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## APPENDIX P.

### EXAMPLES OF COMBINED EFFECTS OF CHANGES IN COSTS AND TERMS OF MORTGAGE LOANS ON CARRYING CHARGES

THE following calculations illustrate the combined effects of changes since 1920 in costs and terms of mortgage loans on borrowers' periodic outlays.<sup>1</sup>

Terms employed by a sample of commercial banks in making loans on one- to four-family houses in 1920 and 1946 were as follows:<sup>2</sup>

	<i>Loan-to-Value Ratio</i>	<i>Contract Interest Rate</i>	<i>Length of Loan</i>
1920	48%	6.2%	2.9 years
1946	70	4.3	12.7

In 1920-1924, according to Table 66, 41.0 per cent (by amount) of all such loans were nonamortized; only 14.9 per cent were fully amortized. In 1945-1947, 69.0 per cent were fully amortized and only 3.7 per cent nonamortized. Thus a large proportion of typical loans in 1920-1924 were nonamortized, while the reverse was true in 1945-1947. On the basis of these data, three alternative calculations are presented in Table P-1. One describes the charges in 1920 and 1946 for a first mortgage loan of \$1,000 on the basis of the above contract term; the second calculation describes the charges for a first mortgage loan on property valued at \$1,000 in both years; the third calculation supplements the second by assuming that enough second mortgage financing was used in 1920 to make the combined mortgage on \$1,000 of property value in that year equal to the first mortgage in 1946. The second mortgage in all cases is assumed to require amortization over the stated term.

For a sample of life insurance company loans on one- to four-family houses, the terms during the same years were:<sup>3</sup>

	<i>Loan-to-Value Ratio</i>	<i>Contract Interest Rate</i>	<i>Length of Loan</i>
1920	46%	6.1%	6.0 years
1946	75	4.2	18.8

<sup>1</sup> For illustrations on a purely hypothetical basis see Ernest M. Fisher, *Urban Real Estate Markets: Characteristics and Financing*, National Bureau of Economic Research, 1951, Tables 14-22.

<sup>2</sup> Based on Tables 64, 67, and O-6.

<sup>3</sup> Based on Tables 64, 67, and O-6.

TABLE P-1  
 Monthly Charges on Various Assumptions Based upon Mortgage  
 Loans Made by Commercial Banks

<i>Base and Period</i>	<i>Down- payment</i>	<i>Loan Type</i>	<i>Loan Amount</i>	<i>Monthly Charge<sup>a</sup></i>
I. Per \$1,000 loan. First mortgage only				
1920		Nonamort.	\$1,000	\$5.17
1946		Amort.	1,000	8.35
II. Per \$1,000 property value. First mortgage only				
1920	\$520	Nonamort.	480	2.48
1946	300	Amort.	700	5.85
III. Per \$1,000 property value				
1920 (first and second mortgage)		First nonamort. at 6.2%	480	2.48
		Second amort. at 6.5%	220	4.31 <sup>b</sup>
Total			700	6.79
1946 (first mortgage only)		First amort.	700	5.85

<sup>a</sup> All debt service charges have been converted to a monthly equivalent. In the case of amortized mortgages, debt service charges were calculated for "direct-reduction" loans and were estimated on the basis of the nearest quarter of a per cent and the nearest year. This type of loan provides for equal monthly installments, including both interest and repayment of principal, over a stated period.

<sup>b</sup> Only a few scattered data are available on costs and terms of second mortgage borrowing in the twenties. However, a standard type of second mortgage on a new structure in that period appears to have been a five-year amortized loan, carrying an interest rate slightly higher than that on the first mortgage. The calculations are based on these terms. No second mortgage discount is charged the borrower in these calculations on the assumption that a purchaser of a new structure usually obtained his second mortgage from the builder. In such cases the discount at which the builder expected to sell the second mortgage was probably reflected in the price of the building. Although this price effect cannot be quantified, it should not be overlooked.

It is more difficult to assume that typical life insurance company mortgages on one- to four-family houses in 1920 were nonamortized. While only 21.3 per cent (by amount) were fully amortized in 1920-1924, only 19.7 per cent were nonamortized, according to Table 66. The bulk of the loans were partially amortized. However, the extreme cases can be considered, and calculations in Table P-2 are based on the alternative assumptions that the 1920 terms were associated with fully amortized or with nonamortized loans.

For commercial bank first mortgages the computed monthly carrying charges per \$1,000 of first mortgage were \$8.35 during 1946, as compared with \$5.17 in 1920. Computed carrying charges per \$1,000 of property value were \$5.85 in 1946, compared with \$2.48 in 1920, assuming no junior mortgage. For life insurance company loans, about the same picture is found when nonamortized 1920 loans are compared with current loans. Monthly carrying charges per \$1,000 of first mortgage were \$6.40 in 1946 as against \$5.08 in 1920. Computed carrying charges per \$1,000 of property value were \$4.80 in 1946 as against

TABLE P-2  
 Monthly Charges on Various Assumptions Based upon Mortgage  
 Loans Made by Life Insurance Companies

	<i>Down- payment</i>	<i>Loan Type</i>	<i>Loan Amount</i>	<i>Monthly Charge<sup>a</sup></i>
A. 1920 First Mortgages Nonamortized				
I. Per \$1,000 loan. First mortgage only				
1920		Nonamort.	\$1,000	\$5.08
1946		Amort.	1,000	6.40
II. Per \$1,000 property value				
1920	\$540	Nonamort.	460	2.34
1946	250	Amort.	750	4.80
III. Per \$1,000 property value				
1920 (first and second mortgage)		First nonamort. at 6.1%	460	2.34
		Second amort. at 6.5%	290	5.68 <sup>b</sup>
Total	250		750	8.02
1946 (first mortgage only)	250	First amort.	750	4.80
B. 1920 First Mortgages Fully Amortized				
I. Per \$1,000 loan. First mortgage only				
1920		Amort.	1,000	16.57
1946		Amort.	1,000	6.40
II. Per \$1,000 property value. First mortgage only				
1920	540	Amort.	460	7.62
1946	250	Amort.	750	4.80
III. Per \$1,000 property value				
1920 (first and second mortgage)		First amort. at 6.1%	460	7.62
		Second amort. at 6.5%	290	5.68
Total	250		750	13.30
1946	250	First amort.	750	4.80

<sup>a</sup> All debt service charges have been converted to a monthly equivalent. In the case of amortized mortgages, debt service charges were calculated for "direct-reduction" loans and were estimated on the basis of the nearest quarter of a per cent and the nearest year. This type of loan provides for equal monthly installments, including both interest and repayment of principal, over a stated period.

<sup>b</sup> Only a few scattered data are available on costs and terms of second mortgage borrowing in the twenties. However, a standard type of second mortgage on a new structure in that period appears to have been a five-year amortized loan, carrying an interest rate slightly higher than that on the first mortgage. The calculations are based on these terms. No second mortgage discount is charged the borrower in these calculations on the assumption that a purchaser of a new structure usually obtained his second mortgage from the builder. In such cases the discount at which the builder expected to sell the second mortgage was probably reflected in the price of the building. Although this price effect cannot be quantified, it should not be overlooked.

\$2.34 in 1920, assuming no junior loan. If fully amortized mortgages are assumed for 1920, however, recent carrying charges are significantly below those calculated for 1920.

Even when second mortgages are assumed to have been used in the twenties, the results, though modified, are not completely vitiated. If a second mortgage was added to a 1920 commercial bank first mortgage

(the amount of the second mortgage being equal to the difference between a typical 1920 first mortgage and a typical 1946 first mortgage on the same property value), the monthly carrying charges per \$1,000 of property value were only \$.94 lower in 1946 than the charges on the combined 1920 mortgages. If life insurance company loans are treated in the same way, however, a large reduction in monthly outlays between 1920 and 1946 is found: \$8.02 per month in 1920, when the first mortgage was nonamortized, compared with \$4.80 in 1946. The decrease would have been even greater for those cases in which the 1920 first mortgage was amortized.<sup>4</sup>

No calculations are needed for savings and loan associations. Since loans by these institutions have always carried amortization provisions, the decline in interest rates and the extension of contract terms have directly reduced periodic carrying charges.

The above comparisons do not take account of noninterest costs of loans around 1920, particularly renewal and refinancing costs of relatively short-term nonamortized loans. These costs were apparently quite high in many cases at that time and have since declined significantly. For current loans the insurance premium of .5 per cent on FHA-insured loans is not included. These underestimates in part offset each other, but it is probable that the underestimate of charges is greater for the 1920 period than for the recent one.

<sup>4</sup> The difference in the conclusions drawn from the calculations for the two types of institutions is largely a consequence of the greater rise in typical loan-to-value ratios of life insurance company loans over this period as compared with ratios for commercial bank loans. As a result, the second mortgage represents a larger portion of the combined first and second mortgages of 1920 in the case of life insurance companies than in the case of commercial banks. Since it has been assumed that second mortgages were amortized, the decline in interest rates affects the life insurance comparison more than the commercial bank comparison.