

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Trade Balances During Business Cycles: U.S. and Britain Since 1880

Volume Author/Editor: Ilse Mintz

Volume Publisher: NBER

Volume ISBN: 0-87014-381-6

Volume URL: <http://www.nber.org/books/mint59-1>

Publication Date: 1959

Chapter Title: Business Cycles and the United States Trade Balance, 1879-1955

Chapter Author: Ilse Mintz

Chapter URL: <http://www.nber.org/chapters/c7025>

Chapter pages in book: (p. 10 - 38)

points led to the decision to use world imports for our purposes. A discussion of this choice and description of the construction of the series will be found in Section IV. Here it suffices to state that, to account for influences from abroad on foreign trade, global imports seemed the most appropriate of the few available series. More accurately, for the analysis of United States trade, we use turns in imports of the world outside the United States; and, for British trade, we use turns in imports of the world outside Great Britain.

The world chronology is used in combination with national reference cycles. The phases of the latter are classified by simultaneous world cycle phases. We thus distinguish four phase-combinations: two in which world and national economy move in the same directions, and two in which they move in opposite directions. We regard these world reference dates merely as a tool for the analysis of foreign trade. For the study of other types of international activities, different definitions of world cycles may be preferable. We do not claim that our world import cycles represent "true" world cycles. Their justification must lie in the insights they afford us. We found that their use shed far more light on foreign trade cycles than their crude nature would have led us to expect and than can be obtained from the use of the national framework alone.

II. BUSINESS CYCLES AND THE UNITED STATES TRADE BALANCE, 1879-1955

Introduction

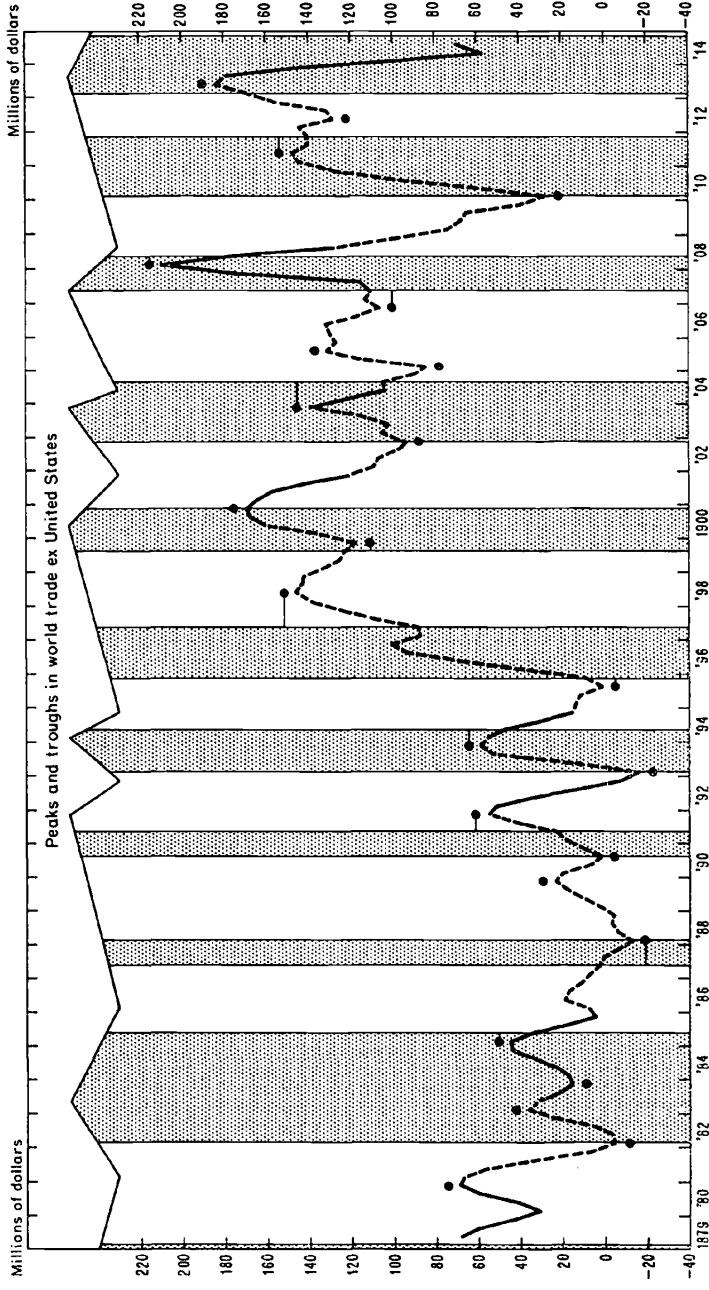
Did the American trade balance fluctuate in cycles over the last seventy years; or over part of that time? If so, what is the relation of such balance cycles to American business cycles? Is it a close or a loose relation; positive or inverse? Do balance turns lead or lag business turns? And what about foreign economic fluctuations: do they affect the American trade balance in a systematic fashion? These are some of the questions which we shall try to answer in this section.

Our data are quarterly totals of the official monthly statistics. These define the United States trade balance as the excess of total exports over general imports.¹ The series has been adjusted for seasonal fluctuations. For comparability to the earlier years of the interwar period, values for 1933 to 1938 have been converted from current dollars into dollars of 1930 parity, i.e. dollars worth 0.048 ounces of gold. This was also necessary for relating the series to world imports, which are measured, until

¹Total exports include re-exports, total imports include imports into warehouses. Both exports and imports are declared f.o.b. values.

Chart 2 *United States, Quarterly, 1879-1914*

TRADE BALANCE IN RELATION TO CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS

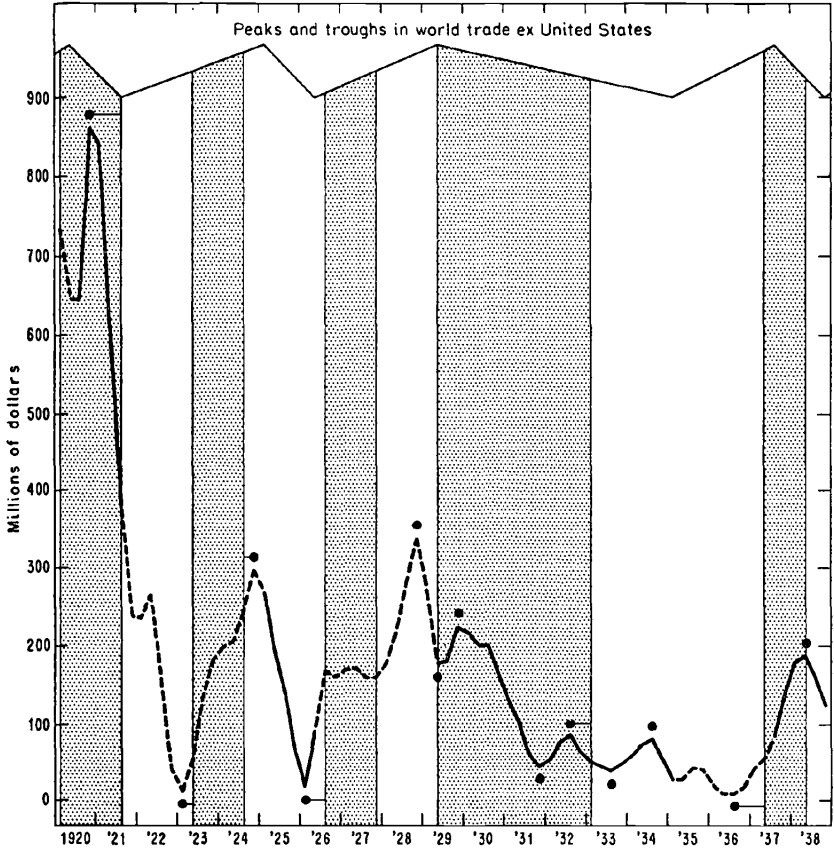


Seasonally adjusted and smoothed by three-quarter moving averages with double weight for center quarter. Broken lines denote expansions in world trade (ex United States), see Table 16. Shaded periods are United States business contractions. Balance of trade turns are marked by dots. When a balance of trade turn is matched with a business cycle turn, a horizontal line indicates the association.

Source: Charts in this Section are based on Tables A-1 and 16.

Chart 3 United States, Quarterly, 1920-1938

TRADE BALANCE IN RELATION TO CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS



Seasonally adjusted and smoothed by three-quarter moving averages with double weight for center quarter.

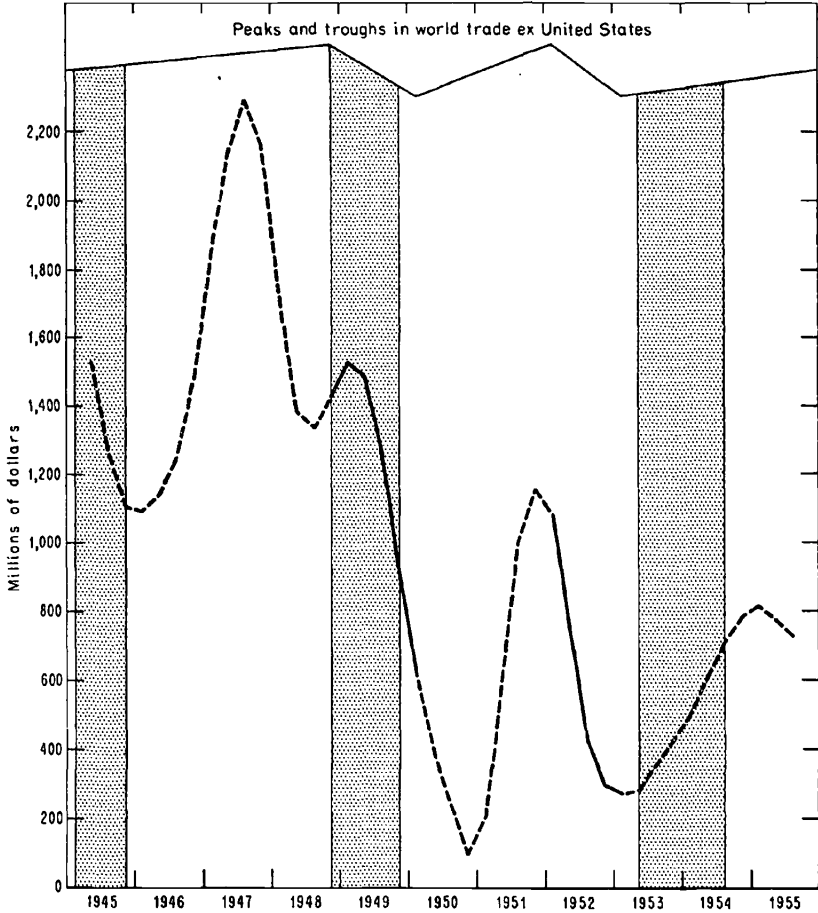
Broken lines denote expansions in world trade (ex United States), see Table 16. Shaded periods are United States business contractions. Balance of trade turns are marked by dots. When a balance of trade turn is matched with a business cycle turn, a horizontal line indicates the association.

World War II, in dollars of 1930 parity. The study covers the years 1879-1955 exclusive of the two World War periods.

An excess of exports over imports characterized the balance during the whole period. A deficit occurred in only 20 of the 252 quarters covered, and 11 of these were before 1891. The export surplus rose in two big steps. Between 1879 and 1895 the quarterly average was around \$23 million; in the next period, 1896 to 1913, and again in the interwar period

Chart 4 *United States, Quarterly, 1945-1955*

TRADE BALANCE IN RELATION TO CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS



Shipments of military equipment under the Mutual Security Program excluded in 1950-1955.

Seasonally adjusted and smoothed by three-quarter moving averages with double weight for center quarter.

Broken lines denote expansions in world trade (ex United States), see Table 16. Shaded periods are United States business contractions.

it was almost five times as large; from 1945 to 1955 the export surplus averaged about \$1 billion per quarter (see Charts 2, 3, 4).² The first

²The range of the surplus in the same four periods was \$113 million, \$264 million, \$492 million, and \$1,487 million.

large rise of the balance was chiefly accounted for by an increase in immigrants' and tourists' remittances;³ that of the interwar and postwar periods by loans and grants, respectively.

Cycles in Exports and Imports. Before studying the movements of the balance, the reader may want to know how the cycles in its components, exports and imports, were related to business cycles. In particular, it might be asked whether the cyclical pattern of the balance cannot be inferred directly from those of its components and hence, whether separate empirical study of the balance is needed. A glance at the behavior of exports and imports refutes this idea, and shows that a wide range of balance patterns would be compatible with those of exports and imports (Chart 5). The latter rise and fall regularly with the tides of business except that they used to expand somewhat earlier than general business in the cycles before World War I. The relation of American exports to business cycles is more complicated. A given change in business activity tends to affect export prices and export quantities in opposite directions. Domestic business expansion, for instance, may be expected to raise export prices and thus to depress export quantities, which may be further reduced as business firms are less eager or even unwilling to sell abroad when domestic business is good. Changes in export values are the result of these opposing forces.

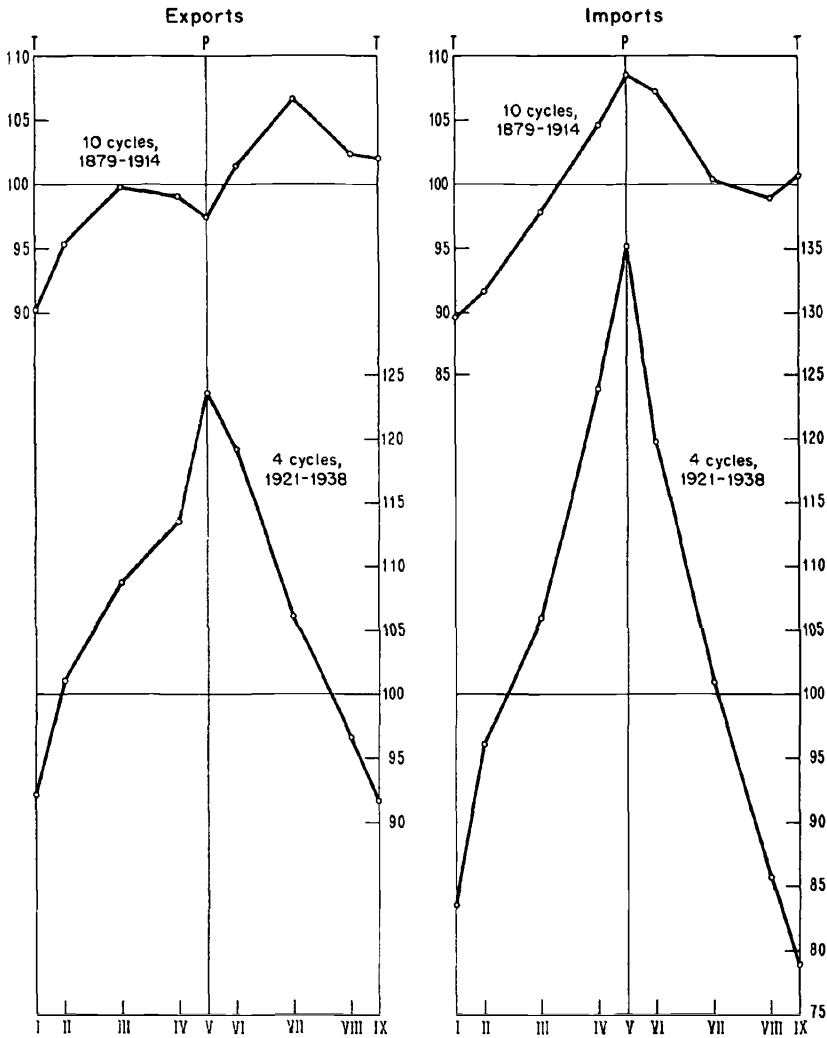
The relationship of exports to business cycles is complicated further by the strong effect of variations in foreign demand and in the supply of agricultural commodities. In some countries, e.g. Great Britain, all these forces may be outweighed by the effect of exports *on* business cycles. But U. S. exports have little influence on U. S. business cycles. Here the combination of the factors mentioned results in what looks like complete cyclical irregularity of exports until 1914: rises and falls are as frequent and as large in business expansions as in contractions. But after World War I there was a shift in the behavior of exports, and since then they have conformed to business cycles.

Evidently balance patterns cannot be inferred from this, either for the earlier or for the later period. When export changes are irregular and imports move with business cycles, as before 1914, the trade balance may move inversely or irregularly. When both exports and imports move with business cycles, as in the interwar period, balance fluctuations might be positive or inverse or irregular. Only by comparing the individual simultaneous export and import movements can we draw inferences about the balance. But this amounts to study of the balance itself.

³See "Balance of the Trade of the United States," by Bullock, Williams, and Tucker in *Review of Economic Statistics*, July 1919.

Chart 5 *United States, 1879-1938*

EXPORTS AND IMPORTS: AVERAGE BUSINESS CYCLE PATTERNS



Dollars of 1930 parity.

Roman numerals indicate business cycle stages, see text.

Domestic Business Cycles and the Trade Balance

High Inverse Conformity. First and foremost, our analysis reveals that the fluctuations in the American trade balance were more regular than is apparent at first glance and than might have been expected. The balance

swings in cycles of 5 to 21 quarters' duration, and these cycles are closely related to United States business cycles.

The regularity of the responses of trade balance movements to cycles in general business is measured by indexes of conformity. We score +100 for every expansion in general business in which the trade balance rises, and -100 when it declines. The algebraic sum of these scores divided by the number of expansions covered is the index of conformity to expansions in general business. The index may vary from +100, signifying perfect positive conformity, to -100, signifying perfect inverse conformity. Conformity to business contractions is measured similarly, +100 being scored for a decline in the trade balance during a business contraction and -100 for a rise. A third index, full cycle conformity, measures the frequency with which the trade balance's rate of change per quarter during a business contraction is algebraically lower than the rate of change during the preceding and following expansions in general business; +100 means that without exception the rate was lower in business contraction.⁴

Our indexes show that the trade balance moved inversely to business cycles. The relationship was close. The conformity index for full cycles, 1879 to 1954, is -70. This means that 23 of 27 comparisons of balance movements in business contractions to those in preceding or following expansions show a greater rise or smaller decline for contraction. The corresponding conformity index for 1879 to 1938 is almost the same: -69 (Table 2). The following discussion refers only to the latter period. The behavior of the balance in the post-World-War-II cycle, 1949 to 1954, will be described separately below. In the preceding cycle, 1945 to 1949, foreign trade movements were still too abnormal after the war to be included here.

The inverse character of the relationship between balance movements and United States business cycles shows up also when we observe the direction of balance movements from stage to stage of business expansions and contractions. To do this we divide each business cycle into nine stages. Stage I represents the initial trough, stages II, III, IV successive thirds of expansion, stage V the peak; stages VI, VII, VIII successive thirds of contraction, and stage IX the terminal trough. Counting the number of rises and declines of the trade balance between successive business cycle stages, we find that about two-thirds of such stage to stage movements of the balance are declines in business expansions (62 per cent) and rises in business contractions (67 per cent).

This is brought out by Chart 6, which serves also to reveal another important aspect of balance fluctuations: the contrast between the con-

⁴For a fuller discussion of indexes of conformity, see A. F. Burns and W. C. Mitchell, *Measuring Business Cycles*, National Bureau of Economic Research, 1946, pp. 31-33.

Table 2 *United States, 1879-1938*

EXPORTS, IMPORTS AND TRADE BALANCE: CHANGE DURING DOMESTIC BUSINESS CYCLES

PERIOD AND BUSINESS CYCLE PHASE	NUMBER OF PHASES COVERED	NUMBER OF QUARTERS COVERED	CONFORMITY INDEXES			Balance of Trade	AVERAGE CHANGE IN BALANCE OF TRADE (millions of dollars of 1930 parity)	
			Exports	Imports	Balance of Trade		Per Cycle Phase	Per Quarter ^a
1879-1913, 1920-1938								
Expansion	14	121	+57	+86	-43	-63.30	-7.29	
Contraction	14	88	+29	+43	-43	+54.75 ^b	+8.64 ^b	
Whole Cycle	14	209	+38	+77	-69			
1879-1913								
Expansion	10	83	+40	+80	-20	-38.67	-4.68	
Contraction	9	53	-11	+11	-78	+50.67	+8.64	
Whole Cycle	9½	136	+11	+67	-78			
1920-1938								
Expansion	4	38	+100	+100	-100	-124.54	-13.14	
Contraction	5	35	+100	+100	+20	+63.90 ^b	+8.82 ^b	
Whole Cycle	4½	73	+100	+100	-50			

Seasonally adjusted. Conformity indexes are constructed by rating a rise during business expansion or fall during contraction plus 100, the opposite change minus 100, and averaging the ratings for all phases covered, see text.

^aWeighted average.

^bExclusive of six quarters ending third quarter, 1921.

Source: Business cycle turns from National Bureau of Economic Research. Balance of trade from Table A-1. Quarterly exports and imports from same source as balance of trade, see notes to Table A-1.

sistent movement of the trade balance in the later stages of expansions and the early stages of contractions, as opposed to its varying direction in the remaining reference cycle stages. Thus in fourteen business expansions the balance fell nine times from the beginning to the mid-point, but twelve times from there to the business peak. In eleven of thirteen business contractions the balance rose in the first half; in four, only in the second half. This contrast between segments of business cycle phases is important, and plays a considerable part in our analysis. Here we note the implication that the high conformity of the balance to business cycles as a whole is due to its behavior around business peaks.

We have described features of balance movements which were characteristic of the whole sixty-year period, since such common features were more prominent than variations between parts of the period. Taking note of such variations now, we find that the conformity index for the balance 1879 to 1913 is considerably higher (-78) than that for 1920 to 1938 (-50). The relatively low index for the interwar period is due mainly to the exceptional character of the cycle 1929 to 1937, in which the balance sank more during depression than during recovery.

Similarly, the main features of the characteristic contrast between directions of balance changes in different segments of business cycle phases are the same before World War I and in the interwar period. In both periods a balance rise is the rule in the two earlier stages of contractions (the balance decline in the Great Depression being the exception in the second period); in both periods also, the balance declines generally between stages III and IV. The direction of balance changes in the first half of expansions, and between stages VII and VIII is rather unstable in both periods. The main difference between the periods is in the last stage before the peak and the last stage before the trough; in both, the balance declined in the first period and rose in the later one, the change before the peak being due to exports and that before the trough to imports. Without underrating this difference we can say that the features common to both periods justify generalizations for the whole sixty-year period.

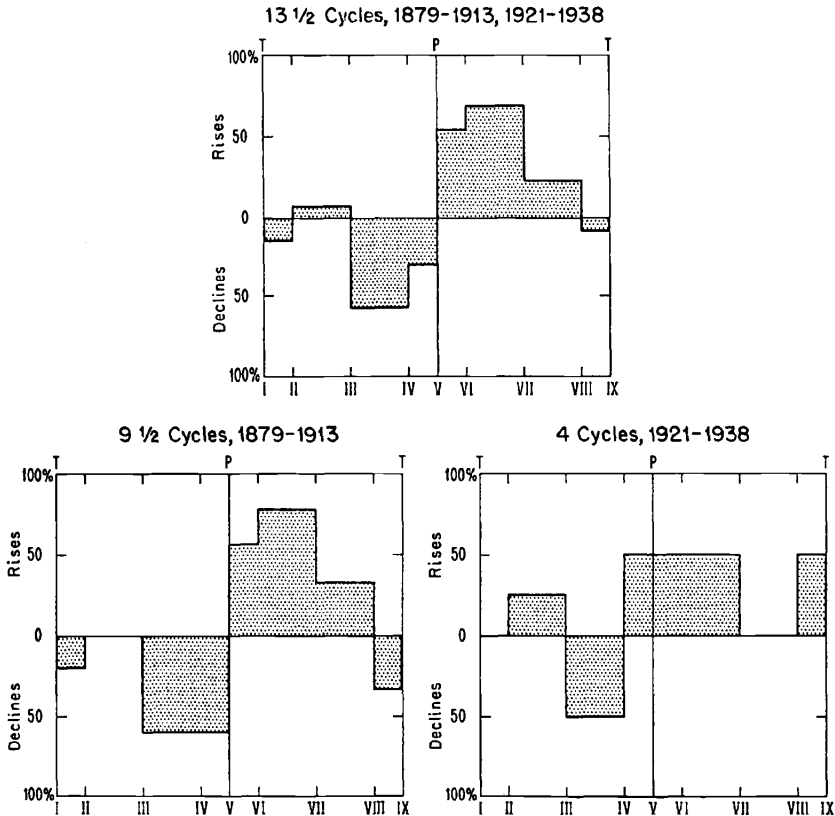
Amplitudes of Balance Changes. Measures of amplitudes of balance changes confirm in general the observations about directions. Amplitudes are the differences in dollars between the quarterly balances at successive reference cycle turning points.⁵

The inverse relation of the balance to United States business cycles is

⁵Since a balance can be positive or negative, the change cannot be expressed as percentage of the average level in a given cycle. This is a disadvantage when amplitudes are averaged for a number of cycles, since no account is taken of the different levels of the balance in different cycles. Measures of absolute amplitudes are thus less meaningful than the usual relative amplitudes, but they are still valuable for comparing balance movements in different phases of business cycles.

Chart 6 *United States, 1879-1938*

TRADE BALANCE: NET NUMBER OF RISES OR FALLS BETWEEN STAGES OF THE DOMESTIC BUSINESS CYCLE
(as percentage of cycles covered)



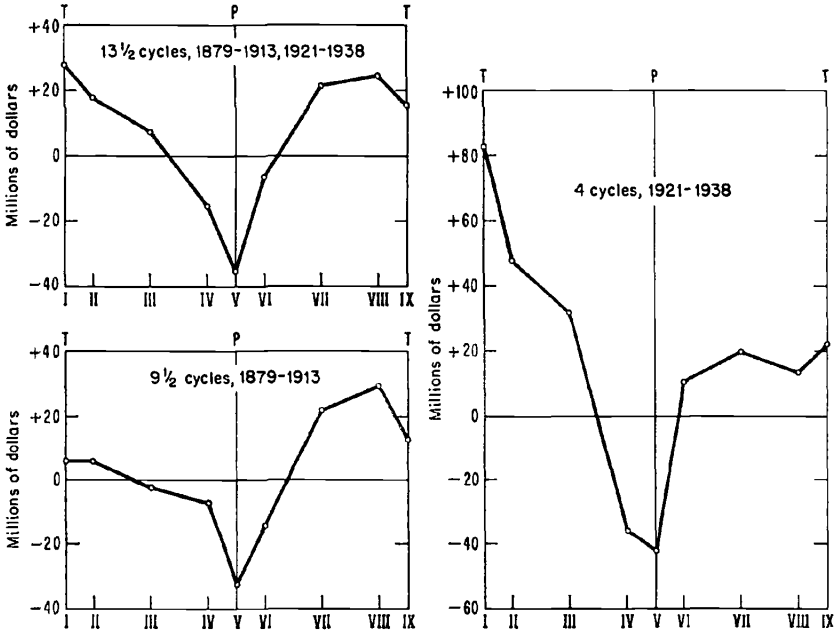
Dollars of 1930 parity.

Roman numerals indicate business cycle stages, see text.

shown by an average balance decline in business expansion amounting to \$63 million and an average rise in contraction of \$55 million. The quarterly rates of change are -\$7.29 for expansion and +\$8.64 for contraction. When we subdivide the business cycle phases and measure the average changes between successive stages of expansions and contractions, we find them consistently inverse except for the last contraction stage. Chart 7 shows how the balance declined from stage to stage of expansion, and rose in the same fashion in contraction. It also shows the same contrast between early and late segments of phases that was revealed above by comparing directions of change. The balance declined on the average

Chart 7 United States, 1879-1938

TRADE BALANCE: AVERAGE BUSINESS CYCLE PATTERNS
(as absolute deviations from cycle averages)



Dollars of 1930 parity.

Roman numerals indicate business cycle stages, see text.

by \$21 million in the first and by \$43 million in the second half of expansion. It rose by \$61 million in the first and fell by \$6 million in the second half of contraction.

Again, many of the features mentioned are common to the pre- and post-1914 periods. In both periods the balance was, on the average, lower at peaks than at troughs; in both it declined from stage to stage of expansion and rose until mid-contraction. Only in the last half of contraction did the balance behave differently in the two periods.

The contrast between earlier and later segments of phases also appears in both periods, though in the second to a lesser extent. Before World War I the balance decline averaged \$8 million in the first and \$30 million in the second half of expansion. In the interwar period the figures are \$51 and \$74 million. Again, before 1914 the balance rose by \$60 million in the first half of contractions and fell by \$9 million in the second half; while in the interwar period the contrast is between a rise of \$62 million and a rise of \$2 million. The smaller difference in the later period reflects the fact that the balance trough led the business peak.

We may conclude that measures of amplitude also indicate sufficient resemblance to justify the notion of a pattern common to both periods.

To summarize the findings to this point: first, the United States trade balance swings in cycles rather than merely oscillating around a trend. Adjustment mechanisms and/or corrective policies did not prevent prolonged movements of the trade balance in one direction, either because such movements were offset by compensating movements in foreign service or capital transactions or because in- or outflows of reserves and liquid assets were permitted to continue for a while, under the pre-World-War-I as well as under later versions of the gold standard.

Second, the high degree of conformity of the balance to domestic business cycles indicates the close association between swings in American business and in foreign trade, a closer association than one might expect in view of the impact of foreign business cycles on foreign trade.^{5a}

Third, the way in which economic expansion and contraction affected the trade balance of the United States is shown by the inverse relation of balance changes to United States business cycles. General expansion depressed, contraction improved the trade balance.⁶ This effect came about not only through positive conformity of imports but also through exports, which showed relatively small changes when they moved with the business cycle or — in four business cycles — even moved inversely.

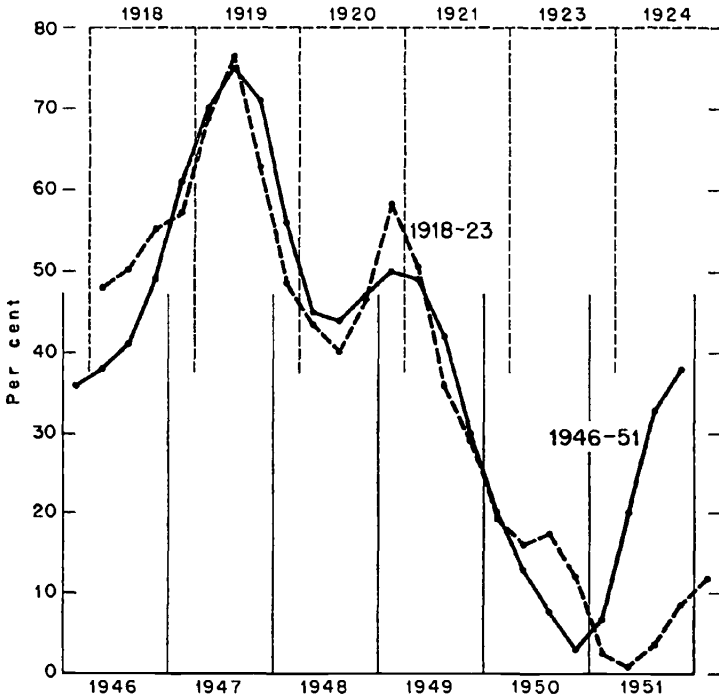
Fourth, we saw that the relations of balance changes to changes in the whole economy are very different in different stages of expansions and contractions. In the later part of contraction and the earlier part of expansion, the United States balance seems to have been relatively independent of cyclical changes in the economy. But in the other half of the business cycle, the movements of the economy seem to have strong and consistent effects on the trade balance. By far the most striking feature of the balance pattern is the impact of a business downturn, which was unfailingly associated with a sharp reversal of the balance. The balance upturn coincided nine times with the business downturn; it lagged twice and led three times by one cycle stage. The dramatic change wrought in the balance by the turn in the economy also shows up clearly in the contrast of an average balance fall by \$20 million in the last stage of United States expansion as against a rise by \$33 million in the first stage of contraction. We shall comment on these features of the balance in the next section, in which the business cycles in foreign countries will be brought into the picture.

^{5a}It might be thought that parallelism of foreign and domestic business cycles explains the close relation of the latter to balance cycles. But the contrary would be more nearly true, since the relation of the balance to domestic cycles is inverse, that to foreign cycles positive. See below, page 23 ff.

⁶We shall see in Section III that the British trade balance, 1882-1913, on the contrary, conformed positively to British business cycles.

Chart 8 *United States, 1918-23, 1946-51*

TRADE BALANCE AFTER TWO WORLD WARS
(as percentage of average exports)



Seasonally adjusted and smoothed by three-quarter moving averages, with double weight for center quarter.
 Curves are placed so that peaks coincide.

The Balance after World War II. Postwar readjustment took much longer in foreign trade than in domestic economic activities, since foreign economies were much more deeply affected by the war than the American economy. Thus the movements of the balance in the first postwar cycle, 1945 to 1949, differed from the previous peace-time pattern. Though periods disturbed by the World Wars are otherwise not included in our observations, we make an exception here and draw attention to the really

striking similarity in the behavior of the American trade balances after World War I and World War II (Chart 8).

The extraordinary flow of American goods which went to fill the gaps torn by the wars reached its crest later after the second war — 1947 as against 1919. But the tempo and relative extent of the subsequent plunge of the balance, reflecting the restoration of more normal conditions abroad, was almost exactly the same in both cases. The decline took three years after World War II and three and one-quarter years after World War I. In both instances it was interrupted after one year by a short rise associated with the business recessions of 1920-21 and 1948-49, which brought curtailments of imports and, in the latter case, expansion of exports also. Not only the duration but also the amplitude of the movement is repeated: in the first year the export surpluses decline from about 75 per cent of the average exports of the period to about 40 per cent; over the next five, six, and nine to ten quarters, to 30, 20 and 5 per cent, respectively. These findings indicate that so far as the behavior of the American trade balance is concerned, what happened after World War II was not so fundamentally new as has been widely believed.

In the cycle 1949 to 1954, which followed the readjustment period, the balance returned to its inverse pattern, as in 1921 to 1924 (Chart 4). Excluding defense shipments, it stood at \$903 million and \$635 million at the troughs of 1949 and 1954; but at only \$202 million at the 1953 peak, which again coincided with the balance trough. (A brief comment on the 1954 to 1958 cycle will be found on page 79.)

World Cycles and the United States Trade Balance

We shall now consider the effects of foreign business cycles on the American trade balance. Did such effects run with or counter to those of domestic cycles? How regular are they, and how large?

To answer these and similar questions we make use of the world cycle chronology which we developed for this purpose and which is described in detail in Section IV. Here it suffices to state that our world reference dates are turning points in imports of the world outside of United States. Using the world turning points in combination with United States reference dates, we subdivide domestic cycle phases according to the simultaneous world cycle phase. Thus we distinguish between those parts of United States expansions which coincide with world expansions (co-expansions) and those parts which are accompanied by world contractions (counter-expansions); a similar division is applied to United States contractions.

How can we expect the balance to behave in these four phase combina-

tions? Assuming that imports move with the importing country's business cycles, we should find large and regular balance movements in counter-phases when domestic and world cycles push exports and imports in opposite directions. In co-phases, however, when the world cycle pulls exports in the same direction as the domestic cycle pulls imports, balance changes are likely to be smaller and may be in either direction depending on the relative strength of the opposing forces.

The following analysis of the actual balance movements in combined world and domestic cycle phases covers a somewhat shorter period than that of domestic cycles, because the basic series on world imports could not be carried back beyond 1881. Another difference between balance measures for domestic and for combined cycles is that the latter are derived from a smoothed form of the series. (The briefness of some of the combined cycle phases made it advisable to reduce erratic movements. A three-quarter moving average with the quarters weighted one, two, one, respectively, was used for this purpose.)

Contrast between Co- and Counter-Phases. The expected contrast between co- and counter-phases is strikingly revealed by Tables 3 and 4. We see that, from 1881 to 1938, the balance rose in nine out of sixteen co-expansions, but always fell in counter-expansions; likewise, the regular rise in counter-contractions contrasted sharply with the alternate ups and downs of co-contractions.

The effect of world cycles also is clearly reflected in measures of average balance changes in the same table. In co-phases, change was small: an average decline of \$3.3 million in co-expansion quarters and a rise of \$0.2 million in co-contraction. In counter-phases, on the other hand, average balance movements were large: down \$15.6 million per quarter in counter-expansion and up \$12.5 million in counter-contraction.

Thus, when the United States economy and world imports moved in the same direction, balance changes were irregular. On the contrary, the balance reacted with amazing regularity to periods when the United States economy was out of step with the rest of the world.⁷ As far as we can tell to date, this reaction is still the same after World War II as it was seventy-odd years ago, despite the great changes in the domestic economy and in the international role of the United States.

The contrast between co- and counter-phases probably explains in part why statements in the literature on balance changes are contradictory. Some authors have co-expansion in mind when they speak of "expansions"; others, counter-expansion. Actually, by our definition, over half

⁷This regularity may be better appreciated when it is taken into consideration that trade balances can also show quite different patterns. See the opposite behavior of the British balance, 1880-1913, described in Section III.

the quarters in United States contractions, 1881-1954, were counter-contractions, while counter-expansions occupied only about one-fourth of the quarters covered by United States expansions.

Counter-Phases. More detailed study of balance movements in counter-phases confirms what the import conformity assumption has led us to expect. Rising exports contributed to each of the twelve balance rises in counter-contractions, including 1953-54, while falling imports helped in nine. Similarly, the balance decline which took place in each of the counter-expansions was due both to falling exports and rising imports. The exception, characteristically, comes in the 1930's. From 1933 to 1935 imports fell despite the business recovery. The balance declined, nevertheless, due to the still larger fall in exports. In the counter-expansions of the 1950's, the balance behaved in the usual way, falling steeply due to falling exports and rising imports.

Co-Phases. The average balance pattern in co-phases can also be explained by the import conformity assumption. But the latter is not sufficient to account for variations between balance movements in individual co-expansions and co-contractions; here another and somewhat unexpected factor plays a role. This is the different impact which — as already suggested by the cycle pattern of the balance — different *stages* of United States expansions and contractions had on foreign trade. The analysis which follows will show that the behavior pattern of the balance was of a different type when, in a given world phase, the American expansion or contraction was in its earlier stages than when it was approaching its end.

The Trade Balance in Different Segments of Co- and Counter-Phases, 1881-1938

We subdivide the co- and counter-phases into periods covering the first and periods covering the second half of an American expansion or contraction. For instance, we distinguish times when world expansion coincided with the first half of an American expansion from times when world expansion coincided with the second half. We deal, thus, with eight types of cyclical situations. Such fine subdivisions — we count seventy — are brief, of course, averaging a little less than three quarters; twenty-one lasted less than two quarters.

It is surely remarkable, then, that over such brief periods, regularities of balance movements are not swamped by random forces and that they emerge as clearly as they do in Table 5. The impact of world and domestic cycles appears strikingly in the subdivisions. But in addition the new measures reveal the large differences between balance changes in the two segments of co- and counter-phases.

Table 3 United States, 1881-1954

EXPORTS, IMPORTS AND TRADE BALANCE: CHANGE DURING CO- AND COUNTER-PHASES OF CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS

	NUMBER OF RISES OR FALLS				WEIGHTED AVERAGE CHANGE PER QUARTER (millions of dollars ^a)	
	Domestic Expansion		Domestic Contraction		Domestic Expansion	Domestic Contraction
	R	F	R	F		
1881-1913, 1920-1938						
Exports						
World Expansion	14	2	11	2	+10.1	+8.0
World Contraction	0	7	0	8	-7.0	-33.1 ^b
Imports						
World Expansion	14	2	4	9	+13.5	-4.9
World Contraction	6	1	3	5	+6.5	-33.2 ^b
Trade Balance						
World Expansion	9	7	11	2	-3.3	+12.5
World Contraction	0	7	4	4	-15.6	+0.2 ^b
1881-1913						
Exports						
World Expansion	9	2	9	1	+5.5	+8.2
World Contraction	0	5	0	5	-7.0	-7.5
Imports						
World Expansion	10	1	4	6	+6.6	-2.1
World Contraction	5	0	3	2	+6.7	-6.9
Trade Balance						
World Expansion	5	6	9	1	-1.7	+10.5
World Contraction	0	5	3	2	-15.7	+1.9
1920-1938						
Exports						
World Expansion	5	0	2	1	+21.4	+7.4
World Contraction	0	2	0	3	-7.0	-57.3 ^b
Imports						
World Expansion	4	1	0	3	+30.6	-14.6
World Contraction	1	1	0	3	+6.2	-56.2 ^b
Trade Balance						
World Expansion	4	1	2	1	-7.1	+19.4
World Contraction	0	2	1	2	-15.4	-1.4 ^b

(continued on next page)

Table 3 (cont.)

	NUMBER OF RISES OR FALLS				WEIGHTED AVERAGE CHANGE PER QUARTER (<i>millions of dollars</i> ^a)	
	Domestic Expansion		Domestic Contraction		Domestic Expansion	Domestic Contraction
	R	F	R	F		
1948-1954						
Exports						
World Expansion	2	0	1	0	+138.3	+47.5
World Contraction	0	2	0	1	-168.6	-148.3
Imports						
World Expansion	2	0	0	1	+92.2	-43.2
World Contraction	2	0	0	1	+50.5	-23.2
Trade Balance						
World Expansion	2	0	1	0	+53.7	+85.1
World Contraction	0	2	0	1	-224.1	-126.2
	NUMBER OF QUARTERS COVERED					
	Domestic Expansion	Domestic Contraction		Domestic Expansion	Domestic Contraction	
1881-1913, 1920-1938			1920-1938			
World Expansion	86	49	World Expansion	25	11	
World Contraction	27	40	World Contraction	13	23	
1881-1913			1948-1954			
World Expansion	61	38	World Expansion	9	5	
World Contraction	14	17	World Contraction	5	4	

Co-phases: Periods when world cycle and domestic business cycle move in same direction.

Counter-phases: Periods when world cycle and domestic business cycle move in opposite direction.

Seasonally adjusted and smoothed by three-quarter moving averages with double weight for center quarter.

^a1881-1938 in dollars of 1930 parity.

^bExclusive of five quarters ending third quarter, 1921.

Source: Same as Table 2. World chronology, see text, Section IV.

Table 4 *United States, 1881-1954*

TRADE BALANCE: CHANGE DURING INDIVIDUAL CO- AND COUNTER-PHASES OF CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS (millions of dollars)^a

TERMINAL QUARTER OF CYCLE PHASE	CO-EXPANSION		COUNTER- EXPANSION		COUNTER- CONTRACTION		CO-CONTRACTION	
	<i>Number of Quarters</i>	<i>Change per Quarter</i>	<i>Number of Quarters</i>	<i>Change per Quarter</i>	<i>Number of Quarters</i>	<i>Change per Quarter</i>	<i>Number of Quarters</i>	<i>Change per Quarter</i>
1882/I	4	-18.0						
1883/II					5	+7.2		
1885/II							8	+0.4
1886/I			3	-9.0				
1887/II	5	-1.0						
1888/I					3	-5.0		
1890/III	10	+1.4						
1891/II					3	+7.6		
1891/IV	2	+15.4						
1892/IV			4	-16.0				
1893/I	1	-7.2						
1894/I					4	+17.9		
1894/II							1	-7.2
1894/IV			2	-16.4				
1895/IV	4	-1.4						
1897/II					6	+13.1		
1899/III	9	+3.9						
1900/II					3	+12.4		
1900/IV							2	+4.7
1901/IV			4	-12.4				
1902/IV	4	-6.6						
1903/IV					4	+11.4		
1904/II							2	-18.2
1904/III					1	+1.8		
1907/II	11	+0.5						
1908/II							4	+15.9
1908/III			1	-46.6				
1910/I	6	-16.7						
1911/IV					7	+16.1		
1913/I	5	+6.0						
1913/III					2	+4.5		

(continued on next page)

Table 4 (cont.)

TERMINAL QUARTER OF CYCLE PHASE	CO-EXPANSION		COUNTER- EXPANSION		COUNTER- CONTRACTION		CO-CONTRACTION	
	<i>Number of Quarters</i>	<i>Change per Quarter</i>	<i>Number of Quarters</i>	<i>Change per Quarter</i>	<i>Number of Quarters</i>	<i>Change per Quarter</i>	<i>Number of Quarters</i>	<i>Change per Quarter</i>
1921/III							5	-53.3
1923/II	7	-46.2						
1924/III					5	+38.0		
1925/I	2	+12.1						
1926/II			5	-35.1				
1926/III	1	+72.0						
1927/IV					5	-1.2		
1929/II	6	+3.1						
1933/I							15	-8.6
1935/I			8	-3.0				
1937/II	9	+3.5						
1937/III					1	+29.2		
1938/II							3	+34.2
1949/IV							4	-126.2
1950/I			1	-309.8				
1952/I	8	+59.1						
1953/I			4	-202.6				
1953/II	1	+9.9						
1954/III					5	+85.1		

Co-phase: Periods when world cycle and domestic business cycle move in same direction.

Counter-phase: Periods when world cycle and domestic business cycle move in opposite direction.

Seasonally adjusted and smoothed by three-quarter moving average with double weight for center quarter.

^a1881-1938 in dollars of 1930 parity.

Source: Same as Table 2. World chronology, see text, Section IV.

Table 5 *United States, 1881-1938*

EXPORTS, IMPORTS AND TRADE BALANCE: CHANGE DURING SUBDIVISIONS OF CO- AND COUNTER-PHASES OF CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS

	NUMBER OF RISES OR FALLS							
	<i>Domestic Expansion</i>				<i>Domestic Contraction</i>			
	First Half		Second Half		First Half		Second Half	
	R	F	R	F	R	F	R	F
Exports								
World Expansion	10	2	11	3	11	0	8	3
World Contraction	0	7	0	2	0	5	0	8
Imports								
World Expansion	9	3	12	2	3	8	5	6
World Contraction	6	1	2	0	0	5	3	5
Trade Balance								
World Expansion	8	4	3	11	10	1	7	4
World Contraction	0	7	0	2	3	2	3	5

WEIGHTED AVERAGE CHANGE PER QUARTER
(millions of dollars of 1930 parity)

	<i>Domestic Expansion</i>		<i>Domestic Contraction</i>	
	First Half	Second Half	First Half	Second Half
Exports				
World Expansion	+14	+8	+10	+4
World Contraction	-6	-10 ^a	-53 ^b	-21 ^c
Imports				
World Expansion	+13	+14	-8	0
World Contraction	+6	+8 ^a	-59 ^b	-16 ^c
Trade Balance				
World Expansion	+2	-6	+17	+5
World Contraction	-15	-18 ^a	+6 ^b	-3 ^c

Co-phases: Periods when world cycle and domestic business cycle move in same direction.

Counter-phases: Periods when world cycle and domestic business cycle move in opposite direction.

Subdivisions of co- and counter-phases: Periods when first half of domestic cycle phase moves in the direction of the world cycle are distinguished from periods when the second half of the domestic cycle phase moves in the direction of the world cycle. Counter-phases are treated in the same manner.

Seasonally adjusted, and smoothed by three-quarter moving averages with double weight for center quarter.

^aIncludes only two phases.

^bExclusive of two quarters ending fourth quarter, 1920.

^cExclusive of three quarters ending third quarter, 1921.

Source: Same as Table 2. World chronology, see text, Section IV.

Consider, for example, co-expansion. We count twelve instances when world expansion and the first half of a domestic expansion occurred simultaneously. In eight of these the balance improved, and its average change was an increase. But when the domestic expansion went through its later stages, the balance fell in eleven of fourteen instances despite continued growth of world trade.

Again, the large and regular rises in the balance during the first half of United States contractions accompanied by world expansion are in contrast to the irregular movements and small average rise during the second half. A similar difference between the two segments characterizes co-contractions. The only phase where it does not appear is counter-expansion. However, our observations include only two instances of the second segment of this phase.

Co- and counter-phases include unequal portions of early and late segments. For instance, about 40 per cent of co-expansion quarters, but 80 per cent of counter-expansion quarters occur in the first half of American expansions. Consequently, comparisons between balance behavior in co- and counter-phases must take account of differences in such behavior in earlier as compared to later phase segments. We shall therefore review the cyclical behavior of the balance in the light of these findings.

Expansions. We noted above that in co-expansions the balance sometimes rose and sometimes fell. Rises were more frequent (nine against seven declines) but smaller, so that the average quarterly change was a decline of \$1.7 million before World War I, and of \$7.1 million in the interwar period. This behavior seems easily explained, as import rises due to domestic expansion sometimes exceed and sometimes fall short of export rises caused by world expansion. But the more detailed analysis reveals that this is not the whole story.

Contrary to what the import conformity assumption might have led us to expect, we find that the irregular behavior of the balance in co-expansion is confined to early stages of United States expansions and that the direction of balance movements was quite regular in periods where a world expansion coincided with the second half of the United States expansion (Tables 6, 7).

Before World War I, 1881 to 1913, the balance fell in nine of the later segments and rose in one only. The average change was a decline of \$5 million per quarter. In the interwar period, the average quarterly decline was \$10 million. There were two instances of balance rises in this period. The first consists of a single quarter in 1926 when the British coal strike caused a steep balance rise. The second exception is the expansion of the 1930's, when the balance rose right up to the peak of 1937. In the expansion which preceded the 1948 peak — the only period of this type after World War II — the balance again fell steeply.

Table 6 United States, 1881-1938

EXPORTS, IMPORTS AND TRADE BALANCE: CHANGE DURING COUNTER-EXPANSIONS AND SUBDIVISIONS OF CO-EXPANSIONS OF CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS

	NUMBER OF QUARTERS	NUMBER OF RISES OR FALLS						WEIGHTED AVERAGE CHANGE PER QUARTER (millions of dollars of 1930 parity)			
		Exports		Imports		Trade Balance		Exports	Imports	Trade Balance	
		R	F	R	F	R	F				
1881-1913											
World Expansion and:											
1st half of U.S. expansion	24.5	7	1	6	2	5	3	+10	+6	+3	
2nd half of U.S. expansion	36.5	7	3	9	1	1	9	+2	+7	-5	
World Contraction and:											
U.S. expansion	14.0	0	5	5	0	0	5	-7	+7	-16	
1920-1938											
World Expansion and:											
1st half of U.S. expansion	9.5	3	1	3	1	3	1	+23	+29	-2	
2nd half of U.S. expansion	15.5	4	0	3	1	2	2	+20	+31	-10	
World Contraction and:											
U.S. expansion	13.0	0	2	1	1	0	2	-7	+6	-15	

Co-phases: Periods when world cycle and domestic business cycle move in same direction.

Counter-phases: Periods when world cycle and domestic business cycle move in opposite direction.

Subdivisions of co- and counter-phases: Periods when first half of the domestic cycle phase moves in the direction of the world cycle are distinguished from periods when the second half of the domestic cycle phase moves in the direction of the world cycle. Counter-phases are treated in the same manner.

Seasonally adjusted, and smoothed by three-quarter moving averages with double weight for center quarter.

Source: Same as Table 2. World chronology, see text, Section IV.

Table 7 *United States, 1881-1938*

TRADE BALANCE: CHANGE DURING INDIVIDUAL COUNTER-EXPANSIONS AND SUBDIVISIONS OF CO-EXPANSIONS OF CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS

(millions of dollars of 1930 parity)

WORLD EXPANSION AND 1ST HALF OF U.S. EXPANSION		WORLD EXPANSION AND 2ND HALF OF U.S. EXPANSION		WORLD CONTRACTION AND U.S. EXPANSION	
<i>Terminal Quarter</i>	<i>Change Per Quarter in Trade Balance</i>	<i>Terminal Quarter</i>	<i>Change Per Quarter in Trade Balance</i>	<i>Terminal Quarter</i>	<i>Change Per Quarter in Trade Balance</i>
1886/II	+12	1882/I	-18	1886/I	-9
1889/II	+4	1887/II	-4	1892/IV	-16
1891/IV	+15	1890/III	-2	1894/IV	-16
1895/I	-1	1893/I	-7	1901/IV	-12
1898/III ^a	+13	1895/IV	-2	1908/III	-47
1906/I ^a	+4	1899/III	-5	1926/II	-35
1909/II ^a	-20	1902/IV	-7	1935/I	-3
1912/III ^a	-4	1907/II	-3		
1922/III ^a	-48	1910/I	-13		
1925/I	+12	1913/I	+16		
1928/III	+40	1923/II	-45		
1935/II	+1	1926/III	+72		
		1929/II	-34		
		1937/II	+4		
AVERAGE, 1881-1913					
Unweighted	+3		-4		-20
Weighted	+3		-5		-16
AVERAGE, 1920-1938					
Unweighted	+1		-1		-19
Weighted	-2		-10		-15
CONFORMITY INDEX (TO U.S. BUSINESS CYCLES), 1881-1938					
	+33		-57		-100

Co-phases: Periods when world cycle and domestic business cycle move in same direction.

Counter-phases: Periods when world cycle and domestic business cycle move in opposite direction.

Subdivisions of co- and counter-phases: Periods when first half of the domestic cycle phase moves in the direction of the world cycle are distinguished from periods when the second half of the domestic cycle phase moves in the direction of the world cycle. Counter-phases are treated in the same manner.

Seasonally adjusted and smoothed by three-quarter moving averages with double weight for center quarter.

^aAveraged with the preceding quarter.

Source: Same as Table 2. World chronology, see text, Section IV.

Thus, over a period of sixty-seven years, world expansions failed, with only three exceptions, to bring about an improvement of the American trade balance during the later part of American expansions. On the contrary, when the first half of domestic expansion coincided with world expansion, the balance *rose* on the average by \$3 million per quarter, 1881 to 1913, and declined moderately (by \$2 million per quarter) in the interwar period. This latter decline must be compared to the \$10 million fall in the second half of domestic expansions coinciding with world expansions.

A count of the number of quarters with balance rises in co-expansions gives similar results (Table 8). Within the last three quarters before peaks, a rising balance was the exception: from 1882 to 1929 it occurred in only eight of thirty-five such quarters. During the earlier part of expansions, however, between the trough and three quarters before the peak, 57 per cent of all changes were rises.

Table 8 United States, 1881-1929

TRADE BALANCE: CHANGE DURING SUBDIVISIONS OF CO- AND COUNTER-PHASES OF CYCLES IN WORLD TRADE AND DOMESTIC BUSINESS

	UNITED STATES CONTRACTION			UNITED STATES EXPANSION		
	Total	Counter- Contraction	Co- Contraction	Total	Counter- Expansion	Co- Expansion
Percentage of Quarters with Rising Balance in:						
Whole phase	64	71	50	35	11	42
Phase exclusive of 3 terminal quarters	76	81	62	44	7	57
3 terminal quarters	53	59	43	23	25	23
Number of All Quarters in:						
Whole phase	70	48	22	96	19	77
Phase exclusive of 3 terminal quarters	34	26	8	57	15	42
3 terminal quarters	36	22	14	39	4	35

Co-phases: Periods when world cycle and domestic business cycle move in same direction.

Counter-phases: Periods when world cycle and domestic business cycle move in opposite direction.

Seasonally adjusted and smoothed by three-quarter moving averages with double weight for center quarter.

Source: Same as Table 2. World chronology, see text, Section IV.

Though the assumption of import conformity would hardly have led us to expect the contrast between the two halves of United States expansions, it is not necessarily incompatible with this contrast. The association of balance changes with United States expansion stages might be due to the association of the latter with relative amplitudes of world and United States expansions. In other words, if United States expansions in their first halves had been relatively weaker than in their second halves, compared to simultaneous world expansions, this could account for the different behavior of the balance. Since it is not likely that the rate of world expansion would vary regularly with the stages of United States expansion, the reason for such systematic change in the ratio of world to United States expansion would have to lie in regular acceleration of the latter. But such acceleration did not take place. Mitchell concluded from his study of thirty-four comprehensive series, of which twenty reach back to 1891, and earlier, that the rise in the second half of expansion is for most series less than in the first half; and that "in general the pace of expansion slackens before recession."⁸ Abramovitz concludes for the interwar period that ". . . total output and business activity tend to begin a period of serious retardation in growth or decline before the turning point in business. The interval is usually many months before the end of the phase and is always a considerable fraction of the phase."⁹ Thus the contrast between balance movements in earlier and later parts of American expansions cannot be attributed to variations in the ratio of domestic to foreign expansions. The fact is that the balance decline in the second segment of United States expansion is due partly not to accelerated rise of imports but to reduced increase of exports;¹⁰ thus another factor must be decisive.

The effect of the later part of the United States expansions on her exports is the clue to the fall in the trade balance in late expansion. But why should the development of exports in the later stages of domestic prosperity be less favorable than in the earlier one? Table 9 shows clearly what happened in ten expansions before World War I. In the first half of American expansions export prices were stable; but they begin to climb as the rising domestic demand gradually overtook the growth in production. This price rise must have hampered export sales. In addition, the pressure of domestic demand may also reduce exports directly as delivery periods are stretched, credit is harder to get and more expensive, and producers' interest in exports lags. Thus the large rise in export quanti-

⁸Wesley C. Mitchell, *What Happens during Business Cycles: A Progress Report*, National Bureau of Economic Research, 1951, p. 299.

⁹*Inventories and Business Cycles*, National Bureau of Economic Research, 1950, p. 335. Cf. also the more detailed statement on p. 378.

¹⁰This holds for the expansion after World War II also.

Table 9 United States, 1879-1913

EXPORTS: CHANGE IN PRICE AND QUANTITY DURING FIRST AND SECOND HALVES OF DOMESTIC BUSINESS EXPANSIONS

	EXPORT PRICE	EXPORT QUANTITY
Average Change per Quarter as Per Cent of Average Level in Cycle		
First half of expansion	+0.04	+2.10
Second half of expansion	+1.30	-1.81
Conformity Index		
First half of expansion	-20	+80
Second half of expansion	+80	-40

Source: Unpublished National Bureau of Economic Research quarterly indexes.

ties typical for the first half of expansion may be turned into a decline during the second half.

In the interwar period the pattern of exports is less clear. In the expansions 1924 to 1926, and 1927 to 1929, they behaved roughly as in the prewar period: the rise in their value slowed down in the second half of the expansion. The retardation before the peak of 1926 also was associated again with price movements. Though the index of total export prices fell, due to the drop in farm prices, prices of manufactured exports after declining in the first part of the expansion turned upward in the second. The slower growth of export quantities in the second half of the expansion 1927 to 1929, is exceptional, however, in that it was not associated with rising prices; in fact, prices of manufactured exports declined in this case.

The depressing effect of the late stages of American expansions on exports was particularly strong in the case of raw cotton exports. The quantity of cotton exports rose ten times in the first half, but only four times in the second half of fourteen American business expansions. The price of cotton, on the other hand, rose six times in the first and eleven times in the second half of these same expansions. The result was that the value of cotton exports showed ten rises and four declines in the first half, as against four rises and ten declines in the second half of expansions.

The expansion of the 1930's presents an entirely different picture. Here exports grew more than imports throughout the phase, and the rise in both export prices and quantities was greater in its second half. This

reflects the very peculiar character of an expansion in which prices rose sharply while resources were far from full employment.

In summary, we distinguish three types of periods within United States expansions. First are counter-expansions, when the balance always declined as world contraction made exports shrink. Second are those parts of co-expansions which include the later halves of United States expansions. Here the balance fell eleven times out of fourteen, the major exception being the depression of the 1930's. The decline is due, at least in part, to the unfavorable effect of late domestic expansion on export growth. Finally, in periods where world expansion and earlier halves of United States expansions coincided, the balance sometimes rose vigorously. Thus, what looks at first like rather irregular behavior of the balance in expansions turns out to be quite regular when the effects of world cycles and of the *stages* of domestic expansion are taken into consideration. The view that the United States balance rises in expansions fits only our third type of period and the exceptional expansion of the 1930's.

Contractions. The balance rose in four of the eight co-contractions and fell in the others. What could be more plausible than to surmise that in four cases the decline in imports caused by the American depression exceeded the fall in exports caused by world depression, while in the other four the reverse happened? Again, however, this simple explanation does not fit well except for the balance decline of the Great Depression. Two of the other such declines occurred in very short phases before World War I and were due not only to a drop in exports but also to the rise in imports which typically preceded domestic troughs in this period. The fourth balance fall in co-contraction was due to the readjustment of exports after World War I. That falling balances in contractions are partly due to rising imports, not to falling exports, suggests what will be confirmed below, that the contrast between co- and counter-contractions is not due entirely to the impact of world cycles on exports.

Instead, the failure of the balance to improve in some co-contractions is associated with the domestic business cycle. As Table 5 shows, the contrast between balance changes in the earlier and later parts of domestic contractions was as great as the contrast due to world cycles. When world trade shrank, and the American contraction was in its later stages, the balance fell an average of \$3 million per quarter. But in the earlier part of the contraction it *rose* \$6 million despite falling world trade. This is about the same rise as achieved in the later segment with world expansion. This varying behavior of the balance in the two segments of American contractions explains in part the contrast between co- and counter-phases which at first glance would be attributed to the world

cycle. The relatively small balance rise in co-contractions is partly due to the relatively large part the second segment of contraction has in these phases. It is thus due partly to the pending revival at home and its effect on imports rather than to world contraction.

The contrast between the two parts of contraction is also shown in Table 8. Here the percentage of quarters with balance rises in periods of fixed duration – namely, the last three quarters before domestic troughs – is compared to that in the rest of domestic contractions.¹¹ In each world phase the balance movements are again found to differ according to the stage of the American contraction. These differences are not less than those, shown in each stage of American contractions, between periods of world expansion and periods of world contraction.

The balance rose in 81 per cent of the quarters in early parts of counter-contractions and in only 59 per cent of those preceding the trough. In co-contractions the contrast is between 62 and 43 per cent. Thus, this measure also indicates that the balance declined more often with expanding world trade when domestic contraction approached its end than it declined with falling world trade when domestic contraction was in its earlier stages.

That the balance declined in half of the quarters preceding United States troughs helps to answer the question whether United States upturns led those of the rest of the world or not. It indicates that favorable effects of American revivals on the rest of the world may have preceded the business cycle troughs, and that world recovery thus may have started in the United States even when United States cycle troughs did not lead those abroad.

In sum, we can say that a large part of the improvement of the American trade balance in American business contractions was due to the frequent simultaneous rise in world trade.¹² However, even when world trade contracted, the average balance change in the *first* half of American contractions was an increase.

The exception to all this was the depression of the early thirties, when the sudden termination of American foreign lending, the erection of trade barriers abroad, the British devaluation, etc. caused a most unusual fall in United States exports.¹³ This exceptional case is, until 1938, the only one which supports the view that falling exports typically cause the American balance to decline in depressions.

¹¹We terminate the period in 1929 because of the exceptional character of the contraction 1929 to 1933 (see below).

¹²From 1881 to 1913 the average rise in co-contractions was less than one-fifth of that typical for counter-contractions.

¹³The balance fall in the co-contraction of 1949 is of the same nature as that of 1920-21, i.e. due to postwar readjustments.