Volume Title: American Exports During Business Cycles, 1879-1958

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Volume Publisher: NBER

Volume ISBN: 0-87014-390-5

Volume URL: http://www.nber.org/books/mint61-1

Publication Date: 1961

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Chapter URL: http://www.nber.org/chapters/c0540

Chapter pages in book: (p. 48 - 58)

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Comparison of the Cyclical Patterns of Exports and World Imports

We shall now try to determine to what extent movements in foreign demand, as represented by the world import series, could account for the pattern of U.S. exports. For this purpose, the fluctuations of world imports in relation to U.S. business cycles are measured in the same manner as those of U.S. exports were before. This not only enables us to compare the results for both series, but also shows how imports of the world outside the U.S. have behaved in the different segments of U.S. business cycles, which is of interest in itself. Presentation of the results of this comparison is cumbersome for two reasons. First, expansions and contractions are not symmetrical. Second, in several respects a distinction must be made between the periods before and after World War I. It may be well, therefore, to state the main results very broadly and briefly at the outset.

As to contractions, the decline in the rate of change of U.S. exports in the later part of the phase can be explained in part by a corresponding, systematic (though smaller) decline in the rate of change of world imports.[1] This goes for the full period. Typical changes in world imports differed from those in U.S. exports in both cycle segments. World imports rose less than exports (or fell more) in the first half of contraction and increased more (or fell less than exports) in the second half. Hence, the decline in the rate of change of world imports in the later part of contraction was less drastic than in U.S. exports. Still, adverse change is common to both series.

As to expansions, the periods before and after World War I must be separated. In the earlier period, world imports cannot account for the decline in the rate of change of U.S. exports. On the contrary, world imports not only rose less than exports in the first half and more than ex-

[1] Decline in the rate of change may mean retardation of growth, acceleration of fall, or a downturn.

ports in the second half of the expansions of this period, but their rise accelerated instead of retarding in the second half. Thus the forces which caused the retardation of U.S. exports must in this case have been strong enough to outweigh the forces reflected in world imports. For the period after World War I, the evidence is mixed. The only brief generalization we can make here is that possibly the rate of change of world imports in these expansions may account for part of the decline in the rate of U.S. exports.

We shall now inspect the evidence, beginning with measures for the full period (Table 13 and Chart 7).[2] At first glance, the pattern of world

[2] For omission of some phases, see Chapter 5.

TABLE 13

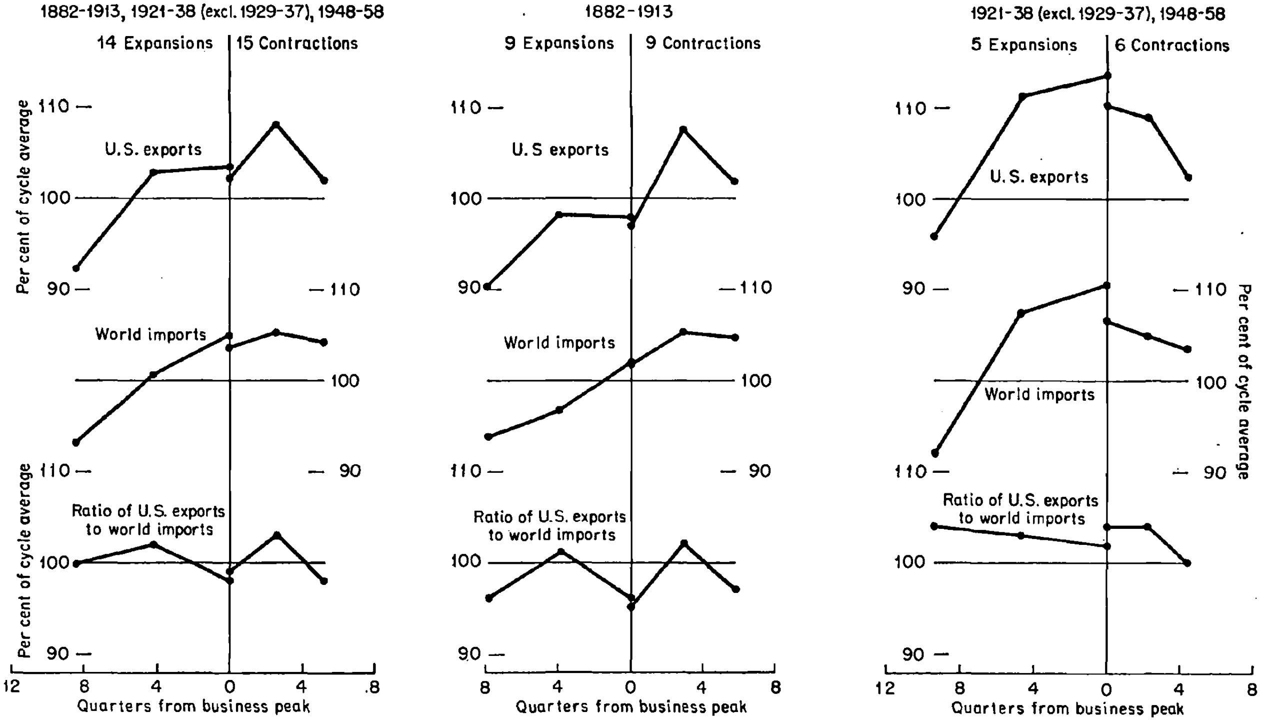
Segments of Domestic Business Cycles: Average Change in U.S. Exports and World Imports, 1882-1958

		1882-1913		1921-38 1948-58		1882-1913 1921-38 1948-58	
		U.S. Exports	World Imports	U.S. Exports	World Imports	U.S. Exports	World Imports
Number of expansions		9	9	5	5	14	14
Number of contractions		9	9	6	6	15	15
Average annual percentage change							
Expansion	1st half	+8.7	+3.0	+13.0	+13.1	+10.5	+7.0
	2nd half	−0.3	+5.0	+2.0	+2.6	+0.6	+4.1
Contraction	1st half	+13.1	+4.8	−2.2	−3.1	+8.5	+2.2
	2nd half	−7.0	−0.8	−12.7	−2.6	−8.7	−1.4
Number of rises							
Expansion	1st half	7	5	4	5	11	10
	2nd half	5	7	4	3	9	10
Contraction	1st half	9	7	2	3	11	10
	2nd half	2	5	1	3	3	8
Number of cases where rate of change is higher than in other half of same phase							
Expansion	1st half	7	4	3	3	10	7
	2nd half	2	5	2	2	4	7
Contraction	1st half	9	7	4	3	13	10
	2nd half	0	2	2	3	2	5

The cycle 1929-37 is excluded.
World imports exclude U.S. imports.
See Table 1, notes 1-4.

CHART 7

Patterns in Domestic Business Cycles: U.S. Exports, World Imports, and Ratio of U.S. Exports to World Imports, 1882-1958



World imports exclude U.S. imports.

See Table 1, notes 1-3.

The pattern labeled "ratio of exports to world imports" is derived by dividing the pattern of world imports into the pattern of U.S. exports (see text).

The export patterns in this chart exclude cycle phases for which the corresponding world import data are not available. Such phases are included, however, in the pattern charts in Appendix D. There we present standings at nine stages of individual cycles and averages covering all complete cycles. Incomplete cycles, on the other hand, are included here, but not in Appendix D. See the note on incomplete cycles in Chart 6.

imports on the chart bears a striking similarity to that of U.S. exports. World imports, like U.S. exports, retard in the second half of U.S. expansions, grow slightly in the first part of contractions, and turn down in the second part. But we also note that the intraphase decline in the rate was much milder in world imports than in U.S. exports. Exports increased much more than world imports in the first half of expansions (11 against 7 per cent) and the first half of contractions (8 against 2 per cent), but rose less or fell more in the second halves. In the second half of expansions, exports rose hardly at all (0.6 per cent) while world imports increased by 4 per cent, and in the second half of contractions a large fall of exports (9 per cent) compares to a minute decline of world imports (1 per cent). In evaluating these differences, we should recall that both series rose at about the same rate over full expansion and full contraction periods (Table 11). In other words, exports ran far ahead of world imports in the beginning of expansions and contractions, but in the later part exports slowed down or fell to the extent that world imports caught up with them.

How representative is this pattern for subdivisions of the long period covered and for individual cycles? Before dissecting it, we can examine the number of instances in which the rate of change of the two series declined in the second half of a cycle phase. Such a decline was less frequent for world imports than for U.S. exports in either expansions or contractions, which agrees with the flatter rate pattern. Retardations of world imports, in expansions in particular, occurred in only half of the phases observed. Thus the averages here fail to give a true picture. This will be clarified below when we distinguish between the periods before and after World War I. But first the relations between U.S. exports and world imports will be presented in another fashion.

These relationships can perhaps be seen most clearly in the cyclical changes of the share of U.S. exports in imports of the world outside the United States. According to our findings above, this share must be higher in midexpansion and midcontraction than around business cycle peaks *and* troughs. To present the changes in this ratio, we make use of a shortcut method. The relative standing of U.S. exports at a given stage of a given cycle is divided by the corresponding standing of world imports. For example, at the peak of 1957, exports were 116.3 per cent of their average level in the 1954-58 business cycle. At the same time, world imports were 113.4 per cent of their average during the same cycle. By dividing 113.4 into 116.3 and multiplying by 100, we get a relative of 103 for the share of U.S. exports in world imports at the 1957 peak. In this way we avoid the laborious procedure of taking ratios of the two series quarter by quarter and subjecting the resulting new series to cyclical analysis.[3]

The average ratios of U.S. exports to world imports at different stages of the business cycle are shown in Table 13 and Chart 7. As expected, the share of U.S. exports in world imports is higher in the middle of domestic business expansions and contractions than at domestic peaks and troughs. Put differently, the growth of U.S. exports in the first half of expansions and contractions reflects in part growth in world imports and in part attainment of a higher place among the world's exporters. And, conversely, the retardation of exports in the second half of expansions and the decline in the second half of contractions represent to some extent similar changes in world imports, but also to some extent the decline of the United States to a lower place among exporters. The behavior of exports was surprisingly consistent in this respect over the full period, as can be seen from the fact that the share of exports rose between the middle and the end of a business cycle phase in only six of twenty-nine instances.

We shall now look behind the broad averages and review the relations of U.S. export and world import movements separately for the periods before and after World War I. Beginning with the cycles of 1882-1913, we find that the pattern of world imports in the nine contractions of this period is fairly well described by the full-period averages discussed above. The rate of change of world imports dropped—not with the perfect regularity of the rate of U.S. exports—but still in seven out of nine instances (Table 13 and Chart 11). The typical movements were upward in the first and downward in the second part of the phase, alike in direction but much smaller than the corresponding export movements (Chart D-1). This agrees with the conclusion drawn from the full-period averages: that part of the intraphase decline of U.S. exports could be accounted for by that of world imports.

The situation is quite different during expansions (Table 13 and Chart 10). World imports, far from slowing down in the later stages of U.S. expansions as exports did, accelerated. Their average growth rate in these cycle segments reached 5 per cent per year while U.S. exports made no further progress. In the first half of expansions, on the other hand, the pace of world imports (3 per cent) was only one-third of that of U.S. exports. In this case, then, the full-period averages are not representative for cycles before 1913 and the retardation of U.S. exports cannot be ascribed to world imports. On the contrary, the forces which caused this

[3] The results obtained by the short-cut method will not be exactly the same as those that would be obtained by constructing a new series. However, there is no systematic bias in the short method and it suffices for our purposes.

retardation must have been strong enough to outweigh the influence of growing world imports.

All this is also reflected in the changing share of U.S. exports in world imports. Before World War I, exports decidedly captured an increased share of world markets when either recession or revival began in the United States economy and lost ground during the later stages of expansions and contractions. These intraphase variations in the share of U.S. exports in world imports range up to 23 and average 5 to 7 percentage points.

How representative are the averages from which these generalizations were derived? Is the average pattern consistently repeated in successive cycles? Examination below will show that for the 1881-1913 cycles we are justified in basing conclusions on the average measures. In the later cycles, however, behavior of U.S. exports and world imports was, in this sense, less regular and some of the conclusions drawn from average patterns will have to be qualified when individual cycles are examined. With this in mind, we describe briefly what the averages for 1921-58 can tell us.

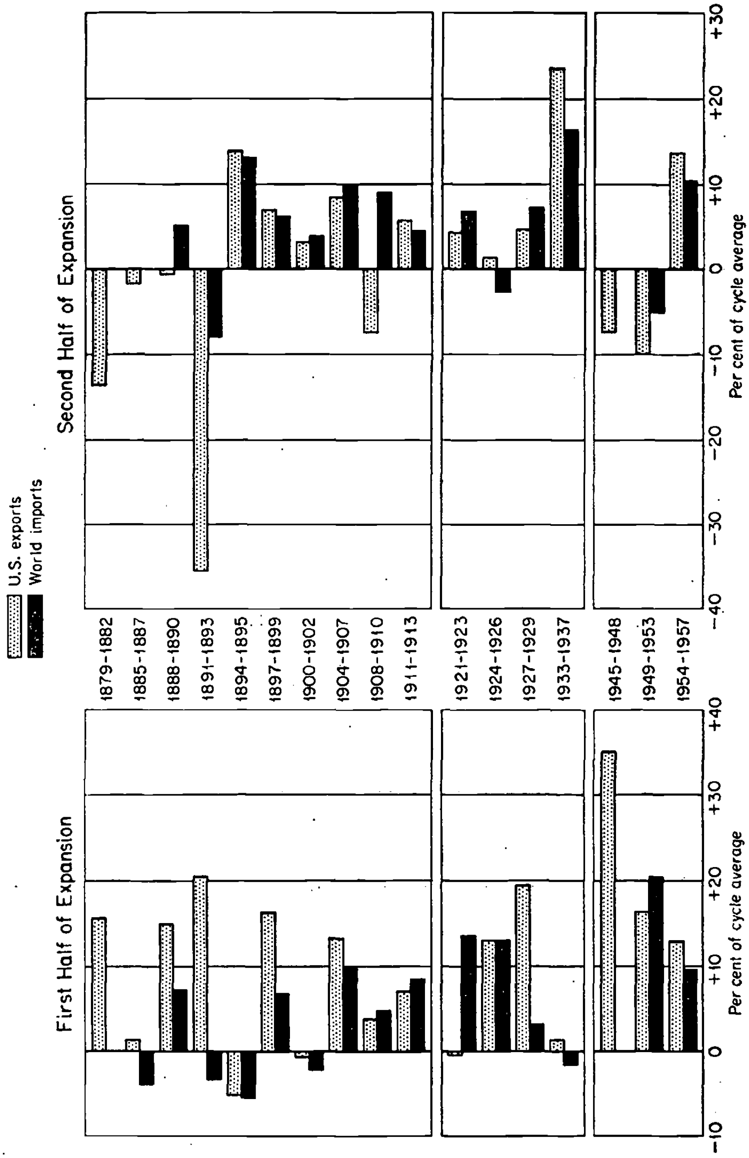
Compared to the earlier period, the behavior of world imports has shifted considerably in both cycle phases. In expansions, acceleration has been replaced by retardation and world import movements in both phase halves have become similar to the movements of U.S. exports: a large rise of over 13 per cent in the first half, a small one of about 2.5 per cent in the second half. It thus seems as if, in this phase, the decline in the growth rate of U.S. exports could be due to that in world imports. In contractions, on the contrary, the movements of world imports differ considerably from those of U.S. exports. The small drop in both series during the first half of the phase is followed by a steep fall in exports of almost 13 per cent in the second half, while the rate of decline of world imports continues small as in the first part of the phase (less than 3 per cent). The decline in the rate of change of world imports found in the contractions before 1913 did not occur in the later ones.

It follows that the pattern of the ratios of U.S. exports to world imports also looks different for these later cycles. The share of exports now remains nearly constant from the trough to the peak and on to midcontraction. Only in the second half of contractions does it decline as it did in the earlier cycles.

For an evaluation of these findings, we must know how consistently the various characteristics appear in measures for individual cycles, exactly when and where the shifts have taken place, and how recent cycles compare to earlier ones. We must, therefore, examine the rates of change of the two series in segments of successive business cycles. These rates are pictured in Charts 8 and 9. Differences between rates in the two parts of

CHART 8

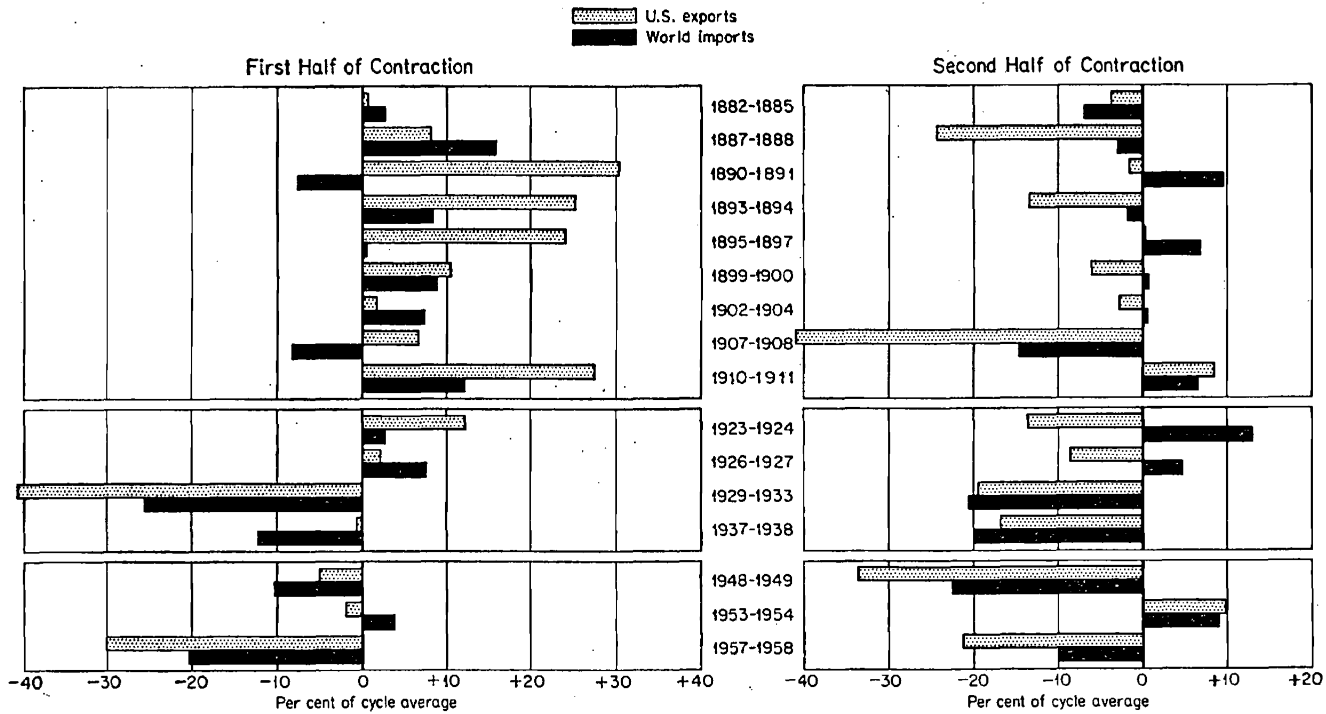
Annual Percentage Change During Segments of Individual Business Expansions: U.S. Exports and World Imports, 1879-1957



World imports exclude U.S. imports.
See Table 1, notes 1-4.

CHART 9

Annual Percentage Change During Segments of Individual Business Contractions: U.S. Exports and World Imports, 1882-1958

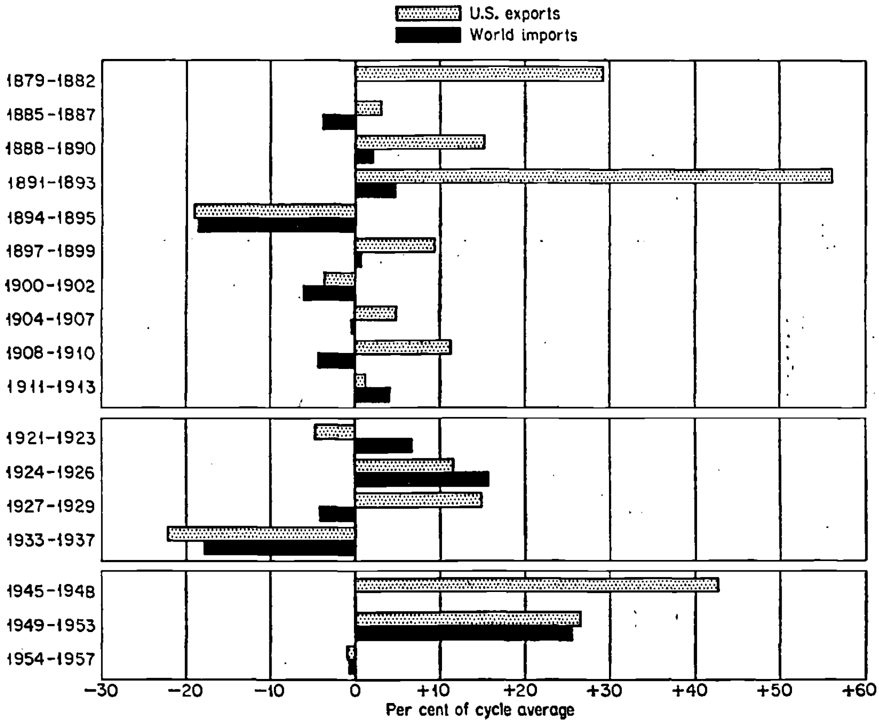


World imports exclude U.S. imports.
See Table 1, notes 1-4.

each phase are shown in Charts 10 and 11. The rate at which the series changed in the second half has been subtracted from that for the first half so that a negative result means that the series turned down in the later part of the phase, or that its growth was retarded or its decline accelerated.

CHART 10

Annual Percentage Change During First Halves of Individual Business Expansions Minus Change During Second Halves: U.S. Exports and World Imports, 1879-1957

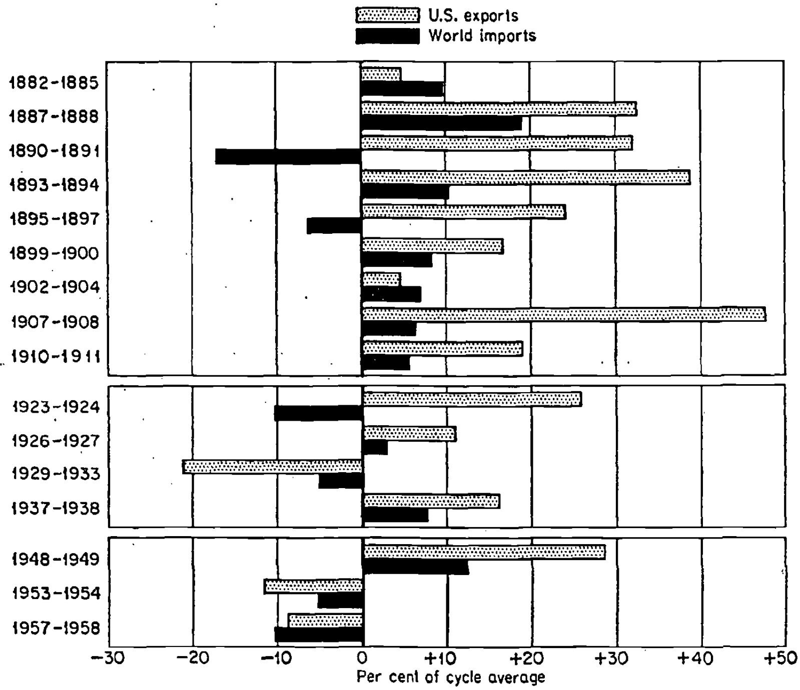


World imports exclude U.S. imports.
See Table 1, notes 1-4.

Detailed study of these charts will be found in Appendix C; here we shall draw attention only to the main lessons to be learnt from them. One fact we already know again shows up clearly: that U.S. exports and domestic business cycles were related before World War I. The consistent and sharp contrast of export changes in the two halves of contractions, for instance, stands out sharply in Chart 9, as does the retardation in both phases in Charts 10 and 11. Further, we obtain more accurate

CHART 11

Annual Percentage Change During First Halves of Individual Business Contractions Minus Change During Second Halves: U.S. Exports and World Imports, 1882-1958



World imports exclude U.S. imports.
See Table 1, notes 1-4.

information on the shift in export behavior after World War I. The replacement of the vigorous growth of exports from the business cycle peak to midcontraction, which had been typical in 1882-1913, by a slight fall in the later period has been disclosed above. Inspection of individual contractions now shows that in the first interwar contraction of 1923-24 there was a sizable rise in exports as there had been in this segment of the prewar cycles. In the first half of the next recession, 1926-27, there still was a small rise in exports—the last one of this type. The first decline in this cycle segment took place in the Great Depression. At the beginning of the following three contractions, 1937-38, 1948-49, and 1953-54, exports still rose briefly, but soon turned down so that by midcontraction they were below the peak level. Thus the change in the export pattern in the later recessions is a gradual process, not a sudden break after World War I.

Finally, our principal findings on the representativeness of our averages may be summarized as follows: all the averages for 1881-1913 characterize the behavior of the series well enough to justify our previous conclusions, viz. that U.S. exports rose more than world imports in the first half of both phases and less (or fell more) in the second; that the intraphase decline in the rate of change of U.S. exports in contractions could be due in part to the similar but much smaller decline in world imports; that the retardation of U.S. exports in expansions cannot be attributed to world imports which accelerated their growth in these phases. The average measures for the period after World War I are, on the whole, less reliable than those for the earlier period. Some of them are still good descriptions of the behavior of the series, others are only fair and a few even misleading. In general, those for U.S. exports are acceptable and so are those for world imports in expansions. The movements of world imports in contractions, however, are too irregular to be characterized by an average.

The main point is, however, that the answer to our question whether the retardation of U.S. exports in expansions and contractions can be due to a similar one in world imports has to be revised for the later period. According to the averages, variations in world imports could account for export retardation in expansions where both series show similar declines in their rate of change, but not in contractions where world imports show no retardation. The truth is that world import movements are more similar to those of U.S. exports in contractions and less similar in expansions than appears in the averages, and thus could account for part of the retardation in both phases rather than for all of it in one and for none in the other.

Our final conclusion is that part of the decline in the rate of change of U.S. exports in contractions during the full period and in expansions after World War I could be accounted for by the decline in the rate of world imports. Another part of these changes and all of the export retardation in the expansions before World War I, however, must be due to other factors, factors favoring U.S. exports in the earlier and repressing them in the later stages of both phases.