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The Postwar Course of Home Mortgage Quality

One of the two main objectives of this study was to ascertain what has happened to the quality of home mortgage credit over the postwar years. Some aspects of this problem have already been considered in Chapter I. It will be recalled that both delinquency and foreclosure remained at historically low levels throughout the late 1940's and early and middle 1950's. Delinquency rates began to rise perceptibly in the late 1950's, with more serious delinquency registering a sharper upsurge than casual delinquency. Foreclosure rates did not begin to turn up until 1960, but between then and 1963 they rose quite rapidly.

These, however, are strictly measures of performance. Could this deteriorating performance have been predicted at the time the loans were made? What has happened to "ex ante" quality as a result of changes in loan and borrower characteristics?

We have already noted in Chapter I that there were substantial changes in both borrower and loan characteristics during the years following World War II, but we made no attempt to relate these changes systematically to changes in performance. There have been numerous warnings that continued liberalization of mortgage terms was creating riskier loans. Just how much riskier, and what specific factors were creating the risks, however, was never made clear. It has been widely assumed, for example, that higher loan-to-value ratios and longer terms to maturity create greater hazards (a) because initial equities are lower, and (b) because the period during which the borrower has little equity in his property is lengthened. Presumably the argument would be that in a prolonged period of low equity, economic reversals

are more likely to strike the borrower, who, having little vested interest, will let loan payments lapse. It is not obvious, however, that the fact that a borrower has only a small equity in his home will cause him to default on his loan. It is perhaps more likely that he defaults simply because he cannot afford to keep up the payments. Clearly this question requires careful analysis.

A second effect of liberalized terms is to magnify the borrower's resources. Lower down payments mean that given liquid assets are capable of purchasing either more home or more of other economic goods. Longer terms mean lower monthly payments for a given loan, or more loan for the same monthly payment. In either case, the borrower's ability to command goods and services with a given income is enlarged. But does this increase or reduce the danger of delinquency and foreclosure? Similar uncertainty surrounds the effects of other variables we examined.

To reduce or eliminate this uncertainty was the purpose of our regression studies in the previous chapter. We set out to test alternative sets of hypotheses to see which were consistent with the empirical evidence. We do not wish to minimize the difficulties, already noted, concerning those tests, but it does seem that they provide a useful framework from which to consider how changing loan and borrower characteristics influenced the quality of mortgage credit. What we propose to do in this chapter is to combine our cross-sectional regression results with the observed changes in loan and borrower characteristics in order to construct a time series "index" of mortgage quality.

Initially we had hoped to include most, if not all, of the variables used in our regressions in constructing such an index. This, however, did not prove practicable. As indicated in Chapter I, reliable time series of some of the variables we used are virtually nonexistent. While some data on mortgage borrower income, age, marital status, family size and occupation are available, they are much too sketchy (and in the wrong form) to be employed in regression equations. Information on loan-to-value ratios, monthly payment-to-income ratios, and term to maturity was as comprehensive as we would have liked, but left something to be desired from the standpoint of reliability. Various series were begun at different times, and the universes to which they apply are not always the ones we would like to work with. Most disconcerting of all is the fact that as the series have been revised, substantial differences show up in the years in which the revisions take effect.

In view of the apparently strong influence of junior financing found in our regressions, it is unfortunate that there is, insofar as we know, no data at all on the extent to which it has been used to supplement conventional home mortgage loans in the postwar years. We did make use of the Federal Home Loan Bank Board's series showing loan purpose, but this unfortunately covers all loans at savings and loan associations, thus including multifamily and commercial conventional loans and all types of VA and FHA loans, as well as conventional loans on one- to four-family residences. Furthermore, the FHLBB breakdown comprises only three categories of loans—those for construction, purchase, and "all other" purposes.

In view of the deficiencies of the published data, we had hoped (albeit faintly) that it would be possible for us to develop our own time series by stratifying our cross-sectional data by year of mortgage initiation. This proved to be feasible only on a limited scale. The biggest problem was the foreshortening of the age distribution of the loans in the samples. Attrition had taken its toll on lenders' portfolios, so that loans made in the late 1940's or early 1950's had, in many cases, been repaid before the sample was drawn. In other instances, sampling procedures mitigated against the probability of drawing older loans. In both the MBA and NAMSB surveys, the procedure was to first draw a sample of delinquent loans and then match these with a sample of current loans having the same age distribution. Since the vast majority of delinquencies take place between the second and seventh year after a loan is put on the books, the likelihood of including loans made before 1957 was greatly reduced. (Because of the scarcity of observations in these earlier years, it was not possible to include variables which contained more than a few dummy classes if we were to avoid the problems associated with empty cells in our classification matrix. It was, of course, possible to combine observations over several years, and this was done for the 1940's, but this device could not be employed extensively without destroying the time-series character of the data.)

Given the nature of these difficulties, it seemed advisable to adopt a compromise solution. Instead of using the full complement of variables, we based our indexes on at most five: loan-to-value ratio, term to maturity, payment-to-income ratio, loan purpose, and junior financing. Separate calculations were made for VA, FHA, and conventional loans, for published (aggregate) time series and the time series derived from our samples, and for delinquency risk (current vs. noncurrent status), conditional foreclosure risk (delinquent vs. in foreclosure), and straight foreclosure risk (current vs. in foreclosure). Altogether, we computed

fourteen different time series, using intermediate versions of the equations discussed in the last chapter.[1]

For conventional loans the equations were derived solely from the USSLL data by regressing loan status on loan-to-value ratio, term to maturity, loan purpose, and junior financing. Monthly payment-to-income ratio was dropped, in the case of conventional loans, because for them reliable data on how this variable changed over time were lacking. Loan purpose for the published data was based on a three-category classification (construction, purchase, and "all other"), and for the time series constructed from the sample data on a four-category classification (construction, purchase, refinancing, and repair). Junior financing was not used in connection with the published data, since no time series relating to its incidence were available, but it does appear in the equation for the sample data.

The equations for both FHA and VA loans were derived from the NAMSB data alone by regressing loan status on loan-to-value ratio, term to maturity, and payment-to-income ratio. Identical versions were used for FHA and VA and for published and derived time series data. It will be recalled that we did not have information on loan purpose and junior financing in the NAMSB data. This presents no serious problem, however, with FHA and VA loans, since no secondary financing is permitted in connection with these loans and the vast majority of them are made for home purchase.

1. Results Using Published (Aggregate) Time Series

The data in Tables 12–14 were inserted into the regression equations listed in Appendix B to develop risk indexes of both delinquency and foreclosure for conventional, FHA, and VA loans. These indexes appear in Table 15 and Charts 14 and 15.

The reader is cautioned against trying to draw inferences from the relative sizes of the indexes for conventional loans as compared with the FHA's and VA's. A different equation was used for conventional loans and, since the regression coefficients depend in part on the proportion of loans in each status category in the cross-section sample, direct comparison could be very misleading. What can be compared, however, are changes in the indexes over time, and that is our primary objective. It is also possible to compare the absolute size of the VA

[1] A full description of the equations on which the indexes are based, together with relevant statistical tests and sample sizes, is contained in Appendix C.

TABLE 12

Time Series on Selected Variables for Conventional Loans at Savings and Loan Associations, Aggregate Data, 1950-67

Year	(*RLS*) Loan-to-Value Ratio (per cent) (1)	(*T*) Term to Maturity (months) (2)	Percentage of Loans Made for: (P_1) House Construction (3)	House Purchase (4)	(P_2) Other (5)
1950	66.9	160	33.7	42.9	23.4
1951	64.6	179	31.6	44.9	23.5
1952	65.6	181	31.8	44.7	23.5
1953	65.4	182	31.9	44.9	23.2
1954	66.8	187	34.3	42.9	22.8
1955	69.8	194	35.4	45.8	18.8
1956	69.8	196	35.8	44.7	19.5
1957	69.3	202	34.3	45.2	20.5
1958	70.8	211	33.2	42.5	24.3
1959	72.8	223	34.3	43.6	22.1
1960	73.6	229	32.7	42.9	24.4
1961	74.4	233	29.3	41.5	29.2
1962	75.8	250	28.8	41.1	30.1
1963	76.3	265	28.5	40.1	31.4
1964	75.6	277	26.6	42.4	31.0
1965	75.9	277	24.1	44.9	30.3
1966	74.1	269	21.6	46.3	32.1
1967	75.3	297	21.1	47.9	31.1

SOURCE: Through 1963 col. 1 is a simple average of cols. 5 and 6 in Table 2; col. 2 is a simple average of cols. 5 and 6 in Table 1. Cols. 3, 4, and 5 are taken from United States Savings and Loan League, *Savings and Loan Fact Book,* 1968, p. 87. From 1964 through 1967, cols. 1 and 2 are simple averages of data in Table 72, p. 91 of *Savings and Loan Fact Book,* 1968.

and FHA indexes, since the same equation was used for calculating both.

Except for a rather sharp drop from 1950 to 1951, the delinquency risk index for conventional loans displayed only slight variation over the period between 1951 and 1961. After 1961, however, there was a steady decline through 1967, except for a very minor rise in 1966. The highest values (excluding 1950) were reached in 1952, 1954, and 1961;

TABLE 13
Time Series on Selected Variables for Section 203 Loans Insured by FHA, Aggregate Data, 1946-67

Year	Loan-to-Value Ratio (per cent) (1)	Term to Maturity (months) (2)	Payment-to-Income Ratio (per cent) (3)
1946	81.4	240	14.5
1947	79.2	235	15.0
1948	78.3	236	15.0
1949	80.1	256	15.5
1950	80.7	266	15.5
1951	78.0	266	14.5
1952	78.2	248	14.5
1953	80.2	252	15.0
1954	80.0	258	15.0
1955	83.6	290	15.0
1956	81.8	288	15.0
1957	82.4	288	15.0
1958	88.4	310	16.0
1959	90.4	324	16.0
1960	91.0	330	16.5
1961	91.8	337	16.5
1962	92.4	346	16.5
1963	92.6	353	16.5
1964	92.8	359	16.5
1965	92.7	362	16.0
1966	92.7	353	16.0
1967	92.4	350	16.0

SOURCE: Through 1964 col. 1 is a simple average of cols. 1 and 2 in Table 2. Col. 2 is a simple average of cols. 1 and 2 in Table 1. Col. 3 is a simple average of cols. 1 and 3 in Table 3. After 1964 the sources are the same as those in Tables 1, 2, and 3.

the lowest values in 1957, 1959, and the period after 1961. Differences were not great, however, until 1964 and it would be difficult to argue that either a cyclical pattern or a trend was in evidence before that time. The declines of 1964 and 1967 are another matter, clearly showing a substantial reduction in delinquency risk. The FHA delinquency risk index showed a little more cyclical variability but no long-

TABLE 14

Time Series on Selected Variables for Primary Section 501 Loans Guaranteed by VA, Aggregate Data, 1946-67

Year	Loan-to-Value Ratio (per cent) (1)	Term to Maturity (months) (2)	Payment-to-Income Ratio (per cent) (3)
1946	90.9	228	15.0[a]
1947	90.0	221	15.0[a]
1948	84.2	215	15.0[a]
1949	85.6	232	15.0[a]
1950	89.2	257	15.0[a]
1951	85.2	253	15.0[a]
1952	83.6	251	15.0[a]
1953	85.4	254	15.0[a]
1954	89.7	283	15.5
1955	91.4	299	15.0
1956	89.7	295	15.5
1957	89.0	292	16.5
1958	91.0	304	16.5
1959	92.8	314	16.5
1960	93.8	314	16.5
1961	95.1	326	16.5
1962	96.4	335	16.5
1963	96.7	340	16.5
1964	96.9	342	16.0[a]
1965	96.7	343	16.0[a]
1966	97.0	343	16.0[a]
1967	97.6	344	16.0[a]

SOURCE: Through 1964 col. 1 is a simple average of cols. 3 and 4 in Table 2. Col. 2 is a simple average of cols. 3 and 4 in Table 1. Col. 3 was computed from data supplied by the Veterans' Administration. After 1964 the sources are the same as those in Tables 1, 2 and 3.

[a]Estimated in order to provide comparability in the regression equations.

TABLE 15

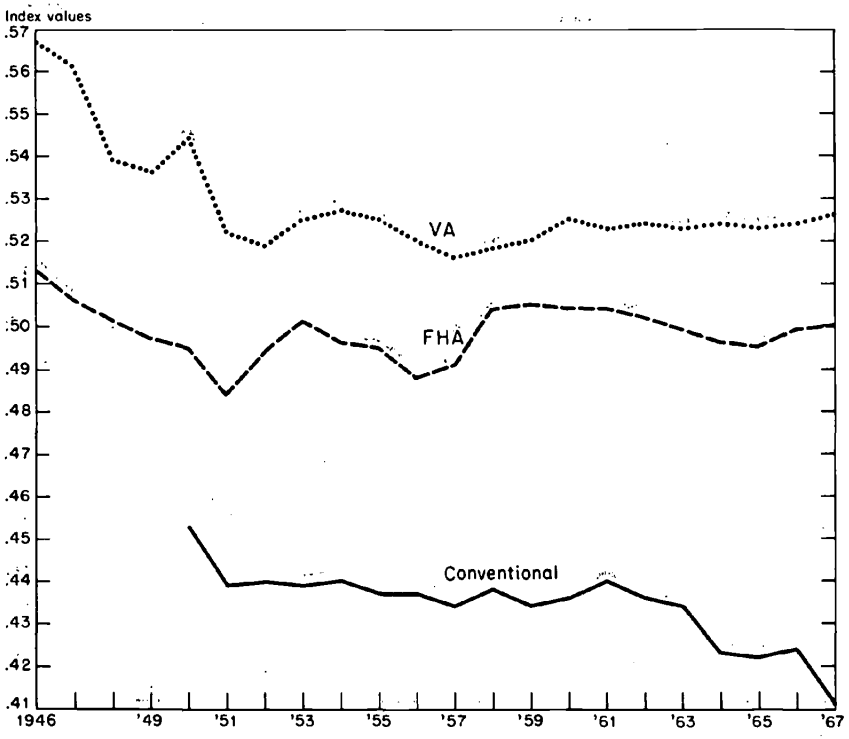
Calculated Values for Risk Index, by Year, Aggregate Data, 1946-67

Year	Delinquency			Conditional Foreclosure Risk			Straight Foreclosure Risk
	Conventional Loans (1)	FHA Loans (2)	VA Loans (3)	Conventional Loans (4)	FHA Loans (5)	VA Loans (6)	Conventional Loans (7)
1946	-	.513	.567	-	.224	.238	-
1947	-	.506	.561	-	.213	.236	-
1948	-	.501	.539	-	.210	.216	-
1949	-	.497	.536	-	.223	.229	-
1950	.453	.495	.544	.277	.230	.247	.223
1951	.439	.484	.522	.285	.227	.239	.224
1952	.440	.494	.519	.286	.209	.231	.227
1953	.439	.501	.525	.287	.224	.238	.227
1954	.440	.496	.527	.292	.226	.263	.229
1955	.437	.495	.525	.296	.253	.280	.231
1956	.437	.488	.520	.298	.247	.270	.232
1957	.434	.491	.516	.300	.249	.262	.233
1958	.438	.504	.518	.306	.272	.274	.237
1959	.434	.505	.520	.314	.285	.282	.240
1960	.436	.504	.525	.317	.287	.285	.243
1961	.440	.504	.523	.319	.293	.299	.246
1962	.436	.502	.524	.329	.300	.307	.250
1963	.434	.499	.523	.338	.304	.311	.255
1964	.423	.496	.524	.342	.307	.313	.242
1965	.422	.495	.523	.340	.311	.313	.242
1966	.424	.499	.524	.333	.306	.314	.238
1967	.411	.500	.526	.348	.307	.310	.245

SOURCE: Index values were calculated by inserting the data in Tables 12-14 into the regression equations listed in Appendix C. For definition of the risk indexes, see Chapter II, Section 1.

CHART 14

Delinquency Risk, Aggregate Data



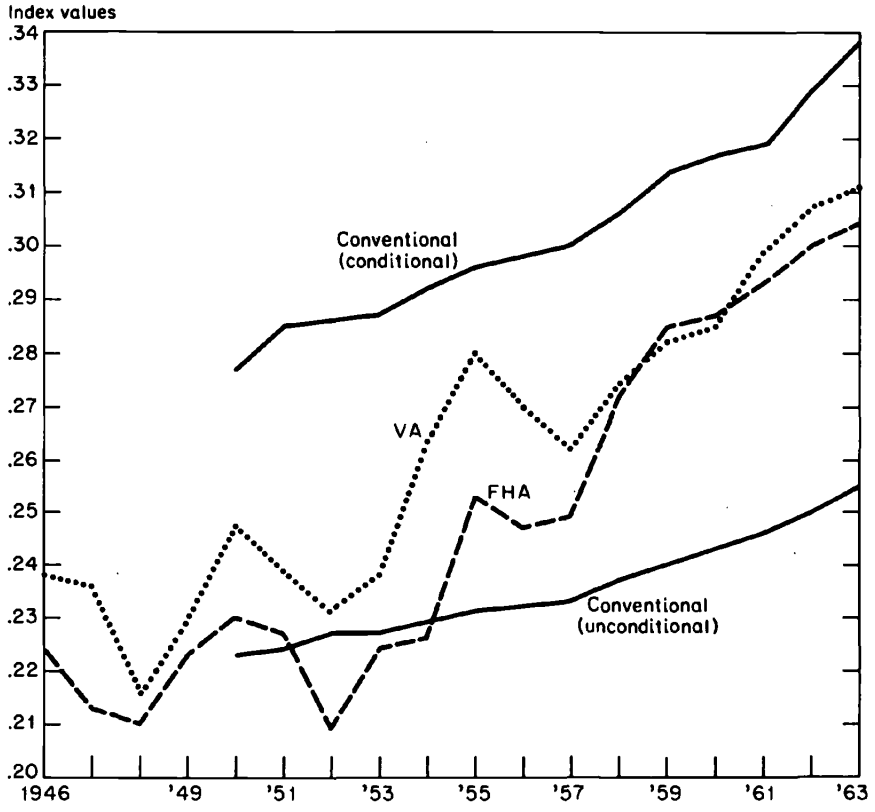
SOURCE: Table 15.

term trend. The highest value was recorded in 1946, the lowest in 1951. The lowest value at the end of the period (1965), however, was higher than either of the previous lows (1951 and 1956) perhaps indicating some upward drift in the series. There was some evidence that cyclical movements in the FHA delinquency risk index followed conditions in the money and capital markets. For example, the index declined steadily through 1951, rose in 1952 and 1953, declined through 1956, rose from 1957 through 1960, and declined again through 1965.

Disregarding the years 1946–49, which were missing from the conventional series, and the period after 1961 (when the risk on conventionals improved) the VA delinquency risk index behaved very much like the one for conventional loans. Variability after 1950 was slight, and no obvious patterns are evident. There was a rather sub-

CHART 15

Foreclosure Risk, Aggregate Data



SOURCE: Table 15.

stantial decline in the index, however, between 1946 and 1952, when a drop from .567 to .519 was recorded. It is perhaps noteworthy that the VA index remained above the FHA for the entire postwar period, although the spread narrowed slightly in 1957 and 1958.

In contrast to the delinquency risk indexes, those measuring foreclosure risk (both conditional and straight) showed a definite upward trend over most of the postwar period. The indexes for conventional loans rose steadily until 1963 for straight foreclosure and 1964 for conditional. With regard to conditional foreclosure risk (the risk of foreclosure, given that a loan is delinquent), 1967 showed the largest

rise followed by 1959, 1962, and 1963. The only years when the index declined were 1965 and 1966. Unconditional foreclosure risk increased most from 1958 through 1963, with the greatest single year's gain in the period being recorded in the latter year. The rise of 1967, however, which followed declines in 1964–66, was sharper even than the one experienced in 1963.

The conditional foreclosure risk index for FHA loans stood at about the same level in 1954 as that at which it started in 1946, although it had fluctuated somewhat in the interim. After 1954, however, it rose considerably, with much of the rise coming in two years—1955 and 1958. The later years, 1959–67, were marked by a gradual but persistent increase (except for a slight decline in 1966), and this gradual drift pushed the index well above its earlier levels.

The VA conditional foreclosure risk index showed a pattern very much like that of the FHA, although it jumped considerably in 1954—one year earlier than the beginning of the upward surge of the FHA index. It also appears that, except for two years (1959 and 1960), delinquent VA loans carried higher risks of foreclosure than FHA.

In general, the results of working with published time series seem to indicate that there was no particular trend in delinquency risk over the postwar period, although cyclical variations are in evidence. Risks on conventionals clearly declined after 1961. Looking at foreclosure risk, however, it would appear that once a loan has become delinquent, the chances that it will wind up in foreclosure have increased markedly over the years for all types of loans (the improvement in conventionals between 1964 and 1966 was more than offset by the rise in risks in 1967). Also, a direct comparison of FHA and VA loans would indicate that the latter are slightly more risky than the former. This spread, however, appears to have narrowed considerably in recent years. Finally, straight foreclosure risk (available only on conventionals) rose considerably between 1950 and 1963, declined through 1966, and rose sharply in 1967. This latter rise, however, still left the index somewhat below its 1963 peak.

We must confess that we were somewhat surprised by the behavior of the delinquency risk indexes. We had expected that they, like the foreclosure risk indexes, would move upward through the period. The obvious statistical explanation of why they did not is that the persistent lengthening of term to maturity (which showed a negative relationship to risk in the delinquency equations, but a positive relationship in the foreclosure equations) simply swamped the effects of the other variables. This fact, of course, underscores one of the dangers of trying to apply

cross-sectional results to time series data. If, as was pointed out in the last chapter, the coefficient on the term to maturity variable is biased downward when other variables are dropped from the equation, the lengthening of maturities over time may have nothing whatever to do with changes in delinquency risk.

There are other methodological difficulties as well. Most of these center around the implicit assumption we made that the economic conditions which prevailed when the sample was drawn were equally relevant to the earlier years when the loans were made. Obviously just which loans are in trouble at any given moment is going to depend on how economic conditions affect different borrowers. If a different set of conditions would lead to a different pattern of delinquency and foreclosure, then our equations would not apply to a situation where economic conditions were different. Whether this weakness was, in fact, of sufficient importance to nullify our findings is impossible to say. The dangers are there, however, and we wish to emphasize that our findings should be interpreted with caution.

2. Results Using Time Series Derived from Sample Data

The time series derived from our sample data were employed for two purposes: (1) to check whether our sample was representative of all loans made in the same periods, and (2) to provide information on some variables, notably loan purpose and junior financing, for which published time series were inadequate or nonexistent. Obviously, the sample time series could not be extended beyond 1963, the year in which the sample was drawn. Comparison of Tables 16–18 with Tables 12–14 indicates that although there are some differences in the two sets of time series, there are basic similarities. The existing differences can probably be attributed to (1) the few cases in the derived time series where the sample size was too small to give reliable estimates, and (2) the averaging technique which was used in deriving the time series based on published data. Loan-to-value ratios and terms to maturity in that set are almost certainly understated as a result of taking a simple average of the values for loans on new and existing properties. In spite of this, however, the same general trends emerge in both sets of data.

This observation is borne out by the striking similarity in the behavior of the two sets of risk indexes (see Table 19 and Charts 16 and 17). There are, of course, some minor differences in the year-to-year fluctuations, but the over-all trends are very much the same. The

TABLE 16

USSLL Conventional Loans, Selected Variables, Sample Data, 1941-63

Year	(*RLS*) Loan-to-Value Ratio (per cent) (1)	(*T*) Term to Maturity (months) (2)	Percentage of Loans Extended for:				Percentage of Loans with Junior Financing (7)	Sample Size (8)
			(P_1) Construction (3)	Purchase (4)	(P_2) Repairs (5)	(P_3) Refinancing (6)		
1941-49	63.5	196	15.2	47.9	10.8	26.1	4.4	43
1950	60.7	196	19.4	41.7	13.9	25.0	3.1	40
1951	64.6	198	18.2	63.7	3.6	14.5	11.8	69
1952	63.6	195	24.0	55.9	8.6	11.5	16.4	117
1953	64.7	188	22.6	47.5	7.3	22.6	9.2	144
1954	63.2	194	21.4	51.6	7.5	19.5	11.1	183
1955	68.6	200	18.5	56.0	8.6	16.9	23.3	332
1956	67.7	196	21.3	45.8	7.1	25.8	17.7	431
1957	65.0	203	16.1	57.4	4.1	22.4	25.8	484
1958	67.5	213	17.7	49.0	5.5	27.8	25.2	744
1959	71.2	231	19.6	53.1	3.5	23.8	30.0	963
1960	71.2	234	15.1	56.7	3.7	24.5	25.7	936
1961	72.9	237	9.7	54.0	3.2	34.1	19.6	1,015
1962	75.1	253	8.5	54.5	3.2	33.8	20.2	694
1963	74.6	269	13.3	48.9	2.2	35.6	21.9	61

SOURCE: All figures were derived from the USSLL sample of 6,550 loans. The loans were stratified by year and the average calculated.

TABLE 17

MBA FHA Loans, Selected Variables, Sample Data, 1946-63

Year	Loan-to-Value Ratio (per cent) (1)	Term to Maturity (months) (2)	Payment-to-Income Ratio (per cent) (3)	Sample Size (4)
1946-49	80.7	289	17.2	17
1950	91.6	296	14.8	30
1951	84.4	279	13.4	14
1952	80.3	274	14.8	7
1953	85.0	279	13.9	22
1954	86.5	298	13.6	31
1955	88.5	296	14.1	67
1956	86.0	287	14.1	38
1957	87.8	295	15.3	58
1958	91.7	317	17.2	240
1959	93.2	334	16.8	360
1960	93.7	342	17.3	353
1961	94.7	342	17.0	310
1962	95.4	336	16.7	186
1963	92.9	340	17.5	14

SOURCE: All figures were derived from the MBA sample of 3,832 loans. The loans were stratified by year and the average calculated.

only substantial difference is in the delinquency risk index for conventional loans. This can be attributed to the reformulation of the regression equation in this case, in order to take account of the finer breakdown of loan purpose and the addition of the junior financing variable made possible by the sample data. This reformulation, which was certainly an improvement, resulted in a definite upward trend in the index over time. It is significant that up to 1954 there were only minor fluctuations in the index, but that afterward, especially in 1958 and 1959, greater risks were clearly in evidence. The index tapered off somewhat after 1959, but it remained well above the 1954 level. These results are entirely consistent with the behavior of published delinquency rates in the same period.

The FHA delinquency risk index from the sample data was at the same level in 1963 as in 1951, again indicating that there was probably no trend toward either higher or lower quality in the FHA loans made over these years. There were, however, as in the index based on

published data, substantial year-to-year fluctuations, with peaks being reached in 1950, 1955, 1958, and 1962. All of these years, it might be noted, fell in the latter stages of periods of monetary ease. The VA index again registered a substantial decline in the early years, dropping from .568 for the 1946–49 period to .522 in 1953. After that time, just as in the version based on published data, it remained relatively stable. Again it should be noted that the VA risk index remained above the FHA, except for one year (1958) when they were virtually equal.

Conditional foreclosure risk again registered clear upward trends in all cases, but the pattern was slightly different from that found by use of the aggregative published data. Conditional foreclosure risk for conventional loans was almost identical to the previous results, except that in the earlier version it advanced somewhat in 1960, whereas the sample version shows a decline. The over-all gain for the entire period was almost identical. The straight foreclosure risk index for

TABLE 18

MBA VA Loans, Selected Variables, Sample Data, 1946-63

Year	Loan-to-Value Ratio (per cent) (1)	Term to Maturity (months) (2)	Payment-to-Income Ratio (per cent) (3)	Sample Size (4)
1946-49	97.4	265	16.5	29
1950	98.0	290	15.2	48
1951	93.2	303	14.1	27
1952	91.7	278	15.1	22
1953	91.4	304	14.5	34
1954	96.2	329	16.0	138
1955	94.1	322	16.0	168
1956	92.9	321	16.5	182
1957	93.6	317	15.6	96
1958	95.3	349	16.2	65
1959	98.7	353	16.7	171
1960	99.3	346	17.1	131
1961	99.6	351	16.8	128
1962	99.0	352	17.2	149
1963	99.0	354	17.5	20

SOURCE: All figures were derived from the MBA sample of 3,832 loans. The loans were stratified by year and the average calculated.

TABLE 19

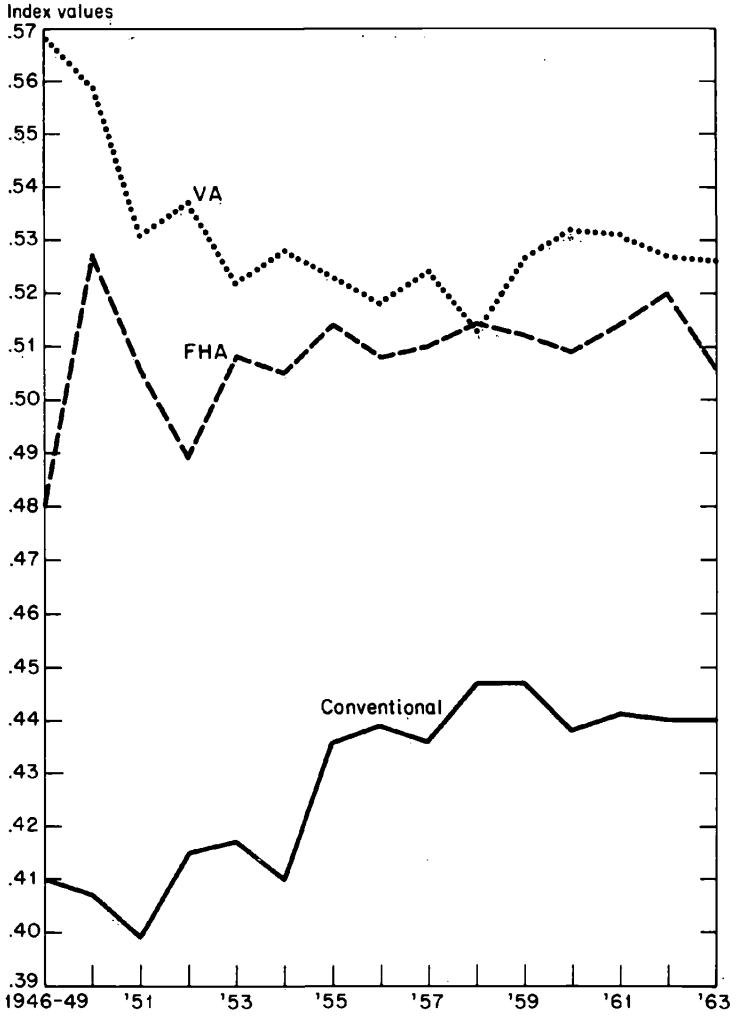
Calculated Values of Risk Index, by Year, Sample Data, 1946-63

Year	Delinquency Risk			Conditional Foreclosure Risk			Straight Foreclosure Risk
	Conventional Loans (1)	FHA Loans (2)	VA Loans (3)	Conventional Loans (4)	FHA Loans (5)	VA Loans (6)	Conventional Loans (7)
1946-49	.410	.480	.568	.271	.233	.273	.223
1950	.407	.527	.559	.273	.260	.294	.223
1951	.399	.506	.531	.271	.258	.292	.224
1952	.415	.489	.537	.278	.236	.270	.228
1953	.417	.508	.522	.267	.257	.285	.226
1954	.410	.505	.528	.275	.273	.305	.226
1955	.436	.514	.523	.287	.275	.295	.234
1956	.439	.508	.518	.287	.263	.288	.233
1957	.436	.510	.524	.287	.266	.293	.234
1958	.447	.514	.513	.298	.279	.311	.238
1959	.447	.512	.526	.312	.294	.320	.244
1960	.438	.509	.532	.306	.297	.318	.241
1961	.441	.514	.531	.305	.302	.322	.239
1962	.440	.520	.527	.314	.302	.317	.242
1963	.440	.506	.526	.327	.293	.318	.246

SOURCE: Index values were calculated by inserting the data in Tables 16-18 into the regression equations listed in Appendix C. For definition of the risk indexes see Chapter II, Section 1.

CHART 16

Delinquency Risk, Sample Data

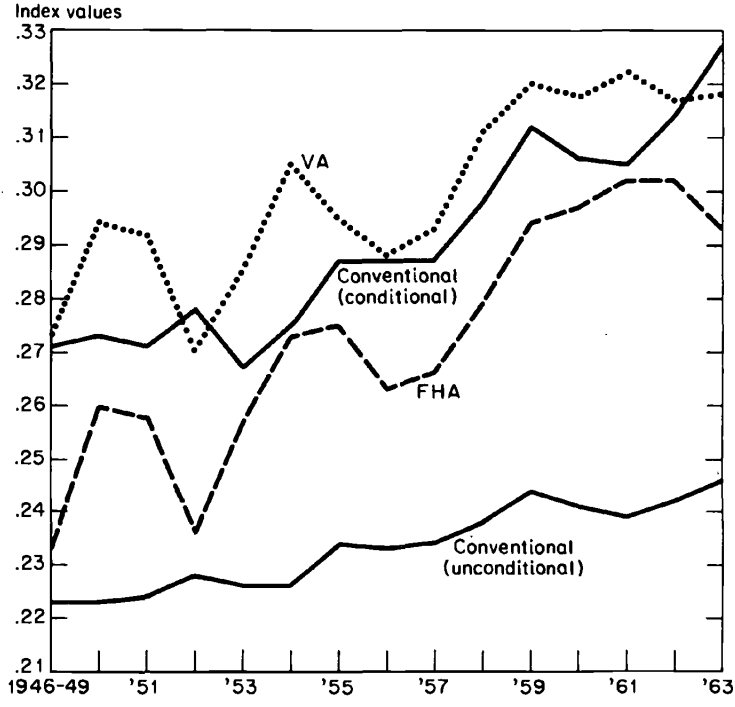


SOURCE: Table 19.

conventional loans behaved in an almost identical manner for both sets of data until the last three years, when the sample-based version lagged behind. Most of the discrepancy in that case can be attributed to the year 1961, which saw the two indexes moving in opposite directions.

CHART 17

Foreclosure Risk, Sample Data



SOURCE: Table 19.

The FHA conditional foreclosure index, which for the published data had remained low through the mid-1950's, advancing only in the later years, in the sample version began to rise earlier (1953). The over-all trend was much the same, however, the highest values being reached in the late years of the period. The same thing was true for the VA index, with substantial increases being recorded in the early years, followed by an additional upward surge from 1958 to 1963. The fact that the sample VA and FHA loans showed increased foreclosure risk earlier than the population of all such loans may be due to the fact that the sample loans were drawn entirely from mortgage bankers' portfolios. It is possible (indeed probable) that mortgage bankers liberalized terms earlier than other lenders. It is also possible, however, that the differences primarily reflect the influence of averaging technique commented upon earlier.

In general, the results provide fairly conclusive evidence that there has been some deterioration of mortgage quality over the postwar period. If one makes allowances for the possibility of a wrong sign on term to maturity, the effect of which is considerable, it is likely that a slight upward drift in delinquency risk took place. There is no question that there was a substantial increase in foreclosure risk, whether measured as the probability that a delinquent loan would wind up in foreclosure or as the probability that a "typical" current loan would meet the same fate. The trends are simply too strong to conclude otherwise.

3. *Comparison of the Risk Indexes with Published Delinquency and Foreclosure Rates*

The risk indexes developed in this study refer only to *new* loans being made at various dates, whereas published delinquency and foreclosure rates are for *outstanding* loans in lenders' portfolios. The relationship between our calculated indexes and published delinquency and foreclosure rates partly depends, therefore, on the age distribution of loans in lenders' portfolios. Moreover, actual delinquency and foreclosure rates are influenced by economic conditions prevailing at the time the loans are outstanding. Hence they may change by more or less than the index, or may even move in the opposite direction.

There are, unfortunately, no published data on the characteristics of loans outstanding from which a risk index for outstanding loans could be calculated. Nor are there any empirical data available on the changing age composition of lenders' portfolios. Attempts to simulate portfolio quality by assuming no change in the age composition of loans and using published data on the characteristics of new loans proved fruitless. An earlier point that bears repeating is that if more definite conclusions are to be drawn about temporal changes in mortgage quality, it will be necessary to work with inter-temporal samples of terminated loans.