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Chapter 2

The Default Index

We turn now to our main topic, fluctuations in the quality of loans. Let us first recall a few well known facts about the history of defaults on foreign bonds. During the entire period of foreign lending, 1920-30, no bond in our record defaulted except two Brazilian state issues. Even on these two, interest payments were maintained until 1929 and 1931 respectively and only the sinking funds were defaulted in 1924 and 1925.[1] The 1920's were the defaultless era in foreign lending. The absence of defaults during such a long period and for about 800 individual investments of this type is remarkable.[2]

Almost all the defaults of the interwar period occurred between 1931 and 1934 under the impact of the great depression. As governmental revenues dwindled with business activity, some governments found that they could not raise the funds for foreign debt service. And even had such funds been available in local currencies their transfer into dollars would have been difficult. Foreign lending had ceased and American imports, the chief remaining source of dollars, shrank in volume and even more in value. Seeing their gold or dollar reserves dwindling many governments attempted to protect their currencies by establishing exchange control and defaulting on their foreign debts. Revolutionary governments — Bolivia, Peru, Chile, Brazil, Cuba, and Germany — especially were inclined to adopt this policy. They "seldom realize fully the

[1] There was a very small number of defaults on bonds not covered by our analysis. The only government issue among these was one of Chinese government notes offered in 1919 and defaulted in 1921; the others were corporate bonds.

[2] Absence of defaults was characteristic of all foreign lending, not just American. ". . . it is true to say that [at the beginning of the depression] the world had been free from any substantial measure of default for more than ten years." *Problem of International Investment,* Royal Institute of International Affairs, 1937, p. 299.

importance of maintaining the credit standing of their country and
are more apt to take drastic measures with less regard for the
consequences".[3]

The first defaults occurred in Latin America. In January 1931
Bolivia suspended service on its dollar bonds. Peru, Chile, Brazil,
Colombia, and Costa Rica followed suit in rapid succession. In
1932 Uruguay and El Salvador, and in 1933 Panama and Cuba,
failed to meet their external obligations.

In 1932, one year later than in Latin America, a wave of
European defaults set in, which spread rapidly through the agri-
cultural countries of eastern Europe (Hungary, Greece, Bulgaria,
Yugoslavia, and Rumania). In Germany the republican govern-
ment met its foreign obligations despite the acute financial crisis.
But when the National Socialist party came into power in 1933 it
immediately reduced and soon after suspended payments on
dollar bonds. The Dawes and Young loans, which at first were
excluded from the moratorium, defaulted one year later. The
great wave of defaults was over in 1934 and during the remaining
interwar years only one major default occurred, that of Poland
in 1936.

Outside Europe and Latin America payments were maintained
on practically all dollar loans. The Canadian province of Alberta
and a few Canadian municipalities were the exceptions.

Thus the period of the twenties when foreign lending flourished
and no foreign loans defaulted was followed in the thirties by a
period of defaults in which the market for new foreign issues prac-
tically disappeared.

In most cases when defaults on government and government
controlled loans occurred, all the loans granted to the country in
question were affected simultaneously. The usual procedure was
for the government of the defaulting country to prohibit the
transfer of debt payments, which meant that all loans owed by
the country were in default. Some governments initially exempted
certain loans from transfer prohibitions but almost all such excep-
tions were brief. Hence the only differences between the individual
loans of the country in question were short intervals between the

[3] Madden et al., op. cit., p. 120.

dates of their defaults. In some countries where partial service was maintained on defaulted loans, the degree of default differed for different loans, more foreign exchange being allowed for the service of certain loans than for others.

The following countries were exceptions in that they defaulted on some of their issues but maintained payments on others in full: Canada, Argentina, Panama, Cuba, and Czechoslovakia. All other countries, in 1937, were in default on all or none of their bonds.

1 *The Sound Loan Curve*

In examining the changes in the quality of foreign loans our concern is not with the time of their defaulting but with the time of their issue. We want to construct a series of the flotations of defaulted loans and compare it with the series of flotations of all foreign loans described in Chapter 1. Our aim is to determine how the proportion of defaulted loans to total loans varied during our period.
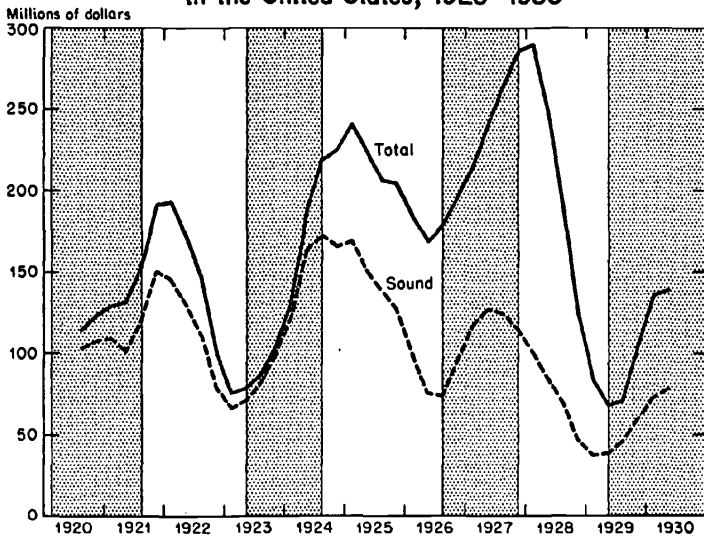
We shall discuss the definition of 'defaulted loan' used in the following investigation at length in Section 2. Here we need merely state that defaulted loans are defined as those granted to a borrower who was in partial or total default on December 31, 1937.

To classify each loan in our record as 'sound' or 'defaulted' we ascertained its fate with the help of the *Annual Reports* of the Foreign Bondholders' Protective Council, the *Bulletins* of the Institute of International Finance, Kimber's *Record of Government Debts,* White, Weld & Co.'s annual publication, *Foreign Dollar Bonds,* and investment manuals. The *Handbook,* our source for the volume of offerings, does not cover defaults, as it was published before their time.

Having determined the status of each issue we split our original series of total bond offerings into two parts: flotations of sound and of defaulted foreign bonds. The varying relation between these two series is the object of our investigation. Before expressing it as a ratio, however, we present the absolute figures of sound loan flotations. Certain facts can be brought out very clearly by this series (Chart 4).

First, the sound loan curve shows the same distinct 3 cycles and

Chart 4
Sound and Total Foreign Government Bonds Issued
in the United States, 1920-1930

Millions of dollars

Shaded areas represent contractions, white areas, expansions of business cycles according
to NBER chronology. Four quarter moving averages, centered; Appendix Tables 13 and 14.

the same inverse relation to general business cycles as total foreign
bond flotations. With a few minor and one major exception every
rise and every fall in total loans was accompanied by a simultaneous
rise and fall in sound loans. The major exception is a difference in
timing: the peaks of the sound loan curve lead the peaks of the
total loan curve and this lead lengthens from cycle to cycle until
in the last cycle sound loans reach their peak 3 quarters earlier than
total loans and decline considerably while total issues are still
rising sharply. Lending peaks, evidently, were reached in every
case, and especially in the last cycle, in the face of a decline of
sound loans. Second, in contrast to the successively rising waves of
. the total loan curve, the last peak of the sound loan curve is the
lowest of the 3. Sound lending was largest in 1924 and in the last
cycle declined not only in proportion to the total, as the ratios will
show, but even absolutely.

2 Definition of the Default Index

The changing distribution of the flotations of each year among
sound and unsound loans is brought out more clearly by percent-

ages. We call the ratio of defaulted loans to all loans issued the 'default index'. When we say the default index of 1926 was 60 percent we mean that of the total amount of loans floated in 1926 60 percent was granted to borrowers who were in default in 1937.

To avoid misunderstanding it should be noted that we use 'default index' in a sense not ordinarily attached to it. At first blush, 'default index' might be taken to mean the ratio of loans defaulting to those outstanding during a period. A default index in this sense would be zero for 1920-30 when no defaults occurred. In the 1930's it would indicate the impact of the different stages of depression on outstanding foreign loans. Our default index, on the contrary, is designed to measure the impact of the changing conditions of the 1920's on the quality of new issues.

Before presenting the default index we discuss the criteria by which we classified a loan as defaulted or not. a) Decisive for the classification of bonds outstanding on December 31, 1937 was their status on that date. We chose this date for the close of the interwar period rather than December 1938 because at the end of 1938 Europe, after the occupation of Austria and Sudetenland, was already under the impact of the forces that came into full power during the war. We decided against a postwar date because of the extraordinary situation still prevailing in a number of countries. However in order to check our findings we examined the default status at the close of 1949 of bonds issued in 1921 and 1928, and find the results substantially confirmed (see below). b) We classified a bond as defaulted when bondholders had not received by December 31, 1937 payments due them according to the original loan contract in full in dollars. Failure to observe the gold clause or payment in Canadian rather than in United States dollars has not been regarded as default.[4] Bonds also were not regarded as defaulted if payments were delayed provided the issuers' obligation was met by December 31, 1937.[5] This applies

[4] In 1937 no gold dollar bonds were being served in gold (in so far as the Council of Foreign Bondholders was informed). Foreign Bondholders Protective Council, *Annual Report, 1938*, p. 24.

[5] With one exception: one issue was classified as 'sound' though its default was not *completely* made up before the end of 1937. In this case the deviation was so slight that it could be disregarded. The bond's price at the end of 1937 was 94.

to a few countries that resumed full service after a short interruption of transfer on foreign debts and paid the arrears.

c) In computing the default index we did not differentiate among degrees of default. It seemed preferable to supplement the default index by a special index of the degree of default (see Sec. 5). The statement "60% of all bonds issued in 1926 went into default" carries a definite meaning, which would be blurred if some bonds were counted, say, as 30 or 60 percent defaulted. Using a rough measure such as the default index seems justified also from the business point of view, which tends to regard any loan in default as a mistake. Besides, payments on defaulted interest coupons represented only a small percentage of the total amount of matured coupons on defaulted bonds. According to Madden et al,[6] of the total amount of matured coupons on bonds defaulted after January 1, 1931 and outstanding at the end of 1935, only 11.8 percent had been paid in cash between January 1931 and December 31, 1935.

d) The most difficult question in rating investments arises from the fact that some loans were partly or totally repaid before the end of our period. At first glance this might seem the clearest case of all. Surely a bond redeemed must be a sound bond and must be classified as such. For purposes of the default index we have, however, decided otherwise. The reason is that, as will be demonstrated below, classification of all repaid loans as sound would bias the results of our analysis in favor of the hypothesis that the proportion of defaulted loans increased during the period under review.

Clearly a loan issued in 1920 will on the average have more chance of being repaid before, say, 1932, than a loan of 1929. Its term may have expired; sinking fund payments may have served to redeem a larger proportion of its original value; finally, the longer a callable bond is outstanding the greater the chance that for some reason the borrower will decide to repay it before maturity. Consequently the percentage of early loans that was repaid and therefore out of danger when the crisis struck was larger than that of later ones.

[6] Op. cit., p. 130.

The resulting downward bias to the default index for the early years is illustrated by the following hypothetical case: Two borrowers, A and B, each issue the same amount of bonds in 1920 and again in 1930. By the depression year 1932, 80 percent of the 1920 bonds but only 20 percent of the 1930 bonds has been repaid. Borrower A defaults in 1932, borrower B remains solvent.

		YEAR OF ISSUE			
	1920			1930	
	BORROWER			BORROWER	
A	B	A & B	A	B	A & B
Amount issued	100	100	200	100	100	200
Amount repaid before 1932	80	80		20	20	
Amount in default in 1932	20	0	20	80	0	80
1 Default index[a]			$\frac{20}{200} = 10\%$			$\frac{80}{200} = 40\%$
2 Default index[b]			$\frac{20+80}{200} = 50\%$			$\frac{80+20}{200} = 50\%$

[a] All repaid loans counted as 'good'.
[b] Loans repaid by borrowers who subsequently defaulted counted as 'bad' (see text).

When repaid parts of loans count as 'good', the default index for loans issued in 1920 is 10 percent, that for loans issued in 1930, 40 percent. The default index for 1930 rises sharply relative to that for 1920 despite the assumption that the loans granted in both years were alike except for their date of issue. This increase is not meaningless. It does show how much better the outcome of the 1920 investments was than that of the 1930 investments. However, this difference is due solely to the lapse of time between flotation and default.

Actually the role of repayments was not nearly as great as in our example and counting repaid loans as 'good' would only moderately depress the default indexes for the early years.[7] Still, we want to eliminate this factor in order to minimize doubts regarding the validity of our results. We have, therefore, devised the following treatment of loans fully or partly repaid. We distinguish between two types of such loans. First, loans that were partly or fully repaid by borrowers who did not default on any of their debts

[7] See Appendix Table 19.

in the 1930's are counted as sound. There is no good reason why a
loan whose issuer remained solvent in the 1930's should be con-
sidered as unsound. One might object that early repayments of
parts of its foreign debt may have enabled a country to maintain
payments on the remainder during the crisis, thus preventing de-
faults that would otherwise have occurred. This may be granted;
yet a debt policy that eased a country's position in the depression
and enabled it to avoid bankruptcy is certainly no justification for
classifying that country's issues as unsound. Second, partly or fully
repaid loans by borrowers who defaulted on any issue are counted
as defaulted on the assumption that in this case repayment was
due to the fact that the loan was granted early in the period.

Using this method in the above example we obtain the same
default index for loans issued in 1920 as for those issued in 1930.
This agrees with our assumption that the two pairs of loans were
alike except for their date of issue. This treatment of repaid loans
obviously affords a most rigorous test for the hypothesis that
defaulted loans constituted a rising proportion of all loans issued.
Counting loans of earlier years as unsound when in themselves
they were sound and did not bring the investor a loss, imparts
a declining bias to the trend of the default index. If the index still
shows a rising trend, as it does, we can be confident that this can-
not be due to our method of computation.

The problem of repaid loans cannot, of course, be solved by
excluding them entirely from the investigation and dealing only
with loans outstanding at a given time. A measure of the quality
of the lending of a period must comprise all loans issued during
this period. The meaninglessness of a measure relating only to
loans outstanding at a certain time becomes evident if we assume,
e.g., that 99 of the 100 issues of a period were repaid before the
crisis and that the single remaining issue defaulted. The default
index would be 100 percent, clearly an unacceptable measure of
loan quality.[8] If the interval between the time of issue and the date

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[8] Applying our method, the 99 repaid issues would be divided into 2 groups:
those repaid by borrowers who did and those repaid by borrowers who did not
default later on. If, say, 9 of the 99 repaid issues belonged in the latter group,
the default index would be 10 percent.

when the outstanding loans are examined is sufficiently long, a default index derived in this way would always approach 100 percent, since all except the defaulted loans would have been repaid.

3 *Description of the Default Index*

Two default indexes are presented in Chart 5. Default index A is for foreign loans in the wider sense, i.e., it includes Canadian issues; default index B is for foreign issues exclusive of Canadian loans. The steep upsweep of both curves shows that the quality of new foreign issues declined sharply during the 1920's. We note further that, like business in general, the default index rises in 3

Chart 5
Default Index: Foreign Government Bonds Issued in the United States, 1920-1930
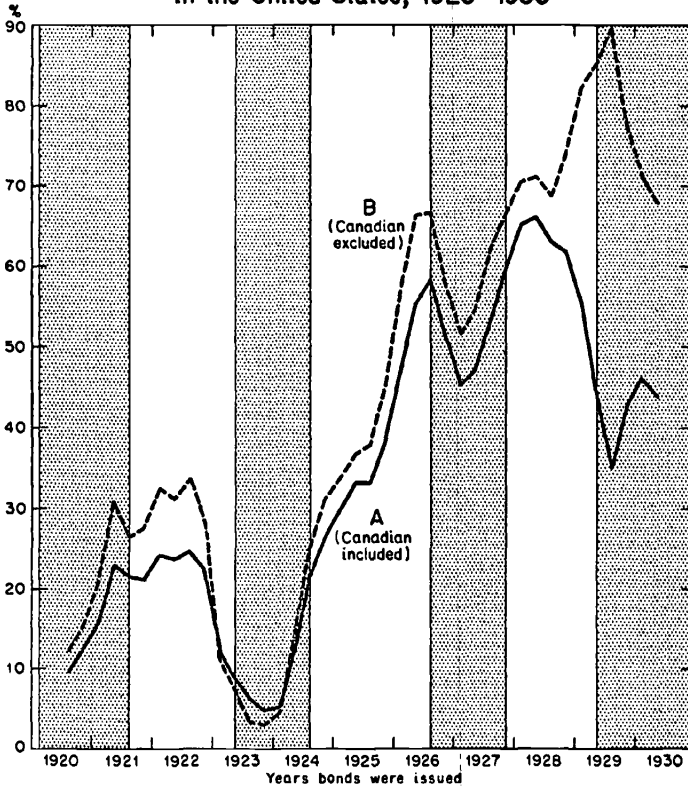
Shaded areas represent contractions, while areas, expansions of business cycles according to NBER chronology. Four quarter moving averages, centered; Appendix Table 14.

successive waves. But the timing of these waves differs from that of the 3 business cycles; foreign loan quality moved sometimes parallel with and at other times counter to cycles in general business. This instability may be due to the inverse relation between fluctuations in foreign loan issues and business cycles. For part of the period, approximately until the end of 1924 and in 1927, the proportion of defaulted loans rose and fell with the amount of lending, so that there was an inverse relation between the default index and business cycles. But between the first quarter of 1925 and the second quarter of 1926 the default index rose steeply with the expansion in business activity and despite the decline in new issues (default index A from 30 to 55 percent; default index B from 34 to 66 percent). And the improvement of loan quality in the second half of 1926 took place in the face of an expansion in loan volume but accompanied a downswing in the business cycle.[9]

Thus, the direction of the short swings in the default indexes seems to depend upon the relative strength of two opposing forces: changes in loan volume and changes in general business conditions. But during the period as a whole these forces were not opposed and the default indexes sweep upward in the same fashion as loan volume and business activity. In other words, the relation between fluctuations in the default index and short business cycles was sometimes positive and sometimes inverted, but the relation to the expansion of the major cycle was positive.

Even at the peak of the first cycle of 'index A' defaulted loans did not amount to 25 percent of all loans floated. But they were 58 percent of all loans at the peak of the second and as much as 66 percent at the peak of the third cycle. Computing an average for each of the 3 cycles in 'default index A' we find that 19 percent of the bonds floated during the first cycle, 1920-23, went to borrowers who defaulted; whereas the average for the second cycle, 1923-27, was 34 percent, and for the third, 1927-29, 57 percent.[10] In other words, the percentage of unsound loans doubled from the

[9] How general business conditions influenced the quality of loans is discussed in Chapter 6.

[10] Averages are computed from trough to trough of each cycle. To avoid a downward bias due to the inclusion of both initial and terminal troughs in computing the cyclical average, the trough values are weighted one-half each.

first to the second cycle and tripled from the first to the third. The quality of credit declined steeply.

When Canadian loans are excluded, results are even more striking. Since few Canadian loans defaulted, index B is considerably higher than A. The higher level does not, of course, imply anything about the slope of the series which, however, was even steeper than that of index A (Chart 5). Index B increases from 34 percent at its first peak to 67 at the second and to 90 at the third. The 3 cycle averages are 24, 40, and 68 percent. Evidently Canadian loans were a stabilizing element as far as loan quality was concerned.[11]

[11] The default index by geographic groups of borrowing countries is analyzed in Chapter 3.

Chart 6
Default Index Based on Number of Issues
Foreign Government Bonds Issued in the United States
1920 – 1930
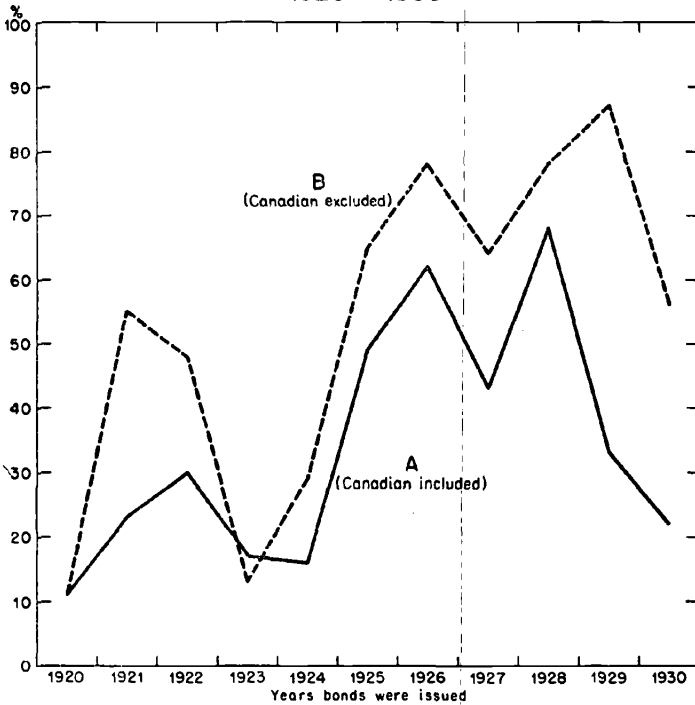
Appendix Table 15.

To increase confidence in our results we test them further by computing a default index in terms of the number of bond issues instead of their dollar value. Because of the big variations in the amounts of individual issues ($10,000 to $125,000,000), the number of issues is a poor measure of lending. We use it solely to test the stability of our results. As we are interested mainly in the broad movements of the indexes, we simplify the procedure by using annual data on the number of issues instead of moving averages of quarterly data (Chart 6). These curves too tend strongly upward, supporting the previous results. Default indexes A and B both roughly double whether we compare the first and the last peak or the averages for the first and last cycle. The slopes are less steep than those of the default index for the dollar amount of loans, indicating that the deterioration of credit involved a change in the relative size of sound and unsound loans as well as in their number. While the average sound issue was 3 percent larger than the average unsound issue in the first half of the period, it was $2\frac{1}{2}$ percent smaller in the second half. When the numerous small sound Canadian loans are omitted, the average value of sound issues becomes much higher. Yet there is the same change in relative values. Sound loans, in this case, averaged 85 percent larger than unsound in the first half and 59 percent larger in the second half of the period (App. Table 16).

Thus all our tests confirm the hypothesis that the quality of foreign loans declined sharply during the 1920's.

Below it is shown that this is further confirmed when the default index is based on the status of the bonds in 1949 instead of in 1937.

4 Degree of Default

To supplement the default index we analyze the variations in the degree of default of foreign bonds. In the default index all defaulted bonds were treated alike; partial payments of interest coupons were disregarded. The upward slope of the default index indicates that a larger proportion of late than of early loans defaulted. But to interpret this as a deterioration in the quality of loans we must assume that the degree of default remained constant

over the period. Conceivably loans issued in early years might
have defaulted completely and those of later years kept up a par-
tial service. In this way the rise in the default index might be offset
by a decline in the degree of default. Was there such an offsetting
improvement in defaulted loans? If defaulted loans floated in the
later years were no better than those floated in the earlier years,
our interpretation of the default index is justified.

Differences among defaulted bonds are reflected to some extent
in their prices. The average price on December 31, 1937 of the
defaulted bonds issued, say, in 1925, may serve as an index of the
degree of their default. A series of such indexes by the date of
issue of the bonds measures the variations in the degree of default.
Accordingly, we computed the arithmetic mean of the prices of
defaulted bonds issued at a given time, weighted by the par values
of the issues.[12] Not all bonds counted as defaulted in the default
index are contained in the price index. Repaid loans, obviously,
had to be omitted. A few minor issues in foreign currencies also
had to be excluded because a price in dollars could not be ascer-
tained. The price index comprises 81 percent of the number and
91 percent of the dollar value of the bonds in the default index.

Chart 7 shows that there was no change in the degree of default
that would offset the change in the default index.[13] Average prices
at the close of 1937 of bonds issued in 1927 and 1928 were about
the same as those of bonds issued in 1921 and 1922, namely 20-25
percent of their par value.

The price of a bond does not by any means, of course, reflect
merely the degree of its default. It depends also upon expectations
of the market and on policies pursued by the debtors. To evaluate
the price index correctly, we must therefore note some of the
special factors affecting bond prices in 1937. Prices of German
bonds, which constitute a large part of the unsound bonds issued
in the late twenties, were much higher in 1937 than the payments

[12] 4 quarter moving averages of weighted prices are divided by 4 quarter moving
averages of weights.

[13] This curve cannot be interpreted like an ordinary price index. It does *not*
reflect changes in a group of prices over time. It shows prices quoted on one
date for bonds floated at different times.

Chart 7
Average Price on December 31, 1937
of Defaulted Foreign Government Bonds Issued
in the United States, by Time of Issue, 1920-1930
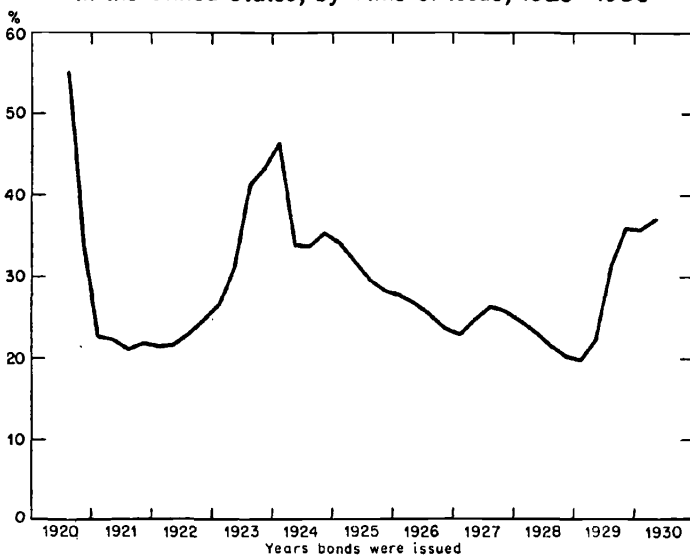
Four quarter moving averages, centered; Appendix Table 14.

their holders received could have explained. After prolonged delay
the German authorities finally, in March 1937, issued 3 percent
funding bonds in lieu of interest payments due on nonReich Ger-
man bonds since June 1934. But even these funding bonds were
available only for coupons matured before the end of 1936; no
provision whatever was made for coupons maturing later. Yet
these bonds were quoted at about 20 because confidence in Ger-
many was still relatively high and because Germany herself was
in the market to buy her own defaulted bonds, thus raising their
prices. Quotations for Latin American defaulted bonds were rela-
tively much lower. For instance, Brazilian bonds, which constitute
a large part of the unsound bonds issued in the early twenties,
brought about the same prices as the German though they paid
in 1937 from 32½ to 50 percent of interest due. This relative over-
valuation of part of the defaulted loans of later years imparts an
upward bias to the price index. If the index still does not show a
rising tendency, we can be satisfied that defaulted loans of the

late twenties were no better than defaulted loans of the early twenties.

We do not attribute much significance to the price index of defaulted bonds except as a check on the default index. Such an index inevitably includes few observations at times when — as in 1920, 1921, and 1923 — few unsound loans were issued. The index is therefore highly unreliable for these years and we refrain from drawing any further conclusions from it.

5 *Note on the Present Status of Foreign Bonds*

What has happened to foreign bonds since 1937? Were they greatly affected by the World War? Did the world shaking events of the last decade make the bad debtors solvent and the good ones bankrupt? The answer is no. The great majority of countries that serviced their loans in full in 1937 did so in 1949; most of the countries in default in 1937 were in default in 1949.

What is the explanation of this consistency? Were the economies of countries in default worse off during these 12 years than those of solvent countries? For many countries this cannot be the explanation. Half of the defaulted loans were issued by Latin American countries that were highly prosperous during the war with booming dollar exports. Many good issues, on the other hand, were from countries that were invaded and occupied and suffered grievously. Belgium, France, and Norway, for example, kept paying all they owed; others, such as Peru and Bolivia, paid and pay almost nothing. Though most South American countries did improve service on their loans not one of those in default in 1937 decided to pay its creditors their due.[14]

In view of these facts no revolutionary changes in the default index are to be expected when the status of the bonds on December 31, 1949 instead of December 31, 1937 is used to classify them. To give some idea of the magnitude and direction of these changes we recomputed the default index for 2 years, each fairly represen-

[14] Argentine bonds, except a few provincial issues, were not in default in 1937. A few Central American and Caribbean countries in partial default in 1937 have completely repaired their defaults, e.g., Cuba, Dominican Republic, Guatemala.

tative for its period, 1921 and 1928. The increase in the proportion of defaulted issues again stands out clearly. Canadian loans are included. Default is defined as before: any deviation from contractual payments. Defaulted loans are loans to borrowers in default at the close of 1949.

The new default index for issues of 1921 is 44 percent, that for issues of 1928 74 percent. The corresponding figures based on the default status of 1937 are 34 percent for 1921 and 68 percent for 1928. The difference between the two pairs of indexes is due almost entirely to Danish issues, which were not in default in 1937. In 1949 Denmark was paying interest fully as stipulated, but had not yet resumed full service on sinking funds or repaid an issue due in 1942. The latter, however, was quoted at 94 at the close of 1949. Except for Danish issues the two indexes based on 1949 would differ only fractionally from the corresponding ones based on 1937. The few changes that did occur during these 12 eventful years roughly offset one another.

During the long period since foreign bonds first defaulted debtors have made various arrangements with their creditors, arrangements that fulfill contractual obligations more or less completely. In other words partial default now plays a greater role than in 1937. In several countries old bonds have been exchanged for new ones with lower interest rates, and it is sometimes a matter of opinion whether the original issue is still to be counted among defaulted issues. To indicate how decisions about the doubtful cases affect the default index, we make the experiment of shifting defaulted issues quoted at 75 or higher at the close of 1949 to sound issues. The results are not altered materially. The new index for 1921 is 31 percent, that for 1928, 63 percent; both standings are remarkably similar to those based on the default status in 1937.

Measured against the events in these 12 years the change in the default status of debtor countries was certainly slight. The resulting stability of the default index enhances its significance as a measure of loan quality. The unchanging character of nations as debtors has further interesting implications for the interpretation of defaults and loan deterioration (see Ch. 6).

6 *In Conclusion*

The statistical investigation has established as a fact what was before surmised by some,[15] denied by others, and ignored by the majority of economists: that the quality of foreign bond issues changed materially during the nineteen twenties. The 'lending of the twenties', as far as time of lending is concerned, has usually been treated as one homogeneous mass to all parts of which much the same explanation is appropriate. This simplification may for certain purposes be justified. For others it distorts the picture. In any case general statements about the lending of the twenties are founded upon an average representing very different conditions.

We have applied statistical methods to a subject that seemed unpromising. The foreign lending of the twenties is commonly described as 'erratic' and 'chaotic' and indeed it was subject to strong forces of diverse and varying power. To make the rule of order in this field seem rather unlikely, it suffices to cite events such as the occupation of the Ruhr, the Locarno Pacts, the collapse of European currencies, the reestablishment of the gold standard. Moreover, we are dealing with errors in individual investment judgment which, even apart from the special field of foreign lending, seem too elusive and subjective to possess much order or regularity. It is noteworthy, therefore, that despite the small scope of our investigation, empirical analysis has enabled us to uncover a rational picture and a high degree of order where chaos was supposed to rule.

7 *Note on Two Investigations of Investment Quality*

Two other investigations of investment quality by date of investing substantiate the results of the foreign bond analysis.

One is a study of domestic bonds made by George W. Edwards

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[15] See particularly an article by Max Winkler in the New York Tribune of March 17, 1927: "Any one who has followed closely the various foreign offerings in this country within recent months could not help noticing the steady decline in the quality of such new loans." Quoted in Max Winkler, *Foreign Bonds, an Autopsy* (Roland Swain, 1933), p. 85.

Cf. also W. A. Brown, op. cit., p. 585, who in discussing American foreign lending remarks on "the appearance of progressively poorer credit risks among the borrowers. . . ."

Table 6

Default Status of Domestic Bonds Outstanding in December 1931,
by Date of Issue

Date of Issue	Total No. of Bonds Issued	% of Bonds Defaulting
Before 1900	70	14.3
1900-13	419	14.5
1914-19	206	10.1
1920-22	263	18.6
1923-24	637	18.4
1925-26	371	21.6
1927-28	1,118	31.8
1929	267	31.1
1930-31	496	11.9
No information	551	22.0
Total	4,398	20.2

George W. Edwards, Control of the Security-Investment System, *Harvard Business Review,* Oct. 1933, p. 7.

in 1932. Edwards grouped all 4,398 issues in Fitch's Bond Record in December 1931 by their date of issue and computed the "per cent of the total number issued for each year which were in actual or pending default" in December 1931 (Table 6). "From this table it is seen that of the bonds issued in 1927, 1928, and 1929, 31.1 percent went into actual or pending default, as compared with a much lower percentage for the bonds issued in previous years."[16] Edwards attributes the decline in quality to "conditions of overcompetition and irresponsibility" in which "the purchasing function of investment banking was poorly performed" and "Capital was frequently raised for corporations and for governments whose financial position did not warrant such financial assistance".[17]

Investment of a very different character is the subject of R. J. Saulnier's recent interesting analysis, *Urban Mortgage Lending by*

[16] *Harvard Business Review,* Oct. 1933, pp. 6, 7. Edwards' figures refer only to bonds still outstanding in December 1931. If bonds repaid before that date were included the percentage of bonds issued in earlier years and defaulting would be even lower, and the rise of this percentage over the period steeper.

[17] George W. Edwards, *The Evolution of Finance Capitalism* (Longmans, Green, 1938), p. 231.

Life Insurance Companies.[18] "The rapid increase in loan delinquency, which began in the early thirties, soon transformed large segments of the urban mortgage holdings of life insurance companies into owned real estate. But not all types of loans were foreclosed with the same relative frequency, and it is pertinent to inquire which groups of loans had the best, and which the worst, records in this respect. To give quantitative expression to these differences in loan experience, the sample of urban mortgage loans was classified according to relevant characteristics of the loan contracts and of the properties securing them and ratios of the number and original amount of foreclosed loans to the total number and amount of loans, referred to as foreclosure rates, were calculated for several classifications."

Among the many characteristics analyzed for their effect on foreclosure rates is the time of loan origination. Saulnier too found that experience with loans of the twenties differs according to the time of lending. The foreclosure rate for loans made in 1920-24 and not extinguished by the end of 1934 was 24 percent; the corresponding rate for loans made in 1925-29 was 41 percent.[19]

Since these mortgage loans had on the average much shorter terms than the foreign bonds, foreclosure rates are more affected by the exclusion of extinguished loans than our default index. "While the average contract life for all loans made between 1920 and 1934, and extinguished by 1946, was 6.7 years, the defaulted loans had an actual life of 13.9 years between origination and final sale of property, while other loans had an average actual life of 8.3 years."[20] Consequently, most of the sound loans made in 1920-24 had been extinguished by 1935, 10 to 15 years after they were made, while a much larger proportion of defaulted loans had not yet been disposed of. This must be taken into account if the foreclosure rate for this period, 24 percent, is to be evaluated correctly. A large part of the sound loans made during the next 5 years, on the contrary, did not expire until after 1934. This, of course, tends to pull down the foreclosure rate for loans made in

[18] National Bureau of Economic Research, 1950, p. 82.
[19] Based on ibid., Tables 22 and B10.
[20] Ibid., pp. 47-8.

Table 7

Foreclosure Rates on a Sample of Urban Mortgage Loans Made by Life Insurance Companies

PERIOD MADE	PERIOD EXTINGUISHED					TOTAL OR AVERAGE
	1920-24	*1925-29*	*1930-34*	*1935-39*	*1940-46*	
NUMBER OF LOANS MADE AND EXTINGUISHED						
1920-24	104	503	140	103	83	933
1925-29		254	593	631	606	2,084
1930-34			116	335	316	767
ORIGINAL AMOUNT OF LOANS MADE AND EXTINGUISHED (millions of dollars)						
1920-24	.85	4.86	.73	1.16	1.08	8.67
1925-29		2.75	4.68	5.75	10.42	23.61
1930-34			.90	2.12	3.18	6.20
FORECLOSURE RATE						
Percentage of Number						
1920-24	0	0	4.3	24.3	30.1	6.0
1925-29		.4*	6.7*	32.8*	38.4*	23.1*
1930-34			4.3	21.8	21.2	18.9
Percentage of Amount						
1920-24	0	0	3.2	31.5	31.5	8.4
1925-29		.3*	5.7*	40.1*	54.1*	34.8*
1930-34			4.7	25.2	18.3	18.7

* Foreclosure rates on loans made in 1925-29 higher than on those made in the preceding or following quinquennium.

R. J. Saulnier, *Urban Mortgage Lending by Life Insurance Companies* (NBER, 1950), Table B10, family dwellings and all other property combined.

1925-29. Under these circumstances 41 percent must be considered a very high rate.

Moreover, the contrast between the good and the really bad years is smoothed when comparisons are made by 5-year intervals. For instance, the foreclosure rate for the earlier period is pushed up considerably by the inclusion of 1924, which had a much higher foreclosure rate than the preceding years, whereas the rate for the later period is held down by the rate for 1925, which was much lower than the following ones.

Table 7 compares the issues of 1925-29 not only with the preceding but also with the following period. Among the loans extinguished in any given period those made in 1925-29 always had considerably higher foreclosure rates, whether number or amount is the criterion, than those made before or after this time.

Other aspects of mortgage lending brought out by Saulnier's

investigation reflect "the optimism characteristic of both parties to the mortgage contract at precisely the time when increased caution was warranted"[21] and point to a decline in credit quality in mortgage lending similar to though perhaps less far-reaching than that in foreign lending. Interest rates were lower in 1925-29 than in 1920-24; the relative numbers of the two safest types of loans, those under $5,000 and those fully amortized, were smaller in the later quinquennium. The average size of loans on family dwellings rose 23 percent from 1920-24 to 1925-29; loans on income-producing properties, which had higher foreclosure rates, increased nearly 50 percent in average amount. Moreover, larger loans reflected not only the rise in real estate prices but also an increase in the average ratio of the amount loaned to the value of the property.[22]

All this is interesting for the foreign bond analysis because mortgage loans and domestic bonds are utterly unaffected by anything peculiar to foreign lending, such as transfer troubles or the inexperience of creditors. The three types of investment have only this in common: they originated in the same market and responded similarly to its changing climate. Analysis of investment experience in other fields, e.g., business failures by the time of the establishment of the firm, might reveal a similar change in quality.

[21] Ibid., p. 100.
[22] Ibid., Tables 10 and B3.