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Volume Title: Dating Postwar Business Cycles: Methods and Their Application to Western Germany, 1950-67

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Volume Publisher: UMI

Volume ISBN: 0-87014-212-7

Volume URL: <http://www.nber.org/books/mint70-1>

Publication Date: 1970

Chapter Title: Classical German business cycles

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Chapter URL: <http://www.nber.org/chapters/c3269>

Chapter pages in book: (p. 44 - 47)

## Classical German business cycles

What results would have been obtained had classical business cycle analysis been applied to the German data? How many turning points would have been identified and how would their timing compare to our chronology?

Two procedures have been used to ascertain the answers to these questions. The first one consists in applying to non-trend adjusted data the methods used above to obtain the deviation cycles from trend adjusted data. This requires the determination of turning points in the twenty-one indicators proper instead of in their deviations from trend. The resulting indicator cycles are again combined into a diffusion index.

The second procedure, devised by Shiskin not previously used in this paper, derives a composite index from the month-to-month percentage changes of the individual indicators. In order to express all the series in comparable units, the rates of change are standardized before being combined. The standardization is accomplished by adjusting the rates of each series so that its average month-to-month rate, without regard to direction, is 1. The standardized month-to-month percentage changes of the twenty-one indicators are summed for each month and chained into an index with the value for the first month covered set equal to 100.<sup>31</sup>

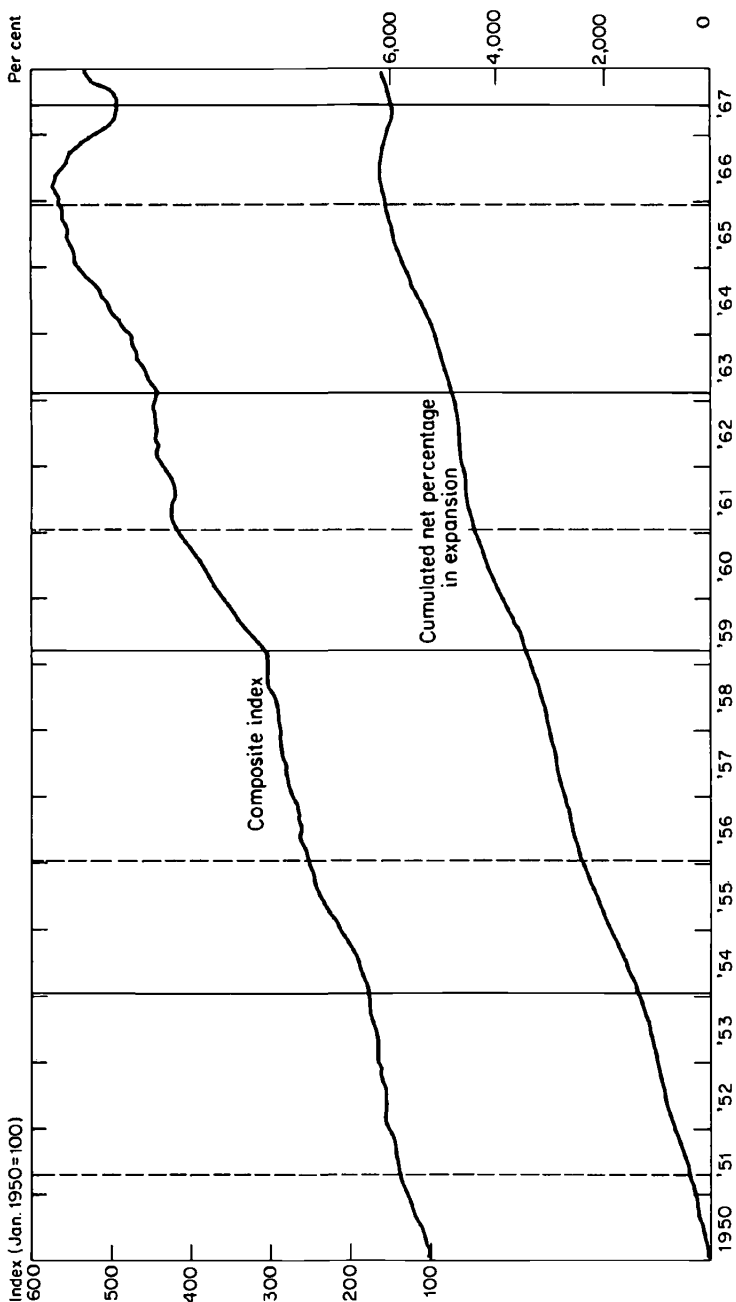
The composite index is more flexible than the diffusion index (Chart 3) because it reflects monthly movements of the indicators while the diffusion index reflects phases in the indicators' cycles. A small decline occurring simultaneously in the majority of indicators may show up as a decline in the composite index but need not do so in the diffusion index because the downward movements of the indicators may not qualify as recession phases. Therefore the chance of identifying a recession is greater with the composite index than with the diffusion index.

However, in our case the composite index concurs with the diffusion index: both failed to record any classical recession in Germany, 1950-66. Despite its greater flexibility the composite index falls in only 30 of the 192 months, 1950-65. Of these thirty months, twenty-three are declines of only one or two months' duration. The only two declines of more than two

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<sup>31</sup>For a detailed description of the derivation of composite indexes, see Julius Shiskin, *Signals of Recession and Recovery: An Experiment with Monthly Reporting*, Occasional Paper 77, New York, NBER, 1961, Appendix A. Also Geoffrey H. Moore and Julius Shiskin, *Indicators of Business Expansions and Contractions*, Occasional Paper 103, New York, NBER, 1967, p. 83.

**CHART 3**  
 Course of the German Economy, 1950-67,  
 Based on Classical Business Cycles Analysis, Twenty-One Indicators



*Net per cent in expansions:* excess of percentage undergoing cyclical expansion over percentage undergoing contraction.

*Composite index:* based upon average of amplitude — adjusted rates of change of twenty-one indicators with January

1950 set equal to 100.

Solid vertical lines indicate business cycle downturns; broken vertical lines, business cycle upturns, based on cycles in indicators' deviations from their trends. See Charts 1 and 2.

## *Classical German Business Cycles*

months (one of three months, one of four months), occurred during the 1961-63 slowdown and both were not only brief but also mild. There is, thus, no evidence of any classical recession until 1966-67.

For this one recession both indexes on Chart 3 give the same trough date, May 1967. But the peak dates vary, the composite index turns down in March 1966 and the diffusion index not until May. As expected, the peaks are later and the trough is earlier than in the trend adjusted chronology.

The absence of recessions prior to 1966 can be seen also in curve C of Chart 1. This shows movements of the diffusion index for classical cycles more or less paralleling those of the indexes for deviations and step cycles (curves A and B), but they are of smaller amplitude. A simultaneous decline of the majority of indicators does not occur until 1966.

The composite index, it should be noted, supports our turning points which in each case mark a distinct change in its slope.

Turning points in individual indicators are marked by dots on Charts A-22 to A-26. Indicators which have practically no upward trend are, of course, expected to turn at about the same time in classical, deviation and step cycles. Indicators with mild trends, or with trends during part of the period may turn at different dates in classical cycles as compared to deviation or step cycles. Those with strong trends show very few turns in classical cycles.

Altogether, in the fourteen and a half years, January 1950 to July 1964, there are only 63 turning points in the classical cycles of the twenty-one indicators as compared to 134 turns in their deviation cycles (Table 6). Nearly all classical cycle turns match deviation cycle turns and nearly half of these matching turns fall in the same month. Significantly, where there are discrepancies, downturns in classical cycles almost always lag behind those in deviation cycles; and practically all upturns in classical cycles lead those in deviation cycles.

All this agrees with our expectations regarding the relations between classical business cycles and cycles in trend adjusted data or in growth rates.

TABLE 6

*Comparison of Turning Points  
in Deviation Cycles (DC) and  
Classical Cycles (CC)  
Twenty-One German Indicators, Jan. 1950-July 1964  
(number of turning points)*

	Downturns and Upturns	Downturns	Upturns
All turns covered			
DC	134	63	71
CC	63	29	34
Matching turns, DC and CC	57	26	31
Exactly coinciding turns, DC and CC	28	11	17
Turn in CC leading turn in DC	13	1	12
Turn in CC lagging turn in DC	16	14	2