup>a</sup>		Average Lead (-) or Lag (+) (in quarters)		Average Amplitude <sup>b</sup> (%)	
	Peaks (2)	Troughs (3)	Peaks (4)	Troughs (5)	Peaks (6)	Troughs (7)	Rise (8)	Fall (9)
	<i>1919-41</i>							
1. Consumption, durable goods	5(0)	5(0)	5(3)	5(3)	-0.4	-0.4	+63	-32
2. Consumption, nondurable goods, and services	4(1)	4(1)	4(1)	4(1)	-0.5	-0.2	+24	-9
3. Residential structures	5(0)	5(0)	5(3)	5(3)	-0.2	-0.8	+101	-33
4. Producers' durable equipment	5(0)	5(0)	5(2)	5(2)	0.2	0.4	+121	-41
5. Nonresidential structures	4(1)	4(1)	4(2)	4(2)	-1.2	-0.2	+172	-44
6. Change in business inventories	5(0)	5(0)	5(4)	5(4)	+1.0	-0.4	+19 <sup>c</sup>	-15 <sup>c</sup>
	<i>1947-83</i>							
7. Consumption, durable goods	7(1)	7(1)	7(3)	7(3)	-2.3	-1.3	+33	-10
8. Residential structures	7(1)	7(1)	7(5)	7(5)	-2.9	-0.9	+36	-21
9. Producers' durable equipment	7(1)	7(1)	7(3)	7(3)	-0.4	0.6	+30	-12
10. Nonresidential structures	6(2)	6(2)	6(4)	6(4)	-1.0	1.2	+22	-9
11. Change in business inventories	8(0)	8(0)	8(2)	8(2)	-4.4	-0.2	+45 <sup>c</sup>	-47 <sup>c</sup>

Sources: Balke and Gordon 1986b; Economic Report 1988.

<sup>a</sup>The following dates from the quarterly NBER reference cycle chronology are covered: 1919-41: peaks, 1920:1, 1923:2, 1926:3, 1929:3, 1937:2 (five), and troughs, 1921:3, 1924:3, 1927:4, 1933:1, 1938:2 (five); 1947-83: peaks, 1948:4, 1953:2, 1957:3, 1960:2, 1969:4, 1973:4, 1980:1, 1981:3 (eight), and troughs, 1949:4, 1954:2, 1958:2, 1961:1, 1970:4, 1975:1, 1980:3, 1982:4 (eight). Entries not in parentheses are numbers of those business cycle peaks or troughs (cols. 2 and 3) that are matched by like cyclical turning points in the quarterly series listed in col. 1 (cols. 4 and 5). Entries within parentheses are numbers of those business cycle turning points (cols. 2 and 3) or specific cycle turning points (cols. 4 and 5) that could not be matched.

<sup>b</sup>Measured from trough to peak for rises and from peak to trough for falls.

<sup>c</sup>Average amplitudes of absolute (not percentage) changes.

relatively small cyclical movements even in the turbulent interwar period, rising and falling on the average about one third as much as the durables (cf. lines 1 and 2). In 1947–83, nondurable goods had only a few declines, none longer than 1 quarter, and services rose continuously at growth rates substantially exceeding those of goods consumption.<sup>6</sup>

The main reason for the observed sharp differences is simple: durable goods are accumulated, render services, and depreciate over time, and their purchases are postponable. Hence, the sensitivity to business cycles of these purchases is typically high. There is no reason why this relationship should have varied over time or should not persist in the future. The demand for services is relatively stable in part because services cannot be stored. The nondurables fall in between.

Of course, major depressions would be associated with larger declines extending to nondurable goods and services as well. Even a lengthy stagnation of growth in real wages and disposable personal income can substantially reduce the consumer and business demand for many short-lived goods and services, particularly in the face of weak labor market conditions and persistent uncertainty about the economic outlook. This is what happened as a result of the protracted period of subnormal growth since early 1989, although the recession in 1990–91 was relatively mild.

New and replacement demands for plant and equipment and housing give rise to outputs of durable capital goods and structures, which, like the consumer durables, have large fluctuations and high conformity to business cycles. In 1919–41, the cyclical swings in business investment (producers' durable equipment and nonresidential structures) were huge, exceeding those in household investment (consumer durables and housing). In 1947–83, movements in all these aggregates were on the average more nearly equal in percentage terms (compare the corresponding entries in cols. 8 and 9).

The cyclical conformity of the investment series was high both before and after World War II (cols 2–5). Inventory investment, though always very volatile, also moved in both periods in a basically procyclical fashion.<sup>7</sup> Timing shifted to longer leads at peaks in the postwar era (cols. 6–7).

Studies that employ variance-analytic methods produce further information, with generally similar results. When total fixed investment is defined to include consumer durables as well as producers' durable equipment and residential and nonresidential structures, its variance accounts for about one quarter of the variance of real GNP in the interwar and postwar periods alike (Gordon and Veitch 1986, pp. 299–300). However, the components of this broad

6. Measures of the type used in table 3.3 are not available for the levels of these aggregates in the postwar period (to show any cyclical movements, the series have to be differenced).

7. Note the change from short lags to long leads at peaks (lines 6 and 11, col. 6). As for the frequencies of the "extra" turns (cols. 4 and 5), they relate to specific cycle movements that are generally at least 2 quarters long; had I counted all directional reversals, their number would have been much larger, especially for inventory investment with its frequent short oscillations.

concept of private investment show much larger covariance in 1919–41 than in the recent era. The contribution of nonresidential structures fell and that of consumer durables rose strongly. Further, the covariance between total investment and the rest of output was large and positive in 1919–41 and small and negative in 1947–83. This is consistent with the notion that government spending crowded out some investment in postwar years.

Inventory investment continued to play a major role in the recent business cycles, especially at turning points and in contractions. Indeed, properly measured in comparison to 1929–41, the variance of inventory investment increased after World War II, whereas that of final sales decreased strongly (Blinder and Holtz-Eakin 1986). These findings are not surprising, since the recent era was one of relatively short and mild aggregate fluctuations, and it has long been known that inventory changes are particularly important in just this type of cycle (Abramovitz 1950). Compared with the mostly moderate cycles of 1919–29, the share of inventory investment was larger in the postwar GNP contractions but smaller in expansions.

The variability of output tends to exceed that of final sales in all periods, which is difficult to reconcile with the popular buffer stock model, in which inventory adjustments are supposed to smooth production in the face of random shocks to demand.<sup>8</sup> Presumably, inventories are held in large part for other reasons, such as to facilitate production at all its stages and counteract the procyclical delivery lags and uncertainties of vendor performance.

The hypothesis that better inventory control reduced instability (see factor VIIA on our list) receives only weak support from these results. Nevertheless, it is premature to dismiss it. The variability of real inventory investment tended to decline in 1948–65 (Brooks and Gigante 1979); it increased later through 1983 but remained relatively low during the following 6 years. Surely in this area the promise of progress through computerized information technology looms large.

Has the structure of GNP by type of expenditure changed so as to contribute to the observed moderation of the business cycle in the postwar period? Such a change could take the form of a shift from the highly variable investment to the relatively stable comparison components. But the average share in real GNP of consumption of nondurables and services actually declined from about 65% to 54% between 1919–41 and 1947–83. Half of the resulting gap was offset by the rise from 18% to 24% in the combined share of consumer durable goods and gross private domestic investment. The other half was taken up by the increase in government purchases of goods and services, a generally acyclical GNP component, from 17% to 22%. In the private sphere,

8. Evidence from other countries supports that for the United States in this regard (West 1988). On the issues in the current debate concerning the sources of inventory fluctuations and the role of inventories as a cyclical propagation mechanism, see Maccini 1987 and chapter 2, sec. 2.3.5 and pp. 59–60 above.

then, the shift would appear to have been in the destabilizing, rather than stabilizing, direction (the role of increased government is considered below).<sup>9</sup>

It seems safe to eliminate the changes in the consumption-investment mix of the private demands on output as a major source of the reduction in cyclical instability.

### 3.3.2 Shifts in the Structure of Employment

The industrial composition of employment shifted in the long run from the categories that are highly recession prone to those that are not.<sup>10</sup> The set of major industries that are generally cyclical or volatile includes manufacturing, mining, construction, transportation, communications, and public utilities; they produce mostly goods but also some important capital-intensive services. The combined share of these industries in total employment increased from 29% in 1869 to 41% in 1948–53 and then declined to 32% in 1979–81. The rest of the private nonfarm sector—that is, trade, finance, insurance, real estate, and services in a narrow sense (professional, personal, business, and repair services)—is on the whole not very cyclical. The employment share of these industries gained steadily from about 19% in 1869 to 45% in 1979–81. The proportion of government employment, which does not vary systematically with the business cycle, rose approximately from 4% to 20% between 1869 and 1979–81.<sup>11</sup> The total of the acyclical services and government accounted for about 23% of national employment in 1869, 44% in 1929–37, and 64% in 1979–81.

The share of agriculture, measured in the same terms, dropped enormously from an estimated 48% in 1869 to little more than 3% in 1979–81. Farm output is not very sensitive to fluctuations in aggregate demand, but farm prices are sufficiently so that alternations of financial prosperity and distress in agriculture played a considerable role in the historical record of business cycles. Rough estimates based on historical data of Shaw, Goldsmith, and Kuznets suggest that the standard deviations of annual log differences declined between 1893–1915/1923–40 and 1947–82 by 67% for total output, 65% for nonfarm output, 57% for private output, and 56% for private nonfarm output (De Long and Summers 1986a, p. 686). These reductions are all very

9. It is true that the GNP shares themselves show some cyclical variation, which affects our comparisons. During business contractions the percentage of consumption usually increases and that of investment decreases; and the postwar contractions were short and mild in contrast to the interwar ones. However, these differences are mostly small and irregular. For example, the share of gross private nonresidential fixed investment in GNP averaged 10.2% in the 7 trough years and 10.7% in the 7 peak years of the 1953–83 period (with standard deviations of 1.1% in both cases).

10. Employment is defined in terms of “persons engaged in production,” which includes full-time workers, part-time workers converted to full-time equivalents, and self-employed workers.

11. This covers general government at all levels, including the armed forces, plus a relatively small component of “government enterprise” (only the latter may be more appropriately thought of as producing goods rather than services).

large and they may well be overstated, but what matters here are the differences between them, which are negligible for the total versus nonfarm and sizable for the total versus private comparisons. This implies that the changing role of agriculture was of little significance in this context, and the changing role of government had a stabilizing influence.

De Long and Summers, using only three measurements, in effect dismiss summarily all “accounting explanations” (i.e., the linking of the change in cyclical variability to structural shifts) as being of little importance. But their method and estimates are open to serious criticism, particularly because they consider only the changing roles of agriculture and government and ignore the great increase in the weight of private service industries.<sup>12</sup>

A strong argument can be made that the shift in the employment structure had much to do with the moderation of cyclical fluctuations of total employment in the post-World War II period. However, this factor was increasingly important after 1950, when the combined weight of the more cyclical sector fell below 50% and 40%; though of long standing, it probably played a much lesser role in earlier times.

Also, it is noteworthy that public and private services, as a broadly defined category, although scoring great gains in terms of employment, grew much more slowly in terms of output. Average labor productivity, as measured, increased far less in services industries than in the production of goods ((Fuchs 1968). According to recent Department of Commerce statistics in 1982 dollars, services already accounted for 41% of real GNP in 1929, with the share of goods being 43% and that of structures 16%. In 1985, the corresponding estimates are 46% for services, again 43% for goods, and 11% for structures.

In sum, the hypothesis that structural shifts contributed to the moderation of postwar business cycles should be neither rejected nor viewed as self-sufficient. It is a valid but partial explanation that leaves much room for the other hypotheses.

### 3.3.3 The Effects of Increased Government

For the government to be able to raise the average level of real economic activity merely by growing itself and thus adding to total employment, two conditions are necessary. First, the private economy must suffer from deficient aggregate demand much of the time, and second, government and private activities must be on the whole complementary. That this should be so seems inconsistent with the idea shared by mainstream economists of various persuasions that the steady state or long-run condition of the market economy is one of full-employment equilibrium. But in the real world the economies are

12. The approach does not distinguish between cyclical and other short-term movements and between expansions and contractions (see comment by Eisner 1986, pp. 721–22). Also, the estimates before 1929 are based on several major assumptions about the proportion of farm output in GNP and the composition of government expenditures.

mixed, involving governments as well as markets, and their equilibrium properties should depend on the relative size (and also on the quality of financing and functioning) of their public sectors. Government growth may be beneficial when proceeding from suboptimal size but may be detrimental when carried too far.

In fact, the massive unemployment of the 1930s in the United States, whatever its cause, was finally eliminated only by the rapid defense buildup associated with the outbreak of the war in Europe. After World War II, the government remained much larger than it had been before, and the growth of its spending not only stimulated consumption but also kept up business profits and investment. U.S. foreign aid was a major factor in the recovery of the recipient countries and the reinvigoration of world trade. It is now widely acknowledged that the 1950s and 1960s constituted a golden era of relatively high and stable real growth in the then increasingly "mixed" economies of the Western world.<sup>13</sup>

However, the high wave of confidently expanding, activist government crested before long, perhaps already in the late 1960s, amidst growing worries about the course of the unpopular Vietnam War. In the 1970s the public became increasingly aware of the rising trends in inflation, interest rates, unemployment, and tax burdens. The oil price hikes hurt and so did the intermittent policy efforts to disinflate, which added to the cyclical instability in the mid-1970s and the early 1980s. For all this, the blame fell on what seemed the heavy and clumsy hand of government.

These developments helped promote antistatist ideas. The larger the government, the greater its capacity to interfere with efficient markets and be itself a source of major disturbances. Some government activities compete with or preempt business activities, sufficiently high tax rates diminish private initiatives, and some policy actions have large adverse effects on the economy. Inflationary policies, in particular, are a major source of macroeconomic instability.<sup>14</sup> The long-proposed remedies involve fiscal and monetary conservatism, deregulation, and privatization, that is, generally a reduction of the relative size and power of the government. Political programs along these lines gained much support in recent years, spreading from the United States and Britain to many countries.<sup>15</sup>

It is difficult to define the "size" of the government and distinguish the di-

13. See Eisner 1986 for a recent formulation of the argument that higher real government expenditures raised both the Hicksian "floor" and "ceiling" levels of real GNP during the business cycles of the postwar era in the United States.

14. The extreme case is that of the inflation tax used by a government that is too large and too costly, unable to raise much revenue by regular tax collection, and hence trying to finance itself by issuing new money. The results, as in most Latin American countries in the 1980s, are disastrously high inflations and attempts to disinflate and reduce foreign-debt burdens, often accompanied by business stagnation or depression.

15. Including, after the 1989 debacle of communist regimes, the nations of Central and Eastern Europe.



rect consequences of its growth from the related effectiveness of fiscal built-in stabilizers and the potential (for good or bad) for discretionary policies; still, these are in principle distinct matters. One of the relevant measures is the ratio of total real government purchases of goods and services ( $G$ ) to total real GNP ( $Q$ ). The acyclical behavior of the upward trending  $G$  translates into a mildly countercyclical behavior of  $G/Q$ . That is, the ratio tends to be higher at troughs than at peaks of business cycles, and this can be seen just as clearly before as after World War II. By this criterion, any stabilizing effects from the growth of  $G$  were only moderate between the interwar and the postwar periods and nonexistent between the pre- and post-1970 parts of the latter era. This is suggested by the following average value of  $G/Q$ , in percentages at the quarterly dates of business cycle peaks ( $P$ ) and troughs ( $T$ ):<sup>16</sup>

5 <i>P</i> , 1920–37:14	8 <i>P</i> , 1948–81:19	4 <i>P</i> , 1953–69:20	3 <i>P</i> , 1973–81:19
15 <i>T</i> , 1921–38:17	8 <i>T</i> , 1949–82:20	4 <i>T</i> , 1954–70:21	3 <i>T</i> , 1975–82:20

Since the large reduction of the federal income rates in 1981, the federal budget deficits, as conventionally measured, ran consistently high. Public spending responded weakly and was maintained at an approximately stable proportion of GNP. State and local governments had to assume a larger share of taxing the public and providing programmed services. Pressures against expanding total government expenditures intensified and became generally more effective. As a result, the tax system grew more regressive, government interest payments rose sharply, and complaints about the neglect of public spending, especially on the infrastructure, multiplied. The government may have ceased growing in relative size but the expected gains in efficiency never materialized.

In the Western world, governments vary substantially in size relative to the private economies, judging by the conventional criteria of comparing their budgets with the respective GNP or GDP figures. Several European countries with good records of macroeconomic growth and stability have proportionally larger public sectors than the United States has. But the shift from the prevailing optimism about the growing governments and their economic performance in the 1950s and 1960s to the increasing concern about excessive government expansion and economic powers in the 1970s and 1980s was a widespread, international phenomenon. The initial gains from the process may have become exhausted, while its negative aspects have gradually become apparent.

16. Note that  $G/Q$  at  $P$  in 1948:4 was 14 and at  $T$  in 1949:4 was 15. These values, relating to the period between the demobilization after World War II and the Korean War, are atypically low.

The data on  $G$  and  $Q$  come from Balke and Gordon 1986b for 1920–38 (in 1972 dollars) and the Economic Report 1988 for 1948–82 (in 1982 dollars). Recall that  $G$  covers state and local as well as federal government purchases; for the latter alone, a much larger and longer upward trend and much more pronounced countercyclical movements in the ratio to GNP can plausibly be estimated (see n. 17 and text below).

### 3.4 Institutional Changes and Financial Instability

#### 3.4.1 Federal Budget since 1869: Growth and Cyclicity

Persistently large federal budget deficits occurred in the period 1879–1945 only during the two world wars and in the depressed 1930s (Firestone 1960). A balanced budget was viewed as a requirement of sound fiscal policy. Surpluses rose during expansions when the tax base broadened; they declined and occasionally yielded to deficits contractions when the tax base narrowed. These stabilizing elements of fiscal response to cyclical change played a minor role as long as the federal budget balances were very small and mostly positive.

Table 3.4 documents the huge growth of the federal budget from 2%-3% of GNP in 1869–1914 to 5%-6% in 1920–38 and 17%-23% in 1948–82.<sup>17</sup> Receipts differed from expenditures on the average by less than 1% of GNP in both the peak and trough years of the twelve business cycles of 1869–1914. Small surpluses prevailed in 1920–27 and larger deficits in the depressed 1930s. In 1948–61, the budget was in the red during recessions and in the aftermath of the Korean War but still in the black at other times. However, the surpluses were relatively small even at the top of the cycle, except for 3.2% in 1948. During the long expansion of the 1960s, there were only two years of balanced budgets and one of a surplus, but there were five of much larger deficits. Since 1970, deficits have occurred every year, ranging from less than 1% of GNP in the peak years 1973 and 1979 to more than 4% in the trough years 1975 and 1982.

The peak-trough differences reflect the cyclical or “passive” component of the measured deficit, which is closely associated with changes in the relationship between personal disposable income and GNP. In recessions, taxes fall more than proportionately with income, and transfer payments rise as more people collect unemployment insurance and benefits from welfare programs and social security. Hence disposable income declines much less than GNP. In expansions, disposable income rises less than GNP because of the faster growth of taxes and the decline in transfers.

Regressions of annual changes in real aggregates suggest that each \$1 rise (fall) in GNP raised (lowered) disposable income by 76 cents in 1898–1926, 95 cents in 1923–40, but only 39 cents in 1949–82 (De Long and Summers 1986a, p. 694). These are rough estimates owing to the weakness in the early data, but there are no good reasons to doubt the existence of a major change of this sort between the pre- and post-World War II periods.<sup>18</sup>

17. The percentage increase in federal expenditures between 1929 and 1986 was more than 5 times as large as that in state and local expenditures. Federal transfer payments, small before World War II, grew more than twice as fast as federal purchases of goods and services between 1948 and 1982.

18. Some recent results relying on neoclassical models of intertemporal substitution of labor, production, and consumption suggest that output response to temporary changes in real military

**Table 3.4 Federal Government Receipts, Expenditures, and Surplus or Deficit in Percentages of GNP at Business Cycle Peaks and Troughs: Selected Subperiods from 1869 to 1982**

Statistic <sup>a</sup>	1869-1894		1895-1914		1920-1927		1929-1938		1948-1961		1969-1982	
	P(6) (1)	T(6) (2)	P(6) (3)	T(6) (4)	P(3) (5)	T(3) (6)	P(2) (7)	T(2) (8)	P(4) (9)	T(4) (10)	P(4) (11)	T(4) (12)
Mean	3.3	3.2	2.2	2.3	5.4	5.7	4.7	5.0	18.2	17.0	20.3	19.5
S.D. <sup>a</sup>	0.8	1.0	0.4	0.4	1.7	2.1	1.1	2.3	1.0	1.4	0.7	0.9
Mean	2.6	2.7	2.3	2.3	4.7	4.7	5.8	8.0	17.6	18.5	20.8	22.6
S.D.	0.8	0.7	0.6	0.3	2.0	2.4	3.8	0.0	3.0	1.6	1.5	1.7
	<i>Receipts</i>											
	<i>Expenditures</i>											
	<i>Surplus or Deficit (-)</i>											
Mean	0.6	0.4	-0.0	-0.0	0.7	1.0	-1.2	-3.0	0.6	-1.4	-0.6	-3.1
S.D.	0.3	0.6	0.3	0.2	0.4	0.3	2.7	2.3	2.1	0.7	1.2	1.6

Sources: 1869-1938: U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, p. 711 (data from *Annual Report of the Secretary of the Treasury*, 1958). For GNP, Balke and Gordon 1986b, pp. 781-82. 1948-82: *Economic Report of the President*, 1988, p. 341 (receipts, expenditures, and surplus or deficit) and p. 248 (GNP).

Note: P refers to business cycle peak years, T to business cycle trough years, according to the annual reference cycle chronology of the NBER. The dates refer to the first and last business cycle turns (P and T, respectively) in each of the six subperiods. Receipts, 1869-1938: excludes receipts from borrowing. Prior to 1931, total receipts; thereafter, net receipts (excluding refunds for overpayment of taxes, transfers to federal trust funds, and capital transfers to the Treasury from government corporations). Expenditures, 1869-1938: excludes debt repayment. Prior to 1931, total expenditures; thereafter, net expenditures (net of refunds paid and of capital transfers). Surplus or deficit: receipts minus expenditures. Data for 1948-82 are from the national income and product accounts. Federal expenditures include grants-in-aid to state and local governments.

<sup>a</sup>S.D. = standard deviation.

### 3.4.2 Automatic Stabilizers

The cyclical changes in tax receipts and transfer payments represent the “automatic stabilizers” that rose to prominence in the first two decades of the postwar era. The term sums up what is probably the most familiar and widely accepted of the hypotheses that attempt to explain the moderation of business cycles in this period. The personal income tax emerged as the largest source of federal revenue with a progressive rate structure, hence as the main stabilizer. The corporate income tax, though much smaller and more nearly proportional, is more elastic cyclically because corporate profits rise and fall much more than any other type of income when the economy expands and contracts. At the same time, the flow of dividend payouts to stockholders tends to be generally well maintained. Large stabilizing effects on disposable income of changes in corporate and personal taxes and unemployment benefits were found early by econometricians (Duesenberry, Eckstein, and Fromm 1960).

Insofar as households’ earnings effectively limit their expenditures, the diminution of the response of disposable income to cyclical changes in GNP implies a dampening of fluctuations in consumption. Although the liquidity constraints must have declined as consumers’ wealth and creditworthiness rose, it is not surprising that they still appear to affect aggregate consumption substantially (as shown in Flavin 1981). Presumably many households of modest means and uncertain prospects simply cannot save enough during expansions or borrow enough during contractions to make their outlays as smooth and independent of current incomes as envisaged by the basic versions of the permanent-income and life-cycle theories.

According to estimates from an annual macroeconomic model, the multiplier effects on real GNP of an exogenous increase in real government expenditures fell from 3.2–5.1 in 1926–40 to 1.6–2.5 (Hickman and Coen 1976, p. 194). This is based on a simulation of high-employment conditions in the prewar period: data unadjusted for the massive unemployment and excess capacity in the 1930s produce much higher prewar multipliers. The strong decline in the multipliers is attributed entirely to the built-in stabilizers of the tax-transfer system. The consumption function itself was not a source of the observed stabilization.

The active and passive components of the budget deficit are of course unobserved, and it is an important caveat that the distinction between the two is difficult to define and implement statistically. The active component is identified with the full-employment or structural surplus (deficit). That is, estimates

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expenditures (viewed as truly exogenous) was stable before and after 1945 and dampened rather than multiplicative. However, work along these lines (Hall 1980b; Barro 1981b) yields estimates with very high standard errors for total government spending and does not necessarily contradict the view that built-in stabilizers improve macroeconomic performance.

of how taxes and expenditures react to macroeconomic change are used to calculate what the budget balance would be if the entire labor force was employed at the prevailing incentives to work and all existing capital was in use. Then the cyclical component is taken to equal the difference: full-employment deficit minus actual deficit. But the basic assumptions of this approach, that the trend of the economy is one of full employment and separable from business cycles, have been questioned. Measures of the economy's potential, whether in terms of output or employment, are of uncertain quality, hence so are the related fiscal variables, probably a fortiori.

Despite these problems, the fiscal decomposition calculus yields interesting uniformities. Table 3.5 is a summary of changes in the real federal budget balance and its estimated active and passive components during the cyclical contractions and expansions in real GNP, 1948–86. Negative (positive) entries in the budget columns represent shifts in the direction of deficit (surplus). The early postwar recessions were associated with shifts from surplus to deficit; the later ones with rising deficit. Opposite changes occurred during expansions, except that the deficit rose in the Korean War period and, on an exceptionally large scale, in the 1980s. Also note that the fiscal changes were generally large relative to the cyclical declines but small relative to cyclical rises in real GNP.

The changes in the passive component of the federal surplus were all negative during recessions and almost all positive during expansions.<sup>19</sup> These estimates suggest a strong prevalence of automatic stabilizing effects. The active component declined in all contractions except 1953–54, but generally much less than the passive component. In expansions, rises and declines in the active component nearly canceled each other out, apart from a large negative shift in the expansion that began in late 1982.<sup>20</sup> On the whole, then, the active component contributed much less than the passive component to the movement in the total surplus/deficit.

Estimates of this type may overstate the benefits from automatic stabilizers because they fail to pay explicit attention to the role of inflation. Government tax receipts, expenditures, and budget balances all depend not only on real economic activity but also on prices and nominal incomes. Thus, according to the Holloway (1986) estimates scaled to the size of the economy and the budget in the early 1980s, the deficit rose by \$25–\$30 billion when the unemployment rate increased by 1 percentage point and fell by \$7–\$9 billion when the inflation increased by 1 percentage point; each \$100 billion increase in current-dollar GNP lowered the deficit by about \$34–\$38 billion. These results

19. A small negative shift occurred in the short recovery of real GNP in 1980:2–1981:3.

20. In this incomplete phase, 1982:3–1986:1, the changes in the total real federal budget balance and its active and passive components were –136, –152, and +16, respectively. Excluding this phase, the mean changes for seven expansions, 1949–81, are real GNP, +357; total balance, +23, active, –4; passive, +27.

**Table 3.5** Changes in the Real Federal Budget Balance, 1948–86 (mean change in billions of 1982 dollars)

	Real GNP	Real Federal Budget Balance		
		Total	Active	Passive
Eight contractions, 1948–82	– 59	– 41	– 9	– 32
Eight expansions, 1949–86	+ 361	+ 3	– 22	+ 25

*Sources:* Quarterly data on real GNP and the federal government budget surplus are from the U.S. Department of Commerce (1986 revision). The corresponding data on the active component of the surplus are based on Federal Reserve Bank of St. Louis estimates of high-employment surplus (1948–54) and Holloway 1986 estimates of cyclically adjusted surplus (1955–86) as modified in Gordon 1987 (see pp. 589–90). For the detail underlying these averages, see Zarnowitz 1989a, table 10.

imply automatic stabilization, given a procyclical movement of inflation. But when inflation accelerates during a recession, as exemplified in 1974, there is less of a shift toward a greater deficit and therefore less of a stabilizing (or more of a destabilizing) effect.

During each of the four business recessions of 1970–82, nominal GNP typically continued to rise while real GNP declined. In these years, the progressivity of personal taxes geared to current-dollar incomes acquired the perverse effect of pushing people into higher tax brackets even though their real incomes had fallen. In 1981, large reductions in marginal tax rates were enacted and tax indexation was introduced to begin in 1985. Deficits still moved countercyclically through the recession of 1981–82 but they remained unprecedentedly high during the business expansion of 1983–87, averaging 4.6% of GNP (equal to the trough year 1982 and much higher than in any previous postwar recession).

In sum, the stabilizing effects of cyclical changes in the budget appear to have been very important in the 1950s and 1960s, as recognized at the time. They were probably significantly reduced by inflation and the “bracket creep” in the 1970s and by an accelerated, long rise in deficits and the attendant worries about the long-term consequences of this new trend in the 1980s.

### 3.4.3 Financial Crises, Banking Panics, and Deposit Insurance

No systematic relationship exists between the dates of speculative peaks and financial crises on the one hand and the chronology of business cycle peaks and troughs in the United States on the other (cf. lines 1–2 and 6–7 in table 3.6A). The speculative “manias” (Kindleberger 1978) usually occurred late in business expansions, but 1818, 1836, and 1920 represent apparent exceptions. They culminated in “crashes,” that is, sharp declines in asset prices, abrupt curtailment of credit, and scrambles to liquidate the speculative assets to obtain money. These events followed the business cycle peaks in 1857,

**Table 3.6 Selected Chronologies and Measures of Financial Crises in the United States**

A. 1818-1933														
1. Speculative peaks	8/18	11/36	End of 56	3/73	1873	1884	1890	1892-93	1907	1920-21	1929	1930	1931	1933
2. Crises	11/18-6/19	9/37	8/57	9/73	1873	1884	1890	1892-93	1907	1920-21	1929	1930	1931	1933
<i>Speculative Peaks and Financial Crises<sup>a</sup></i>														
								12/92	Early 1907	Summer 1920	9/29	...	...	3/33
								5/93	10/07	Spring 1921	10/29	...	...	3/33
<i>Stock Exchange Panics: High and Low Months<sup>b</sup></i>														
3. High	...	...	...	2/73	2/84	5/90	2/93	1/07	1/07	10/19	9/29	4/30	3/31	...
4. Low	...	...	...	11/73	12/84	12/90	8/93	11/07	11/07	8/21	11/29	12/30	12/31	...
<i>Banking Crises and Panics<sup>c</sup></i>														
5. Date	1818+	1837+	1857+	9/73	5/84	1890	6/93+	10/07+	10/07+	...	...	10/30*	3/31*	1933+
<i>Business Cycle Expansions (E) or Contractions (C)<sup>d</sup></i>														
6. Type of phase	C	C	E	E	C	C	C	C	C	C	C	C	C	Trough
7. Date	1815-21	1836-38	12/54-6/57	12/70-	3/82-	7/90-	1/93-	5/07-	1/20-	8/29-	8/29-	8/29-	8/29-	1933
8. Percentage	...	...	...	10/73	5/85	5/91	6/94	6/08	7/21	3/33	3/33	3/33	3/33	3/33
<i>Change in Liabilities of Business Failures<sup>e</sup></i>														
9. Percentage	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10. Percentage	...	...	...	...	...	...	...	...	...	...	...	...	...	...

B. 1957-82														
1. Period	1957-58	1959-60	1966	1969-70	1973-75	1980	1981-82	1981-82	1981-82	1981-82	1981-82	1981-82	1981-82	1981-82
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	
	55:4-57:4	59:2-60:2	66:1-66:3	69:1-70:1	73:1-74:3	78:2-80:1	81:1-81:4	81:1-81:4	81:1-81:4	81:1-81:4	81:1-81:4	81:1-81:4	81:1-81:4	
<i>Pre-crunch Period/Credit Crunch</i>														

2. Period	7/56-12/57	7/59-10/60	<i>Bear Markets<sup>k</sup></i> 1/66-10/66	12/68-6/70	1/73-12/74	2/80-4/80	11/80-7/82
3. Month	...	...	<i>Financial Crises<sup>l</sup></i> 8/66	6/70	5/74	3/80	6-8/82
4. Type of phase	C	C	<i>Business Cycle-Expansions (E) or Contractions (C)<sup>m</sup></i> E	C	C	C	C
5. Dates	8/57-4/58	4/60-2/61	2/61-12/69	12/69-11/70	11/73-3/75	1/80-7/80	7/81-11/82
6. Percentage	51	68	<i>Change in Liabilities of Business Failures<sup>n</sup></i> 25	163	139	153	279
7. Percentage	-19	-10	<i>Change in the Common Stock Price Index<sup>o</sup></i> -17	-29	-43	-11	-19
8. Percentage	+9	+4	<i>Change in the Deposit-Currency Ratio<sup>p</sup></i> -2	+7	-6	+2	+5

<sup>k</sup>Based on the entries for the United States in Kindleberger 1978, following p. 251.

<sup>l</sup>Compiled from the international chronologies and data in Morgenstern 1959, pp. 546-47 and 552 (tables 139 and 140), except for the 1919-21 and 1930 dates, which are additional declines in the S&P index.

<sup>m</sup>Based on Friedman and Schwartz 1963, chs. 2-5 and 7, passim. A \* denotes a restriction on cash payments instituted in the given year, including the nationwide banking holiday of March 1933. A \* denotes the onset of a banking crisis (pp. 308-15).

<sup>n</sup>Based on the NBER business cycles chronology.

<sup>o</sup>Computed from Dun and Bradstreet data, seasonally adjusted (quarterly 1875-94, monthly 1894-1982). Low-to-high percentage change in each period, defined in years (see column headings). Based on quarterly data.

<sup>p</sup>Liabilities reached a peak in 1932:2, 113% above their level at the beginning of the Depression in 1929:3, then declined 72% through 1933:4.

<sup>q</sup>Computed from S&P common stock price index; industrials, rails, and utilities, monthly, 1871-1939 (prior to 1918, the index is converted from that of the Cowles Commission). High-to-low percentage change in each period, based on the dates in lines 3 and 4 above.

<sup>r</sup>Index reached the Depression trough in 3/1933, 12% below 1/1933 and 81% below the pre-Depression peak of 9/1929.

<sup>s</sup>Based on data in Friedman and Schwartz 1963, pp. 799-804, table B-3, col. 3. High-to-low percentage change in each period (annual February or June dates used for 1890-93, monthly dates thereafter).

<sup>t</sup>From Eckstein and Sinai 1986, p. 49 (one of the "Stages of Postwar Business Cycles" in table 1.3).

<sup>u</sup>Based on the monthly index of stock prices of S&P Corp. (500 common stocks).

<sup>v</sup>From Wolfson 1986, p. 133, table 11.1.

<sup>w</sup>Computed from ratios of currency to demand and time deposits (components of the monetary stock M2). Based on seasonally adjusted monthly data compiled by the Board of Governors of the Federal Reserve System.



1893, 1907, 1921, and 1929 by intervals of 2–5 months. In 1873, the crisis preceded the NBER peak date by a month; the 1819 and 1837 episodes fall in years of contraction.

Morgenstern (1959, pp. 541–55) presents and discusses an annual chronology of international stock exchange panics, which involved massive and rapid sales of stocks at falling prices. The high and low dates for seven Wall Street debacles on Morgenstern's list are shown in table 3.6A, lines 3 and 4, along with two additional declines, in 1920–21 and 1930. In each of these cases, the market dropped sharply (line 9). Four of the nine declines have no counterparts among the financial crises (cf. lines 1–2 and 3–4). The stock market peaks in 1873, 1890, and 1907 led business cycle downturns by 8, 2, and 4 months, respectively, those in 1893 and 1929 lagged by 1 month each, and those in 1884 and 1931 occurred in midcontraction (cf. lines 3 and 7).<sup>21</sup>

A number of severe business contractions were associated with banking panics, that is, great surges in bank failures, runs on banks, fears of further failures, and often widespread suspensions of convertibility of deposits into currency. For the period covered by their monetary history, M. Friedman and Schwartz (1963a, chs. 2–5 and 7) identify and discuss eight such panics, from that in 1873 to the “great” one that ended in the nationwide banking holiday in March 1933 (table 3.6A, line 5). But cumulative bank failures, panics, and restrictions on cash payments can be traced back as far as 1814 and 1818, before and during the long depression of 1815–21. They also occurred in 1837, after a downturn that followed the curbing of a monetary expansion, inflationary boom, and speculation in public lands; and in 1857, when a boom in commodities, railroad shares, and building sites broke down sharply in midyear, to be followed by a business downswing through 1858.

No financial crises occurred for one third of a century after 1933, despite the tumultuous nature of this period. Federal insurance of bank deposits, effective since the beginning of 1934, prevented bank panics by radically reducing both bank failures and the depositors' fears for the safety of their money. Most ailing banks, particularly the large ones, were reorganized or merged with sound banks to avert failure. Commercial bank suspensions averaged 635 per year in 1921–29, 2,274 in 1930–33, 54 in 1934–42, and 4 in 1943–60 (M. Friedman and Schwartz 1963a, p. 438). Total losses to depositors fell 95% between 1930–33 and 1934–42 and melted further to negligible amounts in 1943–60.

Small depositors soon learned that they no longer bore the losses of those insolvent banks for which the Federal Deposit Insurance Corporation is responsible. The costs to the government, and hence to the public as taxpayers, were very small for several decades. So it was generally accepted that the

21. Numerous studies indicate that stock price indexes are highly sensitive to changes in aggregate economic activity, prospects for profits, and credit costs and availability. They tend to lead at business cycle peaks and troughs, but not very regularly, and they have frequent “extra” movements of their own as well (Moore 1983; Fischer and Merton 1984; Zarnowitz 1987).

FDIC is the rare example of a clearly and promptly successful reform measure. Only in the 1980s did a new wave of failures of financial (mainly thrift) institutions reveal how large the costs to taxpayers of the federal deposit insurance could be. The system greatly reduced the need of bankers to be careful with other people's money and the incentives of the depositors to be watchful. Overindebtedness, undercapitalization, poor management, and fraud became widespread and serious problems. Risks that look acceptable in good times often turn out to be excessive when conditions deteriorate, and there is little that government supervision can do about it.

#### 3.4.4 Financial Instability after the Great Depression

The depression of the 1930s produced a large reduction in private debt and a temporary rise in financial conservatism. Fears of an imminent depression were widespread and persistent in the commentaries and forecasts of the late 1940s. World War II financing left the economy awash in Treasury securities, that is, high-quality liquid assets. Gradually the liquidity ratios of banks declined as the proportion of business and consumer loans held rose at the expense of government securities; but in the 1950s and the early 1960s liquidity was still high overall and the level of debt was still relatively low.

It is this prevalence of favorable balance-sheet conditions in the private economy that is credited with the absence of financial crises in the first two decades of the postwar era (Minsky 1980; Wolfson 1986, pp. 190–92). In addition, presumably the strong growth of government and aggregate demand, output, and profits helped, as did the fact that inflation was still restrained. The financial disturbances that did occur were brief and mild.<sup>22</sup>

The first post-Depression financial crisis widely recognized as such occurred in 1966 and involved a high degree of disintermediation—withdrawals of funds from savings and loan associations and banks for direct investment in the money market. The flow of credit to nonfinancial corporations fell as much as 40% in the second half of the year. Monetary policy turned very tight in May and eased only in late August and September, after banks were forced to liquidate large amounts of their investments in government and municipal securities. Yet no general business contraction developed, only a slowdown in output and employment that became known as the “minirecession” of 1966–67.

22. There was a disturbance in March 1953 when the Treasury issued new 3.25%, 30-year obligations and prices of outstanding bonds with 2.5% coupons fell sharply, but the Fed eased promptly, which may have helped to keep the 1953–54 recession mild and brief (M. Friedman and Schwartz 1963a, pp. 612–14; Wojnilower 1980, pp. 281–82). Eckstein and Sinai (1986) define a “credit crunch” as a “crisis stemming from the collision of an expanding economy with a financial system that has been depleted of liquidity” and place the first such postwar episode in 1957 (pp. 49 and 61). But this was hardly a “crisis,” only a short phase of tighter nonprice credit rationing. In the fall of 1959, there was a more severe credit stringency and the first disintermediation as rates on government securities rose above the regulated ceiling rates on time deposits (Wojnilower 1980, pp. 282–84). The two crunches were associated with the recessions in 1957–58 and 1960–61, both brief, the second one very mild (see table 3.6B, lines 3–5).

Each of the next four crises (or crunches) did occur during a business contraction, as shown in table 3.6B (lines 1–5). Each was triggered by a particular shock: the bankruptcy of the Penn Central Railroad in June 1970; news about the effective insolvency of the Franklin National Bank in May 1974; troubles with the First Pennsylvania Bank and crisis in the silver futures market in March 1980; the Penn Square Bank failure and the confidence crisis connected with large bank losses on loans to government security dealers, energy producers, and some less developed countries in May–August 1982.

Although the disruptive events varied, the economic and financial developments that preceded and followed them had some important common characteristics. The precrunch periods (table 3.6B, line 1) witnessed high levels of real investment and inventories but declining corporate cash flows: hence the demand for credit would increase. In addition, corporations had to borrow funds to meet payments on increasingly burdensome debts. Banks suffered growing losses on their business loans and tightened their lending, particularly to new customers. Stock prices typically fell in sympathy but with no clear pattern of relative timing (line 2). Curtailment of credit supply was associated with each of the more serious financial crises (line 3), and in each case the crunch was followed by a phase of gradual debt reduction and restoration of liquidity.

### 3.4.5 Business Cycles and Crises

There is no consensus on the nature of financial crises and their role in business cycles. A good reason for this, I believe, is that there is in fact much variety in the sources of these disorders and also in the policy reactions to them.

An old view recently formalized in modern terms attributes financial crises to speculative bubbles in selected asset prices driven by fads, that is, temporarily self-fulfilling mass expectations that diverge from fundamentals.<sup>23</sup> Here no causal role is given to changes in macroeconomic conditions, but the financial booms and busts are seen as a potential source of significant shocks to the real economy.

Other theories relate financial instability to exogenously induced monetary instability or endogenous economic fluctuations. A monetarist interpretation links banking panics to prior monetary disturbances, whose real effects they aggravate (M. Friedman and Schwartz 1963a, 1963b; Cagan 1965). Another approach, which combines elements of early and Keynesian ideas, argues that crises result from long expansions in real investment characterized by overconfidence and overaccumulation of (to a large extent, short-term) debt. Such expansions are terminated by cutbacks in credit supply, debt deflation, and debt liquidation (Minsky 1977, 1980; Sinai 1976; Eckstein and Sinai 1986). A still different emphasis is on the real effects of changes in the cost of supply-

23. See chapter 2, section 2.4.6, for more detail and references for some of the theories mentioned below.

ing credit that occur during financial crises (Bernanke 1981, 1983; Hamilton 1987).

Partial evidence in support of each of these theories exists, but it is typically limited to particular conditions or episodes. The bubble hypothesis is considered to be consistent with the occurrence of sharp and rapid fluctuations in the level of financial asset prices that bear no intelligible relationship to movements in the economy. To give just one classic example, the record collapse of common stock prices in October 1987 followed upon a 3-year boom that exceeded to an extraordinary degree the concurrent expansion in output and profits and eventually could not be justified by any reasonable prospects of further gains in the foreseeable future. The business expansion itself was not seriously disrupted.<sup>24</sup>

The monetarist hypothesis relies on the effects on aggregate demand and output of shifts in the money supply and the money multiplier. Its assumptions agree well with the regime of exogenous money changes and sticky prices, but not with that of endogenous short-run monetary adjustments and flexible prices. Under the latter, which is perhaps approximated by the gold standard, the advantage may lie with the hypotheses that stress the role of deflationary shocks and changes in the availability and cost of credit (Calomiris and Hubbard 1989).

How much a financial crisis matters depends in part on policy factors. Prior restrictive actions of monetary authorities added substantially to the pressure on banks in some instances (1966 and 1980) but not in others (1974). A prompt intervention by the central bank as the lender of last resort and provider of the needed bank reserves is the one recognized way to end the immediate crises and cut the losses. The Federal Reserve neglected this function in 1930–33 but not in the mid-1980s.

The relationship between financial crises and business contractions was never as central and close as some theories would have it and should not be overstated (see De Long and Summers 1986a, pp. 686–90). Many contractions, including some of great severity, were not associated with either massive sellouts of illiquid assets for cash assets or even just an imposition of tight rationing on bank loans (some examples are found in table 3.6). Moreover, some expansions weathered financial problems no less grave than those that occurred in recessions.<sup>25</sup>

24. Although some warnings of an impending global disaster appeared in the press right after the crash, most professional forecasters only reduced their positive growth forecasts for the year ahead (Zarnowitz 1987). The actual outcome was merely small dips in the more sensitive components of real consumption and investment around the end of 1987. In contrast, the previous record panic in the market, that of October 1929, occurred in what turned out to be the initial stage of the Great Depression.

25. Recent examples include the drain of uninsured deposits from the Continental Illinois National Bank in May 1984 and the run on state-insured savings banks in Ohio in March 1985. These incidents show (1) that the system remains sensitive to confidence crises and (2) that the latter can be prevented from spreading into major panics by credible insurance of deposits and, when needed, lender-of-last-resort actions of supplying additional reserves to banks.

These caveats notwithstanding, a reduction in the frequency or intensity of financial disturbances could certainly have a significant impact on the economy (points IIIB and VIA in section 3.2.1). Table 3.6 lists percentage changes in (1) liabilities of business failures, (2) the stock price index, and (3) the ratio of deposits to currency, for each of the periods covered. These are all sensitive measures of the effects of financial or banking crises, with long records.<sup>26</sup> Each indicates that the disorders in speculative asset and credit markets were much more severe historically than in recent times.

Thus, total-failure liabilities more than doubled in each of the six crises of 1884–1932 (counting 1929–32 as one episode) and more than quadrupled on two of these occasions (table 3.6A, line 8). The mean amplitude of these movements was 189%, or 27% per month. The postwar rises in liabilities were on average longer but smaller (table 3.6B, line 6). Here the total mean amplitude was 126%, which is about  $\frac{2}{3}$  of the figure for the financial crisis years of 1884–1932. The postwar per-month amplitude was 11%, which is about  $\frac{1}{10}$  of its historical counterpart.

The declines in stock prices averaged 31% for the panics of 1873–1931 and 21% for the bear markets of 1957–82 (for the individual measures, see table 3.6A, line 9, and 3.6B, line 7). The postwar-to-prewar average ratio total amplitudes is here again close to  $\frac{2}{3}$ , that of the mean per-month amplitudes close to  $\frac{1}{10}$ . In sum, the recent market contractions were longer but smaller and gentler than those associated with the historical crises or panics.

Finally, declines in the deposit-currency ratio ( $D/C$ ) occurred in each of the banking crises or panics of 1890–1933 as well as in 1920–21 and 1929, whereas 1873 and 1884 witnessed at least slowdowns in the rising trend of  $D/C$  (table 3.6A, lines 5 and 10). On the other hand,  $D/C$  increased in each of the postwar credit crunches except 1966 and 1973–75 (table 3.6B, lines 1 and 8). The contrast between the historical and recent behavior of  $D/C$  is clear from the following mean-amplitude measures: 1873–1933,  $-11\%$ ; 1957–82,  $+3\%$ . Evidently, the FDIC reform succeeded in eliminating the massive runs on the banks caused by widespread fears of losses on uninsured deposits.

26. The liabilities act as an early leading indicator whose countercyclical movements reflect more the changes in size than the number of business failures (Zarnowitz and Lerner 1961). They tend to rise only modestly during mild contractions but explosively during severe contractions accompanied by much financial strain.

Stock prices are an important expectational or symptomatic, rather than causal, factor in relation to aggregate economic activity, despite their presumed effects on real investment (Fischer and Merton 1984). Their variability was exceptionally high during the 1930s but not significantly different in the periods before the First and after the Second World War (Officer 1973; Schwert 1988). The argument that this indicates a lack of stabilization in real activity in the postwar era (Shapiro 1988) is not persuasive. First, it overstates the closeness of the relationship between the market and the economy. Second, it ignores the likelihood that the market has grown more sensitive to movements in cyclical and policy indicators as the volume, quality, and currency of the data all increased greatly in the last half-century.

The  $D/C$  ratio is an indicator of changes in the confidence depositors have in the safety of their “money in the bank.” For banks, large drops in  $D/C$  mean losses of both deposits and reserves, transitory rises in the deposit-reserve ratio, and an urgent need to acquire liquidity.

### 3.5 Macroeconomic Policies and the Business Cycle

#### 3.5.1 Fiscal Policy: Motivations, Potential, and Record

The idea that government policies should be used to offset fluctuations in aggregate private demand was inspired by attempts to combat the depressions of the interwar period.<sup>27</sup> Although the Employment Act of 1946 called for promotion of “maximum employment, production, and purchasing power,” many years elapsed before the objective of macroeconomic stabilization gained practical acceptance in the political process. Thus, not until the first half of the 1960s was tax policy deliberately used to increase employment.

The effective use of discretionary countercyclical policies is impeded by the variability of lags with which they operate and the limitations of economic forecasting. The difficulty of predicting the timing of a downturn is such that it is usually late during or after a recession that the administration may decide to ask for a tax cut or a program of increased expenditures. Congressional action will require more time. Hence, even if the taxpayers and beneficiaries of federal expenditures responded promptly with more spending, which is uncertain, the total lag is often apt to be so long as to make the policy ineffective or even destabilizing. This would be so especially for short and mild contractions.<sup>28</sup>

The federal budget is the focus of conflict about the distribution of income and wealth as various interest groups attempt to influence its structure. Political pressures and perceptions of public interest interact with partisan interest and self-interest of elected and appointed officials. The net effect of this clash of different motivations and pressures must surely be to impede consensus and impair the effectiveness of fiscal action as a tool for a discretionary stabilization policy. Although the *potential* of fiscal policy to influence the economy has grown greatly in the last half-century with the vast expansion of the budget, the *ability* of the government to use this power for the public good has not. This is attributable partly to deficient knowledge, partly to conflicting interests, and partly to the increasing complexity of the government and its interactions with the private economy.

The historical record is consistent with this argument. The label “too much too late” often applies to changes in federal expenditures, notably to the public works programs that operated with long lags, peaking in midexpansions (Zarnowitz and Moore 1982). The cessation of Korean hostilities in 1953 was followed by an unnecessarily abrupt and sharp cutback in defense spending that aggravated the 1953–54 recession. The budgetary policy of 1959–60 was excessively tight because of mistimed fears of inflation and high interest rates,

27. On the early advocacy of countercyclical monetary policy, see Keynes 1923; on the shift to fiscal stimulation, Keynes 1936; on the contemporaneous evolution of “classical” economists’ views on unemployment and policies, Friedman 1967; Mayer 1988; Haberler 1988.

28. Moves to raise tax rates or to reduce or discontinue expenditures on social programs or public works, being politically unpopular, would likely involve even longer delays.

plus overoptimistic forecasts of real growth. In retrospect, it is tempting to relate this to the weakness and shortness of the recovery of 1958–60 (see Lewis 1962). Federal expenditures on goods and services fell in real terms between mid-1968 and mid-1973, particularly during fiscal 1970. This may have contributed to the recession of 1970 (Gordon 1980, p. 145), although it did not appear to retard the expansion of 1971–73.

Tax policies fare better in postmortem appraisals, but only partially.<sup>29</sup> The prompt raising of taxes in mid-1950 to finance the Korean War was a commendable move. In contrast, during the Vietnam War taxes were increased too late and inefficiently. The surcharge on the personal income tax, passed by Congress in 1968, was temporary and recognized as such; hence its main effect was to reduce saving rather than spending, in broad agreement with the forward-looking theories of consumption. The expiration of the surcharge in 1970 also affected primarily the saving ratio.

An activist “new economics” strategy was pursued in the 1960s to counter the “fiscal drag” attributed to overly high levels of the high employment surplus. New tax incentives to stimulate investment were legislated in 1962; large reductions in the personal income and excise taxes in 1964 and 1965. The result was that the initially sluggish business expansion was strengthened and probably prolonged but also that the active component of real federal surplus fell strongly to remain negative ever since. After 1965, the federal budget was in deficit each year but one (1969), that is, during expansion and contraction alike. Had fiscal policies been guided by considerations of either macroeconomic stabilization or growth, they could hardly have produced this result.<sup>30</sup>

The tax cut of March 1975 was enacted into law at the very end of the 1973–75 recession. It was followed by further reductions in 1975–76, but the March rebate was explicitly temporary and probably again not very effective. Altogether, repeated errors of fiscal policy added much to the woes of the 1970s (Blinder 1979 and 1981).

### 3.5.2 Readings of the Federal Reserve Performance

Historical assessments of monetary policy often implicitly proceed from the premise that changes in monetary aggregates strongly influence real activity in the short run and are controllable by the Federal Reserve. So the Fed is blamed for causing cyclical instability by *allowing* recurrent accelerations and

29. Some tax reductions were fortuitously well-timed. This applies to the tax cut that was enacted (over a presidential veto) in April 1948 and to the expiration of the Korean War taxes in January 1954.

30. Critics often blame the “Keynesian consensus” for helping to legitimize deficit spending intellectually, which is certainly not without some historical justification (Mayer 1988). But Keynes favored deficits during depressions, not during prosperity. Also, the deficits persisted under different administrations, legislatures, and ideologies. To a large extent, the explanation is simply that fiscal actions were taken in response to immediate political concerns, which notably include vocal demands for lower taxes or currently needed government services.

decelerations in the trend of the money stock. Drops in the money growth rates are viewed as leading to major slowdowns, as in 1966, or recessions, as in 1957, 1960, 1970, and 1980–81; sharp rises, to “overheated” expansions, as in 1967–68 and 1972–73 (see, e.g., Gordon 1980). Larger and more persistent errors of monetary policy are held accountable for the greater cyclical instability of the past (Friedman and Schwartz 1963a, 1963b).

Monetary policy is clearly more focused on short-term stabilization than fiscal policy is, for several reasons. The governing bodies of the Federal Reserve System being relatively small and the influence of the chairperson often strong, their decisions can be reached much more quickly than those of the Congress. The Fed is presumably less subject to diverse political pressures. Conflicts between bureaucratic self-interest and public interest are probably less frequent and sharp here than in the fiscal area (Willett 1988). Yet, great obstacles to effective monetary control remain as a result of deficient knowledge, uncertainty, and indecisiveness in the face of costly alternatives.

There is much that is simply not well understood about the role of money—most important, to what extent it is active rather than passive. Even economists who believe money matters a great deal disagree on how best to define it and agree that monetary policy operates with long and variable lags. There are always alternative forecasts with nonnegligible probabilities of occurrence, and alternative courses of policy, each of which imposes different costs on different classes of people. Hence, monetary policymakers will often differ on when to do what, seek more evidence and consensus, delay hard decisions, or proceed piecemeal. They may be *unable* to “take charge” in time, so their actions may be too weak to prevail or have too slow and hence unintended effects. Such outcomes have received less attention than they deserve.<sup>31</sup>

Another possibility is that the Federal Reserve is *unwilling* to assert active control over money. If its main concern is with the stability of interest rates and if the cyclical shifts in income and money demand are caused by fluctuations in the quantities of goods and services people want to buy, then money supply will simply accommodate these shifts.<sup>32</sup> In fact, these conditions were probably often closely approximated in recent times. Interest rates were pegged low during the war-dominated 1940s and early 1950s, after which the Fed used money market indicators in operating procedures that let money supply behave procyclically and were consistently attacked by monetarist critics. In the 1970s, the Fed set monetary aggregate targets as well as a federal funds target but observed mainly the latter. After October 1979, nonborrowed re-

31. The early monetarists' emphasis on the interrelated problems of uncertainty, ignorance, and lags led them only to reject activist policies, not to question whether, under discretionary policies, monetary changes have dominant short-term effects on economic activity (see, e.g., Laidler 1981, esp. p. 19).

32. In terms of the still widely used macroeconomic model of Hicks 1937, this is the case where the demand for goods fluctuates more than the demand for money (the IS curve is more unstable than the LM curve) and the Federal Reserve pursues the policy of targeting interest rates by open-market operations in government securities (Poole 1970).



erves were used for three years as the main target, and interest rates began to swing widely, but the fluctuations in monetary growth also increased greatly. In effect, much of the time, changes in the credit extended by banks determined the changes in the money supply.

Figure 3.3 shows that monetary growth rates have been on average larger and more volatile in the second than in the first half of the post-1945 era, but also that the relative changes in M2 were much more variable yet before World War I and, especially, in the interwar period. Was it the ineptness of the Federal Reserve System that caused the apparent rise in monetary instability in the early 1920s and then, a fortiori, in the 1930s? And was it the improved Fed policy that caused the apparent post-World War II stabilization? The notion that the monetary authorities performed first so poorly and then so much better almost continuously over such long periods of time seems rather far-fetched. It seems easier to explain the record by recognizing that monetary change is in large measure endogenous (see sec. 3.5.3). But this does not by any means imply that Federal Reserve actions were unimportant. In particular, the fact that no significant periods of negative monetary growth rates occurred after 1948–49 is very probably related to successful preventive actions by the Fed. By the same token, the Fed must also bear the primary responsibility for the inflationary upward tilt in money growth during the last 30 years. Changes in the monetary regime can have strong effects on the economy's structure and responsiveness (see sec. 3.5.4).

### 3.5.3 Money and Economic Activity: Some Short-Run Dynamics

For the effects of money on income to dominate the reverse effects, the demand function for money must be reasonably stable over time and the supply function must include at least one critical factor independent of the determinants of demand. It is the central bank that is seen as providing that factor through its control over the monetary base.

Evidence available through 1973 favored a simple and stable money demand function of the form

$$(1) \quad M_t - P_t = a_0 + a_1 Q_t - a_2 i_t + a_3 (M_{t-1} - P_{t-1}) + u_t^d,$$

where all variables are in logs and  $M$ ,  $P$ ,  $Q$ , and  $i$  denote the money stock, the price level, output, and the interest rate, respectively.<sup>33</sup> However, after 1974 equation (1) went astray by systematically overpredicting demand deposits. This prompted an intensive but on the whole frustrating search for improved specifications (Judd and Scadding 1982.) After 1981 the apparent shortfall of

33. This is a short-run formulation in which portfolio adjustment costs are assumed to cause a given lag pattern in the reaction of real balances to changes in either  $Q$  or  $i$  (Goldfeld 1973). Somewhat different dynamic specifications are obtained when the gradual adjustment is assumed to occur instead in nominal balances (Goldfeld 1976), the price level (Laidler 1980), or both (Gordon 1984b).  $Q$  is usually represented by real GNP,  $P$  by the implicit price deflator, and  $M$  by M1, that is, currency plus checkable deposits.

the demand for M1 was replaced by an excess. The velocity ratio, GNP/M1, instead of following a long upward trend, started drifting downward. The probable sources of the observed instability of money demand are diverse and time specific: financial deregulation and innovations, changes in the Fed's targets, and the shift from rising to declining inflation.<sup>34</sup>

Money supply can be viewed as the product of the money multiplier,  $\mu$  (which depends on the reserve-deposit,  $R/D$ , ratios chosen by banks and on the  $C/D$  ratios chosen by households and firms), and the base,  $B$  (which depends mainly on Federal Reserve dynamic and defensive operations). The theory predicts that money supply is positively related to  $i$ , the level of market interest rates (apart from any influence of  $i$  on the conduct of monetary policy).<sup>35</sup>

Attempts to estimate separately money demand and money supply functions encounter grave problems of simultaneity and identification (Cooley and LeRoy 1981). Suppose the Fed follows an interest-rate stabilization strategy with the target value  $i_t^*$ . Then

$$(2) \quad i_t - i_t^* = \alpha B_t + \varepsilon_t^i,$$

where  $\alpha > 0$ . If, as suggested by the earlier discussion,

$$(3) \quad \mu_t = \beta i_t + \varepsilon_t^\mu,$$

then

$$(4) \quad M_t = \mu_t + B_t = b_1 i_t - b_2 i_t^* + v_t,$$

where  $b_1 = \beta + 1/\alpha$ ,  $b_2 = 1/\alpha$ , and  $v_t = \varepsilon_t^i - \varepsilon_t^\mu$ . Although  $i_t^*$  does not appear in equation (1), one cannot reasonably assume it to be independent of the unobserved determinants of money demand. If, say, money demand increases, exerting an upward pressure on  $i_t$ , then according to equation (2) the Fed will either accommodate the shift or revise  $i_t^*$  or use some balanced combination of the two moves. As this indicates, correlations are likely to exist between  $u_t^d$  and  $B_t$ ,  $i_t$  and  $i_t^*$ , and  $u_t^d$  and  $v_t$ .

Monetary policy is more complicated than equation (2) implies: although often accommodative, it has at times attempted to be countercyclical. To approximate the latter case, allow for partial responses to  $B_t$  to output,  $Q_t$ , and

34. See Gordon 1984b for a comprehensive and discerning analysis of the dynamics of money demand. Our derivations in the text below resemble some of his. Gordon's empirical work proceeds by successive approximations that yield statistically significant improvements but at a considerable loss of simplicity.

35. A rise in  $i$  creates incentives for the banks to increase their borrowing from the Fed and to decrease their excess reserves; it may also cause the public to reduce their holdings of time deposits relative to checkable deposits. In practice, however, most of these effects (which would raise either  $B$  or  $\mu$  and hence  $M$ ) are likely to be weak most of the time because they rely on changes in interest differentials ( $i$  relative to the discount rate or deposit rates) that will be small and short lived, at least without certain working regulatory restraints. Also, excess reserves are apt to be small and mostly random, except in depressions following financial crises.

inflation,  $P_t - P_{t-1}$ , both with negative signs. Incorporating equation (3) as well, the result is a money supply function of the following type:

$$(5) \quad M_t = c_0 + c_1 i_t - c_2 Q_t - c_3 (P_t - P_{t-1}) + u_t^s.$$

This equation resembles equation (1) closely. In fact, the two include the same variables, except for lags that probably belong in both functions.<sup>36</sup> A reasonable inference is that shifts in the demand for money are apt to be related to shifts in the policy reaction functions, or “monetary regimes,” so that the two are difficult to separate (Gordon 1984b).

The most probable explanation of the historical correlation of short-term changes in money and real activity is a composite one. First, much of the time both money and output respond to the common influence of whatever forces drive the prevailing movement of the economy. For example, an investment boom is financed by credit expansion. Second, changes in output and income may affect monetary growth directly. The volume of inside money can adjust to the level of real activity, and it is inside money in the form of various deposits that constitutes the bulk of the total stock of money. The composition of monetary aggregates changes endogenously, and the stability of money demand is not assured. Third, as noted before, the Fed may target interest rates; if it aims at stabilizing the dollar under a fixed exchange rate or a “dirty float” system, the results will be similar. All these cases require an accommodative central-bank policy, and they are in practice very difficult to distinguish from each other.

Fourth, at least some of the time monetary authorities take the initiative in altering the course of money targets and the economy for better or worse. These actions may be episodic but they tend to be of great practical and theoretical interest. Here, unlike in the other cases, it is the aggregate activity that adjusts to the monetary change instead of the other way around.

### 3.5.4 Monetary Regime Changes

Monetary institutions and rules of conduct evolve historically and at times undergo major episodic shifts that result in different monetary regimes. There are related changes in the organization of the foreign-exchange market, banking and investment finance, and government fiscal operations. If the way economic policies are carried out is altered, and a new monetary or fiscal or exchange regime is established, the informed public will adjust its expectations and behavior accordingly over time (Lucas 1976). This raises the question of what relationship can be found between such regime shifts and the differences between business cycles in the prewar, interwar, and postwar periods.

36. The distinction between real and nominal balances is not very helpful in dealing with short-run changes, given the sluggishness of price reactions in countries with relatively low and not very volatile inflation. Under these conditions, too, expected inflation will not be an important additional factor in the money demand function.

*Before World War I*

From 1879 to 1914, the United States was on the gold standard: the dollar was convertible into gold at a fixed legal ratio, and the money stock and price level had to be consistent with an approximate balance in international payments maintained without abnormally large gold movements. So money was basically endogenous. Central banks influenced the international capital markets through interest-rate manipulations to keep the exchange rates fixed. Their role as monetary authorities was thus limited and so was the role of the U.S. Treasury. Variations in gold supply and demand (discoveries and changes in technology of production and use) resulted in changing trends in money supply and prices.

The rate of growth in the stock of M2 dropped below zero on five occasions between 1875 and 1918, each time during a severe business contraction (fig. 3.3A). Milder recessions were marked by smaller declines in positive rates of money growth. The data leave no doubt about the predominantly procyclical behavior of this variable (see also table 3.1, line 9, and table 3.2, line 10). But this pattern of movement in the rate of change in M2 can be attributed to procyclical fluctuations in the currency-money ( $C/M$ ) ratio and the  $R/D$  ratio, not to the behavior of the monetary base ( $B$ ), which under the gold standard was on the whole acyclical (see Cagan 1965, chs. 2 and 3). Changes in  $B$  (the “high-powered” money, which in this period included the public’s holdings of gold coin or certificates, Treasury currency, and national bank notes) reflected mainly the changes in gold stock dominated by long trends. According to the vector autoregression (VAR) equations for rates of change in output ( $q$ ), money ( $m_2$ ), and base ( $b$ ) in 1886–1914,  $q$  was influenced significantly by lagged values by  $m_2$  but not  $b$  (see chapter 12).

The business cycles of the four decades before World War I were relatively frequent and characterized by several serious depressions and financial panics; they were much discussed by contemporaries with reference to the instability of bank credit rather than money supply, of commodity and asset prices as much as of output. Business expansions were seen as phases of rising demand for both credit (as investment rose) and currency (as wages and consumer spending rose). They would be curtailed by shortages of bank reserves and high real costs or low availability of credit. These ideas (elements or variants of which are found, e.g., in Sprague 1910; Hawtrey 1913; and Mitchell 1913) can help explain the cyclical behavior of the  $C/M$  (or  $C/D$ ) and  $R/D$  ratios.

The wholesale price index tended to move procyclically around a downward trend in 1875–96 and around an upward trend in 1896–1914. Over the period as a whole, positive and negative rates of change in the index nearly offset each other, according to the average amplitudes of both quarterly and cyclical measures (see table 3.1, line 5, and table 3.2, line 7). Commodity prices generally had a high degree of cyclical flexibility, and deflations inter-

acted with restrictions on credit supply in contributing to major business downturns.<sup>37</sup>

Short-term interest rates moved up in business expansions and down in contractions, with lags at turning points, but the quarterly changes in them were very volatile and almost symmetrically distributed between rises and declines (table 3.1, line 13, and table 3.2, line 13; fig. 3.4A). As there was no persistent inflation in this period, there was no reason to expect such an inflation to arise, and none did.

### *Between the World Wars*

The interwar period saw a great weakening of the international gold standard and the link between U.S. money and international trade. In 1933 the dollar ceased to be freely convertible into gold, which was eliminated from circulation. The Federal Reserve System began operations in 1914 but came into its own only in the 1920s (during both world wars the financing needs of the Treasury were dominant). The two decades after 1919 include a period of relatively high economic and monetary stability in 1922–29, but they also provide two examples of major errors of monetary policy followed by severe business contractions: the sharp rises in the discount rates in January and June 1920 and the doubling of legal reserve requirements in 1936–37. The huge decline in the money stock during the depression of the early 1930s was driven mainly by the increases in the *C/D* and *R/D* ratios caused by the banking crises; the monetary base actually increased.<sup>38</sup>

On the whole, the fluctuations in monetary growth rates were clearly largest in the interwar period and smallest in the postwar period, and much the same applies to the fluctuations in the rates of change in output and prices (cf. figs. 3.1, 3.2, and 3.3). In contrast, changes in interest rates were not particularly large in 1919–33, and they then became very small and mostly negative, even during the cyclical expansion of 1933–37. They were on average smaller in the interwar period than in the earlier and later eras (fig. 3.4; tables 3.1 and 3.2, lines 13–15).

The interwar estimates in chapter 12 of this volume suggest that  $q$  was significantly affected by lagged growth rates in base and monetary growth but not by interest rates. This is unlike the estimates for both 1886–1914 and 1949–82, which show strong net effects of interest rates on output.

37. A very special episode is the long business contraction of 1873–79, which witnessed a persistent and sharp decline in prices but apparently, much of the time, rising output (see figs. 3.1A and 3.2A; and Friedman and Schwartz 1963a, chart 3 and text in ch. 2). This was the end of the “greenback period,” characterized by political controversy over the resumption of specie payments, rather mild and vacillating movements in monetary aggregates and great financial instability (the 1873 crisis, rises in the *R/D* and *C/D* ratios, and bank failures).

38. Between the business cycle peak in August 1929 and the banking crisis in October 1930, the base declined 4.7% while M2 slipped 2.6%; between October 1930 and the business cycle trough in March 1933, the base rose 23.4% while M2 dropped 35.2% (data from Friedman and Schwartz 1963a, table A-1, col. 8, pp. 712–13, and table B-3, col. 1, pp. 803–4). To be sure, the Federal Reserve policy could and should have been more expansionist.

*After World War II*

The adherence to a program of strict support of government bond prices reduced the Federal Reserve to the passive role of an adjunct to the Treasury Department in the 1940s and until the March 1951 Accord: a time of war-induced expansion and inflation, a brief war-end contraction, and the last deflationary recession in 1948–49. The United States became the dominant economic power and the trading world was effectively on a dollar standard before and after the main European currencies returned to convertibility in 1958. The 1950s and 1960s saw great economic recoveries in Western Europe and Japan, and a remarkably high and stable real growth in the United States by historical standards, despite the shocks of the Korean and Vietnam wars and three recessions between 1953 and 1961. The stock of money grew at stable and moderate rates, which however began to show a rising trend in the 1960s. After the Korean inflation and disinflation, prices generally displayed stability, rising very little before 1960 and still slowly for several years thereafter. Interest rates resumed their cyclical pattern but remained low until the later 1960s, when inflationary expectations began to be clearly reflected in the data (see figs. 3.1–3.4).

In the face of past setbacks and expected difficulties of monetary policy-making, the Federal Reserve authorities, not surprisingly, showed much uncertainty and caution in the early postwar period, paying most attention to interest and credit changes and often yielding to the growing fiscal activism. The public availability of frequent monetary data, though helpful, may have also had some intimidating effects (see Friedman and Schwartz 1963a, pp. 637–38). It would be incorrect to credit the successes of this period to monetary activism, which was largely absent. But the caution and passivity seem to have worked well much of the time under the highly favorable conditions then prevailing, which merits recognition.

The environment deteriorated rapidly in the late 1960s and 1970s for several familiar reasons: the decline in U.S. comparative international advantage and the dollar, the breakdown of the Bretton Woods system, the experimentation with price and wage controls, the supply shocks, the reduced productivity growth, and rising financial instability. But the main factor underlying the problems of this period was the rising trend and volatility of inflation, which resulted in persistent inflationary expectations and heightened uncertainty about the general economic outlook. For this, much of the blame was naturally laid on the purportedly countercyclical and oscillating but mostly too expansionary monetary policy actions. The turn to a policy of reducing money growth in 1979–82 contributed to the business contractions of 1980–82 but also helped to produce the major disinflation of the first half of the 1980s.

The test statistics for the VAR model in chapter 12 indicate that in 1949–82 output ( $q$ ) was strongly influenced by interest rates as well as by a leading

index reflecting mainly real investment and related production and employment decisions. The direct effects of changes in monetary aggregates were significant but comparatively weak.

### 3.5.5 Gains in Confidence

There are good reasons to believe that the generally favorable trend of events between the late 1940s and the late 1960s has gradually produced a rise in public optimism that economic growth and prosperity can be maintained and recessions can be kept mild and short. In the spirit of self-fulfilling expectations, such a rise in optimism would be apt to encourage productive activity and enterprise.

Thus, the Standard and Poor's index of common stock prices moved strongly upward throughout this period, and its cyclical declines were short and relatively mild despite its high sensitivity.<sup>39</sup> The Survey Research Center index of consumer sentiment, available since 1952, averaged as high as 91 (1966:1 = 100) in its first 10 years and 96 in 1962–68, even though it too fell significantly in each recession and in the minirecession of 1966, leading at the business cycle turns. This index depends inversely on unemployment and inflation, positively on stock prices and its own lagged value (Lovell 1975).

By the same measures, investor and consumer confidence suffered serious setbacks during the years 1969–80. The S&P index had no trend but early and long recession-bound declines in 1969–70 and 1973–74 (also a lengthy extra one in 1977). The SRC index, similarly, had long and large contractions in 1969–70 and 1972–75; moreover, its expansions in this period were relatively weak and short (1971–72, 1975–77). Presumably, the public's perceptions and expectations were depressed because of a succession of bad economic, financial, and energy news. Inflation was not only rising but also becoming more volatile, which increases uncertainty (see chapter 17). Interest rates had a steepening upward trend and large fluctuations around it, in contrast to their earlier restraint.

However, considering its length and severity, the 1981–82 recession was associated with a relatively mild decline in stock prices and a remarkably short and small decline in consumer sentiment. The bull market came back to stay in the 1980s, surviving even the debacle of August–October 1987. The consumer sentiment index recovered quickly in 1982–83 and remained very high during 1984–88. There is little doubt about the reasons for the new rise in optimistic attitudes and expectations: disinflation and downward movements in interest rates and unemployment. Despite the depressant effects from news of high budget and trade deficits, and a rising debt, another wave of pessimism arose only after a long period of sluggish growth and recession in 1989–91.

39. The downturns in the index anticipated each of the four recessions, and the upturns anticipated each of the four recoveries of 1948–61, plus two episodes of slowdown-speedup sequences beginning in 1962 and 1966.

In sum, persistent changes in the economy's performance can have important effects on the confidence of consumers, investors, and business executives. The process of recognition and reaction to the changes involves lags of uncertain but probably substantial length. All this seems entirely consistent with rational behavior, without requiring an implausibly high degree of foresight.

According to the hypothesis V in section 3.2.1, if recessions are *expected* to be shorter and milder, they *will* be so because people will see less reason to curtail or postpone spending; hence consumption will slow less and investment will decline less. Baily (1978) argues that private behavior has indeed changed in this direction during the 1950s and 1960s as people learned to *believe* that monetary and fiscal policies are capable of keeping the economy close to the full-employment targets. He shows the employment reactions to changes in output and inventory reactions to changes in final sales were weaker in 1962–71 than in 1948–61. But these results are also consistent with the broader hypothesis stated above. Private economic behavior may have changed in response to the general climate of greater stability rather than because of confidence in the efficacy of government policies. When the climate deteriorated in the 1970s and public interest shifted to the seemingly unyielding problem of inflation, private confidence and supportive behavior seem to have decreased markedly. The rising budget deficits have probably undermined the belief in flexible countercyclical uses of fiscal policy. The popular credibility of monetary policy was at least temporarily restored in the 1980s, after what was widely viewed as the success of the Federal Reserve in reducing inflation and managing the long business expansion.

### 3.6 Conclusions

1. A review of data and results reported in the literature reveals great diversity of cyclical experience both in more distant and in recent U.S. economic history. The postwar period as a whole, however, has been one of distinctly reduced instability when compared with earlier times.

2. Significant net stabilizing effects can be attributed to shifts in the structure of employment to less cyclical industries, which produce mainly services, and, up to a point, to the increased size of the acyclical government sector.

3. The fiscal automatic stabilizers played an important positive role, mainly in the 1950s and 1960s, before the rise in inflation and the consequent distortions.

4. The smoother functioning of the financial system helped reduce overall instability. Most of the credit here goes to federal deposit insurance and prevention of general banking panics.

5. Discretionary fiscal policies rose to prominence in the course of the postwar era, but their record is very mixed. It is generally more favorable before



the mid-1960s than afterward, and also more favorable for tax policies than expenditure policies.

6. Quarterly rates of change in money supply were more volatile in 1875–1914 and, particularly, in 1919–39 than in 1946–83, although monetary growth increased and became more variable in the second half of the postwar period. These differences parallel those in output variability. The active and passive elements in monetary (as well as fiscal) policy are both important and intermingled, which makes it difficult to assess their effects. On balance, however, monetary policy probably made a modest contribution to the greater stability of real economic activity in the last 40 years.

7. Economic agents have gradually realized that business recessions have become shorter and milder, which has strengthened their confidence and induced behavior that promotes more stable growth. But expectations change with the trend of events; for example, the rise in inflation and unemployment during the 1970s had the opposite effects.