The Investment Market, 1870-1914: The Evolution of a National Market
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The Investment Market, 1870-1914: The Evolution of a National Market

I

IT is necessary not only that capital be accumulated, but also that it be mobilized for productive use, if an economy is to benefit from an increase in capital per person.[1] The classical model of resource allocation assumes that within any economy capital is perfectly mobile. It implies, therefore, that once allowance is made for uncertainty and risk, returns on investment are equal in all industries in all regions. Such a model, while logically consistent, is not very useful for analyzing the process of economic growth. In the early stages of development, because the uncertainty discounts are high, capital is not very mobile. As a result, rates of return vary widely between industries and between regions; and growth in high-interest regions is retarded. Development, in part then, takes the form of a reduction in uncertainty discounts—a reduction that makes it possible for capital to move more freely between regions and industries.

In a Robinson Crusoe economy, where the saver is also the investor, capital mobilization presents no problem. The more complex the economy, however, the more difficult it is to transfer the command over resources gained by nonconsumption from the savers to those who wish to use these resources—that is, the investors. In the case of the United Kingdom, as Postan has shown, each of several personal fortunes could have financed the entire industrial revolution. Despite these personal accumulations, the new industries were unable to acquire funds even at interest rates in excess of 20 per cent. At the same time, the land-connected industries (agriculture, brewing, milling, and mining) were able to command large quantities of capital, although rates of return were near zero (and sometimes, perhaps, negative).[2] In the case of the United States, the mobilization problem was even more complex. Not only did capital have to move from old to new industries, but mobilization fre-

[1] M. M. Postan, in an unpublished series of lectures given in the graduate economic history seminar at Johns Hopkins University during the academic year 1954-55.

[2] Postan.

quently involved geographic movement as well. In general, most of the savings accrued in the developed areas (that is, in the Northeast), but the demand for capital moved steadily toward the South and West. At the same time as comparative advantage shifted, early accumulations in foreign trade and shipping had to be transferred into textiles and other light industry during the first half of the nineteenth century. In the second half, funds had to be mobilized for heavy industry; and in the present century petroleum, chemicals, and electronics have become great demanders of new capital.

Although Douglass North has argued that barriers to capital mobility were not important in the United States,[3] many students of the nineteenth century have felt they were. Moreover, a fund of qualitative information suggests that the economy encountered substantial problems in its attempts to mobilize capital across regional and industrial boundaries.[4] The purpose of this paper is to provide some quantitative measures of the barriers to interregional mobility and to suggest that certain institutional innovations in the period 1870-1914 acted to reduce these barriers.

For simplicity, the United States has been divided into six geographic regions—regions originally defined by the Comptroller of the Currency. Because of the timing of American development, only two of the six lie entirely west of the Mississippi River. East of the Mississippi, New England has been separated from the Middle Atlantic states, but the remainder of the divisions quite closely follow those laid down by North. Region I is New England; Region II, the Middle Atlantic states; Region III, the South; Region IV, the Old Northwest Territory plus the first-settled states of the West North Central region; Region V includes the Great Plains and part of the Mountain states; and Region VI, the Pacific and the remainder of the Mountain states.[5]

[3] North, "Capital Formation and the Industrialization of the United States," a paper delivered before the Second International Economic History Conference, Aix-en-Provence, France, 1962.

[4] See L. Davis, "Capital Formation and the Industrialization of the United States: Comment," a paper delivered before the Second International Economic History Conference, Aix-en-Provence, 1962; and L. Davis, "Capital Immobilities and Finance Capitalism: A Study of Economic Evolution in the United States 1820-1920," *Explorations in Entrepreneurial History*, second series, I, No. 1 (Fall 1963), 88-105.

[5] Region I: Maine, Vermont, New Hampshire, Massachusetts, Connecticut, and Rhode Island.
Region II: New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia.

II

The major quantitative series for the analysis of the short-term market have been derived from the annual reports of the Comptroller of the Currency. These reports include state-by-state balance sheets for both reserve-city and non-reserve-city national banks at two or three dates per year. These balance sheets are reported in sufficient detail to permit earning assets to be separated from non-earning assets. In addition, for the years 1888 to 1914 the reports include gross earnings of the same banks on a state-by-state basis; and for the years 1869 to 1914 they report net earnings (gross earnings less losses and bank operating expenses). The gross rates of return on earning assets (gross earning divided by earning assets) appear to be a good approximation of the average rate of interest earned by the national banks. Moreover, since operating expenses tended to be relatively constant between regions and years and since losses are a short-run phenomenon, the net rates of return are a fairly good proxy for long-term movements in the average interest rates earned.

Because reserve-city banks had different reserve requirements than did non-reserve-city banks, and because the assets of the former might differ significantly from those of the latter, the two are reported separately in the following analysis. (Otherwise, an apparent rate differential might reflect only differences in the mix of reserve-city and non-reserve-city banks in a region.) For the same reason, the city of New York is reported separately.[6]

Interregional interest differentials were a well-known phenomenon in the nineteenth century; and contemporaries generally as-

Region III: Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Kentucky, and Tennessee.
Region IV: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, and Missouri.
Region V: North Dakota, South Dakota, Nebraska, Kansas, Montana, Wyoming, Colorado, New Mexico, and Oklahoma.
Region VI: Washington, Oregon, California, Idaho, Utah, Nevada, and Arizona.
Region O: New York City.

[6] Because of the difficulties induced by changing definitions, Chicago and St. Louis are included in their respective regions. The law required 25 per cent reserves (all in lawful money) in central-reserve-city banks; 25 per cent (but up to one half could be in the form of bank deposits) in reserve-city banks; and 15 per cent (up to three fifths in deposits) in non-reserve-city banks.

sumed that they were the result of certain capital immobilities.[7] The term "disinclination of capital to migrate" was used to explain the phenomenon, and it was estimated that an interest differential of 2 per cent was necessary to overcome this barrier.[8] Table 1 displays Breckenridge's estimates of intercity rate differentials in the mid 1890's, and these differentials correspond fairly closely to the estimates based on the Comptroller of the Currency's reports.

Since it was 1913 before national banks were permitted to invest in mortgages, bank loans tended to be short-term; and the regional differentials in the rate of return tend to reflect differentials in the interest rate of short-term commercial paper. Tables 2, 3, 4, and 5 display the gross and net rates of return to national banks in the period 1869-1914. For each region, column 1 shows unweighted average rates and column 2 an average weighted by the earning assets of the banks in each region. Because these returns were subject to sharp short-term fluctuations (particularly in years when only a few banks were operating in a region), Charts I through IV display three-year moving averages of the weighted rate series. Chart I displays gross earnings for non-reserve-city banks and Chart II, gross earnings for reserve-city banks. Charts III and IV show net earnings for non-reserve-city and reserve-city banks respectively. The New York City rate is displayed separately in each chart. Since it represents the rate of return in the nation's financial center, it is a useful referent.

In general, the unweighted bank data show differences in the mid 1890's that are comparable to those reported by Breckenridge; whereas the weighted average, dominated by the largest cities, shows less variation between regions. The two series are, however, not strictly comparable, since Breckenridge includes both reserve-city and non-reserve-city banks in his enumeration. City-for-city,

[7] It is, of course, true that other factors aside from uncertainty may have engendered (and probably did engender) a part of the differential. It is likely that in the early period eastern lenders may have felt western loans were more risky. In addition, since the average loan size in the West was smaller, these loans may have entailed a higher percentage of administrative costs. These reasons, on the other hand, cannot be used to explain away the entire differential. Since substantial differentials were also apparent in the net rates of return (after losses had been deducted) it must have become obvious that western loans were not "all that much" riskier, but the differentials persist for some decades. Moreover, the differentials continued after the size differentials between eastern and western loans began to diminish.

[8] R. M. Breckenridge, "Discount Rates in the United States," *Political Science Quarterly*, XIII (1898), 129.

Breckenridge's rates are slightly above those derived from bank earnings, and this difference undoubtably reflects the "nominally lower yielding" Government bonds in the banks' portfolios.

All four charts indicate that differentials were higher in the earlier years than they were in the later. This pattern suggests that there

TABLE 1
THE AVERAGE WEEKLY RATE OF DISCOUNT, 1893-1897
(IN FORTY-THREE CITIES OF THE UNITED STATES, ARRANGED ACCORDING TO THE GEOGRAPHICAL DIVISIONS IN WHICH THEY LIE)

	Percentage			*Percentage*	
New England			*Middle States*		
Boston	3.832		Cincinnati	5.012	
Hartford	4.602		Chicago	5.742	
Providence	4.982		Pittsburgh	5.838	
Portland	6.000		St. Louis	5.903	
			Milwaukee	6.276	
Average		4.854	Indianapolis	6.369	
			Cleveland	6.376	
Eastern States			Detroit	6.415	
New York	4.412		St. Paul	6.607	
Baltimore	4.567		Minneapolis	6.903	
Philadelphia	4.642		Kansas City	6.911	
Buffalo	6.007		St. Joseph	6.969	
			Duluth	7.253	
Average		4.907			
			Average		6.352
Southern States					
New Orleans	5.853		*Western States*		
Richmond	6.000		Omaha	7.980	
Memphis	6.103		Denver	10.000	
Nashville	6.673				
Louisville	6.826		Average		8.990
Charleston	7.026				
Galveston	7.311		*Pacific States*		
Mobile	7.957		San Francisco	6.216	
Savannah	7.992		Los Angeles	7.057	
Atlanta	8.000		Portland	8.000	
Birmingham	8.000		Salt Lake City	8.000	
Houston	8.000		Tacoma	9.273	
Little Rock	8.015		Seattle	9.969	
Dallas	8.342				
			Average		8.583
Average		7.293			

Source: Breckenridge, *Political Science Quarterly*, III, 126.

was a gradual movement toward a national short-term capital market during the period. Other evidence also appears to bear out this conclusion. The rates in the eastern regions tended to close before those in the West and South. Moreover, the differentials

TABLE 2
GROSS RETURNS RESERVE-CITY BANKS BY REGIONS, 1888-1914

		Region											
		I		II		III		IV		V		VI	
Year	NYC	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1888	5.78	5.32	5.32	5.92	5.48	6.24	6.33	6.69	6.65	6.97	6.97	6.90	6.90
1889	4.99	5.30	5.30	5.77	5.33	6.28	6.40	7.16	6.59	7.90	7.90	7.80	7.80
1890	5.90	4.91	4.91	6.00	5.49	6.47	6.55	6.29	6.34	7.46	7.46	7.75	7.75
1891	6.01	5.17	5.17	5.94	5.54	6.95	7.11	6.64	6.84	8.38	8.38	7.63	7.63
1892	4.57	4.45	4.45	5.64	5.41	7.18	7.29	9.18	6.61	7.87	7.87	8.60	8.60
1893	5.36	4.72	4.72	5.60	5.38	6.19	6.35	5.78	5.77	5.56	6.71	7.69	7.69
1894	4.63	4.80	4.80	5.62	5.36	8.84	8.74	6.74	6.31	7.72	7.80	7.22	7.22
1895	4.02	3.87	3.87	4.92	4.52	6.96	6.98	5.78	5.31	11.46	6.94	7.54	7.54
1896	4.70	4.48	4.48	5.48	5.52	6.23	6.51	5.46	5.47	5.74	6.28	7.37	7.37
1897	4.43	4.33	4.33	5.48	5.11	9.01	9.22	5.99	5.51	13.66	8.39	6.62	6.62
1898	4.10	4.14	4.14	5.39	5.04	7.52	7.34	5.35	5.32	10.25	9.05	4.99	5.00
1899	3.18	3.19	3.19	5.27	4.79	7.41	6.47	4.62	4.50	21.43	9.86	5.85	6.18
1900	4.47	4.48	4.48	5.33	4.89	7.10	6.38	5.09	5.44	5.50	4.49	4.35	5.22
1901	3.51	3.67	3.67	4.79	4.48	7.07	6.21	3.83	3.82	3.54	3.22	5.40	5.75
1902	5.40	3.71	3.71	4.77	4.52	5.86	5.73	5.41	4.99	10.34	9.01	5.55	5.64
1903	4.72	4.30	4.30	4.91	4.96	6.65	6.22	4.38	4.46	4.76	3.76	4.35	4.48
1904	4.74	4.48	4.48	5.08	5.12	6.61	6.00	5.06	4.70	5.92	5.55	5.65	5.20
1905	2.40	3.62	3.61	3.67	2.87	7.05	6.23	4.55	4.34	6.55	4.94	6.11	5.07
1906	4.64	4.66	4.66	4.86	4.88	5.80	5.53	4.94	4.62	5.66	5.36	5.38	4.67
1907	5.09	5.13	5.13	4.96	5.00	5.39	5.25	4.68	4.51	6.43	6.85	4.95	4.57
1908	4.86	5.59	5.59	4.96	5.07	6.46	6.19	5.18	5.20	5.91	5.78	6.07	5.45
1909	4.47	4.81	4.81	5.11	4.77	6.27	6.12	4.99	4.85	5.96	5.90	5.39	5.13
1910	5.50	5.99	5.99	5.22	4.99	6.78	6.60	5.36	5.23	6.64	6.50	6.12	5.17
1911	5.04	5.37	5.37	5.24	5.06	6.75	6.74	5.94	6.13	8.26	6.34	6.30	5.70
1912	5.21	5.35	5.35	5.25	5.29	7.54	6.72	5.75	5.39	7.31	7.01	5.30	6.19
1913	5.76	6.73	6.73	5.43	5.57	6.73	6.72	6.00	5.90	7.30	7.16	6.10	6.27
1914	5.09	6.15	6.15	5.60	5.92	7.93	7.52	6.27	6.10	8.32	8.21	6.14	6.32

[a] Unweighted.
[b] Weighted.
Source: *Annual Report of the Comptroller of the Currency.*

TABLE 3
GROSS RETURNS NON-RESERVE-CITY BANKS BY REGIONS, 1888-1914

	Region											
	I		II		III		IV		V		VI	
Year	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1888	5.99	5.96	5.80	5.86	8.57	8.35	7.24	7.07	9.83	10.42	10.71	8.83
1889	6.31	6.16	6.00	6.22	8.84	8.52	7.29	7.18	9.60	9.81	10.13	8.81
1890	6.33	6.62	6.19	6.15	8.61	8.22	6.97	6.93	9.55	9.61	9.53	8.85
1891	6.20	6.11	6.08	5.99	8.51	8.48	7.16	7.08	9.83	9.19	10.33	9.30
1892	5.64	5.48	5.94	5.82	8.37	8.21	6.86	6.76	9.63	9.01	9.26	8.59
1893	5.53	5.45	5.21	5.63	7.72	7.84	6.42	6.31	13.50	9.72	9.02	7.88
1894	5.38	5.34	5.58	5.54	7.80	7.85	6.77	6.65	8.58	7.42	8.99	8.12
1895	5.16	4.96	5.46	5.44	8.21	8.29	6.35	6.32	8.90	8.06	8.52	7.87
1896	5.27	5.16	5.48	5.48	7.68	7.87	6.47	6.33	10.40	8.60	9.87	8.67
1897	5.17	5.12	5.58	5.50	7.81	7.71	6.71	6.53	9.29	8.65	8.37	7.44
1898	5.24	5.30	5.18	4.94	7.82	7.97	6.11	5.97	9.26	8.72	8.39	8.52
1899	5.32	5.33	5.53	5.54	7.71	7.70	6.03	5.89	9.24	8.56	8.31	7.91
1900	6.57	6.24	6.34	6.02	7.79	7.64	6.26	6.21	9.24	8.95	7.78	7.61
1901	5.36	5.22	5.20	5.19	6.91	7.12	4.37	4.41	6.72	6.36	7.17	7.15
1902	5.01	4.97	4.69	4.39	6.78	7.00	5.20	5.00	7.57	6.66	7.62	6.52
1903	4.86	4.92	5.22	5.09	6.76	6.83	5.28	5.13	8.55	8.15	8.33	7.44
1904	4.90	4.90	5.17	5.11	6.67	6.82	5.51	5.31	8.67	8.17	7.60	7.57
1905	4.32	3.62	3.04	2.59	6.55	6.61	5.32	5.13	7.99	7.63	7.34	7.06
1906	4.56	4.16	4.82	4.80	6.44	6.63	4.90	4.50	7.94	7.64	8.79	7.51
1907	4.87	4.93	4.70	4.68	6.20	6.25	4.94	4.85	7.80	7.51	7.75	6.67
1908	6.26	5.82	4.83	4.97	6.28	6.35	5.40	5.28	7.64	7.37	8.93	5.14
1909	4.80	4.85	5.00	5.09	6.28	6.50	5.16	5.16	7.98	7.80	8.27	6.98
1910	5.06	5.10	5.11	5.33	6.56	6.64	5.63	5.54	8.17	7.92	9.83	7.11
1911	5.16	5.20	5.20	5.37	6.98	7.03	5.94	5.83	8.88	8.61	8.87	7.41
1912	4.98	4.96	5.21	5.32	6.83	6.83	6.02	5.92	8.76	8.66	9.76	7.12
1913	5.34	5.35	5.37	5.56	6.96	7.01	6.17	6.06	8.78	8.68	9.11	7.23
1914	5.57	5.63	5.61	5.69	7.12	7.14	6.32	6.21	8.63	8.65	8.84	7.39

[a] Unweighted.
[b] Weighted.
Source: *Annual Report of the Comptroller of the Currency.*

TABLE 4
NET RETURNS RESERVE-CITY BANKS BY REGIONS, 1869-1914

		Region											
		I		II		III		IV		V		VI	
Year	*NYC*	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1869	3.83	5.37	5.37	4.60	4.64	5.67	5.77	5.07	5.18				
1870	3.25	5.29	5.29	4.10	4.18	8.72	8.31	3.82	3.88				
1871	3.09	4.70	4.70	4.37	4.51	5.59	5.38	4.03	3.59			7.32	7.32
1872	3.36	4.62	4.62	4.05	4.14	4.69	4.74	4.10	3.35			7.59	7.59
1873	3.56	4.86	4.86	4.16	3.92	4.50	4.04	4.69	4.80			8.51	8.51
1874	3.12	4.23	4.23	4.04	3.87	4.31	3.96	4.10	3.99			6.20	6.20
1875	2.62	3.51	3.51	3.72	3.42	3.36	3.34	4.30	4.56			6.92	6.92
1876	0.37	2.32	2.32	3.17	2.96	4.85	4.81	3.97	4.21			5.47	5.47
1877	1.00	1.57	1.57	2.81	2.81	3.12	3.13	2.57	2.23			4.32	4.32
1878	1.30	0.98	0.98	1.91	2.20	3.39	3.50	2.11	2.08			5.16	5.16
1879	0.91	0.89	0.99	2.09	2.48	1.72	1.73	2.57	2.80			4.58	4.58
1880	3.10	2.29	2.29	2.27	2.54	3.21	3.21	3.11	3.30			5.31	5.31
1881	2.84	2.45	2.45	2.57	2.86	4.29	4.29	3.30	3.32			6.74	6.74
1882	2.47	2.38	2.38	2.24	2.48	3.33	3.34	4.03	3.87			4.78	4.78
1883	2.32	2.24	2.25	2.61	2.66	3.62	2.68	2.36	2.77			5.31	5.31
1884	1.39	2.06	2.06	2.86	2.88	3.32	3.35	2.86	2.89			5.24	5.24
1885	1.57	1.27	1.27	2.26	2.32	2.25	2.26	2.49	2.39			3.69	3.69
1886	2.20	2.25	2.25	2.24	2.38	1.69	1.56	3.11	3.00			4.37	4.37
1887	2.74	2.19	2.19	2.98	2.85	2.73	2.76	3.08	3.38			3.25	3.25
1888	2.59	2.73	2.73	2.95	3.14	1.94	1.90	2.75	3.12	1.91	1.91	4.80	4.80
1889	2.30	2.69	2.69	2.95	2.81	3.05	3.07	3.30	3.22	3.08	3.08	6.06	6.06
1890	2.53	1.78	1.78	2.72	2.80	3.19	3.16	2.96	3.12	2.41	2.41	5.45	5.45
1891	2.83	2.72	2.72	2.75	2.85	2.41	2.44	2.95	3.27	2.72	2.72	5.48	5.48
1892	1.91	1.69	1.69	2.57	2.52	1.95	1.96	2.62	2.78	0.74	0.74	6.07	6.07

TABLE 4 (*Continued*)

Year	NYC	I		II		III		IV		V		VI	
		(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1893	2.29	2.25	2.25	2.75	2.71	2.63	2.66	2.24	2.33	1.29	1.26	5.33	5.33
1894	1.26	1.51	1.51	2.23	2.31	0.96	1.13	0.48	1.01	—0.11	0.01	4.20	4.20
1895	1.14	1.26	1.26	2.24	2.13	1.58	1.81	1.48	1.67	0.52	0.44	4.42	4.42
1896	1.45	1.81	1.81	2.21	2.17	2.49	2.00	1.55	1.45	1.96	1.51	4.19	4.19
1897	1.37	1.82	1.82	2.16	2.10	2.85	2.27	0.93	1.22	—1.39	—0.41	3.60	3.60
1898	1.40	1.36	1.36	2.26	1.98	2.60	2.37	1.53	1.80	0.68	0.79	2.91	2.91
1899	1.03	0.80	0.80	1.89	1.57	1.97	1.49	1.22	1.44	2.22	1.50	3.30	2.98
1900	1.94	2.06	2.05	2.47	2.54	2.90	2.55	2.20	2.38	1.37	0.91	2.53	3.13
1901	1.48	1.41	1.41	1.95	1.89	3.43	2.82	3.21	3.04	3.45	2.98	2.55	3.03
1902	3.15	1.56	1.56	2.85	2.31	3.00	3.02	2.37	2.35	3.80	5.10	2.90	3.06
1903	2.46	2.01	2.01	2.08	2.28	2.93	2.67	1.85	1.93	1.16	0.78	2.22	2.37
1904	2.72	1.80	1.80	1.77	1.92	3.17	1.77	1.92	1.89	2.00	1.39	2.44	2.59
1905	1.07	1.16	1.16	1.56	1.22	3.90	3.74	1.59	1.62	3.83	2.09	2.65	2.46
1906	2.50	1.88	1.88	2.03	2.10	2.63	2.48	1.93	1.79	2.11	1.86	2.19	2.30
1907	3.01	2.34	2.34	2.37	2.26	2.74	2.60	1.90	1.88	2.96	3.42	4.28	3.23
1908	2.16	1.91	1.91	1.13	1.57	2.72	2.40	1.53	1.71	1.75	1.69	2.46	2.38
1909	1.94	1.33	1.33	1.98	1.63	2.47	2.15	1.55	1.47	2.10	1.84	1.85	2.12
1910	2.48	2.22	2.22	1.84	2.16	2.79	2.49	1.66	1.63	2.27	2.33	2.45	2.30
1911	2.00	1.75	1.75	1.51	1.41	2.18	1.92	2.06	2.44	2.28	1.62	2.18	2.46
1912	2.01	1.37	1.37	1.57	1.51	3.15	2.50	1.43	1.33	1.97	2.01	1.79	1.94
1913	2.26	2.03	2.03	1.53	1.55	2.51	2.35	1.59	1.38	1.81	1.67	1.98	2.07
1914	1.58	1.68	1.67	1.63	1.81	2.32	2.12	1.62	1.72	1.62	1.57	1.73	1.75

[a] Unweighted.
[b] Weighted.
Source: *Annual Report of the Comptroller of the Currency.*

TABLE 5

NET RETURNS NON-RESERVE-CITY BANKS BY REGIONS, 1869-1914

	Region											
	I		II		III		IV		V		VI	
Year	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1869	6.32	6.36	5.10	4.93	5.56	5.46	6.44	6.28	4.29	3.79	12.52	11.64
1870	5.78	5.77	4.65	4.35	5.63	5.17	6.01	5.80	4.08	3.77	8.81	7.38
1871	5.36	5.44	4.60	4.78	5.45	5.34	5.79	5.61	7.41	5.24	18.62	14.21
1872	5.33	5.42	3.90	4.16	4.99	4.96	5.32	5.20	5.19	4.21	15.24	12.81
1873	5.50	5.75	4.46	4.33	5.59	5.38	5.39	5.24	6.55	6.29	7.40	6.42
1874	5.41	5.34	4.12	3.84	4.69	4.57	4.96	5.08	5.64	5.23	9.17	6.68
1875	4.91	4.87	3.80	3.67	4.53	4.84	4.93	4.96	5.65	5.12	10.25	7.56
1876	3.87	3.88	3.81	3.14	4.33	4.59	4.70	4.62	5.27	4.24	8.36	7.31
1877	3.29	2.94	3.51	2.89	3.45	3.62	3.76	3.66	3.99	2.99	8.55	6.81
1878	3.03	2.83	2.83	2.35	2.39	2.42	3.53	3.46	2.57	2.26	5.92	5.42
1879	2.84	2.51	2.84	2.32	2.58	2.70	3.21	3.07	4.67	3.05	7.48	6.34
1880	3.51	3.34	3.06	2.85	2.99	3.09	3.67	3.38	4.88	3.79	6.90	4.94
1881	3.70	3.70	3.26	3.15	4.60	4.34	4.02	4.00	6.32	5.38	8.53	5.72
1882	3.37	3.34	2.92	2.94	4.16	3.92	4.15	3.94	5.47	5.24	6.84	5.16
1883	3.10	3.04	3.04	2.90	3.76	3.69	3.98	3.63	4.33	3.72	5.14	3.31
1884	2.85	2.81	2.87	2.82	4.63	4.55	4.36	3.95	5.22	5.19	6.46	5.22
1885	2.60	2.43	2.73	2.44	4.07	4.08	4.18	3.79	4.74	4.88	6.11	5.44
1886	3.29	3.02	3.00	2.87	4.13	4.41	3.62	3.58	4.59	4.74	5.30	4.51
1887	3.47	3.34	3.16	3.19	4.35	4.21	4.50	3.97	4.56	4.77	4.19	3.96
1888	3.44	3.13	3.11	3.02	4.42	4.40	3.73	3.60	4.84	5.57	7.08	5.75
1889	3.61	3.37	3.34	3.35	4.61	4.59	3.76	3.73	4.18	4.51	6.55	5.37
1890	3.63	3.40	3.36	3.32	5.17	4.59	3.66	3.62	4.29	4.35	5.30	5.03
1891	3.48	3.32	3.24	3.08	4.49	4.49	3.81	3.79	4.18	3.90	5.95	5.24
1892	2.86	2.72	3.04	2.87	3.72	3.63	3.36	3.35	4.03	3.39	4.86	4.22

TABLE 5 (*Continued*)

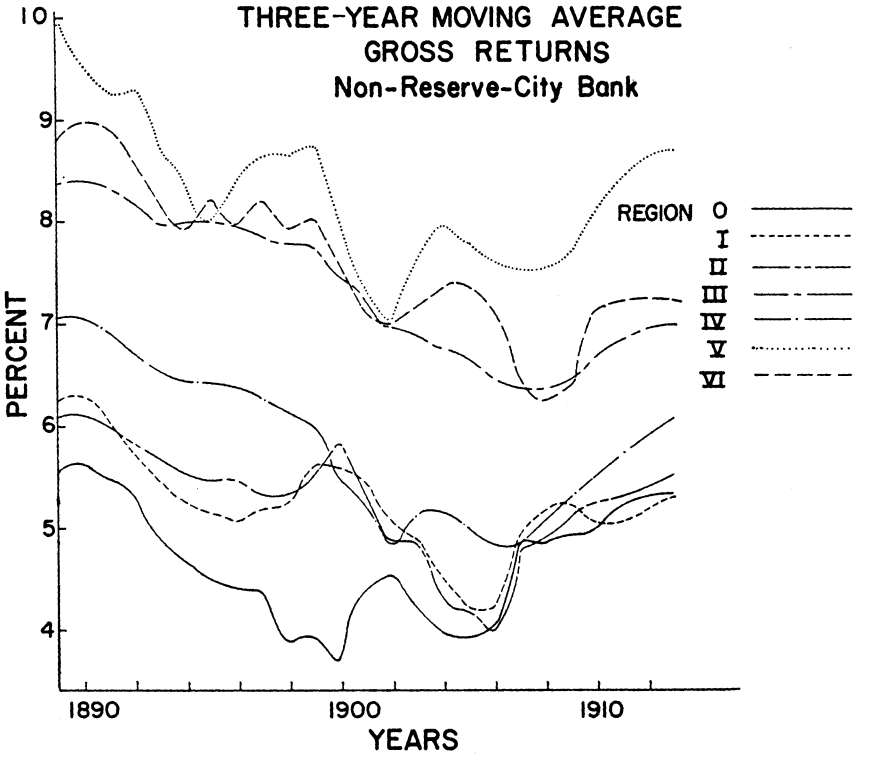
Year	I		II		III		IV		V		VI	
	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1893	2.82	2.82	2.52	2.75	3.19	3.33	2.99	3.01	5.63	3.60	4.53	3.50
1894	2.34	2.28	2.59	2.37	2.14	2.45	2.17	2.17	1.65	0.42	2.14	0.41
1895	2.15	2.06	2.49	2.17	2.88	3.02	2.38	2.43	1.98	1.17	1.83	1.52
1896	2.38	2.36	2.49	2.36	2.98	3.14	2.25	2.41	2.68	1.13	4.18	2.08
1897	2.23	2.14	2.20	2.02	2.58	2.70	1.84	1.97	1.79	1.25	1.00	0.64
1898	2.09	2.04	2.02	1.99	2.95	2.97	1.94	2.03	2.93	2.29	2.65	2.11
1899	2.71	2.10	2.44	2.24	2.94	3.05	2.15	2.17	2.87	2.45	2.81	2.88
1900	2.95	2.72	3.40	2.81	3.66	3.61	2.47	2.49	3.67	3.11	3.09	3.25
1901	2.44	2.19	2.51	2.32	3.35	3.49	3.90	3.88	4.00	3.47	3.59	3.32
1902	2.23	2.06	2.66	2.81	3.38	3.47	2.63	2.71	3.42	3.03	5.18	3.38
1903	2.27	2.24	2.78	2.54	3.20	3.32	2.46	2.43	3.93	3.61	3.87	3.49
1904	2.12	1.96	2.55	2.41	3.16	3.17	2.42	2.32	3.74	3.43	3.29	3.18
1905	1.95	1.48	1.46	1.21	3.05	3.10	2.19	2.08	3.29	3.13	3.52	3.21
1906	2.31	2.03	2.29	2.30	3.08	3.19	2.07	1.90	3.41	3.15	3.56	3.58
1907	2.52	2.40	2.13	2.25	3.05	3.19	2.14	2.11	3.67	3.50	3.19	3.14
1908	2.80	2.50	1.93	1.92	2.76	2.83	2.13	2.11	3.34	3.18	3.53	2.12
1909	1.90	1.87	1.98	1.90	2.55	2.76	1.86	1.86	3.43	3.29	2.91	2.90
1910	2.12	2.17	2.04	2.08	2.64	2.77	1.91	1.86	3.03	2.95	3.62	2.99
1911	2.12	2.08	2.05	1.93	2.67	2.84	1.97	1.93	3.17	3.09	3.01	2.71
1912	1.90	1.87	1.96	1.84	2.48	2.58	1.92	1.89	2.83	2.82	1.90	2.46
1913	1.90	1.89	1.98	1.82	2.47	2.62	1.91	1.89	2.65	2.72	3.02	2.56
1914	1.38	1.38	1.21	1.22	2.43	2.53	1.72	1.74	2.22	2.36	2.31	2.08

[a] Unweighted.
[b] Weighted.
Source: *Annual Report of the Comptroller of the Currency.*

between banks in reserve cities tend to narrow before the differentials between the non-reserve-city banks.

Charts II and IV indicate that, with the exception of the Pacific region, there appears to have been a marked decrease in the interest differentials between the reserve cities sometime in the late 1890's. In the early 1870's, with few exceptions, the New York City rate represented a lower boundary for the regional rates. In the latter

Chart I



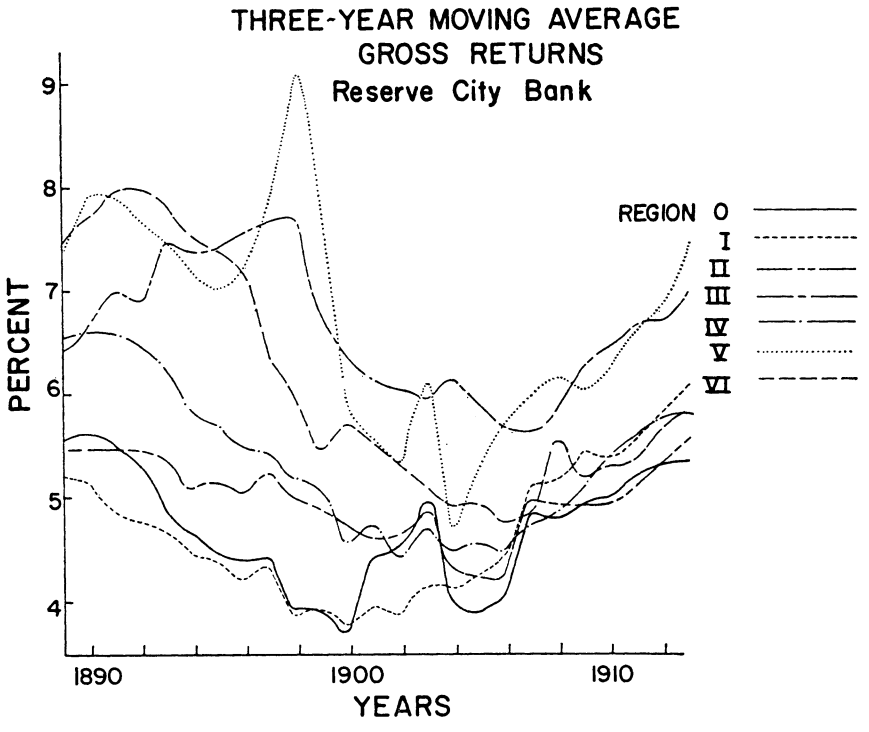
SOURCE: APPENDIX

years of that decade, however, the differentials between New York and regions I and II largely disappeared. During the early 1890's, the rate in Region IV tends to close on the eastern rates; and, in the second half of that decade, the gap between rates in the East and those in Region VI narrows substantially. Although the differentials diminish between the Plains regions and those in the East, the rates in Region V remain above those in the East throughout the period. In the South, the rates show much less of a tendency

to close than in any other region. Thus, although the rates in Region III compare favorably in the 1870's with those in the East, by 1914 they are among the highest in the country.

These rates are, of course, weighted by total earning assets, and therefore they tend to be dominated by the rates prevailing in the largest cities in each region. An examination of the unweighted rates (see Table 3) indicates that the evolution toward a national market was more gradual.

Chart II



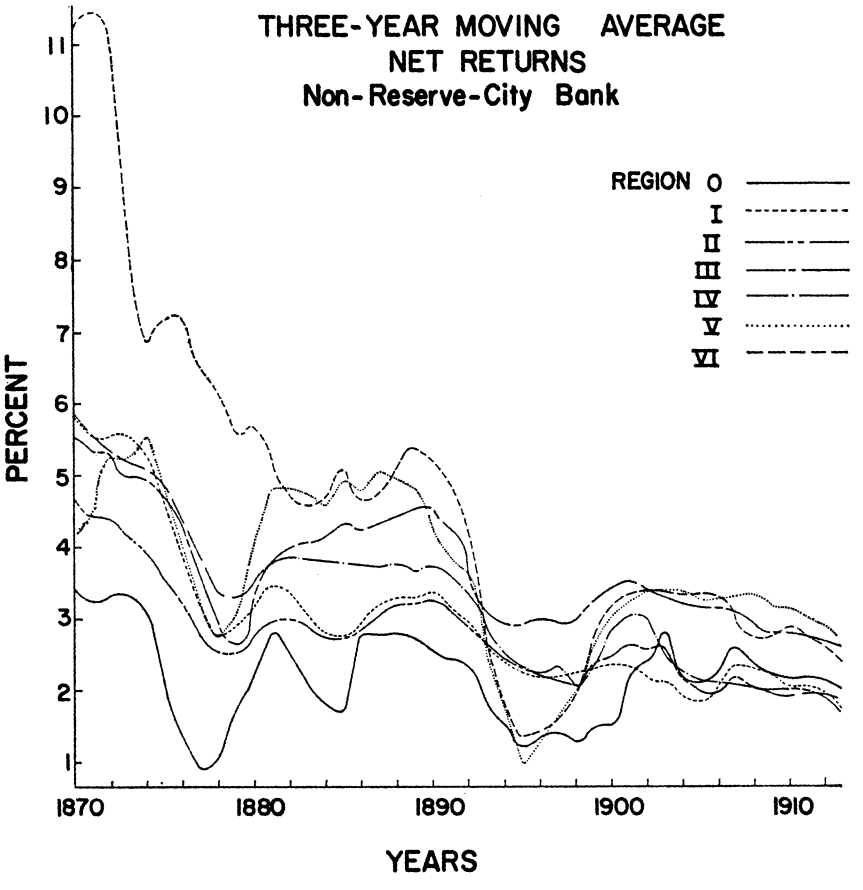
SOURCE: APPENDIX

As Charts I and III indicate, the non-reserve-city rates display the same tendencies that were visible in the city figures; however, in this case the rate of closure was much more gradual. In the late 1870's the rates in Region I and II come together, but they are still well above the New York rate. In fact, it is the beginning of the twentieth century before the differential between rates in these two regions and Region IV and those in New York City largely disap-

pear. From that point on, however, it is difficult to select the New York rate from among the four.

Although the variance is much reduced, as late as 1914 the rates prevailing in the South, the Great Plains, and the Pacific Coast states are still substantially above those in the more eastern regions.

Chart III

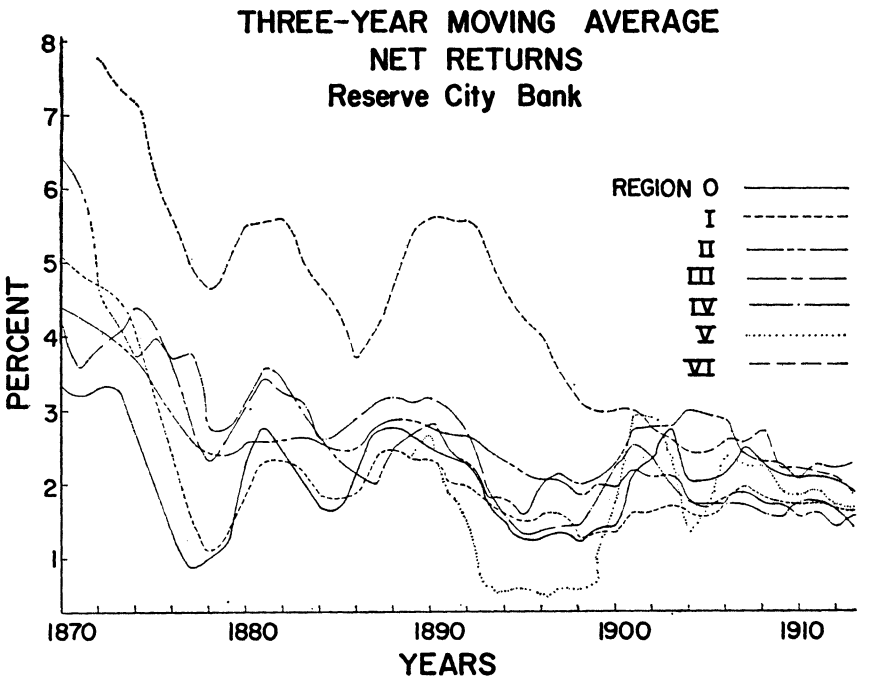


SOURCE: APPENDIX

With the non-reserve-city, as with the reserve-city banks, the South appears to be a case apart. Southern rates were not abnormally high at the beginning of the period, while rates in Regions V and VI stood far above those prevailing in the East. However, while western rates were declining fairly rapidly, those in the South were moving much more slowly. By 1914, rates in Region III appear more typical of western than of eastern rates.

The movements in the unweighted non-reserve-city rates follow the pattern set by the weighted series; but once again the trends are more gradual. Overall then, the picture seems clear. Between 1870 and 1914, a national short-term capital market gradually evolved. The movement started in the major eastern cities and moved first to the large cities in the other regions. From that point the market grew to encompass those smaller city and country areas

Chart IV



SOURCE: APPENDIX

with the best banking facilities and finally those areas with the least-developed banking structures.[9]

When, in 1890, Breckenridge examined the interregional interest differentials, he concluded that they were permanent and attributed

[9] It is interesting to note that the movements of the regional rates seem to display a sequence of long swings. It appears that there was a long swing with a trough in 1878, a peak in 1887 or 1888, and a trough in 1895. A second long swing appears to date from the 1894 trough. The peak was apparently in 1901 and the final trough somewhere around 1914. With the exception of the first trough, these movements conform quite closely to the long swings in commodity output found by Robert E. Gallman.

them to the legal barriers that prohibited national branch banking in the United States.[10] With the omniscience of hindsight, it is obvious that these differentials have been reduced and were, in fact, declining during the 1890's. Moreover, the reductions did not result from the passage of new laws permitting interstate branching. Instead, a series of new financial institutions capable of surmounting the barriers raised by distance and by the lack of adequate branch-banking legislation was innovated. In the period from 1870 to 1914, barriers to short-term mobility were overcome (or at least reduced) by direct solicitation of interregional funds, by commercial bank rediscounting, and most important, by the evolution of a national market for commercial paper.

In regions with high interest rates, commercial banks had an incentive to solicit additional funds. In regions with low rates, both banks and private investors were given a powerful incentive to seek more lucrative alternatives, particularly if distant investments could be made more certain. As a result, it was not long before western banks began to issue certificates of deposit to surplus savings units in the East. Since these certificates were insured by national banks, they must have appeared "more certain" to eastern investors. The volume of these transactions was never large, but it might have become significant if the Comptroller of the Currency had not moved to stop these flows. In his report of 1890 the Comptroller, E. S. Sacey, reported:

> The items reported as deposits, which most frequently invite the criticism of this office, arise out of transactions like these:
>
> (1) A bank with business in a locality where rates of interest rule high negotiates with persons living at distant points, where loanable funds are more abundant, and secures certain sums for a fixed period and at a rate of interest current for loans at the place where the lender resides, issuing certificates of deposit therefor.
>
> (2) A bank similarly situated issues its certificates of deposit payable at a future date, drawing interest, and in some cases accompanied by collaterals, and places these certificates with a broker for sale.[11]

One may wonder what notions of banking policy might have dictated these words, but there is little question that the result was yet another legal barrier to inhibit the flow of funds between regions.

[10] Breckenridge, *PSQ*, XIII, 129.
[11] *Report of the Comptroller of the Currency, 1890*, I, 14.

It was also possible for banks in high-interest regions to increase their free reserves by rediscounting commercial paper in banks located in lower-interest areas. Table 6 suggests that banks in the

TABLE 6
VOLUME OF NATIONAL BANK REDISCOUNTING 1892-1897
(FIGURES ARE THE PROPORTION OF REDISCOUNTED LOANS TO ALL LOANS AND DISCOUNT)

	Proportion Discounted (Percentage)	
Region	*Slack Period*	*Peak Period*
New England[1]	1.13	1.50
Eastern States[2]	.42	.53
Southern States[3]	2.69	8.00
Middle States[4]	1.25	1.50
Western States[5]	3.00	3.38
Pacific States[6]	2.00	2.45

1. Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.
2. New York, New Jersey, Pennsylvania, Delaware, Maryland, Washington, D. C.
3. Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Kentucky, Tennessee.
4. Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri.
5. North Dakota, South Dakota, Nebraska, Kansas, Montana, Wyoming, Colorado, New Mexico, Oklahoma, Indian territory.
6. Washington, Oregon, California, Idaho, Utah, Nevada, Arizona.

Source: Breckenridge, *PSQ*, XIII.

later nineteenth century did rediscount to some extent, but that the volume of rediscounting was relatively small. During the five-year period covered by Breckenridge's survey, rediscounts average only about 1½ per cent of total loans and discounts, and the figure exceeded 3 per cent in only one month. In general, banks appear to have used rediscount only to meet seasonal and panic demands. However, banks in regions with the high interest rates tended to discount more than banks in low-rate areas; and the South seems to have engaged in significantly more rediscounting than any other region.[12] Whatever the reasons, however, rediscounting which could have provided the mechanism for interregional capital transfers did not do so.

Given the Comptroller of the Currency's views on direct solici-

12 Breckenridge, *PSQ*, XIII, 136-37.

tation and the bankers' views on rediscounting, it is doubtful that the volume of funds moved by these techniques would even have been sufficient to arbitrage out the regional differentials. More important was the evolution of a national market for commercial paper.

In the United States there has always been a widely-held view among lawmakers that local banks should serve the local communities. In the antebellum decades, a number of states actually passed laws prohibiting bank loans to persons living in other states.[13] Despite these restrictions, banks in low-interest areas began to seek more lucrative investment opportunities than those available at home; as a result, even before the Civil War the foundations for an active commercial-paper market in the East had been laid.

Since the market was centered in the large eastern cities, it was the rates in these areas that were first affected; however, the market began to spread into the Midwest in the two decades after the end of the war. There are records of commercial-paper dealers operating in Indianapolis in 1871. By 1880 commercial paper was being traded in Milwaukee, Chicago, and Minneapolis; and by the turn of the century nine or ten houses were operating in each of the latter two cities. The expansion of the market continued across the Plains and on to the Pacific Coast. By the early 1880's Kansas City had been integrated into the market; and by 1910 further growth had encompassed Wichita and Dallas. On the Pacific Coast, brokers' offices were opened in San Francisco, Seattle, and Los Angeles about the turn of the century.

"By 1913 it could be said that the commercial paper houses had branches or representatives 'in all the large cities' in the United States."[14] More important from the viewpoint of this study, in each case the timing of the expansion of the commercial-paper market conforms fairly closely to the closing of the interregional rate differentials.

The profits earned by the commercial-paper houses induced additional entry, and increased competition forced the brokers to extend the area of their operations in search of prime paper and good

[13] Albert Greef, *The Commercial Paper House in the United States* (Cambridge: Harvard University Press, 1938), p. 18. Nor is this view completely dead today. In a recent book, a respected historian has suggested that the failure of Rhode Island to pass such legislation was a major defect of its political system; P. J. Coleman, *The Transformation of Rhode Island* (Providence, R. I.: Brown University Press, 1963), p. 199.

[14] Greef, pp. 39-40.

customers. As late as the 1890's a typical brokerage firm maintained a single office, and bankers who wanted to buy bills called there. Thereafter, however, the note firms began to employ salesmen to call on prospective customers, and by the first decade of the twentieth century some brokers employed "several score" salesmen. The brokers competed more actively for bills as well. In order to penetrate areas not previously served, the firms began to open branches in some cities and to establish correspondent relations in areas that could not support a branch.[15]

The added competition also began to infringe on long-established monopolies. Among the first groups to feel the squeeze were the western bankers who had been accustomed to high returns on their investments. In 1892 an Iowa banker said:

> Until recently, western bankers were able to maintain their loaning rates regardless of the depression of the eastern markets, but now there has arisen an element that wages constant war on the established rates. It is the festive note broker, who with his eastern capital, steps in to disturb the harmonious relations between banker and borrower, and just at the time there seems to be an opportunity to dispose of idle funds at a profitable rate, the banker is confronted with the alternative of cutting his rates or seeing his loans going to outside dealers.[16]

The press of competition also had its effects on the note houses. In the 1870's commission rates ranged as high as ½ per cent, but by the 1880's a ¼ per cent rate appears to have been common. By the middle of that decade brokers in the largest cities had reduced their rates to ⅛ per cent, and twenty years later there are reports of some transactions with no commission charge.[17]

More important, however, because of the increased activity in the commercial-paper market, many small cities and towns were integrated into the national capital market; capital moved more easily across regional boundaries; and interest rates in the high-interest areas began to decline.

III

The data on long-term interest rates are not as good as those from the "short-end" of the market. The Comptroller of the Currency, while publishing balance-sheet information on savings banks, pri-

[15] *Ibid.*, pp. 64-65.
[16] J. K. Deming, "Modern Methods of Soliciting Business," *Proceedings*, Iowa Bankers' Association, 1892, p. 21.
[17] Greef, pp. 107-8.

vate banks, and loan and trust companies (institutions that operated in the long-term market), did not report the earnings of these intermediaries. As a result, the evidence presented in this section is quite fragmentary. What evidence there is, however, strongly suggests that: (1) interregional interest differentials did exist, (2) there was a tendency for these differentials to decline over the period, and (3) the movement toward a national long-term capital market did not proceed as far or as fast as the movement toward the short-term market.

The best data on long-term interest rates probably lie in the offices of the county recorders, where every mortgage was made a matter of public record. These recorded mortgage rates are not always reliable (particularly in the South and West), but they do provide a fair index of interregional differentials. The task of collecting these rates from every county (or even a sample of counties) would be, at best, heroic; however, the Census Bureau has surveyed records for the years 1880-1890.[18] In addition, two studies of the records of single Midwest counties are available for the period 1865-1880; and a sampling of mortgage rates in several western states provides some further information.[19] Finally, a study of farm mortgages in 1914-1915 provides some data on regional rates at the end of the period.[20] These rates are reproduced in Tables 7, 8, and 9.

Table 7 indicates that marked regional differentials in mortgage rates existed during the 1880's. Over the period, rates averaged 5.9 per cent in Region I, 5.8 per cent in Region II, 7.9 per cent in Region III, 7.3 per cent in Region IV, 9.8 per cent in Region V, and 10.7 per cent in Region VI. (The farm mortgage rates displayed in the second half of the table show similar differentials.) Over the period, however, there appears to have been a movement toward greater equality. In 1880 the coefficient of variation for the six regional rates was 28 per cent (26 per cent for the farm mortgage rates), but by 1889 this figure had declined to 21 per cent (20 per cent for farm mortgages).

[18] G. K. Holmes and J. S. Lord, "Report of Real Estate Mortgages in the United States," in *Eleventh Census of the United States*, Vol. XII (Washington, 1895), pp. 4-5.

[19] R. F. Severson, "The Sources of Mortgage Credit for Champaign County, 1865-1880," *Agricultural History*, XXXVI (July 1962); J. Ladin, "The Sources of Mortgage Credit for Tippecanoe County, 1865-1886" (unpublished); Allan Bogue, *Money at Interest* (Ithaca, N. Y.: Cornell University Press, 1955).

[20] U.S. Department of Agriculture, Bulletin 384, *Costs and Sources of Farm Mortgages in the United States* (Washington: Government Printer, 1916).

Although there appears to have been substantial movement toward a national market in the years before 1890, there is some question about the period 1890-1914. Some evidence suggests that improvements in the market were quite substantial, and other evidence indicates that they were less so. Over the whole period 1869-1914, however, it appears that some progress toward a national

TABLE 7
MORTGAGE INTEREST RATES BY REGION, 1880-1889

	All Mortgages[a] *Region*					
Year	I	II	III	IV	V	VI
1880	6.04	6.06	7.97	7.72	10.89	12.48
1881	5.90	5.80	7.96	7.39	11.28	11.40
1882	5.88	5.85	7.91	7.23	10.30	10.70
1883	5.87	5.83	7.87	7.25	9.94	10.77
1884	5.88	5.84	8.02	7.29	9.58	10.65
1885	5.83	5.79	8.08	7.31	10.09	10.88
1886	5.75	5.70	8.03	7.18	9.75	10.14
1887	5.69	5.69	7.86	7.10	9.57	9.49
1888	5.82	5.66	7.91	7.10	7.24	10.43
1889	5.78	5.66	7.80	6.90	9.00	9.95
	Farm Mortgages[b] *Region*					
Year	I	II	III	IV	V	VI
1880	6.03	6.11	8.02	7.81	10.51	11.94
1881	5.98	6.01	8.02	7.48	10.75	11.11
1882	5.93	5.90	7.93	7.34	9.65	10.52
1883	5.95	5.83	7.90	7.34	9.21	10.71
1884	5.95	5.79	8.05	7.40	9.03	10.10
1885	5.90	5.78	8.13	7.46	9.57	10.63
1886	5.86	5.76	8.02	7.32	9.60	9.84
1887	5.82	5.75	7.88	7.19	9.42	9.07
1888	5.88	5.70	7.90	7.22	9.09	10.19
1889	5.87	5.74	7.82	7.14	8.96	9.85
1914[a]	5.7	5.6	7.6	5.9	7.6	8.2
1914[b]	5.7	5.8	8.3	6.3	8.7	8.6
1930	6.1	6.0	6.8	5.9	6.5	6.9

[a] Without charge.
[b] With charge.
Source: *Eleventh Census,* Vol. XII, and Dept. of Agriculture, *Bulletin,* No. 384.

market was made, but the pace appears to have been slower than it had been in the case of the short-term market.

A comparison of the farm mortgage rates from the 1890 census with those from the Department of Agriculture survey of 1914-1915 suggests that progress toward a national market may not have been too great over the period 1890-1914. The coefficient of variation for

the 1914 figures is definitely less than that for the year 1880 (21 as compared with 26 per cent), but it is slightly higher than the figure for 1889. The two series are not, however, strictly comparable. Certainly the years after 1914 saw substantial progress. The next regional mortgage rates come from the 1930 census (the figures from the 1920 census do not include commission charges), and by that later date interregional differences have largely disappeared (the coefficient of variation is less than 2 per cent).

Other evidence also indicates that there were substantial regional interest differentials and suggests that some progress toward a na-

TABLE 8

AVERAGE MORTGAGE INTEREST RATE, TIPPECANOE COUNTY, INDIANA, AND CHAMPAIGN COUNTY, ILLINOIS—1865-1880

Year	*Tippecanoe*	*Champaign*	*Champaign-Tippecanoe Difference*
1865	7.0	8.5	+ 1.5
1866	7.3	8.8	+ 1.5
1867	8.5	9.1	+ .6
1868	8.3	9.3	+ 1.0
1869	8.5	9.5	+ 1.0
1870	8.3	9.7	+ 1.4
1871	8.1	9.8	+ 1.7
1872	8.6	9.8	+ 1.2
1873	8.6	9.6	+ 1.0
1874	8.5	9.6	+ 1.1
1875	8.3	9.4	+ 1.1
1876	8.7	9.4	+ .7
1877	8.6	9.0	+ .4
1878	8.6	8.6	0
1879	7.9	8.0	+ .1
1880	7.1	7.2	+ .1

Sources: Ladin and Severson.

tional market was made in the period under consideration. Table 8 compares average interest rates in one Indiana county with rates in one Illinois county. Although both are in Region IV, Tippecanoe County began to develop before Champaign County. Table 8 indicates that interest rates in Tippecanoe County were continually below those prevailing in Champaign County, but that the differential declined over the period (by 1880 the difference is negligible). Moreover, Champaign County drew on eastern investors for about 40 per cent of its long-term mortgage funds after 1870, but the peak eastern investment in Tippecanoe County was only half that amount, and the average was less than one fourth.[21] In the case

[21] Ladin, p. 8; Severson, p. 3.

of Tippecanoe County, it appears that, in the early years, when local sources could have been usefully supplemented by eastern capital, effective interregional markets did not exist. Later, when Cham-

TABLE 9

PREVAILING MORTGAGE INTEREST RATES, SELECTED STATES, 1868-1903

Year	*Indiana*	*Illinois* (A)	*Illinois* (B)	*Iowa*	*Dakotas*	*Kansas*	*Nebraska*
1868	10.0	10.0	10.0	10.0		12.0	
1869	10.0	10.0	10.0	10.0		12.0	
1870	10.0	10.0	10.0	10.0		12.0	
1871	10.0	10.0	10.0	10.0		12.0	12.0
1872	10.0	10.0	10.0	10.0		12.0	12.0
1873	10.0	10.0	10.0	10.0		12.0	12.0
1874	10.0	10.0	10.0	10.0		12.0	12.0
1875	10.0	10.0	10.0	10.0		12.0	12.0
1876	10.0	10.0	10.0	10.0		12.0	12.0
1877	10.0	9.0	10.0	10.0		12.0	12.0
1878	10.0	8.0	10.0	10.0	10.0	12.0	12.0
1879	8.0	8.0	8.0	10.0	10.0	10.0	10.0
1880	8.0	7.0	8.0	10.0	10.0	10.0	10.0
1881			7.0			8.0	10.0
1882			7.0			10.0	10.0
1883			7.0			8.0	9.0
1884			7.0			7.0	9.0
1885			7.0			8.0	10.0
1886			7.0				9.0
1887			7.0				9.0
1888			7.0			8.0	10.0
1889			7.0			8.0	10.0
1890			6.0			7.0	8.0
1891			6.5				8.0
1892			6.5				8.0
1893			6.5				7.0
1894			6.5				7.0
1895			6.5			7.0	6.0
1896						7.0	6.0
1897							6.5
1898							6.0
1899							5.0
1900							5.0
1901						6.0	
1902			6.0				
1903						5.0	

Source: Indiana, Ladin; Illinois (A), R. Severson; Illinois (B), Iowa, Dakotas, Kansas, and Nebraska, Bogue, pp. 13, 29, 47, 61.

paign County began to develop, improvements in the interregional capital markets permitted the mobilization of eastern capital.

Similar trends appear to mark the modal interest series presented in Table 9. Again, since those taken from Bogue almost certainly do not represent a complete enumeration of all mortgages and the

Severson and Ladin figures are drawn from only two counties, the evidence is only suggestive. It does, however, appear that the rates in Region IV were significantly below those in Region V, that all rates fell after 1878, that rate differentials between eastern and western states tended to narrow, and that this latter trend continued after 1890.

Additional evidence is found in the annual report of the Comptroller of the Currency. Although earnings are not reported, the balance sheets of private banks, savings banks, and loan and trust companies are included. Since the loan and trust companies were almost all located in the East, they provide little interregional information. If, however, one is willing to accept two perhaps not-too-unreasonable assumptions, some interesting conclusions can be adduced from the balance sheets of the savings and private banks.

Let us assume that (1) if a banker is faced by two investment alternatives of equal risk, he will choose the one that yields the highest returns; and (2) the securities market for any bank is broader than the loan market for that same bank.[22] Given these two assumptions, it follows that a bank in a high-interest area will tend to put a larger portion of its assets in loans (as opposed to securities), while a bank in a low-interest area will behave in the opposite manner. Thus the ratio of $\frac{\text{Loans}}{\text{Loans} + \text{Securities}}$ is a fair index of the rate of interest on loans in any area.[23]

If each state year is taken as an observation, and if states are divided into regions and years into eras, the problem can then be formulated as an exercise in the analysis of variance where the rows are regions and the columns are time periods.[24] If there were no regional differences in rates, there should be no significant row effects; if there were no variations between time periods, there should be no significant column effects; and if there were no inter-

[22] This characteristic is certainly true of financial markets today and was probably more true in the earlier period.

[23] Legal restrictions on investment policy can affect portfolio composition, but since there were no restrictions on lending at home these legal restrictions would tend to increase the sensitivity of the ratios. Moreover, while state-to-state differences in legal regulation certainly did exist, these differences would tend to "wash out" between regions.

[24] Analysis of variance assumes that taken all together the observations are normally distributed and that they are homogeneous within each cell. In this case the normalcy assumption was not fulfilled with the raw data, but an arc sin transformation produced a distribution that met the two assumptions.

actions between the interregional rate differentials and the passage of time, the interaction term should not be significant.

The results of three separate analyses of variance tests are displayed in Table 10. In the case of private banks, no banks in Region

TABLE 10

ANALYSIS OF VARIANCE OF $\frac{\text{LOANS}}{\text{LOANS + SECURITIES}}$ FOR SAVINGS AND PRIVATE BANKS BY TIME PERIOD AND REGION OF LOCATION

TEST NO. 1
SAVINGS BANKS 1870-1914 WITHOUT REGION V

	Degrees of Freedom	*F Ratio*	*Significance Level*
Years	7	7.46	.001
Regions	4	104.07	.001
Interaction	28	1.95	.001

TEST NO. 2
SAVINGS BANKS 1885-1914 ALL REGIONS

	Degrees of Freedom	*F Ratio*	*Significance Level*
Years	5	7.45	.001
Regions	5	80.33	.001
Interaction	25	1.27	.2

TEST NO. 3
PRIVATE BANKS 1885-1914 WITHOUT REGION I

	Degrees of Freedom	*F Ratio*	*Significance Level*
Years	7	3.74	.001
Regions	3	21.59	.001
Interaction	21	1.33	.2

Source: *Annual Report of the Comptroller of the Currency* (1899, 1900, and 1910 are not included).

I reported after 1890, and the analysis was limited to the other five regions. Moreover, there were no reports from several regions before 1885, and therefore the time period was truncated to the period 1885-1914. In the case of the savings banks, reports went back into the 1870's for all regions except V, and the first reports from institutions in that area date from the quinquennium 1885-1889. As a result, savings-bank test No. 1 covers the time period 1870-1914 for all regions except V; and test No. 2 includes all six regions for the period 1885-1914.

These tests seem to substantiate the theses advanced earlier. There is no question but that there were significant differences between the ratios in the various regions and various time periods. Moreover, it appears likely that the differences arising from location may have diminished over time. In every test, the F ratio for both columns and rows was significant at the .001 level. The interaction term in test No. 1 is also significant at the .001 level. In tests No. 2 and 3, however, that same term is significant at only the .2 level. At the same time, the exclusion of Region V from tests 2 and 3 causes an even further drop in the significance of the interaction term. Moreover, the decrease in the interaction term between test No. 1 and a test run on savings banks for the period 1885-1914 without Region V is significant at the .01 level. Thus the data suggest that substantial progress toward a national market was made in the period 1870-1885 but that thereafter progress was slower. It does not, however, indicate that there was no progress after that date (the interaction term is greater than one and is significant at the .2 level), nor does it indicate that the slowdown was a function of changing circumstances rather than merely of past progress (the more improvement has occurred in the past, the less room there is for improvement in the future). These questions are still open.

A national long-term market appears to have begun to develop during the period under consideration, although its progress may not have been steady. In the short end of the market, it was the commercial-paper houses that provided the institutional framework for a national market. In the case of the long-term market, no single institutional development was so important; however, the growth of life insurance companies, the development of the mortgage banking business, and the evolution of a national securities market all appear to have made some contribution.

The period after the Civil War saw life insurance companies emerge as the nation's most important nonbank intermediaries. In the years from 1869 to 1914, the assets of the nation's life insurance companies increased more than twenty-fold.[25] This growth, as North has shown, is associated with the innovation of new types of life insurance policies (particularly industrial and tontine).[26] These

[25] *Historical Statistics of the United States* (Washington: Government Printer, 1961), pp. 675-76.

[26] D. North, "Capital Accumulation in Life Insurance between the Civil War and the Investigation of 1905-06," in W. Miller (ed.), *Men in Business* (Cambridge: Harvard University Press, 1952).

companies would not have played such an important role in the process of capital mobilization had it not been for the concomitant evolution of their investment policies. Within the companies, professional management developed, and one aspect of this development was a widening of investment horizons. Externally, and perhaps more important, the period was marked by a gradual easing of the legal regulations that had restricted the investment policy of many of the largest companies.

While legal restrictions may have been more important than managerial timidity, the evolution of professional management did contribute to a widening of the list of feasible investment alternatives.[27] Harold F. Williamson's study of the Northwestern Mutual Life Insurance Company shows clearly the impact of widening sales and investment horizons on that firm's portfolio. In his own words:

> From 1858 until 1865 the Company sold insurance and made its investments almost exclusively in the state of Wisconsin. . . . Beginning about 1866 and ending around 1880 Northwestern supplied the same investment functions for Wisconsin and its neighboring states . . . . The third phase of Northwestern's evolution as an investment institution began about 1881 and extended into the 1890's. By the early 1880's Northwestern was firmly established as a national marketer . . . .[28]

In general, these conclusions appear to be borne out by the investment record of the Northwestern. Table 11 indicates a gradual widening of that firm's investment horizons, but it appears that Northwestern did not really become a national investor until the twentieth century. Of course, since the firm collected funds wherever policies were sold, it was not necessary for it to become a national investor to successfully mobilize funds across regional boundaries.

Zartman has argued that it was changes in investment regulations that were most important in restructuring the investment portfolios of the large insurance firms and that the period was marked by substantial reductions in legal limitations.[29] As originally written, laws governing the investments of mutual life insurance companies tended to emphasize safety and to demand that funds be invested

[27] Lester Zartman, *Investments of Life Insurance Companies* (New York: H. Holt, 1906). Insurance companies in Connecticut and Massachusetts, subject to less severe restrictions, did invest more widely than did firms with home offices in New York.

[28] H. F. Williamson and O. A. Smalley, *Northwestern Mutual Life: A Century of Trusteeship* (Evanston, Ill.: Northwestern University Press, 1957), pp. 127-28.

[29] Zartman, p. 243.

TABLE 11

PERCENTAGE OF DISTRIBUTION OF THE NORTHWEST MUTUAL LIFE INSURANCE COMPANY'S MORTGAGE LOANS, BY REGION, 1872-1907

Year	*Middle Atlantic*	*South Atlantic*	*E-S Central*	*E-N Central*	*W-N Central*	*Mountains*	*Pacific*	*W-S Central*
1872	0	.9	2.3	72.1	24.1	.6	0	0
1875	—	1.6	2.1	68.4	27.1	.8	0	0
1880	—	.8	.4	73.0	25.1	.6	0	0
1887	0	—	—	63.2	35.4	1.2	0	0
1892	0	—	2.8	55.2	31.2	9.2	0	0
1897	—	—	4.1	61.8	26.8	6.7	.5	—
1902	1.6	.6	3.1	61.8	26.6	4.7	1.6	0
1907	1.4	1.3	2.6	44.0	44.2	2.7	3.8	.1

— indicates less than .1 per cent.

Source: Williamson and Smalley, pp. 64, 78, 122.

close to home. In the late 1860's only four states permitted investment in corporate securities; and most states had some restrictions on investment policy. During the last third of the century, however, many of these laws were altered to provide a wider range of legal investments. In New York, for example, the original law prohibited investments in out-of-state mortgages. An 1868 amendment permitted insurance companies to invest in mortgages anywhere within fifty miles of New York; in 1875 the legal boundaries were extended to include every adjacent state; and in the 1880's the New York mutuals were granted the right to invest in mortgages anywhere. By 1905, only Georgia, Nebraska, Pennsylvania, and Texas retained laws prohibiting investment in out-of-state mortgages. Similarly, by 1905, California, Colorado, Utah, Connecticut, New Jersey, Pennsylvania, Illinois, and Wisconsin had all begun to permit some investment in corporate securities.[30]

Given professional management and an absence of legal restrictions, there were still substantial technical problems in handling distant investments. Therefore, it might have taken longer for the insurance companies to become important forces in interregional mobilization had it not been for the parallel development of brokerage institutions designed to service their portfolios. The New York Life, for example, depended upon Vermilyea and Company to handle their securities account, and other firms appear to have employed similar agents.[31] For mortgages, the mutuals frequently turned to western agents. A. L. Ward, for example, a Minneapolis mortgage broker and later an important midwestern banker, acted as the resident mortgage agent for a number of insurance companies.[32]

Table 12 displays the interest rates earned on mortgages by insurance companies located in various regions. These series show the impact of the institutional development in management and regulation. While large differentials are characteristic of the early years, they tend to decline over the period. For example, a projection based on a linear regression through the mortgage rates earned by companies in Regions II and VI for the years 1878-1889 suggests that (if the trend had continued) the differentials would have

[30] *Ibid.*, pp. 150-70.

[31] M. James, *The Metropolitan Life, A Study in Business Growth* (New York: Viking Press, 1947), p. 105.

[32] C. S. Popple, *Development of Two Bank Groups in the Central Midwest* (Cambridge: Harvard University Press, 1944), pp. 37-38.

TABLE 12
RATE OF EARNINGS ON MORTGAGES HELD BY LIFE INSURANCE COMPANIES, BY REGION OF LOCATION, 1868-1904

Year	I	II	IV	VI
1868	7.4	8.1	7.2	
69	8.1	6.7	8.1	
1870	9.5	7.6	8.5	
71	8.2	7.2	9.0	
72	9.0	7.4	8.1	
73	8.5	7.5	9.9	
74	8.5	7.2	9.5	
1875	7.8	6.7	7.7	
76	8.2	7.0	9.3	
77	6.8	6.9	8.7	13.3
78	6.6	6.4	8.6	9.4
79	6.4	6.5	9.5	11.8
1880	6.8	6.3	9.2	5.2
81	6.7	6.1	8.3	8.5
82	6.7	5.8	7.8	9.2
83	6.6	5.8	7.3	8.2
84	6.7	5.7	7.3	8.5
1885	5.8	5.8	7.1	9.3
86	6.6	5.9	7.0	9.0
87	6.4	6.4	7.1	9.1
88	6.3	6.4	7.3	9.6
89	6.4	6.1	7.0	9.0
1890	6.5	6.1	6.9	7.8
91	6.3	5.9	6.5	8.4
92	6.2	5.6	6.7	9.7
93	6.2	5.5	6.7	7.9
94	6.0	5.6	6.6	8.3
1895	6.0	5.5	6.5	7.0
96	5.8	5.4	6.4	6.8
97	5.1	5.4	6.6	6.6
98	5.6	5.4	6.3	6.0
99	5.4	5.2	6.1	5.5
1900	5.4	5.1	5.9	5.4
01	5.1	5.1	5.7	5.4
02	5.1	5.1	5.6	6.0
03	5.0	4.9	5.5	5.2
04	5.1	5.1	5.6	5.3

Source: Zartman, pp. 89-91.

disappeared in 1905 (as in fact they did). This result contrasts markedly with a parallel projection posed on regression through the mortgage census data for the years 1880-1889. In the latter case, rates would not have closed until 1921. Although these projections are very rough, they are quite suggestive. It does not appear unreasonable to conclude that the insurance companies, freed of their managerial and legal restrictions, were willing to move funds across regional boundaries before most private investors were willing to

take this step. Moreover, the data suggest that the companies were not large enough to arbitrage out the market.

For a short two-decade period in the 1870's and 1880's, the mortgage company played a very significant role in the interregional mobilization of capital. At first the companies merely acted as middlemen. They made mortgage loans in the West and sold these mortgages in the East. As long as they performed the brokerage function, they did little to reduce the uncertainty discounts of the eastern investors, although they did make western investment easier. As competition increased, however, they began to guarantee the mortgages they sold; and from a guarantee it was an easy step to a general debenture issued against a portfolio of mortgages. The first mortgage companies were organized about 1870, but it was the middle 1880's before they began to issue bonds.[33] At the height of their popularity (about 1890) there were at least 167 companies operating in the United States.[34]

The history of the mortgage company has yet to be written, but Allan Bogue has provided an excellent study of a single company (the J. B. Watkins Land Mortgage Company of Lawrence, Kansas). Moreover, examination of contemporary chronicles suggest that the Watkins firm was probably fairly typical of the larger mortgage companies. The firm was organized in 1870; began as a middleman but shifted into guaranteed mortgages and later into debentures; enjoyed twenty years of profitable existence; and went bankrupt in the early 1890's.

To succeed, it was necessary for Watkins to sell his mortgages (and later his bonds) quickly. To accomplish this end, he had by 1877 a branch office in New York City and sales agents in Buffalo, Albion, Batavia, Rochester, Syracuse, Rome, and Johnstown, New York; in Wilmington, Delaware; in Boston, Massachusetts; in Warner, New Hampshire; and in Ferrisburg, Vermont. In 1878, in search of still more investors, he opened a second branch in London, England.[35]

An analysis of Watkins' customers provides considerable evidence about the sources of the eastern capital that flowed into western farmlands. Less than 1 per cent of Watkins' customers were institu-

[33] D. M. Frederiksen, "Mortgage Banking in the United States," *Journal of Political Economy*, II (March 1894).
[34] *Ibid.*, p. 213.
[35] Bogue, pp. 86-88.

tional investors. About equal numbers of men and women appear on his roster of customers; and, of the men, about 15 per cent were ministers, teachers, and doctors. Over a quarter of his customers were English, and most of the rest lived in New England or in the Middle Atlantic states.

In the early 1890's, in the face of agricultural depression, the J. B. Watkins Company, like most mortgage companies, collapsed. Many of those that managed to remain solvent turned to other lines of endeavor. The management of Wells Dicky, for example—one of the oldest and largest mortgage companies in the upper plains—withdrew entirely from the mortgage business and shifted the company's resources to other financial activities. The industry's collapse was in part a function of the tenuous financial structure on which it had been built; contributing factors were the narrow margin of profitability of farms west of the 98th meridian, the failure of eastern investors to understand the nature of agriculture in this semiarid land, and of course the general price decline. In the 1870's, many of the mortgages had been on farms in Iowa, Minnesota, or the eastern parts of the Great Plains states. After 1880, however, an increasing proportion of the new mortgages were located in the western counties of the Plains states; and in the mid 1880's, this area was subject to a prolonged drought. Drought meant falling incomes, and deflation meant rising debt burdens; as a result, many mortgages went into default. The mortgage companies were not strong enough financially to carry the burden of the foreclosed land, and they too were unable to meet their obligations.[36] For two decades thereafter it was difficult to lure eastern capital into western mortgages.

Although they operated for only a short period, the mortgage companies played a significant role in the movement of funds from Regions I and II into Regions IV and V. Moreover, if progress toward a national long-term market did slow down after 1890, the failure of the mortgage companies may well have been a contributory factor.

Throughout much of the nineteenth century, the formal securities markets had aided interregional mobilization of funds for the public sector and for the growing transportation industries. They had, however, made little direct contribution to western or southern manufacturing. By the end of the century, however, some changes

[36] *Ibid.*, p. 267.

were evident. In 1885 the New York Stock Exchange organized a department of unlisted securities, and this department became the route by which a number of distant manufacturing companies reached the "big board." More important, J. P. Morgan turned his attention to manufacturing, and his success convinced many investors that paper investments in manufacturing were safe and profitable. International Harvester, for example, was a combine of Midwest firms. Most had been locally owned, but after the merger it was eastern capital that poured in and released the local capital for other activities. Thereafter, imitation was easier. As investors became convinced of the profitability of paper securities, the number of brokerage houses increased. In 1900 no firm but Morgan (and perhaps Kuhn Loeb) could successfully have marketed a major industrial issue, but by the 1920's several could and did. The increased competition reduced profits and increased capital mobility.

Nor did the securities markets mobilize only eastern capital. By the twentieth century, the Old Northwest Territory had become a savings surplus area, and the securities markets began to mobilize these funds as well. In 1905 a New York banker said: "The whole great Mississippi Valley gives promise that in some day distant perhaps it will be another New England for investments. There is developing a bond market there which is of constant astonishment to eastern dealers."[37]

IV

Interest differentials should induce capital to move between regions, and these movements should, in turn, reduce interest differentials. Richard A. Easterlin has estimated interregional capital flows for the period 1880-1920, and these estimates are displayed in Table 13. A comparison of these movements with changes in interest differentials is presented in Chart V. The changes in interest differentials are represented by the slope term of a linear regression passed through the weighted net returns to non-reserve-city banks over the period 1880-1914. (The results change but little if gross earning 1888-1914, or net earning of reserve-city banks, is used.)

This model is, of course, very rough and oversimplified. Changes in interest rates are a function of the demand for and supply of both foreign and domestic funds, and nothing in this model directly

[37] Frank A. Vanderlip, quoted in G. Edwards, *The Evolution of Finance Capitalism* (New York: Longmans, Green, 1938), p. 185.

TABLE 13
INTERREGIONAL CAPITAL MOVEMENTS, 1880-1920

Region	(*Change in Nonagricultural Wealth Located*) *minus* (*Change in Nonagricultural Wealth Owned*) (*in millions of dollars*)
I	— 4,775.1
II	— 17,354.8
III	+ 8,575.9
IV	+ 9,347.5
V	+ 5,815.6
VI	— 282.1

Source: E. S. Lee, A. R. Miller, C. P. Brainerd, and R. A. Easterlin, *Population Redistribution and Economic Growth in the United States, 1870-1950* (Philadelphia: American Philosophical Society, 1957), I, 729-33; II, 179-81.

represents these underlying factors. Nonetheless, the results are suggestive. With the exception of Region VI (the Pacific Coast), regions importing capital tended to experience the greatest reductions in interest rates while those exporting capital tended to experience the least decline. The coefficient of rank correlation for the six observations is only .5, but if the Pacific region is excluded the coefficient rises to .9.

It appears, therefore, that capital did move in response to interest differentials (at least east of the Rocky Mountains). Moreover, a state-by-state analysis of the Pacific region shows that capital did move out of the low-interest state (California) toward the remainder of the region. (If California is excluded, the other five states imported $5,863,200,000 between 1880 and 1920.) These results appear to bear out the conclusion that a national capital market was developing; however, they suggest that as late as the first decades of the twentieth century the connections across the Rockies were still tenuous.[38]

V

In the analysis of both the long- and short-term capital markets, the South stood apart. In the case of the short-term market, interest rates (which at the beginning of the period appeared not much different than those prevailing in the New England and Middle Atlantic area) stood by the end of the period considerably above

[38] In this light, it is interesting to note that if analysis of variance Test No. 1 is repeated without the Pacific region, the f ratio for the interaction term rises to over 2.

the rates from these regions and almost as high as rates charged in the Plains and Pacific regions. An examination of the South's financial institutions suggests some reasons for this pattern. Of all six regions, the South almost certainly had the poorest commercial banking facilities. The region was slow to adopt free banking, and what banks there were (dominated by the political and social elite) were not very competitive. Nor did the region receive much help from the National Banking Act. Since the region was almost unrepresented in Congress when the Act was passed, the law was not well suited for the region's needs. In particular, both the minimum capital requirements (too high for small agricultural banks) and the distribution of bank-note quotas discriminated against the region. Thus in 1870, when there were 1600 national banks, fewer than one hundred were in the South. There were none at all in Mississippi and Florida and only twenty-seven in all Arkansas, Texas, Louisiana, Georgia, North Carolina, and South Carolina.[39] Nor were even these banks very aggressive. Designed to service the commercial community, they frowned on industry and did little to help agriculture. Throughout the latter half of the century, for example, the managers of the growing textile mills were continually complaining that local banks would not discount their paper.[40]

Although the southern banks did attempt to increase their lending power through a fairly extensive use of rediscounting, the commercial-paper market (so important to the evolution of a short-term credit market elsewhere in the country) failed to develop in the South. At the turn of the century, when the purchase and sale of single-name paper had become the standard method of moving funds between regions, a leading southern banker included among his rules for "sound" banking the following warning: "Lend your money to your regular customers, and do not make a rule of buying commercial paper . . . . Do not permit any loans to be made on single name paper, unless otherwise secured, no matter what the commercial rating may be."[41] Nor did southern reluctance to utilize the commercial-paper market appear to have decreased over the

[39] P. Trescott, *Financing American Enterprise* (New York: Harper and Row, 1963), pp. 58-59.

[40] B. Mitchell, *The Rise of Cotton Textile Mills in the South* (Baltimore, Md.: Johns Hopkins Press, 1921).

[41] A speech by W. S. Witham appearing in the *Proceedings* of the American Bankers' Association, 1898, p. 128 and p. 130, quoted in M. Myers, (ed.), *New York Money Market*, Vol. I (New York: Columbia University Press, 1931).

next decade and a half (in the nation as a whole, the volume of commercial-paper transactions almost tripled between 1907 and 1914).[42] In 1908 a New York banker reported that the South was the only section of the country not buying commercial paper to any great extent; and in 1911 the Minnesota Superintendent of Banks reported that "the market for commercial paper extends over the length and breadth of this land, excepting some portions of the southern states.[43]

A similar lack of development is seen in the long-term market. The 1890 census of mortgages indicates that rates in the South, while higher than those in New England and the Middle Atlantic states, were not significantly above those in Region IV and were well below those prevailing in Regions V or VI. By 1914, however, while rates in every other region had declined substantially, those in the South were higher than they had been in 1880. Moreover, they were now substantially above the rates in Regions I, II, and IV, and only slightly below those in Regions V and VI. (By 1930 only Region VI had higher rates.) Again it appears that the South stood apart.

In the long- (as in the short-) term market, institutional development was retarded in the South. Mutual savings banks (the most important nonbank intermediaries in the early years) were never important, and even stock savings banks were slow to start.[44] Moreover, the mortgage companies that had aided the transfer of funds into Regions IV and V had little impact upon the South. Of the 167 mortgage companies enumerated by the New York report of 1891, only six were located in the thirteen southern states (three in Texas, two in Florida, and one in Georgia). By comparison there were seven in Colorado alone.[45] Nor did life insurance companies develop to fill the gap. The 1890 census enumeration of Class A life insurance companies indicates that only six southern companies operated during the decade 1880-1890, and by 1890 three of these had gone out of existence.[46]

[42] Greef, p. 59.

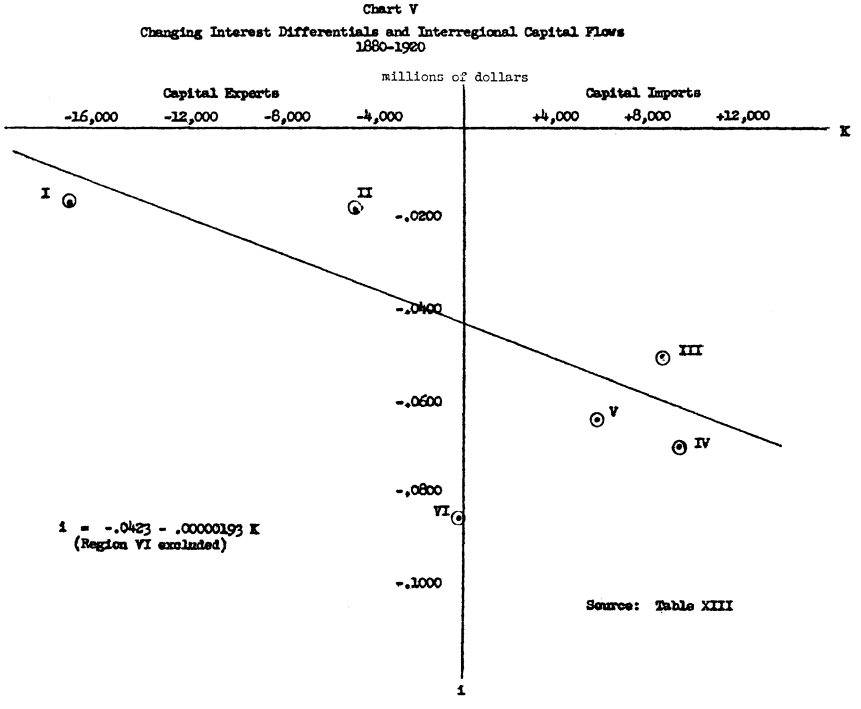
[43] *Ibid.*, p. 50.

[44] In the years 1870-1885, there were only five state-year observations on savings banks among the thirteen southern states. This compares with 62 in Region I, 53 in II, 18 in IV, and 12 in VI. If comparison is made in terms of number of banks, the results are even more skewed.

[45] Frederiksen, *JPE*, II, 213.

[46] *Eleventh Census of the United States*, Vol. XI, "Report of Insurance Business in the United States," Part II, "Life Insurance" (Washington, 1895).

The failure to mobilize long-term capital through normal market channels is also reflected in the experience of capital users in the South. The complicated arrangements entered into by Nathaniel Davis in his attempts to get credit for his Alabama cotton plantation were probably typical of planters in the South, and they certainly do not reflect a well-developed capital market.[47] In the case of the textile industry, development frequently took the form of direct investment by northern firms. To take advantage of labor and trans-



port cost differentials, such firms frequently opened branches in the South and at times even moved their entire plants into the area.[48] Since these latter movements bypassed the capital markets, they had little impact on interest differentials. An examination of Chart V suggests, for example, that southern differentials declined much less rapidly than the size of capital movements would lead one to expect—a reflection, perhaps, of the relative volume of direct investment.

[47] W. T. Jordan, *Hugh Davis and His Alabama Plantation* (Tuscaloosa: University of Alabama Press, 1948).

[48] J. Keslensky, "Financing Southern Industry, 1865-1915" (unpublished); and Mitchell.

The evidence strongly suggests that the institutional developments that speeded the flow of capital across geographic boundaries in other regions lagged in the South. The question of why it lagged is still open; and on that question, further research would almost certainly be most rewarding. Some tentative hypotheses do, however, suggest themselves. The Civil War undoubtedly played some role. The fact that the southern states were not represented in Congress when the National Banking Act was passed accounts in part for the failure of the Act's authors to take account of that region's needs. Moreover, the War destroyed a number of financial connections between that region and the North, and these had to be completely replaced. The sons of Hugh Davis, for example, were unable to depend upon northern factors for finance (as their father had done) and were forced to turn to local informal markets.[49]

The close connection between agricultural investment and political and social prestige may well have hindered the movement of local capital from agriculture to manufacturing and, in addition, may have engendered an economic environment that resisted the penetration of "foreign" finance. At the same time, the resulting political structure produced laws designed to prevent competition, and the lack of competition in southern banking was certainly apparent.

Finally, it may be that conservative southern attitudes did not lend themselves well to innovation; and financial innovations were needed. These suggestions are, of course, mere speculations. There is, however, little question that the South represents an interesting counter example to the thesis that the economy moved gradually towards a national capital market in the period 1870-1914.

VI

It appears that interregional interest differentials did exist in the nineteenth century. Moreover, in the case of short-term rates, the differentials had been substantially reduced by World War I, and this reduction appears to have been the result of the growth of a national short-term capital market. In particular, the commercial-paper market appears to have made substantial contributions to this process. In the case of the long-term capital market, institutional developments appear to have reduced interest differentials,

[49] Jordan.

but some (particularly in the South and the Pacific region) continued to exist. Although the evidence strongly suggests that the nation moved toward a national long-term market in the period, the speed of this movement may have been retarded after 1890. No single institutional development appears to have played a dominant role in the growth of the nation's market, but several developments may have made substantial contributions. The expanded investment activities of the life insurance companies were important, as was the development of the formal securities market. The growth of mortgage banking in the 1870's and 1880's aided movements of capital into Regions VI and V; and the failure of these companies in the 1890's may have contributed to the retardation in development of a national long-term market. Finally, the South appears to have been less affected by these new financial institutions than any other region; however, the explanation of the failure of this region to develop an adequate set of financial institutions requires still further work.

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APPENDIX TABLE 1

THREE-YEAR MOVING AVERAGE OF GROSS RATE OF RETURN TO RESERVE-CITY NATIONAL BANKS

		Region											
		I		II		III		IV		V		VI	
Year	NYC	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1889	5.56	5.18	5.18	5.90	5.43	6.33	6.43	6.72	6.52	7.44	7.44	7.48	7.48
1890	5.64	5.13	5.13	5.90	5.45	6.57	6.68	6.70	6.59	7.92	7.92	7.73	7.73
1891	5.50	4.84	4.84	5.86	5.48	6.87	6.98	7.37	6.59	7.91	7.91	7.99	7.99
1892	5.32	4.78	4.78	5.73	5.45	6.78	6.92	7.20	6.41	7.27	7.66	7.97	7.97
1893	4.86	4.66	4.66	5.62	5.38	7.41	7.46	7.24	6.23	7.05	7.46	7.84	7.84
1894	4.67	4.46	4.46	5.38	5.09	7.33	7.36	6.10	5.80	8.25	7.15	7.48	7.48
1895	4.45	4.39	4.39	5.34	5.14	7.35	7.41	5.99	5.70	8.31	7.01	7.37	7.37
1896	4.38	4.23	4.23	5.30	5.05	7.40	7.57	5.74	5.43	10.28	7.20	7.18	7.18
1897	4.41	4.32	4.32	5.45	5.22	7.59	7.69	5.60	5.43	9.88	7.91	6.33	6.33
1898	3.90	3.89	3.89	5.38	4.98	7.98	7.68	5.32	5.11	15.11	9.10	5.82	5.93
1899	3.92	3.94	3.94	5.33	4.91	7.34	6.73	5.02	5.09	12.39	7.80	5.06	5.47
1900	3.72	3.78	3.78	5.13	4.72	7.19	6.35	4.51	4.59	10.16	5.86	5.20	5.72
1901	4.46	3.95	3.95	4.96	4.63	6.67	6.10	4.78	4.75	6.47	5.58	5.10	5.54
1902	4.54	3.89	3.89	4.82	4.65	6.52	6.05	4.54	4.42	6.22	5.33	5.10	5.29
1903	4.95	4.16	4.16	4.92	4.87	6.37	5.98	4.95	4.71	7.01	6.11	5.19	5.10
1904	3.95	4.13	4.13	4.55	4.32	6.77	6.15	4.66	4.50	5.75	4.75	5.37	4.92
1905	3.93	4.25	4.25	4.54	4.29	6.48	5.92	4.85	4.55	6.05	5.28	5.72	4.98
1906	4.04	4.47	4.47	4.50	4.25	6.08	5.67	4.72	4.49	6.22	5.72	5.48	4.77
1907	4.86	5.13	5.13	4.93	4.98	5.88	5.66	4.93	4.78	6.00	6.00	5.47	4.90
1908	4.81	5.18	5.18	5.01	4.95	6.04	5.85	4.95	4.85	6.10	6.17	5.47	5.05
1909	4.94	5.46	5.46	5.10	4.94	6.50	6.30	5.18	5.09	6.17	6.06	5.86	5.23
1910	5.00	5.39	5.39	5.19	4.94	6.60	6.49	5.43	5.40	6.95	6.25	5.94	5.32
1911	5.25	5.57	5.57	5.24	5.11	7.02	6.69	5.68	5.58	7.40	6.62	6.21	5.37
1912	5.34	5.82	5.82	5.30	5.31	7.01	6.73	5.89	5.80	7.62	6.84	6.25	5.70
1913	5.35	6.08	6.08	5.43	5.59	7.40	6.99	6.01	5.79	7.64	7.46	6.26	5.85

[a] Unweighted.
[b] Weighted.
Source: Table 4.

APPENDIX TABLE 2

THREE-YEAR MOVING AVERAGE OF GROSS RATE OF RETURN TO NON-RESERVE-CITY NATIONAL BANKS

		Region											
		I		II		III		IV		V		VI	
Year	NYC	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1889	5.56	6.21	6.25	6.00	6.08	8.67	8.36	7.17	7.06	9.66	9.95	10.12	8.83
1890	5.64	6.28	6.30	6.09	6.12	8.65	8.40	7.14	7.06	9.66	9.54	10.00	8.99
1891	5.50	6.06	6.07	6.07	5.99	8.50	8.30	7.00	6.92	9.67	9.27	9.71	8.91
1892	5.32	5.79	5.68	5.75	5.81	8.20	8.18	6.82	6.72	10.99	9.31	9.54	8.59
1893	4.86	5.52	5.42	5.58	5.66	7.97	7.97	6.68	6.57	10.57	8.72	9.09	8.20
1894	4.67	5.36	5.25	5.42	5.53	7.91	8.00	6.51	6.43	10.32	8.40	8.85	7.96
1895	4.45	5.27	5.15	5.51	5.49	7.90	8.00	6.53	6.43	9.29	8.03	9.13	8.22
1896	4.38	5.20	5.08	5.51	5.47	7.90	7.96	6.51	6.39	9.53	8.43	8.92	7.99
1897	4.41	5.22	5.19	5.41	5.31	7.77	7.85	6.43	6.28	9.65	8.66	8.88	8.21
1898	3.90	5.24	5.25	5.43	5.32	7.78	7.79	6.28	6.13	9.27	8.64	8.36	7.95
1899	3.92	5.71	5.62	5.69	5.50	7.77	7.77	6.14	6.02	9.25	8.74	8.16	8.01
1900	3.72	5.75	5.60	5.69	5.58	7.47	7.49	5.55	5.50	8.40	7.96	7.75	7.56
1901	4.46	5.65	5.48	5.41	5.20	7.16	7.25	5.28	5.21	7.84	7.32	7.52	7.09
1902	4.54	5.08	5.04	5.04	4.89	6.82	6.98	4.95	4.85	7.61	7.06	7.71	7.04
1903	4.95	4.92	4.93	5.03	4.86	6.74	6.89	5.33	5.15	8.26	7.66	7.85	7.18
1904	3.95	4.69	4.48	4.48	4.26	6.66	6.75	5.37	5.19	8.40	7.98	7.76	7.36
1905	3.93	4.59	4.23	4.34	4.17	6.55	6.69	5.24	4.98	8.20	7.81	7.91	7.38
1906	4.04	4.58	4.24	4.19	4.02	6.40	6.50	5.05	4.83	7.91	7.59	7.96	7.08
1907	4.86	5.23	4.97	4.78	4.82	6.30	6.41	5.08	4.88	7.79	7.51	8.49	6.44
1908	4.81	5.31	5.20	4.84	4.91	6.25	6.35	5.17	5.10	7.81	7.56	8.32	6.26
1909	4.94	5.37	5.26	4.98	5.13	6.37	6.48	5.39	5.33	7.93	7.70	9.01	6.41
1910	5.00	5.01	5.05	5.10	5.26	6.61	6.71	5.58	5.51	8.35	8.11	8.99	7.17
1911	5.25	5.07	5.09	5.17	5.34	6.79	6.83	5.86	5.76	8.60	8.40	9.49	7.21
1912	5.34	5.16	5.17	5.26	5.42	6.92	6.96	6.05	5.94	8.81	8.65	9.25	7.25
1913	5.35	5.30	5.31	5.40	5.52	6.97	6.99	6.17	6.06	8.72	8.66	9.23	7.25

[a] Unweighted.
[b] Weighted.
Source: Table 3.

APPENDIX TABLE 3

THREE-YEAR MOVING AVERAGE OF NET RATE OF RETURN TO NON-RESERVE-CITY NATIONAL BANKS

		Region											
		I		II		III		IV		V		VI	
Year	*NYC*	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1870	3.39	5.12	5.12	4.37	4.44	6.66	6.49	4.31	4.21				
1871	3.23	4.87	4.87	4.17	4.28	6.33	6.15	3.99	3.60				
1872	3.34	4.73	4.73	4.19	4.19	4.93	4.72	4.28	3.91			7.81	7.81
1873	3.35	4.57	4.57	4.08	3.98	4.50	4.24	4.30	4.05			7.43	7.43
1874	3.10	4.20	4.20	3.97	3.74	4.05	3.78	4.36	4.45			7.21	7.21
1875	2.04	3.35	3.35	3.64	3.42	4.17	4.04	4.12	4.25			6.20	6.20
1876	1.33	2.47	2.47	3.23	3.06	3.78	3.76	3.61	3.66			5.57	5.57
1877	.89	1.62	1.62	2.63	2.65	3.79	3.81	2.88	2.84			4.99	4.99
1878	1.07	1.15	1.15	2.27	2.50	2.74	2.78	2.42	2.37			4.69	4.69
1879	1.77	1.39	1.39	2.09	2.41	2.77	2.81	2.60	2.73			5.02	5.02
1880	2.28	1.88	1.88	2.31	2.63	3.07	3.07	2.99	3.14			5.54	5.54
1881	2.80	2.37	2.37	2.36	2.63	3.61	3.61	3.48	3.50			5.61	5.61
1882	2.54	2.36	2.36	2.47	2.67	3.75	3.44	3.23	3.32			5.61	5.61
1883	2.06	2.23	2.23	2.57	2.67	3.42	3.13	3.08	3.18			5.11	5.11
1884	1.76	1.86	1.86	2.58	2.62	3.06	2.76	2.57	2.68			4.75	4.75
1885	1.72	1.86	1.86	2.45	2.53	2.42	2.39	2.82	2.76			4.43	4.43
1886	2.17	1.90	1.90	2.49	2.52	2.23	2.19	2.89	2.92			3.77	3.77
1887	2.77	2.39	2.39	2.72	2.79	2.12	2.08	2.98	3.17			4.14	4.14
1888	2.81	2.54	2.54	2.96	2.93	2.58	2.58	3.04	3.24			4.70	4.70
1889	2.71	2.40	2.40	2.88	2.92	2.73	2.71	3.00	3.16	2.47	2.47	5.44	5.44
1890	2.56	2.40	2.40	2.81	2.82	2.88	2.89	3.07	3.24	2.74	2.74	5.66	5.66
1891	2.42	2.07	2.07	2.68	2.72	2.52	2.52	2.84	3.06	1.96	1.96	5.66	5.66
1892	2.34	2.22	2.22	2.69	2.69	2.33	2.35	2.60	2.79	1.58	1.57	5.63	5.63
1893	1.82	1.82	1.82	2.52	2.51	1.85	1.92	1.78	2.04	.64	.67	5.20	5.20

APPENDIX TABLE 3 (*Continued*)

Year	NYC	Region I		II		III		IV		V		VI	
		(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1894	1.57	1.67	1.67	2.41	2.39	1.72	1.87	1.40	1.67	.57	.57	4.65	4.65
1895	1.29	1.53	1.53	2.23	2.21	1.68	1.65	1.17	1.38	.79	.66	4.27	4.27
1896	1.32	1.63	1.63	2.20	2.14	2.31	2.03	1.32	1.45	.37	.51	4.07	4.07
1897	1.41	1.67	1.67	2.21	2.08	2.65	2.21	1.34	1.49	.42	.63	3.57	3.57
1898	1.27	1.33	1.33	2.10	1.88	2.47	2.04	1.23	1.49	.50	.63	3.27	3.16
1899	1.46	1.41	1.41	2.21	2.03	2.49	2.14	1.65	1.87	1.42	1.07	2.92	3.01
1900	1.48	1.42	1.42	2.10	2.00	2.77	2.29	2.21	2.29	2.35	1.80	2.80	3.05
1901	2.19	1.67	1.67	2.42	2.25	3.11	2.80	2.59	2.59	2.87	3.00	2.66	3.07
1902	2.36	1.66	1.66	2.29	2.16	3.12	2.84	2.48	2.44	2.80	2.95	2.56	2.82
1903	2.78	1.79	1.79	2.23	2.17	3.03	2.82	2.05	2.06	2.32	2.43	2.52	2.67
1904	2.08	1.66	1.66	1.80	1.81	3.33	3.06	1.79	1.81	2.33	1.42	2.43	2.47
1905	2.10	1.61	1.61	1.79	1.75	3.23	3.00	1.81	1.77	2.65	1.78	2.43	2.45
1906	2.19	1.80	1.80	1.99	1.86	3.09	2.94	1.81	1.76	2.97	2.46	3.04	2.66
1907	2.56	2.05	2.05	1.84	1.98	2.70	2.49	1.79	1.79	2.27	2.32	2.98	2.64
1908	2.37	1.86	1.86	1.83	1.82	2.64	2.38	1.66	1.69	2.27	2.32	2.86	2.58
1909	2.20	1.82	1.82	1.32	1.78	2.66	2.35	1.58	1.61	2.04	1.95	2.25	2.27
1910	2.14	1.77	1.77	1.78	1.73	2.48	2.18	1.76	1.85	2.21	1.93	2.16	2.30
1911	2.17	1.78	1.78	1.64	1.69	2.71	2.30	1.72	1.80	2.17	1.99	2.14	2.23
1912	2.09	1.72	1.72	1.54	1.49	2.61	2.26	1.69	1.72	2.02	1.77	1.98	2.16
1913	1.95	1.69	1.69	1.58	1.62	2.66	2.33	1.55	1.48	1.80	1.75	1.83	1.92

[a] Unweighted.
[b] Weighted.
Source: Table 4.

Appendix Table 4

THREE-YEAR MOVING AVERAGE OF NET RATE OF RETURN TO NON-RESERVE-CITY NATIONAL BANKS

		Region											
		I		II		III		IV		V		VI	
Year	NYC	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1870	3.39	5.82	5.86	4.78	4.69	5.55	5.32	6.08	5.90	5.26	4.27	13.32	11.08
1871	3,23	5.49	5.55	4.38	4.43	5.36	5.16	5.71	5.54	5.56	4.41	14.22	11.47
1872	3.34	5.40	55.4	4.32	4.43	5.33	5.23	5.50	5.35	6.38	5.25	13.75	11.15
1873	3.35	5.41	5.50	4.16	4.11	5.08	4.97	5.22	5.17	5.79	5.24	10.60	8.64
1874	3.10	5.27	5.32	4.13	3.95	4.92	4.93	5.09	5.09	5.95	5.55	8.94	6.89
1875	2.04	4.73	4.69	3.91	3.55	4.52	4.67	4.86	4.89	5.52	4.86	9.26	7.18
1876	1.33	4.02	3.90	3.71	3.23	4.10	4.35	4.46	4.41	4.97	4.12	9.05	7.22
1877	.89	3.40	3.22	3.39	2.79	3.39	3.55	4.00	3.91	3.93	3.16	7.61	6.51
1878	1.07	3.05	2.76	3.06	2.52	2.81	2.92	3.50	3.39	3.73	2.76	7.32	6.19
1879	1.77	3.13	2.90	2.91	2.51	2.65	2.74	3.47	3.30	4.03	3.03	6.77	5.56
1880	2.28	3.35	3.19	3.05	2.77	3.39	3.38	3.63	3.48	5.29	4.07	7.64	5.67
1881	2.80	3.53	3.46	3.08	2.98	3.91	3.78	3.94	3.77	5.56	4.80	7.42	5.27
1882	2.54	3.39	3.36	3.07	3.00	4.17	3.98	4.04	3.86	5.37	4.78	6.84	4.73
1883	2.06	3.11	3.06	2.94	2.89	4.18	4.06	4.16	3.84	5.01	4.72	6.15	4.56
1884	1.76	2.85	2.76	2.88	2.72	4.15	4.11	4.18	3.79	4.76	4.60	5.91	4.66
1885	1.72	2.91	2.75	2.87	2.71	4.28	4.35	4.05	3.77	4.85	4.94	5.96	5.06
1886	2.17	3.12	2.93	2.96	2.83	4.18	4.24	4.10	3.78	4.63	4.79	5.20	4.64
1887	2.77	3.40	3.16	3.09	3.03	4.30	4.34	3.95	3.71	4.66	5.02	5.52	4.74
1888	2.81	3.51	3.28	3.20	3.19	4.46	4.40	4.00	3.77	4.52	4.95	5.94	5.03
1889	2.71	3.56	3.30	3.27	3.23	4.74	4.53	3.71	3.65	4.43	4.81	6.31	5.38
1890	2.56	3.57	3.36	3.31	3.25	4.76	4.56	3.74	3.71	4.21	4.25	5.93	5.21
1891	2.42	3.32	3.15	3.21	3.09	4.46	4.24	3.61	3.59	4.17	3.88	5.37	4.83
1892	2.34	3.05	2.95	2.93	2.90	3.80	3.82	3.39	3.38	4.61	3.63	5.11	4.32
1893	1.82	2.68	2.60	2.72	2.66	3.02	3.14	2.84	2.84	3.77	2.47	3.85	2.71
1894	1.57	2.44	2.38	2.54	2.43	2.72	2.93	2.51	2.54	3.08	1.73	2.84	1.81
1895	1.29	2.29	2.23	2.53	2.30	2.65	2.87	2.27	2.34	2.10	.98	2.72	1.34
1896	1.32	2.25	2.19	2.39	2.18	2.79	2.95	2.16	2.27	2.15	1.26	2.34	1.41

APPENDIX TABLE 4 (*Continued*)

		Region											
		I		II		III		IV		V		VI	
Year	*NYC*	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(1)[a]	(2)[b]
1897	1.41	2.24	2.18	2.24	2.12	2.83	2.94	2.01	2.14	2.46	1.63	2.61	1.61
1898	1.27	2.35	2.10	2.22	2.08	2.82	2.91	1.97	2.06	2.53	2.00	2.15	1.88
1899	1.46	2.59	2.29	2.62	2.35	3.18	3.21	2.19	2.23	3.15	2.62	2.85	2.75
1900	1.48	2.70	2.34	2.79	2.46	3.32	3.38	2.84	2.85	3.51	3.01	3.17	3.15
1901	2.19	2.54	2.33	2.86	2.65	3.46	3.52	3.00	3.03	3.70	3.20	3.96	3.32
1902	2.36	2.32	2.16	2.65	2.56	3.31	3.43	3.00	3.01	3.78	3.37	4.22	3.40
1903	2.78	2.21	2.09	2.66	2.59	3.24	3.32	2.50	2.49	3.69	3.36	4.11	3.35
1904	2.08	2.12	1.90	2.26	2.05	3.13	3.19	2.36	2.28	3.65	3.39	3.56	3.29
1905	2.10	2.13	1.83	2.10	1.97	3.10	3.15	2.23	2.10	3.48	3.24	3.46	3.32
1906	2.19	2.26	1.97	1.96	1.92	3.06	3.16	2.13	2.03	3.46	3.26	3.43	3.31
1907	2.56	2.55	2.31	2.12	2.16	2.97	3.07	2.12	2.04	3.47	3.28	3.43	2.94
1908	2.37	2.41	2.26	2.01	2.02	2.79	2.93	2.05	2.03	3.48	3.33	3.21	2.72
1909	2.20	2.27	2.18	1.98	1.97	2.65	2.79	1.97	1.94	3.27	3.14	3.35	2.67
1910	2.14	2.05	2.04	2.02	1.97	2.62	2.79	1.92	1.88	3.21	3.11	3.18	2.87
1911	2.17	2.05	2.04	2.02	1.95	2.60	2.73	1.93	1.90	3.01	2.96	2.84	2.72
1912	2.09	1.98	1.95	2.00	1.86	2.54	2.68	1.94	1.91	2.89	2.88	2.64	2.57
1913	1.95	1.73	1.71	1.72	1.62	2.46	2.58	1.85	1.84	2.57	2.63	2.41	2.36

[a] Unweighted.
[b] Weighted.
Source: Table 5.