CHAPTER 3

CYCLES IN PERSONAL INCOME AND BUSINESS ACTIVITY

Timing of Turning Points

How well do the cycles in personal income (see Chart 1 above) conform to cycles in business activity? One way of determining the degree of conformity is to compare the turning points in personal income and in business cycles. Since turning points can be dated more precisely by monthly data, we shall examine first the period since 1929—the period covered by the Department of Commerce in its monthly estimates of personal income (Chart 4 and Table 2).

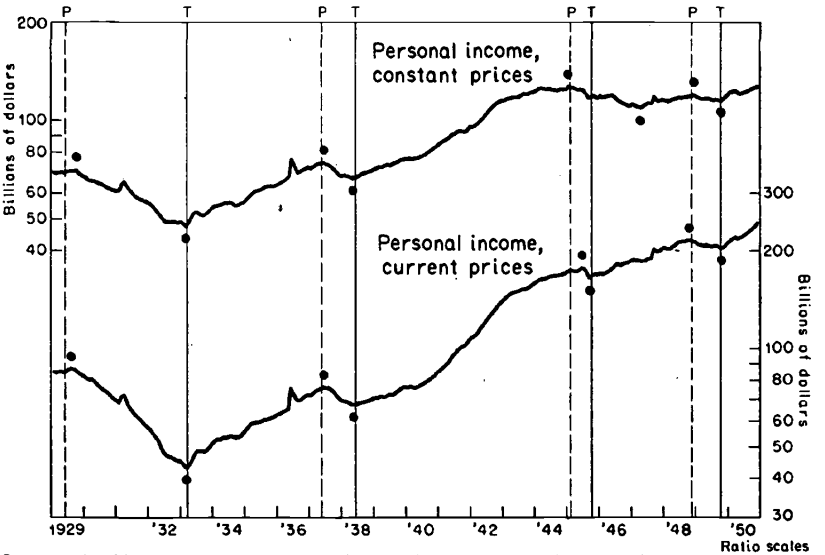
In the two decades following 1929 there were eight turning points in business activity and eight corresponding turns in personal income. At the four troughs the upturn in personal income either coincided with or led by one month the upturn in general business. At three of the four peaks the downturn in personal income lagged one to four months behind the downturn in general business, and at the remaining peak it led by one month. On this evidence there is a one-to-one correspondence of cycles in business activity and personal income; their timing coincides roughly at the troughs, while at the peaks personal income usually lags slightly.[1]

Annual estimates of personal income give us a glimpse of its cyclical behavior during another twenty years. The starting point now is 1909. On an annual basis, cyclical fluctuations in personal income no longer show a close correspondence with cycles in business activity (Chart 5). Thus the cyclical contractions in business in 1910-1911, 1918-1919, 1923-1924, and 1926-1927 do not have a counterpart in the annual totals of personal income. To be sure, all these business cycle contractions were relatively mild, and on closer inspection there appears to have been a conformity of sorts in the slackening in the rate of increase of personal income. Moreover, real per capita income did decline in all of these cyclical contractions, except that of 1926-1927 (Chart 1).

[1] For the 1920's, also, there is evidence suggesting that the downturn in personal income lagged briefly behind the downturn in business activity. As we shall see in Chapters 5 and 6, dividends, interest, and salaries failed to trace a specific contraction between 1921 and 1929, and factory wages, which typically lead total wages, lagged at the 1920 and 1923 peaks and had a coincident turn at the 1926 peak.

CHART 4

Personal Income in Current and in Constant (1935-1939) Prices, Monthly Data, 1929-1950



Broken and solid vertical lines represent business cycle peaks and troughs, respectively.
Source: See Appendix A; data are seasonally adjusted annual rates.

On the other hand, the contraction of business activity in 1913-1914 was fairly severe and the declines in 1920-1921 and 1929-1932 were very substantial. For each of these contractions there was a corresponding contraction in personal income. Moreover, there were no cycles in personal income that could not be matched with business cycles, and, with the exception of the 1932 trough, what turning points there were in personal income between 1909 and 1949 coincided with business cycle turns.

The statistical record for the decades immediately before and after World War I indicates, on the surface at least, that personal income continued to expand unless halted by a major downturn in business activity. This evidence of cyclical insensitivity, however, is probably spurious because of the crudity of an annual period in general and the rigidity of the calendar year in particular.[2] For this reason we contend that the behavior of the annual data does not negate the conclusion based on the monthly data: a one-to-one

[2] Note, for example, that on a monthly basis there is a contraction in personal income from June to September 1945, the first contraction after the 1938 trough; on an annual basis the first contraction did not occur until 1948.

TABLE 2

Turning Points in Business Activity, and in Personal Income in Current and in Constant (1935-1939) Prices, 1909-1949

	BUSINESS ACTIVITY		PERSONAL INCOME			
			Current Prices		*Constant prices*	
	Monthly Date	*Calendar Year Date*	*Monthly Date*	*Calendar Year Date*	*Monthly Date*	*Calendar Year Date*
P		1910				
T		1911				
P		1913		1913		1913
T		1914		1914		1914
P		1918				1917
T		1919				
P		1920		1920		
T		1921		1921		1921
P		1923				
T		1924				
P		1926				
T		1927				
P	June 1929	1929	Aug. 1929	1929	Oct. 1929	1929
T	Mar. 1933	1932	Mar. 1933	1933	Mar. 1933	1933
P	May 1937	1937	June 1937	1937	June 1937	1937
T	June 1938	1938	May 1938	1938	May 1938	1938
P	Feb. 1945	1944	June 1945		Jan. 1945	1944
T	Oct. 1945	1946	Sept. 1945		Apr. 1947	1947
P	Nov. 1948	1948	Oct. 1948	1948	Dec. 1948	1948
T	Oct. 1949	1949	Oct. 1949	1949	Oct. 1949	1949

P = peak; T = trough.

Source: Business cycle turns are those in the National Bureau of Economic Research business cycle chronology; personal income turns are based on Appendix A.

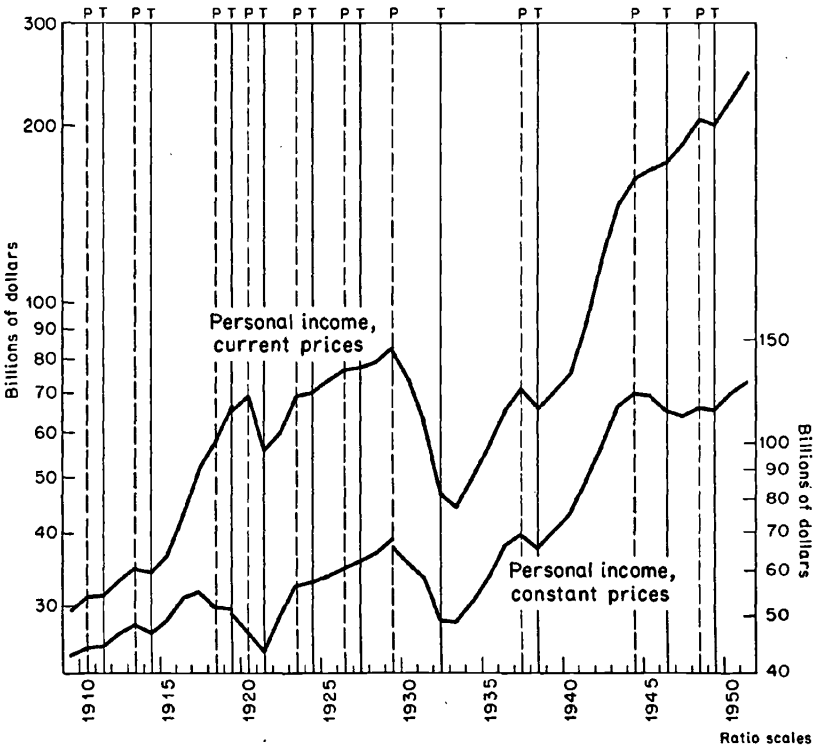
correspondence between cycles in general business and personal income.

Much the same conclusion can be reached when personal income in constant prices is compared with business cycles (Chart 5 and Table 2).[3] Before 1929 the sole difference in turning points between personal income in current and in constant prices (annual data) occurred in the period of World War I and its aftermath. Personal income, whether measured in constant or in current prices, traced only one cycle, but the peak occurred in 1917 in constant prices and in 1920 in current prices. During the 1930's there was no significant difference in the timing of the turns in the two income series (monthly data) (see Chart 4).

[3] For the derivation of personal income in constant prices see Appendix A.

CHART 5

Personal Income in Current and in Constant (1935-1939) Prices, Annual Data, 1909-1951



Broken and solid vertical lines represent business cycle peaks and troughs, respectively.
Source: Tables A-1 and A-4.

In World War II, timing again begins to diverge after the peak in personal income in constant prices, in January 1945 (Chart 4). The subsequent trough in personal income in current prices and in business activity was reached in September or October 1945, but personal income in constant prices continued to decline until April 1947. Thereafter until 1951 all three series had roughly coincident turning points. Thus for more than forty years the turns in personal income are virtually the same whether measured in current or in constant prices except in periods characterized by the rapid and substantial price changes that occur during war and its immediate aftermath.[4]

[4] Since consumers' prices tend to lag, one might expect personal income in constant prices to lead personal income in current prices both at peaks and at

Amplitude of Personal Income Cycles

Chart 1 served to suggest the wide swings in personal income between 1909 and 1949. The amplitude of these movements is measured more precisely in Table 3.

TABLE 3

Amplitude of Specific Cycles in Personal Income in Current and in Constant (1935-1939) Prices, 1909-1949
(*based on cycle relatives*)

PHASE	CURRENT PRICES		CONSTANT PRICES	
	Period	*Amplitude*	*Period*	*Amplitude*
Expansion	1909-1913	+16.7	1909-1913	+11.8
Contraction	1913-1914	−1.8	1913-1914	−3.5
Full cycle		18.5		15.3
Expansion	1914-1920	+67.2	1914-1917	+16.4
Contraction	1920-1921	−25.5	1917-1921	−22.1
Full cycle		92.7		38.5
Expansion	1921-1929	+40.2	1921-1929	+42.1
Contraction	1929-1933	−56.2	1929-1933	−30.4
Full cycle		96.4		72.5
Expansion	1933-1937	+45.3	1933-1937	+33.4
Contraction	1937-1938	−9.1	1937-1938	−5.7
Full cycle		54.4		39.1
Expansion	1938-1948	+99.6	1938-1944	+56.8
Contraction	1948-1949	−2.8	1944-1947	−11.4
Full cycle		102.4		68.2
Expansion			1947-1948	+3.5
Contraction			1948-1949	−.7
Full cycle				4.2

Source: Based on Tables A-1 and A-4.

To measure cyclical amplitudes, we compute the average of the annual figures comprised in a cycle, and express each annual value as a percentage of this average or "cycle base." These percentages we call "cycle relatives." The difference between the cycle relatives representing the peak and the initial trough is the amplitude of

troughs. Timing differences of this sort can be tested only by monthly data, which restricts our comparison to the two decades following 1929. For this period the evidence suggests (Chart 4) that in peacetime the primary determinant of turns in real personal income is the turns in personal income in current prices; in war and postwar inflation the primary determinant becomes the turns in retail prices. For the evidence on the lag of consumers' prices see Daniel Creamer's *Behavior of Wage Rates during Business Cycles* (National Bureau of Economic Research, Occasional Paper 34, 1950, p. 21, note 14).

expansion, and the difference between the cycle relatives representing the terminal trough and the peak is the amplitude of contraction. In this way the amplitude of the rise and that of the fall are both related to a common base and can therefore be directly compared. The full cycle amplitude is the sum of the amplitudes of expansion and contraction after reversing the sign of the latter.

The amplitude of the personal income cycle (current prices) that includes the Great Depression is about as large as those of the two cycles that include war periods. The upward long-term movement is also clearly shown by these measurements. In every cycle, except the one terminated by the Great Depression, the amplitude of the expansion phase is much larger than the amplitude of the contraction phase. The same thing is true when personal income is expressed in constant prices, the 1917-1921 contraction providing the single exception. As one would expect, the full cycle amplitude is much less in constant prices than in current prices. This is not true, however, phase by phase. Whenever the movement of the BLS Consumers Price Index fails to conform in direction with the movement of personal income—i.e. declines during an expansion, as in 1921-1929, or rises during a contraction, as in 1913-1914 and 1944-1947—the amplitude of the constant-price series exceeds that of the current-price series.

Since the personal income total is an aggregate compounded of many different types of income, originating from a variety of sources, the amplitude and other cyclical characteristics of personal income represent an averaging of the cyclical characteristics of its components. These components must be analyzed if we are to gain some understanding of the cyclical behavior of the total. Hence the rest of the study is devoted to the cyclical analysis of some of the more important components.