Short-Term Interest Rates in New York City and San Francisco, 1872-98

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In recent years there has been increasing interest in the development and behavior of the postbellum American capital market. Much of this research was inspired by the pioneering work of Lance Davis [2, and also 12]. Several researchers have utilized national bank data from the Comptroller of the Currency's annual *Reports* to construct estimates of regional or state and reserve city series of interest rates charged on commercial loans. The detailed interest rate series of James and Smiley rely on national bank gross earnings data which were not reported by the comptroller until 1888 [4, 5, and 10]. Consequently, our knowledge of regional interest rate behavior prior to that date is more limited.[1]

Two generally overlooked interest rate series are used here to examine the behavior of short-term interest rates in New York City and San Francisco between 1872 and 1898. The relatively high quality of the series adds significance to the finding that, for similar types of short-term loans, the San Francisco rates were similar to those for New York City from about 1880 on. This finding is surprising given the general impression that rates in southern and western regions were much higher than in eastern areas throughout most of the postbellum period, but it is generally consistent with Lance Davis's assertion that "...the movement [capital market integration] started in the major eastern cities and moved first to the larger cities in other regions" [2, p. 369].

Two well-known series of first class (or prime) commercial paper rates for New York City go back to 1866 [3 and 7]. A similar series of rates on commercial paper and loans secured by bonds for San Francisco commercial banks comes from the generally overlooked work of Carl C. Plehn, published in 1899 [8 and 9]. Plehn was interested in the effect of California's taxation of mortgages as part of its general property tax. To determine the impact, he needed data on mortgage interest rates for "first-class mortgages" and interest rates on similar but untaxed loans.[2] He used the books of the three largest savings banks in San Francisco to calculate (for six-month periods) interest

rates on "first-class mortgages" in San Francisco, Alameda County, and "outside" counties from 1871 through 1898. He then used the books of five large San Francisco commercial banks to calculate the "...rates of interest charged upon loans secured by a deposit of bonds and upon first-class commercial paper" [8, pp. 51-53 and 55-56]. The generally overlooked San Francisco commercial paper rate series and the New York City commercial paper rates, presented in Table 1 and in the chart can be used to study another aspect of capital market integration in the postbellum period.

The quality of the Plehn series seems to be high enough to merit use for this purpose. Plehn used actual negotiated rates calculated directly from the books of the banks because he found that published or asking rates often differed substantially from the rates actually negotiated.[3] This is the kind of data, rates actually charged on loans, that James, Smiley, and others would have liked to have had. Plehn gave several examples to illustrate the often substantial differences between quoted and negotiated rates. For example, on one date he found commercial loans quoted in San Francisco newspapers at 7 to 8 percent, while the actual negotiated rates ranged from 4.50 to 7.75 percent and the average that day for the five large banks was 5.75 percent. On the same day, call loans secured by deposits of bonds were quoted at 6 to 8 percent while the average negotiated rate was 4.83 percent [9, pp. 350-51]. In the late 19th century the trade journals *Bradstreet's* and *Dun's Review* published discount rates for selected US cities but these were quoted rates which makes their accuracy suspect. Breckenridge's well-known study used the quoted rates collected by *Bradstreet's* but many of these rates reveal a remarkable constancy. For example, the Portland and Salt Lake City rates were constant at 8 percent from 1893 through 1897, Seattle at 10 percent from 1893 through 1896, Tacoma at 9 percent from 1895 through 1897, and Los Angeles at 7 percent from 1894 through 1897 [1, p. 120]. John James also criticized the accuracy of the *Bradstreet's* and *Dun's* rates for interior cities, noting that the rates were reported by local "stringers" and that data collection and reporting were quite erratic and inconsistent in smaller cities [5, pp.252-62]. He concluded "...that there is a prima facie case for the implausibility of such stable interior rates. Thin markets should have been much more volatile than the well-developed Eastern money markets" [5, p. 255]. It is reasonable, therefore, to assume that Plehn's rates are more accurate than quoted rates because they were calculated directly from individual bank records.

The San Francisco rates shown in Table 1 are lower than the recent estimates of rates for San Francisco national banks constructed by James and Smiley [5, Appendix A; and 11]. The

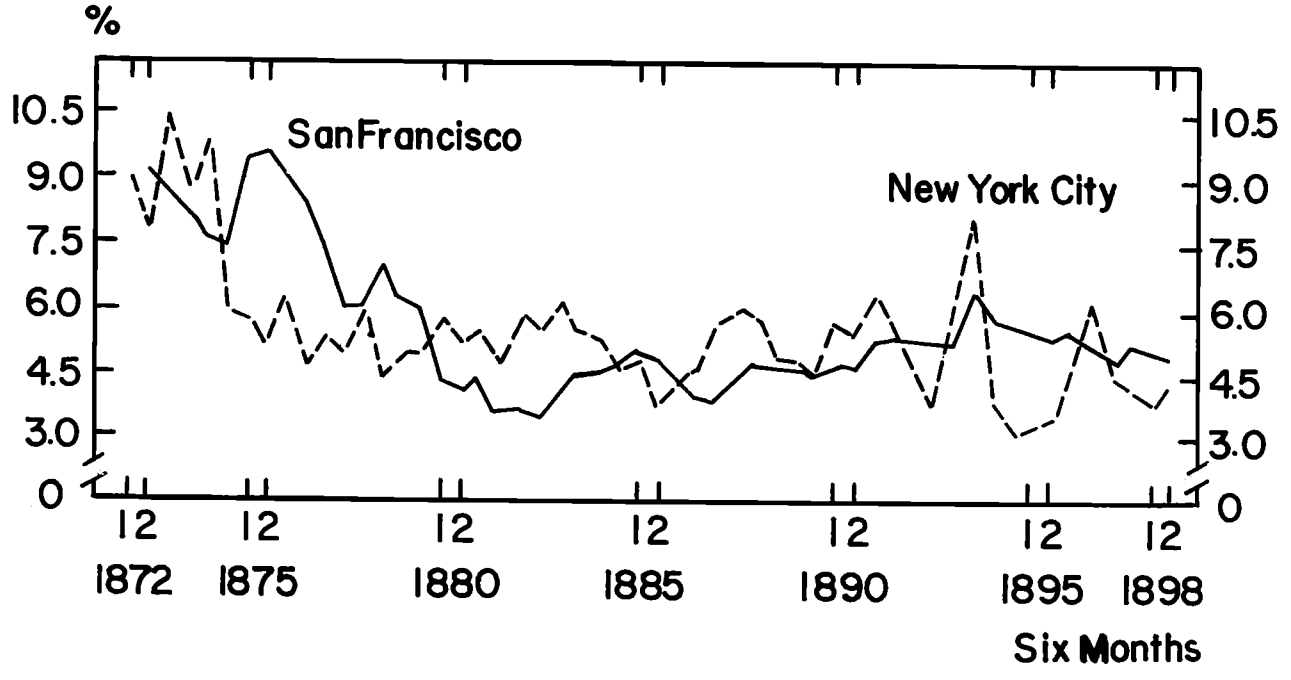
Table 1

AVERAGE ANNUAL COMMERCIAL PAPER RATES: SAN FRANCISCO AND NEW YORK CITY, 1872-98

Six Months Ending	New York City	San Francisco	Six Months Ending	New York City	San Francisco
Apr. 1872	9.06	nd	Oct. 1885	3.69	4.89
Oct. 1872	7.62	9.23	Apr. 1886	4.17	4.34
Apr. 1873	10.50	nd	Oct. 1886	4.53	3.89
Oct. 1873	8.66	nd	Apr. 1887	5.62	3.83
Apr. 1874	10.09	7.65	Oct. 1887	5.86	4.34
Oct. 1874	5.86	7.30	Apr. 1888	5.63	4.66
Apr. 1875	5.71	9.50	Oct. 1888	4.71	4.66
Oct. 1875	4.97	9.68	Apr. 1889	4.70	4.59
Apr. 1876	6.19	9.01	Oct. 1889	4.47	4.47
Oct. 1876	4.58	8.43	Apr. 1890	5.67	4.69
Apr. 1877	5.25	7.41	Oct. 1890	5.27	4.71
Oct. 1877	4.81	5.92	Apr. 1891	6.26	5.22
Apr. 1878	5.92	6.07	Oct. 1891	5.52	5.30
Oct. 1878	4.27	6.93	Apr. 1892	4.56	5.21
Apr. 1879	4.80	6.20	Oct. 1892	3.63	5.22
Oct. 1879	4.90	5.57	Apr. 1893	5.43	5.23
Apr. 1880	5.71	4.32	Oct. 1893	8.15	6.39
Oct. 1880	5.00	4.02	Apr. 1894	3.99	5.69
Apr. 1881	5.46	4.37	Oct. 1894	3.05	5.58
Oct. 1881	4.56	3.60	Apr. 1895	3.16	5.41
Apr. 1882	5.93	3.65	Oct. 1895	3.31	5.32
Oct. 1882	5.35	3.55	Apr. 1896	5.06	5.42
Apr. 1883	6.05	4.03	Oct. 1896	5.90	5.04
Oct. 1883	5.40	4.42	Apr. 1897	4.54	4.64
Apr. 1884	5.25	4.49	Oct. 1897	3.59	5.21
Oct. 1884	4.50	4.72	Apr. 1898	3.71	5.05
Apr. 1885	4.89	5.03	Oct. 1898	4.17	4.90

Sources: The New York City prime commercial paper rate is calculated from Greef [3, pp. 80-82]. The San Francisco commercial paper rate is taken from Plehn [8, pp. 52-53]. Plehn's rates were calculated directly from the books of the five largest ccmmercial banks in San Francisco and are rates for "...loans secured by a deposit of bonds and upon first-class commercial paper." [8, p. 56] The New York City rates were calculated as averages of the monthly rates for the same six-month period that Plehn's San Francisco rates covered.

Commercial paper rates in San Francisco and New York City, 1872-98.



James and Smiley series are indirect estimates constructed from the comptroller's *Reports* by adjusting gross earnings from earnings generated by other types of income-earning assets, while Plehn used rates actually charged on loans.[4] The discrepancy between the rates from Plehn and those constructed from the comptroller's annual *Reports* (**the James and** Smiley rates) appear puzzling until one considers the construction of each series. Plehn calculated mortgage rates only for what he considered "first-class" mortgages and excluded "loans of doubtful security, as indicated by abnormally high rates...." The mortgage rates in San Francisco from the 1890 census were higher than his mortgage rates "...because they include all sorts of mortgages, and also contracts to purchase...." [8, p. 51]. He stressed that he needed interest rates on loans equally secure but not taxed and said loans secured by a deposit of bonds and upon first-class commercial paper represented untaxed but equally secure loans [8, pp. 55-56]. Plehn implied that he excluded all other types of commercial bank loans which were not "equally secure" but gave no indication as to the volume of these "secure" loans relative to all commercial bank loans. He did say that, in 1898, the loans he used "...amounted to over $8,000,000... and were typical of about $35,000,000 of similar loans made by various banks in San Francisco" [8, p. 56]. If these secured loans were a relatively small percentage of all loans and the less secure loans carried risk premiums, then the average loan interest rate on all types of loans would be higher than the commercial paper rate. The rates constructed by Smiley and James from the ***Reports*** are average rates of interest for all loans and discounts made by San Francisco national banks and therefore would be expected to be above rates on more "secure" loans.

We believe that the evidence indicates that the Plehn rates are comparable with the first-class commercial paper rates for New York City and are appropriate to use in examining market integration.[5] The chart graphically presents the San Francisco and New York City commercial paper rates. Several observations can be made. Prior to 1880, the San Francisco rate was substantially above the New York City rate as expected. The former rate declined sharply during the latter part of the decade, however, and by 1880 was below the New York City rate where it remained for the first half of the 1880s. During the latter half of the 1880s and the early 1890s, the rates were quite close with the San Francisco rate tending to be slightly lower. With the panic of 1893 and the ensuing depression, New York City's rate again became somewhat lower.

New York City was the financial center of the United States during the period while San Francisco was the financial center of the west coast. One would expect San Francisco to have lower

interest rates than elsewhere in the western states but the similarity of its short-term rates to those in New York City from 1880 on is surprising and suggests that the city was integrated into the national money market at an earlier date than usually thought. This integration is suggested not only by the level of the short-term rates in the two cities, but also by the similarity in general trends in the rates as well.

San Francisco rates were much closer to New York City rates than to those of other western rates. The only other western city with good rate estimates prior to 1900 is Portland (from an 1899 survey by the comptroller) but state rates for country banks were also reported. Table 2 presents the difference between the comptroller's western state (and Portland) rates and San Francisco rates for 1889, 1894, 1899, and 1902. The table indicates that San Francisco rates were markedly lower than other rates but that there was a pronounced narrowing of the state-San Francisco rate differences between 1889 and 1902. This finding is consistent with the previously reported Davis finding that "...the movement started in the major eastern cities and moved first to the larger cities in other regions. From that point, the market grew to encompass those smaller cities and country areas with the best banking facilities and finally to those areas with the least developed banking structure" [2, p. 369].

Table 2

RATE DIFFERENTIALS: 1889, 1894, 1899, and 1902

	1889	1894	1899	1902
Portland - San Francisco	1.60	2.20	2.30	1.12
California - San Francisco	3.10	2.10	2.00	1.27
Oregon - San Francisco	4.60	4.20	4.00	2.48
Washington - San Francisco	5.80	4.70	4.80	2.60
Nevada - San Francisco	6.30	4.00	2.80	2.81
Arizona - San Francisco	9.30	6.40	5.20	2.85
Idaho - San Francisco	7.70	6.50	4.40	2.42
Utah - San Francisco	4.80	4.50	3.80	2.75

Sources: [13, pp. 484-97; and 14, pp. 252-79]. The rates are the national banks' average rates of interest received on loans as reported by the banks in response to the comptroller's special survey and averaged for the states and cities by the Comptroller of the Currency.

At this time it is difficult to form a complete explanation as to why San Francisco was integrated into the national market at an earlier date than previously thought. Plehn suggested some reasons for the high San Francisco rates in the early part of the period. Prior to the completion of the transcontinental railroad in 1869, San Francisco and California were "isolated" and interest rates were very high, often quoted at one and a half to two percent per month. The 1870s were a period of adjustment complicated by "...speculative excitement connected with mining. This, known as the 'Bonanza Mining Boom' seems to have involved the whole community not excepting the banks." This boom burst in 1875 and brought another period of adjustment. Plehn suggested that in subsequent years national conditions exerted a greater impact on local interest rates but did not elaborate [9, pp. 350-51].

As already discussed, recent research on 19th century United States financial markets has examined the integration of local and regional markets into a more national short-term capital market as indicated by the tendency for regional rates to converge toward a common interest rate. One determinant of the rate at which regional interest rates converge is the change in transactions costs between markets. Plehn suggested that one early factor reducing these costs between San Francisco and eastern markets was the opening of the transcontinental railroad in 1869 which contributed to a subsequent fall in San Francisco (and California) interest rates. The continuing integration of San Francisco into the national market was probably also helped by another technological advance that lowered communications costs between areas. Real telegraph rates between New York City and San Francisco were $1.88 in 1873, $1.68 in 1876, $1.40 in 1883, $0.96 in 1884 and 1888, $0.97 in 1890, and $0.96 in 1908.[6] While these developments tended to tie the two markets more closely together, thereby contributing to the convergence of rates beginning in the late 1870s, there must have been additional forces at work, since these factors working throughout the country did not equalize rates as completely or as rapidly between New York City and other major cities in the interior areas of the United States.[7]

No attempt is made here to offer a complete explanation of the observed pattern of interest rates but possibly contributing factors can be mentioned. A major reason for the early similarity of San Francisco's rates to New York City's probably related to the former's role as the financial center of the west coast. Western funds tended to flow there much like funds from other parts of the country moved to New York City during the period. The financial dominance in the west was at least partly due to San Francisco being the largest western city and the main recipient of gold and silver produced in California and Nevada

mines. This dominance must also have been given a strong impetus by the National Banking Act which made San Francisco the only reserve city west of St. Louis. For country national banks in the west, interest-earning bankers' balances could also be counted as part of those banks' required reserves against deposits.[8] Because of the greater flow of funds into the city and the larger volume of financial activity, a more sophisticated financial market was developing in San Francisco. Improved transportation and communications also linked the city's financial sector to New York City before this occurred in other western cities.

Why this integration occurred so early in San Francisco and even before it occurred in some large cities in other parts of the United States is not entirely clear. We suspect that much of the answer lies in the fact that San Francisco dominated its large region to a greater extent than other regional financial centers dominated their regions. Given its western dominance, the relatively greater supply of funds in San Francisco's financial market would have resulted in relatively lower equilibrium interest rates compared with those in other western cities and larger cities in the Midwest and South. Smaller banks in smaller nonwestern cities often dealt directly with New York City financial institutions as well as with banks in regional financial centers. With the much greater distance to New York City, and thus higher transactions costs, the smaller banks in smaller western cities looked primarily to San Francisco banks to perform services similar to those provided by New York City banks.

The evidence presented in this paper suggests that San Francisco was integrated into the national money market well before the date previously assumed. The surprising finding that short-term rates in New York City and San Francisco were very close from the late 1870s on required additional research into the forces contributing to this equalization.

NOTES

1. Lance Davis [2] derived net rates of return on earning assets for New York City and country and city national bank regions back to 1869 but these are inadequate as estimates of interest rates on loans. An example of the inadequacy of the Davis series as a proxy for short-term rates can be shown using the New York City and San Francisco rates this paper presents. The regression of the short-term commercial paper rate presented here (CPR) on Davis's net rate of return (NR) for each city is:

$$(1)\quad CPR_{NYC} = \underset{(4.56)}{3.4313} + \underset{(2.56)}{0.9487}\ (NR_{NYC}). \quad R^2 = 0.234.$$

$$(2)\quad CPR_{SF} = \underset{(2.14)}{3.0113} + \underset{(1.73)}{0.4818}\ (NR_{SF}). \qquad R^2 = 0.116.$$

The t-statistics are in parentheses. Neither slope coefficient is significantly different from zero at the one percent level though *NYC*'s is at the five percent level. Davis's net rates of return are from [2, Table 4, pp. 362-63]. Before 1899, San Francisco was the only reserve city in Region VI. The New York City and San Francisco commercial paper rates are from Greef and Plehn [3 and 8] and are presented in Table 1.

2. Under California law the mortgagee was required to pay property taxes on the value of a mortgage held, while the mortgagor paid taxes on the difference between the value of the property and the value of the mortgage [8, pp. 48-49].

3. Plehn [8, pp. 50-51] criticized Nathan Matthew [6] on these grounds.

4. Given the available evidence, on the average, the James and Smiley rates seem to be good estimates of the average prevailing rates. The comptroller reported results of surveys of average loan interest rates received by national banks for 1889, 1894, 1899, 1902, and 1910. James reported that the correlation coefficient between his 1910 estimates and the comptroller's survey rates was 0.92 [5, p. 251]. The correlation coefficients between Smiley's estimates and the comptroller's reported survey rates for country national banks were 1899, 0.9137; 1894, 0.8048; 1899, 0.8273; 1902, 0.9190; and 1910, 0.9453.

5. We refer to the San Francisco rates as commercial paper rates while noting that they are rates on commercial paper and loans secured by a deposit of bonds. The New York City commercial paper rates are averages of monthly rates for the appropriate six-month periods.

6. The nominal telegraph rates for New York City to San Francisco messages were taken from [15, series R-74]. Real rates were constructed by deflating the nominal rates by Hoover's consumer price index. Nominal rates were $2.50 in 1873, $2.00 in 1876, $1.50 in 1883, and $1.00 in 1884 where they apparently remained through 1908.

7. It seems unlikely that the demand and supply of capital in each market would independently be in equilibrium at similar interest rates and independent changes in each market result in similar changes in interest rates. These characteristics strongly suggest increasing market integration.

8. The interest could have been received implicitly in the form of services performed by the correspondent San Francisco national banks, or explicitly in interest payments. The advantages of being a reserve city are well known. Banks in reserve cities could expand their deposits at less than the marginal cost of gaining additional local deposits, since country national banks

counted some of the bankers' balances as required reserves. In 1887, when allowed to do so, St. Louis and Chicago banks immediately chose to move to Central Reserve City status and Kansas City, St. Joseph, and Omaha banks immediately asked for reserve city classification because of the expected profits from doing so. Between 1887 and 1911 the number of reserve cities increased from 19 to 50 indicating the potential rents to be extracted from becoming a reserve city.

REFERENCES

1. R. M. Breckenridge, 'Discount Rates in the United States," *Political Science Quarterly*, Vol. 13 (March 1898) pp. 119-42.

2. Lance Davis, "The Investment Market, 1870-1914: The Evolution of a National Market," *Journal of Economic History*, Vol. 25 (September 1965) pp. 355-99.

3. Albert O. Greef, *The Commercial Paper House in the United States* (Cambridge: Harvard University Press, 1938).

4. John A. James, "Banking Market Structure, Risk, and the Pattern of Local Interest Rates in the United States," *Review of Economics and Statistics*, Vol. 58 (November 1976) pp. 453-62.

5. _____, *Money and Capital Markets in Postbellum America* (Princeton: Princeton University Press, 1978).

6. Nathan Matthews, "Double Taxation of Mortgaged Real Estate," *Quarterly Journal of Economics*, Vol. 4 (April 1890) pp. 339-45.

7. Richard N. Owens and Charles O. Hardy, *Interest Rates and Stock Speculation* (New York: MacMillan, 1925).

8. Carl C. Plehn, "the Taxation of Mortgages in California, 1849-1899," *Yale Review* (May 1899) pp. 31-67.

9. _____, "Notes Concerning the Rates of Interest in California," *Journal of the American Statistical Association*, Vol. 6 (September 1899) pp. 350-53.

10. Gene Smiley, "Interest Rate Movement in the United States, 1888-1913," *Journal of Economic History*, Vol. 35 (September 1975) pp. 591-620.

11. _____, "Revised Estimates of Short Term Interest Rates of National Banks for States and Reserve Cities, 1888-1913," Working paper, Marquette University, Economics Department, (October 1976).

12. Richard Sylla, "Financial Intermediaries in Economic History: Quantitative Research on the Seminal Hypotheses of Lance Davis and Alexander Gerschenkron," in R. E. Gallman, ed., *Recent Developments in the Study of Business and Economic History; Essays in Memory of Herman E. Krooss* (Greenwich CT: JAI Press, 1977).

13. US Comptroller of the Currency, *Report, 1899*, (Washington: US Government Printing Office, 1900).
14. _____, *Report, 1902* (Washington: US Government Printing Office, 1903).
15. US Department of Commerce, *Historical Statistics of the United States: Colonial Times to 1970* (Washington: US Government Printing Office, 1975).