Market Timing Report's
LONG TERM FINANCIAL MARKETS DATABASE

Section FX1
NEW YORK FOREIGN EXCHANGE RATES

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INTRODUCTION

This long term financial data base generally begins in 1861 and consists data for nine classifications of financial statistics:

BP	British Pound Exchange Rates in New York,
FX	Foreign Exchange in New York for the Major Trading Currencies,
INT	Long and Short Term Interest Rates in New York,
STK	Stock Market Indexes for U.S. Stock Markets,
LME	London Metal Exchange Prices in London and New York,
PGM	Precious & Platinum Group Metal Prices in London and New York,
FRB	United States Reserves of Depository Institutions,
M	United States Money Supply and Its Components, and
TR	Total Return Indexes.

Extensive documentation is provided as to the source or derivation of every entry in the data base. Some of the series are purely historical, representing either actual quotations or derived values in units which are no longer quoted. The following list gives the total number of series and the number of series currently maintained in each section of data:

BP	The British Pound Exchange Rate Section consists of 4 historical series of which 2 are currently maintained;
FX	The New York Foreign Exchange Rate Section consists of 25 historical currency series all of which are currently maintained;
INT	The U.S. Interest Rate Section consists of 45 historical series of which 17 are currently maintained;
STK	The U.S. Stock Market Indexes Section consists of 48 historical series of which 27 are currently maintained;
LME	The London Metal Exchange Prices consists of aluminum, copper, nickel, lead, tin and zinc prices in New York and London;
PGM	The Precious & Platinum Group Metal Prices consists of gold, platinum, palladium and silver prices in New York and London;
FRB	The U.S. Reserves of Depository Institutions Section consists of 43 historical series of which 30 are currently maintained;
M	The Money Supply Components Section consists of 45 historical series 40 of which are currently maintained;
TR	The Total Return Indexes section consists of 13 historical total return series derived from 65 component indexes which are all currently maintained.

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The specific series which are currently maintained are indicated in the filename indexes for each section below. Because the focus of this data base is the compilation of rare long term historical series, each of the currently maintained series are readily available from numerous publications and on line data bases. Market Timing Report updates the database quarterly on its website.

The following list identifies many primary and secondary sources for current data:

Board of Governors of the Federal Reserve System, Washington, D.C. 20551.
Federal Reserve Statistical Releases:

- H.3 Aggregate Reserves of Depository Institutions and the Monetary Base
- H.4.1 Factors Affecting Reserves of Depository Institutions and Condition Statement of Federal Reserve Banks
- H.6 Money Stock, Liquid Assets and Debt Measures
- H.10(512) Foreign Exchange Rates
- H.15(519) Selected Interest Rates

Dow Jones and Co., Inc., 22 Courtland Street, New York, New York 10007.
Barron's (call loans and all stock market indexes)
Wall Street Journal (call loans, New York and London LME & PGM prices and all stock market indexes)
Also, both Barron's and the Wall Street Journal have current interest rate and foreign exchange rate data which is extremely close to the series in this data base, but are not the same sources.

The Economist Newspaper, Inc., 111 West 57th Street, New York, New York 10019-2211.
"The Economist" (foreign money market rates for total return indexes)

Financial Times Ltd., Number One Southwestern Bridge; London SE1 9HL.
Financial Times (London LME & PGM prices)

McGraw-Hill, Inc., 1221 Avenue of the Americas, New York, New York 10020.
Platt's Metals Week (New York LME & PGM prices)

Moody's Investment Service, Inc., 99 Church Street, New York, New York 10007.
Moody's Bond Service (Moody's Aaa and Baa corporate bond yields)

Standard and Poor's Corporation, 25 Broadway, New York, New York 10004.
"Outlook" (several Standard and Poor's Stock Indexes)

Times Newspaper, Ltd., 1 Virginia Street, London E1 9XN.
The Times (London LME & PGM prices)

Arnold Bernhard and Co., Inc., 711 Third Avenue, New York, New York 10017.
"The Value Line Investment Survey" (Value Line Indexes)

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Websites

American Stock Exchange	www.amex.com
Engelhard	www.engelhard.com/eibprices/DPCharts.aspx
KITCO	www.kitco.com/gold.londonfix.html
London Bullion Market Association	www.lbma.org.uk/statistics_historic.htm
The Bullion Desk	www.thebulliondesk.com/nav_ns4.asp
Johnson Matthey	www.platinum.matthey.com/prices
London Platinum & Palladium Market	www.lppm.org.uk/statistics_cover.html
Federal Reserve Board	www.federalreserve.gov/releases/
London Metal Exchange	www.lme.co.uk/dataprices_historical.asp
New York Stock Exchange	www.nyse.com
Standard & Poors	www.standardandpoors.com

The database can be of use for many fields of inquiry including economic historians, business cycle researchers, central bank researchers, students of the individual precious metals and financial markets covered as well as time series technical analysis researchers.

Periods for which there are no quotations (i.e. before the start of a series or for periods when the market was closed), have zeros entered into the time period slots. When a market was apparently open but no quotation was available in the sources reviewed, a quotation was estimated by interpolation or bid-asking spreads. Dates for which quotations were estimated are detailed in the relevant documentation sections.

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SELECTING UNIFORM WEEKLY QUOTATION DATES

Two approaches were considered in selecting the uniform quotation date to be used each week in constructing this weekly data base:

1) providing the last quotation of the week for each series (comparable to the daily close), and
2) providing the same quotation date for all series to allow for comparisons for the study of intermarket relationships.

Because some but not all of the markets in the early years were traded on Saturdays and often there were days when London markets were closed for British holidays while New York markets were open and vice versa, a compromise between the two approaches was made. When the New York bond markets ceased Saturday trading in 1952, all of the markets were traded Monday through Friday except for holidays. For this data base quotations are always taken the last day of the week for which all of the markets were open, which is usually Friday (except for the Federal Reserve data). Because of a few extremely peculiar cases, sometimes different quotation dates had to be taken in different markets for the same week. As a result there are three date files which are very similar but not identical for the various markets:

DATE1861.WFM	for copper, gold, silver, and foreign exchange prices, stock market indexes and interest rates
FRDT1913.FRB	for the U.S. Reserves of Depository Institutions

DERIVATION OF SPECIAL SERIES FROM DAILY DATA SERIES

When quotations are consistently available on a daily basis for various series, the quotations have been processed to create various "derived" sub-series. These include weekly, monthly, quarterly and annual series of the open, high, low, close and average of these time periods. Sub-series can easily be identified by the three letter file extensions described in the Key to Data Filenames.

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Section FX
FOREIGN EXCHANGE RATE DATA SERIES

Data Series	Page		Description
New York: U.S. Dollars per Swiss Franc, 1861 or 1913 to present			
SFNY1913.DCL	FX5	*	close; daily
SFNY1861.WFM	FX5	*	Friday close; weekly
SFNY1913.#AV	FX5	*	average; #
SFNY1913.#OP	FX5	*	open; #
SFNY1913.#HI	FX5	*	high; #
SFNY1913.#LO	FX5	*	low; #
SFNY1913.#CL	FX5	*	close; #
New York: U.S. Dollars per French Franc, 1861 or 1913 to present			
FFNY1913.DCL	FX7	*	close; daily
FFNY1861.WFM	FX7	*	Friday close; weekly
FFNY1913.#AV	FX7	*	average; #
FFNY1913.#OP	FX7	*	open; #
FFNY1913.#HI	FX7	*	high; #
FFNY1913.#LO	FX7	*	low; #
FFNY1913.#CL	FX7	*	close; #
New York: U.S. Dollars per Netherlands Guilder, 1861 or 1913 to present			
NGNY1913.DCL	FX9	*	close; daily
NGNY1861.WFM	FX9	*	Friday close; weekly
NGNY1913.#AV	FX9	*	average; #
NGNY1913.#OP	FX9	*	open; #
NGNY1913.#HI	FX9	*	high; #
NGNY1913.#LO	FX9	*	low; #
NGNY1913.#CL	FX9	*	close; #
New York: U.S. Dollars per Deutschemark, 1861 or 1913 to present			
DMNY1913.DCL	FX11	*	close; daily
DMNY1861.WFM	FX11	*	Friday close; weekly
DMNY1913.#AV	FX11	*	average; #
DMNY1913.#OP	FX11	*	open; #
DMNY1913.#HI	FX11	*	high; #
DMNY1913.#LO	FX11	*	low; #
DMNY1913.#CL	FX11	*	close; #

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New York: U.S. Dollars per Canadian Dollar, 1913 to present

CDNY1913.DCL	FX14	*	close; daily
CDNY1913.WFM	FX14	*	Friday close; weekly
CDNY1913.#AV	FX14	*	average; #
CDNY1913.#OP	FX14	*	open; #
CDNY1913.#HI	FX14	*	high; #
CDNY1913.#LO	FX14	*	low; #
CDNY1913.#CL	FX14	*	close; #

New York: U.S. Dollars per Japanese Yen, 1913 to present

JYNY1913.DCL	FX15	*	close; daily
JYNY1913.WFM	FX15	*	Friday close; weekly
JYNY1913.#AV	FX15	*	average; #
JYNY1913.#OP	FX15	*	open; #
JYNY1913.#HI	FX15	*	high; #
JYNY1913.#LO	FX15	*	low; #
JYNY1913.#CL	FX15	*	close; #

New York: U.S. Dollars per Mexican Peso, 1913 to present

MPNY1913.DCL	FX16	*	close; daily
MPNY1913.WFM	FX16	*	Friday close; weekly
MPNY1913.#AV	FX16	*	average; #
MPNY1913.#OP	FX16	*	open; #
MPNY1913.#HI	FX16	*	high; #
MPNY1913.#LO	FX16	*	low; #
MPNY1913.#CL	FX16	*	close; #

New York: U.S. Dollars per Australian Dollar, 1913 to present

ADNY1913.DCL	FX17	*	close; daily
ADNY1913.WFM	FX17	*	Friday close; weekly
ADNY1913.#AV	FX17	*	average; #
ADNY1913.#OP	FX17	*	open; #
ADNY1913.#HI	FX17	*	high; #
ADNY1913.#LO	FX17	*	low; #
ADNY1913.#CL	FX17	*	close; #

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New York: U.S. Dollars per New Zealand Dollar, 1913 to present

NZNY1913.DCL	FX18	*	close; daily
NZNY1913.WFM	FX18	*	Friday close; weekly
NZNY1913.#AV	FX18	*	average; #
NZNY1913.#OP	FX18	*	open; #
NZNY1913.#HI	FX18	*	high; #
NZNY1913.#LO	FX18	*	low; #
NZNY1913.#CL	FX18	*	close; #

New York: U.S. Dollar per South African Rand, 1913 to present

SANY1913.DCL	FX19	*	close; daily
SANY1913.WFM	FX19	*	Friday close; weekly
SANY1913.#AV	FX19	*	average; #
SANY1913.#OP	FX19	*	open; #
SANY1913.#HI	FX19	*	high; #
SANY1913.#LO	FX19	*	low; #
SANY1913.#CL	FX19	*	close; #

New York: Original Quotation Forms No Longer Published

SFOR1913.DCL	FX20	Swiss franc, daily, 1913 - 1920
SFOR1861.WFM	FX20	Swiss franc, Fridays weekly, 1861 - 1920
FFOR1913.DCL	FX21	French franc, daily, 1913 - 1920
FFOR1861.WFM	FX21	French franc, Fridays weekly, 1861 - 1920
NGOR1913.DCL	FX22	Netherlands guilder, daily, 1913 - 1915
NGOR1861.WFM	FX22	Netherlands guilder, Friday weekly, 1861 - 1915
DMOR1913.DCL	FX23	German marks, daily, 1913 - 1917
DMOR1861.WFM	FX23	German marks, Fridays weekly, 1861 - 1917
SFDS1900.WFM	FX24	Swiss franc discounts, Fridays weekly, 1900 - 1915
FFDS1900.WFM	FX24	French franc discounts, Fridays weekly, 1900 - 1915
NGDS1900.WFM	FX24	Netherlands guilder discounts, Fridays weekly, 1900 - 1915
DMDS1900.WFM	FX24	German mark discounts, Fridays weekly, 1900 - 1915
HMOR1861.WFM	FX25	Hamburg marc du banque, Fridays weekly, 1861 - 1878
FKOR1861.WFM	FX26	Frankfort florin, Fridays weekly, 1861 - 1878
BROR1861.WFM	FX27	Berlin thalers, Fridays weekly, 1861 - 1878
BMOR1861.WFM	FX28	Bremen thalers, Fridays weekly, 1861 - 1878
HMNY1861.WFM	FX29	Hamburg marks, Fridays weekly, 1861 - 1878
FKNY1861.WFM	FX30	Frankfort marks, Fridays weekly, 1861 - 1878
BRNY1861.WFM	FX31	Berlin marks, Fridays weekly, 1861 - 1878
BMNY1861.WFM	FX32	Bremen marks, Fridays weekly, 1861 - 1878
CDDB1913.DCL	FX33	Canadian dollar discounts, daily buying, 1913 - 1921
CDDS1913.DCL	FX33	Canadian dollar discounts, daily selling, 1913 - 1921
ADLB1913.DCL	FX34	Australian pound, London daily buying, 1913 - 1933
ADLS1913.DCL	FX34	Australian pound, London daily selling, 1913 - 1933
ADAV1913.DCL	FX34	Australian pound, London daily average, 1913 - 1933
NZLB1913.DCL	FX35	New Zealand pound, London daily buying, 1913 - 1933
NZLS1913.DCL	FX33	New Zealand pound, London daily selling, 1913 - 1933
NZAV1913.DCL	FX35	New Zealand pound, London daily average, 1913 - 1933
SALB1913.DCL	FX36	South African pound, London daily buying, 1913 – 1933

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SALS1913.DCL	FX36	South African pound, London daily selling, 1913 - 1933
SAAV1913.DCL	FX36	South African pound, London daily average, 1913 - 1933
ADOR1913.DCL	FX37	Australian pound, New York daily, 1913 - 1966
ADOR1913.WFM	FX37	Australian pound, New York weekly, 1913 - 1966
NZOR1913.DCL	FX38	New Zealand pound, New York daily, 1913 - 1967
NZOR1913.WFM	FX38	New Zealand pound, New York weekly, 1913 - 1967
SAOR1913.DCL	FX39	South African pound, New York daily, 1913 - 1961
SAOR1913.WFM	FX39	South African pound, New York weekly, 1913 - 1961

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Key to Data Filenames

????YYYY.###	General filename fields where:
????	- Four characters describing the data series
YYYY	- Four numbers indicating the first year in the data file
.###	- Three character appendage

The .### Appendage represents

.DCL	Daily CLose
.WAV	Weekly AVerage from daily closing data
.WOP	Weekly OPen from daily closing data
.WHI	Weekly HIgh from daily closing data
.WLO	Weekly LOw from daily closing data
.WCL	Weekly CLose from daily closing data
.MAV	Monthly AVerage from daily closing data
.MOP	Monthly OPen from daily closing data
.MHI	Monthly HIgh from daily closing data
.MLO	Monthly LOw from daily closing data
.MCL	Monthly CLose from daily closing data
.QAV	Quarterly AVerage from daily closing data
.QOP	Quarterly OPen from daily closing data
.QHI	Quarterly HIgh from daily closing data
.QLO	Quarterly LOw from daily closing data
.QCL	Quarterly CLose from daily closing data
.AAV	Annual AVerage from daily closing data
.AOP	Annual OPen from daily closing data
.AHI	Annual HIgh from daily closing data
.ALO	Annual LOw from daily closing data
.ACL	Annual CLose from daily closing data

All files with the .WFM appendage represents Weekly Friday quotations that are quoted on the same dates throughout the entire database (with a few exceptions detailed in the documentation for each .WFM file).

DATEYYYY.DLY	daily ANSI dates
DATEYYYY.WFM	weekly ANSI dates, Fridays for copper, gold, silver, foreign exchange, interest rates, and stock indices
FRDTYYYY.FRB	weekly ANSI dates, Wednesdays for Federal Reserve Board statements

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INTRODUCTION TO THE FOREIGN EXCHANGE RATE SECTION

The Foreign Exchange Rate Tables (FX1_Tble.DCL, FX!_Tble.WFM and FX1_1861.WFM) present foreign exchange rate data for a different currency in each column for 11 countries. Quotations begin in 1861 with weekly data through 1912. Daily quotations were available for all of the currencies from 1913 to present. Although there is a considerable amount of variation in the content of the tables over time, the following five series have been derived or obtained for the entire period of coverage in FX1_1861.WFM:

1. British pounds as the buying rate in New York in U.S. dollars per British pound,
2. Swiss francs as the buying rate in New York in U.S. dollars per Swiss franc,
3. French francs as the buying rate in New York in U.S. dollars per French franc,
4. Netherlands guilders as the buying rate in New York in U.S. dollars per Netherlands guilder, and
5. German marks as the buying rate in New York in U.S. dollars per German mark.

In addition, the following six series are available from 1913 to present in tables FX1_Tble.DCL and FX1_Tble.WFM:

6. Canadian dollars as the buying rate in New York in U.S. dollars per Canadian dollar, from 1913 to present,
7. Japanese yen as the buying rate in New York in U.S. dollars per Japanese yen, from 1913 to present,
8. Mexican pesos as the buying rate in New York in U.S. dollars per Mexican peso, from 1920 to present,
9. Australian dollars as the buying rate in New York in U.S. dollars per Australian dollar, from 1913 to present,
10. New Zealand dollars as the buying rate in New York in U.S. dollars per New Zealand dollar, from 1913 to present, and
11. South African rands as the buying rate in New York in U.S. dollars per South African rand, from 1913 to present.

Besides these final quotation series, all expressed in modern quotation form, there are thirteen shorter series which contain quotations exactly as obtained from the original sources which had to be adjusted and spliced to form the final quotation series above. The first four contain original data in the old quotation form as follows:

12. Swiss francs as the buying rate in New York in Swiss francs per U.S. dollar, from 1861 through 1920,
13. French francs as the buying rate in New York in French francs per U.S. dollar, from 1861 through 1920,
14. Netherlands guilders as the buying rate in New York in U.S. dollars per Netherlands guilder, from 1861 through 1915, and
15. German marks as the buying rate in New York in U.S. dollars per four German marks, from 1861 through 1917.

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During the period from 1900 through 1915 a very awkward method of quoting several of the currencies was the convention. This method consisted of a base rate with a second value as a premium or discount to the base rate and is explained in Table 27. For the period from 1900 through 1915 the original discounts or premiums are given in the following series:

16. Swiss francs as discounts or premiums to the base rate in New York,
17. French francs as discounts or premiums to the base rate in New York,
18. Netherlands guilders as discounts or premiums to the base rate in New York
19. German marks as discounts or premiums to the base rate in New York, and

Also, during the twenty years between 1861 and 1878, the situation was further complicated by the Greenback Era in the United States where currencies were quoted in both U.S. gold dollars and U.S. fiat dollars. Also, this was the period of German currency unification where several independent German silver standard currencies were gradually unified into one German gold standard currency. Original quotation values during these years are provided as the following series in the Foreign Exchange Table.

20. Hamburg
21. Frankfurt
22. Berlin
23. Bremen
24. Premium of U.S. fiat dollars to U.S. gold dollars in New York

Series 20 through 24 were used as the basis for developing four German currency series in modern quotation form for the period from 1861 through 1878. These quotations are provided as the following series in the Foreign Exchange Table:

25. German marks as the New York buying rate in dollars on Hamburg,
26. German marks as the New York buying rate in dollars on Frankfurt,
27. German marks as the New York buying rate in dollars on Berlin, and
28. German marks as the New York buying rate in dollars on Bremen.

Series 29 is original Canadian dollar discounts on Montreal from 1913 through 1921. The data is presented in Table 31.

29. Canadian dollar discounts on Montreal

Series 30 through 32 are British pounds per Australian, New Zealand and South African pound quotations in London. The data is presented in Table 31.

30. British pounds per Australian pound
31. British pounds per New Zealand pound
32. British pounds per South African pound

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Series 33 through 35 provide U.S. dollars per Australian, New Zealand and South African pound quotations. The data is presented in Table 32.

33. U.S. dollars per Australian pound
34. U.S. dollars per New Zealand pound
35. U.S. dollars per South African pound

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WEEK OF THE YEAR NUMBERS

Units: none

Filenames: files ending with `.WFM`

Data Series: none

Format: week count from 1 to 52 or 53 for each year

Comments: Quotations for currencies were normally taken on Friday of each week with some exceptions for holidays and early years (especially before 1865). Although a year consists of 52 weeks and 1 or 2 days, any particular year may have 52 or 53 Fridays. The week number for each quotation date is provided for each year from 1 to 52 or 53.

QUOTATION DATES

Units: first and second digits from the right are the day of the month; third and fourth digits from the right are the month; the four left most digits are the year.

Filenames:
`FX1_1861.WFM`
`FX1_Tble.DCL`
`FX1_Tble.WFM`

Data Series:
`DATE1913.DCL` left side of the table, 1913 to present
`DATE1861.WFM`, left side of the table, 1861 to present
`DATE1913.WFM`, left side of the table, 1913 to present

Format:
`18610104` is read as January 4, 1861
`19891229` is read as December 29, 1989

Comments: Quotations were normally taken on Fridays except on holidays when the last previous open market day quotations are used. The letters immediately to the right of the date give the day of the week.

1. NEW YORK: U.S. DOLLARS PER BRITISH POUND - see Section BP for details.

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2. NEW YORK: U.S. DOLLARS PER SWISS FRANC EXCHANGE RATES

Units: U.S. dollars per Swiss franc (for the mint definitions see Table 3)
The SFNR1971.DCL file is Swiss francs per U.S. dollar

Filename:	FX1_Tble.DCL	SFNY in column 2
Data Series:	SFNY1913.DCL	daily closing quotations
Filenames:	FX1_1861.WFM	SFNY in column 2
	FX1_Tble.WFM	SFNY in column 2
Data Series:	SFNY1861.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	SFNR in column 2
Data Series:	SFNR1971.DCL	daily closing quotations
Filename:	SFNY1913.DNZ	SFNY in column 1
Data Series:	SFNY1913.DNZ	daily closing quotations, no zeros
Filename:	SFNY1913.#TX	open/high/low/close/average
Data Series:	SFNY1913.#OP	SFNY open in column 1
	SFNY1913.#HI	SFNY high in column 2
	SFNY1913.#LO	SFNY low in column 3
	SFNY1913.#CL	SFNY close in column 4
	SFNY1913.#AV	SFNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From 1861 through July 10, 1920 the values are calculated from original quotations as shown in Equations 1 through 5. From April 10, 1919 to present, quotations are those published by the Federal Reserve Board. These rates are currently published weekly with daily quotations as Federal Reserve Statistical Release H.10 (512) Foreign Exchange Rates. Additional details on the sources of this series are provided in the discussion of the original quotation series for Swiss francs and French francs, series 12, 13, 16 and 17 below.

Comments: From 1913 to present the quotations are for cable buying rates in New York.

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Calculations: The following equations have been used to develop this series.

EQUATION 1: Conversion of the New York exchange rate, Swiss francs per fiat dollar, to fiat dollars per Swiss franc.

for 1861 through October 15, 1864 in FX1_Tb33.WFM

$$\frac{1}{\text{(Swiss franc/fiat \$, col. 6)}} = \text{fiat \$/Swiss franc}$$

EQUATION 2: Conversion of the New York exchange rate, Swiss francs per gold dollar, to fiat dollars per Swiss franc.

for October 22, 1864 through 1878 in FX1_Tb33.WFM

$$\frac{\text{(premium, fiat\$/gold \$, col.17)}}{\text{(Swiss franc/gold \$, col. 6)}} = \text{fiat \$/Swiss franc}$$

EQUATION 3: Conversion of the New York exchange rate, Swiss francs per dollar, to U.S. dollars per Swiss franc.

for 1879 through 1899 in FX1_Tb34.WFM

$$\frac{1}{\text{(Swiss franc/US \$, col. 6)}} = \text{US \$/Swiss franc}$$

EQUATION 4: Conversion of the New York exchange rate, Swiss francs per dollar plus the discount, to U.S. dollars per Swiss franc. For more details on the nature of this calculation, please refer to Table 24.

for 1900 through 1912, in FX1_Tb35.WFM and 1913 through 1915 in FX1_Tb29.DCL

$$\frac{1}{\text{((Swiss franc/\$, col. 6) x (1+((.0001) x (Swiss franc disc., col. 7))))}} = \text{US \$/Swiss franc}$$

EQUATION 5: Conversion of the New York exchange rate, Swiss francs per dollar to U.S. dollars per Swiss franc.

from 1916 through July 10, 1920 in FX1_Tb30.DCL

$$\frac{1}{\text{(Swiss franc/\$),col. 4}} = \text{US \$/Swiss franc, col.2}$$

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3. NEW YORK: U.S. DOLLARS PER FRENCH FRANC EXCHANGE RATES

Units: U.S. dollars per French franc
.19512195 is read as $.19512195 per old French franc
.19512195 is read as $19.512195 per new French franc
The FFNR1971.DCL file is French francs per U.S. dollar

Filename:	FX1_Tble.DCL	FFNY in column 3
Data Series:	FFNY1913.DCL	daily closing quotations
Filenames:	FX1_Tble.WFM	FFNY in column 3
	FX1_1861.WFM	FFNY in column 3
Data Series:	FFNY1861.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	FFNY in column 3
Data Series:	FFNR1971.DCL	daily closing quotations
Filename:	FFNY1913.DNZ	FFNY in column 1
Data Series:	FFNY1913.DNZ	daily closing quotations, no zeros
Filename:	FFNY1913.#TX	open/high/low/close/average
Data Series:	FFNY1913.#OP	FFNY open in column 1
	FFNY1913.#HI	FFNY high in column 2
	FFNY1913.#LO	FFNY low in column 3
	FFNY1913.#CL	FFNY close in column 4
	FFNY1913.#AV	FFNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From 1861 through July 10, 1920 the values are calculated original quotations as shown in Equations 6 through 10. From April 10, 1919 to present, quotations are those published by the Federal Reserve Board. These rates are currently published weekly with daily quotations as Federal Reserve Statistical Release H.10 (512) Foreign Exchange Rates. Additional details on the sources of this series are provided in the discussion of the original quotation series for French francs, series 12 and 16 below.

Comments: For 1913 to present the quotations are for cable buying rates. Beginning January 1, 1960, the French franc was redenominated so that 100 old francs equals 1 new franc.

Calculations: The following equations have been used to develop this series.

EQUATION 6: Conversion of the New York exchange rate, French francs per fiat dollar, to fiat dollars per French franc.

for 1861 through October 15, 1864 in FX1_Tb33.WFM

$$\frac{1}{\text{(French franc/fiat \$, col. 7)}} = \text{fiat \$/French franc}$$

EQUATION 7: Conversion of the New York exchange rate, French francs per gold dollar, to fiat dollars per French franc.

for October 22, 1864 through 1878 in FX1_Tb33.WFM

$$\frac{\text{(Premium, fiat \$/gold \$, col. 17)}}{\text{(French franc/gold \$, col. 7)}} = \text{fiat \$/French franc}$$

EQUATION 8: Conversion of the New York exchange rate, French francs per dollar to U.S. dollars per French franc.

for 1879 through 1899 in FX1_Tb34.WFM

$$\frac{1}{\text{(French franc/U.S. \$, col. 7)}} = \text{fiat \$/French franc}$$

EQUATION 9: Conversion of the New York exchange rate, French francs per dollar plus the discount, to U.S. dollars per French franc. For more details on the nature of this calculation, please refer to Table 27.

for 1900 through 1912 in FX1_Tb35.WFM and 1913 through 1915 in FX1_Tb29.DCL

$$\frac{1}{\text{((French franc/\$, col. 8) x (1+((.0001) x (French franc disc., col. 9))))}} = \text{fiat \$/French franc}$$

EQUATION 10: Conversion of the New York exchange rate, French francs per dollar to U.S. dollars per French franc.

from 1916 through July 10, 1920 in FX1_Tb30.DCL

$$\frac{1}{\text{(French franc/\$)),col.5)}} \quad \text{.....} = \text{fiat \$/French franc, col.3}$$

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4. NEW YORK: U.S. DOLLARS PER NETHERLANDS GUILDER EXCHANGE RATES

Units: U.S. dollars per Netherlands guilder
The NGNR1971.DCL file is Netherlands guilders per U.S. dollar

Filename:	FX1_Tble.DCL	NGNY in column 4
Data Series:	NGNY1913.DCL	daily closing quotations
Filenames:	FX1_1861.WFM	NGNY in column 4
	FX1_Tble.WFM	NGNY in column 4
Data Series:	NGNY1861.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	NGNY in column 4
Data Series:	NGNR1971.DCL	daily closing quotations
Filename:	NGNY1913.DNZ	NGNY in column 1
Data Series:	NGNY1913.DNZ	daily closing quotations, no zeros
Filename:	NGNY1913.#TX	open/high/low/close/average
Data Series:	NGNY1913.#OP	NGNY open in column 1
	NGNY1913.#HI	NGNY high in column 2
	NGNY1913.#LO	NGNY low in column 3
	NGNY1913.#CL	NGNY close in column 4
	NGNY1913.#AV	NGNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From 1861 through 1915 the values were calculated from original quotations as shown in Equations 11 through 14. Quotations were obtained from or monthly tables of daily data published in the Monthly Review section of the Commercial and Financial Chronicle. From April 10, 1919 to present quotations are those published by the Federal Reserve Board.

Comments: The values from 1861 through 1865 are long buying rates for banker's bills. Values in 1866 are 60 day buying rates for banker's bills. From 1867 through 1870 the values are short buying rates for banker's bills. From 1871 through January 10, 1879 the values are 3 day buying rates for banker's bills. From January 17, 1879 through November 7, 1902 the quotations are demand buying rates for banker's bills. From November 14, 1902 through 1912 the quotations are for short buying rates on banker's bills. For 1913 to present the quotations are cable buying rates.

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Calculations: The following equations have been used to develop this series.

EQUATION 11: Conversion of the New York exchange rate, U.S. fiat dollars per Netherlands guilder, to fiat dollars per Netherlands guilder.

for 1861 through October 15, 1864 in FX1_Tb33.WFM

(US fiat $/Netherlands guilder, col. 8) = fiat $/Netherlands guilder

EQUATION 12: Conversion of the New York exchange rate, gold cents per Netherlands guilder, to fiat dollars per Netherlands guilder.

for October 22, 1864 through 1878 in FX1_Tb33.WFM

(US gold $/Netherlands guilder, col. 8)
x (Premium, fiat $/gold $, col. 17) = fiat $/Netherlands guilder

EQUATION 13: Conversion of the New York exchange rate, U.S. cents per Netherlands guilder, to U.S. dollars per Netherlands guilder.

for 1879 through 1899 in FX1_Tb34.WFM,

(US $/Netherlands guilder, col. 8) = US $/Netherlands guilder.

EQUATION 14: Conversion of the New York exchange rate, U.S. dollars per Netherlands guilder plus discount, to U.S. dollars per Netherlands guilder.

for 1900 through 1912 in FX1_Tb35.WFM and 1913 through 1915 in FX1_Tb29.DCL

(US $/Netherlands guilder, col. 10) x (1+((.0001) x (Netherlands guilder disc., col. 11)))
= US $/Netherlands guilder, col. 4

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5. NEW YORK: U.S. DOLLARS PER GERMAN MARK EXCHANGE RATES

Units: U.S. dollars per German mark (for Mint Definitions, see Table 6)
The DMNR1971.DCL file is German marks per U.S. Dollar

Filename:	FX1_Tble.DCL	DMNY in column 5
Data Series:	DMNY1913.DCL	daily closing quotations
Filenames:	FX1_1861.WFM	DMNY in column 5
	FX1_Tble.WFM	DMNY in column 5
Data Series:	DMNY1861.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	DMNY in column 5
Data Series:	DMNR1971.DCL	daily closing quotations, no zeros
Filename:	DMNY1913.DNZ	DMNY in column 1
Data Series:	DMNY1913.DNZ	daily closing quotations, no zeros
Filename:	DMNY1913.#TX	open/high/low/close/average
Data Series:	DMNY1913.#OP	DMNY open in column 1
	DMNY1913.#HI	DMNY high in column 2
	DMNY1913.#LO	DMNY low in column 3
	DMNY1913.#CL	DMNY close in column 4
	DMNY1913.#AV	DMNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Format: Beginning October 1, 1924 (under the monetary law of August 30, 1924) the mark was redenominated so that one new Reichsmark became equal to 1,000,000,000,000 old marks.

before 1924

2.37656e+11 is read as $ .237656/old mark
2.37656e+11 is read as $ .237656 x 10^{12}/new mark

from 1924

$.238306/new mark = $.238306 X 10^{-12} per old mark

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Sources: From 1861 through March 30, 1917 the values were calculated from original quotations as shown in Equations 15 through 21. From April 5, 1917 to May 11, 1917 no quotation could be found and values were estimated by interpolation. From May 14, 1917 through July 15, 1919 values were calculated from quotations for the U.S. dollar per Swiss franc in New York and Swiss francs per German mark in Zurich as published in the Economist as shown in Equation 7. From July 18, 1919 to present quotations were obtained from the Federal Reserve Board. These rates are currently published weekly with daily quotations as Federal Reserve Statistical Release H.10(512) Foreign Exchange Rates.

Comments: Before the German currency unification (from 1872 to 1874), there were many different silver standard currencies throughout Germany. Nearly complete quotation series from 1862 through 1878 were found for four of these. Because there was generally very little fluctuation in these currencies during this period and the quotations on the Hamburg currency were the most complete, this currency was chosen to be representative of all German currencies in extending the mark quotations for Germany back to 1862 (prior to the unification and before the existence of the mark). Additional details concerning the original series used to develop this series of German mark quotations are found in the discussion of series 15, 19 and 20 through 23.

Calculations: The following equations have been used to develop this series.

EQUATION 15: Conversion of the New York paper dollar exchange rate on Hamburg marc du banques to fiat dollars per German mark.

for 1861 through October 15, 1864 in FX1_Tb33.WFM

$$\frac{\text{((fiat \$/marc du banque, col. 9)} \times (23.821 \text{ U.S. cents/mark})) \times (10^{12})}{(36.43 \text{ U.S. cents/marc})} = \text{fiat \$/new German mark}$$

EQUATION 16: Conversion of the New York gold dollar exchange rate on Hamburg marc du banques to fiat dollars per German mark.

for October 22, 1864 through November 29, 1872 in FX1_Tb33.WFM,

$$\frac{\text{((gold \$/marc du banque, col. 9)} \times \text{(fiat \$/gold \$ ratio, col. 17)} \times (23.821 \text{ U.S. cents/mark})) \times (10^{12})}{(36.43 \text{ U.S. cents/marc})} = \text{fiat \$/new German mark}$$

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EQUATION 17: Conversion of the New York gold dollar exchange rate on Hamburg marks to fiat dollars per German mark.

for December 6, 1872 through 1878 in FX1_Tb33.WFM

$$\frac{\text{(gold \$/4 German marks, col. 9)} \times \text{(premium, fiat \$/gold \$, col. 17))} \times (10^{12})}{4} = \text{fiat \$/new German mark}$$

EQUATION 18: Conversion of the New York dollar per four German marks exchange rate to U.S. dollars per German mark.

for 1879 through 1899 in FX1_Tb34.WFM,

$$\frac{((10^{12}) \times \text{(US \$/4 German marks, col. 9))}}{4} = \text{US \$/new German mark}$$

EQUATION 19: Conversion of the New York dollar per four German marks plus discount exchange rate to U.S. dollars per German mark. For more details on the nature of this calculation, please refer to Table 27.

for 1900 through 1912 in FX1_Tb35.WFM and for 1913 through 1915 in FX1_Tb29.DCL

$$\frac{\text{((US \$/4 German marks, col. 12)} \times (10^{12}) \times (1+((.0001) \times \text{(German mark discount (col 13)))}}{4} = \text{US \$/new German mark, col. 5}$$

EQUATION 20: Conversion of the New York dollar per four German marks exchange rate to U.S. dollars per German mark.

from 1916 through March 30, 1917 in FX1_Tb30.DCL

$$\frac{\text{(US \$/4 German marks, col. 6)} \times (10^{12})}{4} = \text{US \$/new German mark}$$

EQUATION 21:..Conversion of the Swiss franc per German mark exchange rate in Zurich and the U.S. dollar per Swiss franc exchange rate in New York to U.S. dollars per D - mark.

for May 14, 1917 through July 15, 1919 in FX1_Tb30.DCL

$$\frac{\text{((Swiss francs/German marks) col. 7)} \times (10^{12})}{\text{(Swiss francs/US dollar, col. 4)}} = \text{US \$/new German mark}$$

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6. NEW YORK: U.S. DOLLARS PER CANADIAN DOLLAR EXCHANGE RATES

Units: U.S. dollars per Canadian dollar
The CDNR1971.DCL file is Canadian dollars per U.S. Dollar

Filename:	FX1_Tble.DCL	CDNY in column 6
Filename:	FX1_Tb31.DCL	CDNY in columns 12 & 13, through June 11, 1921
Data Series:	CDNY1913.DCL	daily closing quotations
Filename:	FXNR1971.DCL	CDNR in column 6
Data Series:	CDNR1971.DCL	daily closing quotations
Filename:	FX1_Tble.WFM	CDNY in column 6
Data Series:	CDNY1913.WFM	weekly Friday quotations
Filename:	CDNY1913.DNZ	CDNY in column 1
Data Series:	CDNY1913.DNZ	daily closing quotations, no zeros
Filename:	CDNY1913.#TX	open/high/low/close/average
Data Series:	CDNY1913.#OP	CDNY open in column 1
	CDNY1913.#HI	CDNY high in column 2
	CDNY1913.#LO	CDNY low in column 3
	CDNY1913.#CL	CDNY close in column 4
	CDNY1913.#AV	CDNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From 1913 through June 11, 1921 the values are calculated from the Canadian dollar discounts presented in Table 31, columns 10 and 11. From April 10, 1919 to present the quotations were those published by the FRB Statistical Release H.10(512).

Comments: All of the quotations are cable buying rates. Although cable selling were collected from the New York Times from 1913 through June 11, 1921 and the weekly series is published in Table 31, columns 11 and 13, this data was primarily used to confirm the quality of the buying rates and has not been provided as data. The rates in the FX1_Tble Column 6, are the cable buying rates calculated in Table 31, column 12.

Calculations: The following equation was used to develop this series.

EQUATION 22: Conversion of discount rates into U.S. dollars per Canadian dollars for 1913 through June 11, 1921 in Table 31.

1 - (discount) = U.S. $ / Canadian $, columns 12 and 13

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7. NEW YORK: U.S. DOLLARS PER JAPANESE YEN EXCHANGE RATES

Units: U.S. dollars per Japanese yen
The JYNR1971.DCL file is Japanese yen per U.S. Dollar

Filename:	FX1_Tble.DCL	JYNY in column 7
Data Series:	JYNY1913.DCL	daily closing quotations
Filename:	FX1_Tble.WFM	JYNY in column 7
Data Series:	JYNY1913.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	JYNY in column 7
Data Series:	JYNR1971.DCL	weekly Friday quotations
Filename:	JYNY1913.DNZ	JYNY in column 1
Data Series:	JYNY1913.DNZ	daily closing quotations, no zeros
Filename:	JYNY1913.#TX	open/high/low/close/average
Data Series:	JYNY1913.#OP	JYNY open in column 1
	JYNY1913.#HI	JYNY high in column 2
	JYNY1913.#LO	JYNY low in column 3
	JYNY1913.#CL	JYNY close in column 4
	JYNY1913.#AV	JYNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From 1913 through March 22, 1915 quotations were obtained from the History of Yen. From March 23, 1915 through April 9, 1919 the quotations were obtained from the New York Times. From April 10, 1919 through July 25, 1941 the quotations were obtained from the Federal Reserve Board. From July 26, 1941 through August 31, 1945 rates were suspended during World War II. From September 1, 1945 through November 25, 1956 the quotations are Military Rates administered during the post war occupation as quoted in the History of Yen. From November 26, 1956 to present the quotations are from the Federal Reserve Statistical Release H.10(512) Foreign Exchange Rates.

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8. NEW YORK: U.S. DOLLARS PER MEXICAN PESOS EXCHANGE RATES

Units: U.S. dollars per Mexican peso
The MPNR1971.DCL series is Mexican pesos per U.S. dollar

Filename:	FX1_Tble.DCL	MPNY in column 8
Data Series:	MPNY1913.DCL	daily closing quotations
Filename:	FX1_Tble.WFM	MPNY in column 8
Data Series:	MPNY1913.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	MPNR in column 8
Data Series:	MPNR1971.DCL	weekly Friday quotations
Filename:	MPNY1913.DNZ	MPNY in column 1
Data Series:	MPNY1913.DNZ	daily closing quotations, no zeros
Filename:	MPNY1913.#TX	open/high/low/close/average
Data Series:	MPNY1913.#OP	MPNY open in column 1
	MPNY1913.#HI	MPNY high in column 2
	MPNY1913.#LO	MPNY low in column 3
	MPNY1913.#CL	MPNY close in column 4
	MPNY1913.#AV	MPNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From April 10, 1919 through November 5, 1985 the quotations were obtained from the Federal Reserve Board. From November 6, 1945 through July 18, 1986 quotations were obtained from Reuters Wire Service. From July 21, 1986 through November 5, 1993 the quotations were obtained from the Wall Street Journal. From November 8, 1994 to present the quotations are from the Federal Reserve Statistical Release H.10(512) Foreign Exchange Rates.

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9. NEW YORK: U.S. DOLLARS PER AUSTRALIAN DOLLAR EXCHANGE RATES

Units: U.S. dollars per Australian dollar
The ADNR1971.DCL file is Australian dollars per U.S. dollar

Filename:	FX1_Tble.DCL	ADNY in column 9
Filename:	FX1Tbl32.DCL	ADNY in column 9, through February 11, 1966
Data Series:	ADNY1913.DCL	daily closing quotations
Filename:	FX1_Tble.WFM	ADNY in column 9
Data Series:	ADNY1913.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	ADNY in column 9
Data Series:	ADNR1971.DCL	daily closing quotations
Filename:	ADNY1913.DNZ	ADNY in column 1
Data Series:	ADNY1913.DNZ	daily closing quotations, no zeros
Filename:	ADNY1913.#TX	open/high/low/close/average
Data Series:	ADNY1913.#OP	ADNY open in column 1
	ADNY1913.#HI	ADNY high in column 2
	ADNY1913.#LO	ADNY low in column 3
	ADNY1913.#CL	ADNY close in column 4
	ADNY1913.#AV	ADNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From 1913 through February 11, 1966 the values were calculated as shown in Equation 23. From February 12, 1966 to present the daily quotations were obtained from the Federal Reserve Statistical Release H.10(512) Foreign Exchange Rates.

Comments: For 1913 to present the quotations are cable buying rates.

Calculations: The following equation was used to develop this series.

Equation 23: Conversion of the New York exchange rate, US $ per A. pound to U.S. $ per A. $.

for 1913 through February 11, 1966 in FX1_Tb32.DCL.

$$\frac{\text{US \$/Australian pound, col. 5)}}{\text{2 Australian \$/Australian pound}} = \text{US \$/Australian \$, col. 2}$$

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10. NEW YORK: U.S. DOLLARS PER NEW ZEALAND DOLLAR EXCHANGE RATES

Units: U.S. dollars per New Zealand dollar
The NZNR1971.DCL file is New Zealand dollars per U.S. dollar

Filename:	FX1_Tble.DCL	NZNY in column 10
Data Series:	NZNY1913.DCL	daily closing quotations
Filename:	FX1_Tble.WFM	NZNY in column 10
Filename:	FX1Tbl32.WFM	NZNY in column 10, through July 7, 1967
Data Series:	NZNY1913.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	NZNR in column 10
Data Series:	NZNR1971.DCL	weekly Friday quotations
Filename:	NZNY1913.DNZ	NZNY in column 1
Data Series:	NZNY1913.DNZ	daily closing quotations, no zeros
Filename:	NZNY1913.#TX	open/high/low/close/average
Data Series:	NZNY1913.#OP	NZNY open in column 1
	NZNY1913.#HI	NZNY high in column 2
	NZNY1913.#LO	NZNY low in column 3
	NZNY1913.#CL	NZNY close in column 4
	NZNY1913.#AV	NZNY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: July 7, 1967 the values were calculated as shown in Equation 24. From July 8, 1967 to present quotations were obtained from the Federal Reserve Statistical Release H.10(512) Foreign Exchange Rates.

Comments: The following equation was used to develop this series. From 1913 through

EQUATION 24: Conversion of the NY exchange rate, US $ per NZ pound to US $ per NZ $.

for 1913 through July 7, 1967 in FX1_Tb32.DCL

$$\frac{\text{(U.S. \$/New Zealand pound, col. 6)}}{\text{2 New Zealand \$/New Zealand pound}} = \text{US \$/New Zealand \$, col. 3}$$

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11. NEW YORK: U.S. DOLLARS PER SOUTH AFRICAN RAND EXCHANGE RATES

Units: U.S. dollar per South African rand
The SANR1971.DCL file is South African rands per U.S. dollar

Filename:	FX1_Tble.DCL	SANY in column 11
Filename:	FX1_Tb32.DCL	SANY in column 4
Data Series:	SANY1913.DCL	daily closing quotations
Filename:	FX1_Tble.WFM	SANY in column 11
Data Series:	SANY1913.WFM	weekly Friday quotations
Filename:	FXNR1971.DCL	SANY in column 11
Data Series:	SANR1971.DCL	weekly Friday quotations, through February 10, 1961
Filename:	SANY1913.DNZ	SANY in column 1
Data Series:	SANY1913.DNZ	daily closing quotations, no zeros
Filename:	SANY1913.#TX	open/high/low/close/average
Data Series:	SANY1913.#OP	SANY open in column 1
	SANY1913.#HI	SANY high in column 2
	SANY1913.#LO	SANY low in column 3
	SANY1913.#CL	SANY close in column 4
	SANY1913.#AV	SANY average in column 5

where # can be W-weekly, M-monthly, Q-quarterly or A-annually

Sources: From 1913 through February 10, 1961 the values were calculated as shown in Equation 25. From February 11, 1961 to present quotations were obtained from the Federal Reserve Statistical Release H.10(512) Foreign Exchange Rates.

Comments: For 1913 to present the quotations are cable buying rates.

Calculations: The following equation was used to develop this series.

EQUATION 25: Conversation of the New York exchange rate, U.S. dollars per South African pound to U.S. $ per South African rand.

for 1913 through February 10, 1961 in FX1_Tb32.DCL

$$\frac{\text{(US \$/South African pound, col. 7)}}{\text{2 South African rand/South African pound}} = \text{US \$/South African rand, col. 4}$$

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12. NEW YORK: SWISS FRANCS PER U.S. DOLLAR EXCHANGE RATES

Units: Swiss francs per U.S. dollar

Filenames:	FX1_Tb33.WFM	Column 6, 1861 through 1878
	FX1_Tb34.WFM	Column 6, 1879 through 1899
	FX1_Tb35.WFM	Column 6, 1900 through 1912
Data Series:	SFOR1861.WFM	

Filenames:	FX1_Tb29.DCL	Column 6, 1913 through 1915
	FX1_Tb3Ø.DCL	Column 4, 1916 through July 10, 1920
Data Series:	SFOR1913.DCL	

Sources: No foreign exchange quotations (except for the British pound) have been found for 1861. An average estimate for the year was made for 1861. From 1862 through 1866 there were no Swiss franc quotations in the sources examined, so weekly quotations for the French franc were used as a proxy for Swiss franc quotations. For 1867 through 1870 weekly Swiss franc quotations were obtained from annual tables of weekly data published in the Commercial and Financial Chronicle on January 9, 1875. From 1871 through July 9, 1880 weekly Swiss franc quotations were obtained from the weekly Bankers Gazette section of the Commercial and Financial Chronicle. From July 16, 1880 through 1912, French franc quotations from the weekly Bankers Gazette section of the Commercial and Financial Chronicle were used as a proxy for Swiss franc quotations, which were discontinued in the sources examined. From 1913 through 1915 daily quotations were obtained from the New York Times. From 1916 through April 9, 1919 daily quotations were obtained from the Commercial and Financial Chronicle. From April 10, 1919 through July 10, 1920 daily quotations are those published by the Federal Reserve Board. This series was discontinued on July 10, 1920 when the Federal Reserve changed form of the quotation to dollars per Swiss franc.

Comments: Quotations for 1861 through 1865 are long buying rates on banker's bills in New York. For 1866 through 1870 the quotations are 60 day buying rates on banker's bills in New York. For 1871 through January 10, 1879 the quotations are 3 day buying rates on banker's bills in New York. From January 17, 1879 through November 7, 1902 the quotations are demand buying rates on banker's bills in New York. For November 14, 1902 through 1912 the quotations are short buying rates on banker's bills in New York. From 1913 to present the quotations are for cable buying rates in New York. Further discussion of the terms of exchange (long, short, demand, banker's bills, cables, buying rates, 60 day, and 3 day, etc.) is provided in Table 28.

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13. NEW YORK: FRENCH FRANCS PER U.S. DOLLAR EXCHANGE RATES

Units: French francs per U.S. dollar

Filenames:	FX1_Tb33.WFM	Column 7, 1861 through 1878
	FX1_Tb34.WFM	Column 7, 1879 through 1899
	FX1_Tb35.WFM	Column 8, 1900 through 1912
Data Series:	FFOR1861.WFM	

Filenames:	FX1_Tb29.DCL	Column 8, 1913 through 1915
	FX1_Tb30.DCL	Column 5, 1916 through July 10, 1920
Data Series:	FFOR1913.DCL	

Sources: No foreign exchange quotations (except for the British pound) have been found for 1861. An average estimate for 1861 was made. From 1862 through 1866 weekly quotations were obtained from the Review section of Hunt's Magazine and the Commercial and Financial Chronicle. From 1867 through 1870 quotations were obtained from annual tables of weekly data published in the January 9, 1875 edition of the Commercial and Financial Chronicle. From 1871 through 1912 weekly quotations were obtained from the Banker's Gazette section of the Commercial and Financial Chronicle. From 1913 through 1915 daily quotations were obtained from the New York Times. From 1916 through April 9, 1919 daily quotations were obtained from the Commercial and Financial Chronicle. From April 10, 1919 through July 10, 1920 daily quotations are those published by the Federal Reserve Board. This series was discontinued on July 10, 1920 when the Federal Reserve was changed the form of the quotation to dollar per French franc.

Comments: Quotations from 1861 through 1865 are long buying rates for banker's bills. Quotations in 1866 are 60 day buying rates for banker's bills. From 1867 through 1870 the quotations are short buying rates for banker's bills. From 1871 through January 10, 1879 the quotations are 3 day buying rates for banker's bills. From January 17, 1879 through November 7, 1902 the quotations are demand buying rates for banker's bills. From November 14, 1902 through 1912 the quotations are for short buying rates on banker's bills. For 1913 to July 10, 1920 the quotations are for cable buying rates. Further discussion of the terms of exchange (long, short, demand, banker's bills, cables, buying rates, 60 day, 3 day, etc.) is provided in Table 28.

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14. NEW YORK: U.S. DOLLARS PER NETHERLANDS GUILDER EXCHANGE RATES

Units: U.S. dollars per Netherlands guilder

Filenames:	FX1_Tb33.WFM	Column 8, 1861 through 1878
	FX1_Tb34.WFM	Column 8, 1879 through 1899
	FX1_Tb35.WFM	Column 10, 1900 through 1912
Data Series:	NGOR1861.WFM	
Filename:	FX1_Tb29.DCL	Column 10, 1913 through 1915
Data Series:	NGOR1913.DCL	

Sources: No foreign exchange quotations (except for the British pound) have been found for 1861. An average estimate for 1861 was made. From 1862 through 1866 weekly quotations were obtained from the Review section of Hunt's Magazine and the Commercial and Financial Chronicle. From 1867 through 1870 quotations were obtained from annual tables of weekly data published in the January 9, 1875 edition of the Commercial and Financial Chronicle. From 1871 through 1912 weekly quotations were obtained from the Bankers Gazette section of the Commercial and Financial Chronicle. From 1913 through 1915 daily quotations were obtained from the New York Times.

Comments: The quotations from 1861 through 1865 are long buying rates for banker's bills. Quotations in 1866 are 60 day buying rates for banker's bills. For 1867 through 1870 the quotations are short buying rates for banker's bills. For 1871 through January 10, 1879 the quotations are 3 day buying rates for banker's bills. From January 17, 1879 through November 7, 1902 the quotations are demand buying rates for banker's bills. From November 14, 1902 through 1915 the quotations are short buying rates on banker's bills.

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15. NEW YORK: U.S. DOLLARS PER FOUR GERMAN MARKS EXCHANGE RATES

Units: U.S. dollars per four German marks

Filenames:	FX1_Tb33.WFM	Column 9, 1861 through 1878
	FX1_Tb34.WFM	Column 9, 1879 through 1899
	FX1_Tb35.WFM	Column 10, 1900 through 1912
Data Series:	DMOR1861.WFM	

Filenames:	FX1_Tb29.DCL	Column 12, 1913 through 1915
	FX1_Tb3Ø.DCL	Column 6, 1916 through March 30, 1917
Data Series:	DMOR1913.DCL	

Sources: No foreign exchange quotations (except for the British pound) have been found for 1861. An average estimate for 1861 was made. From 1862 through Oct. 14, 1864 the quotations are U.S. gold dollars per Hamburg marc du banque. From Oct. 21, 1864 through Nov. 1872 the quotations are U.S. gold dollars per Hamburg marc du banque. From Dec. 1872 through 1912 weekly quotations (as U.S. gold dollars per four German marks) were obtained from the Banker's Gazette section of the Commercial and Financial Chronicle. From 1913 through 1915 daily quotations were obtained from the New York Times. From 1916 through March 30, 1917 daily quotations were obtained from the Commercial and Financial Chronicle.

Comments: From 1861 through November 1872 the Hamburg marc du banque quotations were used to begin this series. The Hamburg quotations were selected over those of other German cities because of their high quality and frequency of quotation. See series 20.

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16, 17, 18, 19. NEW YORK: DISCOUNTS ON EXCHANGE RATES

Units: + or - a fraction of 1% of currency per dollar

Filenames:
FX1_Tbl35.WFM: Columns 7, 9, 11 and 13; 1900 through 1912
FX1_Tbl29.DCL: Columns 7, 9, 11 and 13; 1913 through 1915

Data Series:			
SFDS1900.WFM, Swiss franc,	Column 7	1900 through 1912
SFDS1900.DCL, Swiss franc	Column 7	1913 through 1915
FFDS1900.WFM, French franc	Column 9	1900 through 1912
FFDS1900.DCL, French franc	Column 9	1913 through 1915
NGDS1900.WFM, Netherlands guidler	Column 11	1900 through 1912
NGDS1900.DCL, Netherlands guidler	Column 11	1913 through 1915
DMDS1900.WFM, German mark	Column 13	1900 through 1912
DMDS1900.DCL, German mark	Column 13	1913 through 1915

Sources: Bankers Gazette section of the Commercial and Financial Chronicle from 1900 through 1912 and the New York Times from 1913 through 1915

Comments: See Table 27 for more details.

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20. NEW YORK: U.S. DOLLARS PER HAMBURG MARC DU BANQUE OR MARK

Units: U.S. fiat dollars per Hamburg marc du banque, 1861 through Oct. 14, 1864
U.S. gold dollars per Hamburg marc du banque, 1864 through Nov. 29, 1872
U.S. gold dollars per four German marks, Dec., 1872 through 1878

Filenames: `FX1_Tb33.WFM`

Data Series: `HMOR1861.WFM` Column 9, 1861 through 1878

Sources: See series 15, U.S. dollars per four German mark exchange rates.

Comments: The Hamburg marc du banque was a silver standard currency issued before December, 1872. It was replaced by the unified gold standard German mark after November, 1872. Neither a precise definition of the silver content of the marc du banque nor the legal conversion ratio between the marc du banque and the mark have been found but the U.S. Mint value of 36.43 cents per marc du banque is adequate for calculations using this series. Estimated values on dates where quotations were not found are given in Table 13.

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21. NEW YORK: U.S. DOLLARS PER FRANKFURT FLORIN OR MARK

Units: U.S. fiat dollars per Frankfurt, 1861 through Oct. 14, 1864
U.S. gold dollars per Frankfurt florin, Oct. 21, 1864 through Nov. 6, 1874
U.S. gold dollars per four Frankfurt marks, Nov. 13 1874 through 1878

Filenames: `FX1_Tb33.WFM`

Data Series: `FKOR1861.WFM` Column 10, 1861 through 1878

Sources: See series 15, U.S. dollars per four German mark exchange rates.

Comments: The Frankfurt florin was a silver standard currency issued before November 6, 1874. It was replaced by the unified gold standard German mark after November 13, 1874. Neither a precise definition of the silver content of the florin nor the legal conversion ratio between the florin and the mark have been found, but the U.S. Mint value of 41.2 U.S. cents per florin is adequate for calculations using this series. Estimated values on dates where quotations were not found are given in Table 14.

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22. NEW YORK: U.S. DOLLARS PER BERLIN THALER OR MARK EXCHANGE RATES

Units: U.S. fiat dollar per Berlin thaler, 1861 through Oct. 14, 1964
U.S. gold dollars per Berlin thaler, October 21, 1864 through November 6, 1874
U.S. gold dollars per four Berlin marks, November 13, 1874 through 1878

Filenames: `FX1_Tb33.WFM`

Data Series: `BR0R1861.WFM` Column 11, 1861 through 1878

Sources: See series 15, U.S. dollars per four German mark exchange rates.

Comments: The Berlin thaler was a silver standard currency issued before November 13, 1874. It was replaced by the unified gold standard German mark after November 6, 1874. Neither a precise definition of the silver content of the thaler nor the legal conversion ratio between the thaler and the mark have been found, but the U.S. Mint value of $.7205 per thaler is adequate for calculations using this series. Estimated values on dates where quotations were not found are given in Table 15.

23. NEW YORK: U.S. DOLLARS PER BREMEN THALER OR MARK

Units: U.S. fiat dollars per Bremen thaler, 1861 through Oct. 14, 1864
U.S. gold dollars per Bremen thaler, Oct. 21, 1864 through June 1872
U.S. gold dollars per four Bremen marks, July 1872 through 1878

Filenames: FX1_Tb33.WFM

Data Series: BMOR1861.WFM Column 12, 1861 through 1878

Sources: See series 15, U.S. dollars per four German mark exchange rates.

Comments: The Bremen thaler was a silver standard currency issued before July 1872. It was replaced by the unified gold standard German mark after June, 1872. Neither a precise definition of the silver content of the thaler nor the legal conversion ratio between the thaler and the mark have been found, but the U.S. Mint value of $.8000 per thaler is adequate for calculations using this series. Estimated values on dates where quotations were not found are given in Table 16.

24. NEW YORK GOLD PREMIUMS - see Section BP for details.

Filename: FX1_Tb33.WFM

Data Series: GPRM1861.WFM Column 17

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25. NEW YORK: U.S. DOLLARS PER GERMAN MARK ON HAMBURG

Units: U.S. dollars per German Mark

Filenames: FX1_Tb33.WFM

Data Series: HMNY1861.WFM Column 13, 1861 through 1878

Sources: See series 5, U.S. Dollars Per German Mark Exchange Rates.

Comments: This series extends the German mark quotations back to 1861 by converting the Hamburg marc du banque quotations prior to November 30, 1872 into equivalent quotations for the German mark by utilizing the mint ratios for the German mark and the Hamburg marc du banque. Of the four pre-unification German currencies presented here, this currency was selected for use in developing the main German mark Series 5.

Calculations: The following equations have been used to develop this series.

EQUATION 26: Conversion of the New York paper dollar exchange rate on Hamburg marc du banques to paper dollars per German mark.

for 1861 through October 15, 1864 in the Foreign Exchange Table,

$$\frac{\text{((fiat \$/marc, col. 9) x (23.8208 U.S. cents/mark))}}{\text{(36.43 U.S. cents/marc)}} = \text{fiat \$/German mark}$$

EQUATION 27: Conversion of the New York gold dollar exchange rate on Hamburg marc du banques to paper dollars per German mark.

for October 22, 1864 through November 19, 1872 in the Foreign Exchange Table,

$$\frac{\text{((gold \$/marc du banque, col. 9) x (fiat \$/gold \$ ratio, col. 17) x (23.8208 U.S. cents/mark))}}{\text{(36.43 U.S. cents/marc du banque)}} = \text{fiat \$/German mark}$$

EQUATION 28: Conversion of the New York gold dollar exchange rate on Hamburg marks to paper dollars per German mark.

for December 6, 1872 through 1878 in the Foreign Exchange Table,

$$\frac{\text{((gold \$/4 German marks, col. 9)x (fiat \$/gold \$ ratio, col. 17))}}{4} = \text{fiat \$/German mark}$$

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26. NEW YORK: U.S. DOLLARS PER GERMAN MARK ON FRANKFURT

Units: U.S. dollars per German Mark

Filenames: FX1_Tb33.WFM

Data Series: FKNY1861.WFM Column 14, 1861 through 1878

Sources: See series 5, U.S. Dollars Per German Mark Exchange Rates.

Comments: This series extends the German mark quotations back to 1861 by converting the Frankfurt florin quotations prior to November 7, 1874 into equivalent quotations for the German mark by utilizing the mint ratios for the German mark and the Frankfurt florin.

Calculations: The following equations have been used to develop this series.

EQUATION 29: Conversion of the New York paper dollar exchange rate on Frankfurt florins to paper dollars per German mark.

for 1861 through October 15, 1864 in the Foreign Exchange Table,

$$\frac{\text{(fiat \$/florin, col. 10) x (23.8208 U.S. cents/mark))}}{\text{(41.2 U.S. cents/florin)}} = \text{fiat \$/German mark}$$

EQUATION 30: Conversion of the New York gold dollar exchange rate on Frankfurt florins to paper dollars per German mark.

for October 22, 1864 through November 6, 1874 in the Foreign Exchange Table,

$$\frac{\text{((gold \$/florin, col. 10) x (fiat \$/gold \$ ratio, col. 17) x (23.8208 U.S. cents/mark))}}{\text{(41.2 U.S. cents/florin)}} = \text{fiat \$/German mark}$$

EQUATION 31: Conversion of the New York gold dollar exchange rate on Frankfurt marks to paper dollars per German mark.

for November 13, 1874 through 1878 in the Foreign Exchange Table,

$$\frac{\text{((gold \$/4 German marks, col. 10) x (fiat \$/gold \$ ratio, col. 17))}}{4} = \text{fiat \$/German mark}$$

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27. NEW YORK: U.S. DOLLARS PER GERMAN MARK ON BERLIN

Units: U.S. dollars per German mark

Filenames: FX1_Tb33.WFM

Data Series: BRNY1861.WFM Column 15, 1861 through 1878

Sources: See series 5, U.S. Dollars Per German Mark Exchange Rates.

Comments: This series extends the German mark quotations back to 1861 by converting the Berlin thaler quotations prior to November 7, 1874 into equivalent quotations for the German mark by utilizing the mint ratios for the German mark and the Berlin thaler.

Calculations: The following equations have been used to develop this series.

EQUATION 32: Conversion of the New York paper dollar exchange rate on Berlin thalers to paper dollars per German mark.

for 1861 through October 15, 1864 in the Foreign Exchange Table,

$$\frac{\text{(fiat \$/thaler, col. 11) x (23.8208 U.S. cents/mark)}}{\text{(72.05 U.S. cents/thaler)}} = \text{fiat \$/German mark}$$

EQUATION 33: Conversion of the New York gold dollar exchange rate on Berlin thalers to paper dollars per German mark.

for October 22, 1864 through November 6, 1874 in the Foreign Exchange Table,

$$\frac{\text{((gold \$/florin, col. 11) x (fiat \$/gold \$ ratio, col. 17)) x (23.8208 U.S. cents/mark)}}{\text{(72.05 U.S. cents/thaler)}} = \text{paper \$/German mark}$$

EQUATION 34: Conversion of the New York gold dollar exchange rate on Berlin marks to paper dollars per German mark.

for November 13, 1874 through 1878 in the Foreign Exchange Table,

$$\frac{\text{((gold \$/4 German marks, col. 11) x (fiat \$/gold \$ ratio, col. 17))}}{4} = \text{paper \$/German mark}$$

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28. NEW YORK: U.S. DOLLARS PER GERMAN MARK ON BREMEN

Units: U.S. dollars per German mark

Filenames: FX1_Tb33.WFM

Data Series: BMNY1861.WFM Column 16, 1861 through 1878

Sources: See series 5, U.S. Dollars Per German Mark Exchange Rates.

Comments: This series extends the German mark quotations back to 1861 by converting the Bremen thaler quotations prior to June 29, 1872 into equivalent quotations for the German mark by utilizing the mint ratios for the German mark and the Bremen thaler.

Calculations: The following equations have been used to develop this series.

EQUATION 35: Conversion of the New York paper dollar exchange rate on Bremen thalers to paper dollars per German mark.

for 1861 through October 15, 1864 in the Foreign Exchange Table,

$$\frac{\text{(fiat \$/thaler, col. 12)} \times \text{(23.8208 U.S. cents/mark)}}{\text{(80.00 U.S. cents/thaler)}} = \text{fiat \$/German mark}$$

EQUATION 36: Conversion of the New York gold dollar exchange rate on Bremen thalers to paper dollars per German mark.

for October 22, 1864 through June 28, 1872 in the Foreign Exchange Table,

$$\frac{\text{((gold \$/thaler, col. 12)} \times \text{(fiat \$/gold \$ ratio, col. 17)} \times \text{(23.8208 U.S. cents/mark))}}{\text{(80.00 U.S. cents/thaler)}} = \text{fiat \$/German mark}$$

EQUATION 37: Conversion of the New York gold dollar exchange rate on Bremen thalers to paper dollars per German mark.

for July 5, 1872 through 1878 in the Foreign Exchange Table,

$$\text{((gold \$/4 German marks, col. 12)} \times \text{(fiat \$/gold \$ ratio, col. 17))} = \text{fiat \$/German mark}$$

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29. NEW YORK: CANADIAN DOLLAR DISCOUNTS ON MONTREAL

Units: Percent

Filenames: `FX1_Tb31.DCL` Columns 10 and 11, 1913 through June 11, 1921

Data Series: `CDDB1913.DCL` daily close, buying discount/premium
`CDDS1913.DCL` daily close, selling discount/premium

Format: .000625 is read as .0625 percent discount
-.00046875 is read as .046875 percent premium

Sources: From 1913 through April 9, 1919 the quotations are discounts/premiums for Canadian collars in terms U.S. dollars in New York as published in the Domestic Exchange section of the New York Times. From April 10, 1919 to June 11, 1921 the quotations are buying discounts as published by the Federal Reserve Board. Beginning June 13, 1921 the Federal Reserve Board quotations are in the form of US dollars per Canadian dollar.

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30. LONDON: BRITISH POUNDS PER AUSTRALIAN POUND

Units: British pounds per Australian pound, 1913 through October 11, 1930
Australian pounds per British pound, October 14, 1930 through February 7, 1933

Filenames: `FX1_Tb31.DCL` Columns 1, 4 and 5, 1913 through February 7, 1933

Data Series:
`ADLB1913.DCL` daily closing quotations, buying rates
`ADLS1913.DCL` daily closing quotations, selling rates
`ADAV1913.DCL` daily closing quotations, average rates

Sources: From 1913 through February 7, 1933 the quotations were obtained from the Economist.

Comments: Prior to February 8, 1933, no consistent New York quotations could be found. Since daily exchange rates were available in London, these were obtained to allow the calculation of pseudo rates for New York prior to 1933. The London buying rates converted to U.S. dollars per Australian pound were low and the London selling rates converted were high relative to the actual New York buying rates quoted for February 8, 1933. Since the average of the London buying and selling rates best approximated the February 8, 1933 quotations, the average London rates were used for conversion to New York rates from 1913 through February 7, 1933.

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31. LONDON: BRITISH POUNDS PER NEW ZEALAND POUND EXCHANGE RATES

Units: British pounds per New Zealand pound; 1913 through January 3, 1931
New Zealand pounds per British pound; January 4, 1931 through February 7, 1933

Filenames:
`FX1_Tb31.DCL` Columns 2, 6 and 7; 1913 through February 7, 1933

Data Series:
`NZLb1913.DCL` daily closing quotations, buying rates
`NZLs1913.DCL` daily closing quotations, selling rates
`NZav1913.DCL` daily closing quotations, average rates

Sources: From 1913 through February 7, 1933 the quotations were obtained from the Economist.

Comments: No consistent New York quotations could be found prior to February 8, 1933. Since daily exchange rates were available in London, these were obtained to allow the calculation of pseudo rates for New York prior to 1933. The London buying rates converted to U.S. dollars per New Zealand pound were low and the London selling rates converted were high relative to the actual New York buying rates quoted for February 8, 1933. Since the average of the London buying and selling rates best approximated the February 8, 1933 quotation, the average London rate was used for conversion to New York rates from 1913 through February 7, 1933.

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32. LONDON: BRITISH POUNDS PER SOUTH AFRICAN POUND EXCHANGE RATES

Units: British pounds per South African pound; 1913 through September 19, 1931
South African pounds per British pound; September 20, 1931 through February 7, 1933

Filenames: `FX1_Tb31.DCL` Columns 3, 8 and 9; 1913 through February 7, 1933

Data Series: `SALB1913.DCL` daily closing quotations, buying rates
`SALS1913.DCL` daily closing quotations, selling rates
`SAAV1913.DCL` daily closing quotations, average rates

Format: for 1913 through September 19, 1931, -.0025
is read as .25% discount

Sources: From 1913 through February 7, 1933 the quotations were obtained from the Economist.

Comments: No consistent New York quotations could be found prior to February 8, 1933. Since daily exchange rates were available in London, these were obtained to allow the calculation of pseudo rates for New York prior to 1933. The London buying rates converted to U.S. dollars per South African pound were low and the London selling rates converted were high relative to the actual New York buying rates quoted for February 8, 1933. Since the average of the London buying and selling rates best approximated the February 8, 1933 quotation, the average London rate was used for conversion to New York rates from 1913 through February 7, 1933.

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33. NEW YORK: U.S DOLLARS PER AUSTRALIAN POUND EXCHANGE RATES

Units: U.S. dollars per Australian pound

Filenames: `FX1_Tb32.DCL` Column 5, 1913 through February 11, 1966.

Data Series: `ADOR1913.DCL` daily closing quotations
`ADOR1913.WFM` weekly Friday quotations

Sources: From 1913 through February 7, 1933 the values were calculated as shown in Equations 38 and 39. From February 8, 1933 through February 11, 1966, the daily quotations were obtained from the Federal Reserve Board.

Comments: All of these rates are cable buying rates.

Calculations: The following equations were used to develop this series.

EQUATION 38: Conversion of British pounds per Australian pound to U.S. dollars per Australian pound.

for 1913 through October 11, 1930 in Table 32

((US $/British pound) col. 1)
x (British pound/Australian pound, col. 8) = US $/Australian pound

EQUATION 39: Conversion of Australian pounds per British pound to U.S. dollars per Australian pound.

for October 12, 1930 through February 7, 1933 in Table 32

$$\frac{\text{US \$/British pound, col. 1)}}{\text{(Australian pound/British pound, col. 8)}} = \text{US \$/Australian pound}$$

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34. NEW YORK: U.S. DOLLARS PER NEW ZEALAND POUND EXCHANGE RATES

Units: U.S. dollars per New Zealand pound

Filenames: FX1_Tb32.DCL Column 6, 1913 through July 7, 1967

Data Series: NZOR1913.DCL daily closing quotations

Sources: From 1913 through February 7, 1933 the values were calculated as shown in Equations 40 and 41. From February 8, 1933 through July 7, 1967, the daily quotations were obtained from the Federal Reserve Board.

Comments: All of these rates are cable buying rates.

Calculations: The following equations were used to develop this series.

EQUATION 40: Conversion of British pounds per New Zealand pound to U.S. dollar per New Zealand pound.

for 1913 through January 3, 1931 in Table 32.

(US $/British pound, col. 1)
x(British pound/Australian $, col. 9) = US $/New Zealand pound

EQUATION 41: Conversion of New Zealand pounds per British pound to U.S. dollars per New Zealand pound.

for January 4, 1931 through February 7, 1933 in Table 32.

$$\frac{\text{(US \$/British pound, col. 1)}}{\text{(New Zealand pound/British pound, col. 9)}} = \text{US \$/New Zealand pound}$$

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35. NEW YORK: U.S. DOLLARS PER SOUTH AFRICAN POUND EXCHANGE RATES

Units: U.S. dollars per South African pound

Filenames: FX1_Tb32.DCL Column 7, 1913 through July 7, 1967

Data Series: SA0R1913.DCL daily closing quotations

Sources: From 1913 through February 7, 1933 the values were calculated as shown in Equations 42 and 43. From February 8, 1933 through July 7, 1967, the daily quotations were obtained from the Federal Reserve Board.

Comments: All of these rates are cable buying rates.

Calculations: The following equations were used to develop this series.

EQUATION 42: Conversion of British pounds per South African pound to U.S. dollar per South African pound.

for 1913 through September 19, 1931 in Table 32.

(US $/British pound, col. 1)
x(1+((disc%) col. 10)) = US $/South African pound

EQUATION 43: Conversion of South African pounds per British pound to U.S. dollars per South African pound.

for September 20, 1931 through February 7, 1933 in Table 32.

$$\frac{\text{(US \$/British pound, col. 1)}}{\text{(South African pound/British pound, col. 10)}} = \text{US \$/South African pound}$$

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Table 1
MINT PAR EXCHANGE RATES IN GOLD IN 1913
(Just Before World War I)

Unit	grams/unit	grains/unit	$/unit	pounds/unit
U.S. dollar	1.504630882	23.22	1.00000	.2054838069
U.K. pound	7.322381773	113.0016051	4.866563527	1.00000
French franc	.2903225806	4.480361532	.192952693	.0396486539
Swiss franc	.2903225806	4.480361532	.192952693	.0396486539
Dutch guilder	.6048	9.333489144	.40195905	.082596076
Canadian dollar	1.504630882	23.22	1.00000	.2054838069
German mark	.3584229391	5.531323339	.2382132012	.048948955
Japanese yen, 1897	.75	11.57426729	.4984611236	.1024256893
Mexican peso	.75	11.57426729	.4984611236	.1024256893
Australian pound	7.322381773	113.0016051	4.866563527	1.00000
New Zealand pound	7.322381773	113.0016051	4.866563527	1.00000
South African pound	7.322381773	113.0016051	4.866563527	1.00000

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Table 2
MINT DEFINITIONS OF U.S. COINS

Act of January 18, 1837[1]-13	412.5 grains, .9 fine silver = 1 dollar 25.8 grains, .9 fine gold = 1 dollar
Act of February 21, 1853[1]	384 grains, .9 fine silver = 1 dollar, for small coins (50, 25, and 10 cents)
Act of February 12, 1873[2]	385.8 grains, .9 fine silver = 1 dollar, for small coins (50, 25, and 10 cents) ceased fixing price of silver
Presidential Proclamation of 1/30/34[3]	15.5/21 grains, .9 fine gold = 1 dollar
Act of March 31, 1971[4]	$38.00 = 1 oz. fine gold
Act of September 21, 1973[4]	$42.22 = 1 oz. fine gold

	grams, fine	grains, fine	troy oz fine	$ / troy oz.
1837 gold $	1.504630882	23.22	.048375	$20.67183463
1837 silver $	24.0565984	371.25	.7734375	$1.292929293
silver/gold		15.98837209		
1853 subsidiary silver	22.39450615	345.6	.72	$.72
silver/gold		14.88372093		
1873 subsidiary silver	22.49948039	347.22	.723375	$.723375
silver/gold		14.95348837		
1934 gold $	.88867086	13.714285	.028571428	$35
1971 gold $	.8185126517	12.63157895	.02631578947	$38
1973 gold $	.7367001601	11.36901942	.02368545713	$42.22

1 Pearson, Frank A. and George F. Warren, Gold and Prices, p. 155
2 Pearson, Frank A. and George F. Warren, Gold and Prices, p. 172
3 Prather, Charles L., Money and Banking, p. 46
4 Groseclose, Elgin, America's Money Machine, p. 250

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Table 3
MINT DEFINITION OF FRENCH COINS

Law of 1863[1]	1000 gram gold, .9 fine -> 3100 francs[2] 5 gram silver, .9 fine -> 1 franc
Latin Monetary Union, December 23, 1865[3]	Unified coinage of France, Belgium, Italy and Switzerland .322580645 gram gold, .9 fine = 1 franc 5 gram silver, .9 fine = 1 franc 5 gram silver, .835 fine = 1 franc subsidiary silver
Act of June 25, 1928	.05895 grams gold, fine = 1 franc

	grams/franc	grains/franc	troy oz/franc	franc/troy oz
1803 gold, fine	.2903225806	4.48031532	.009334086524	107.1342115
1803 gold, .9 fine	.3225806452	4.97817948	.01037120725	96.42079036
1928 gold, fine	.05895	.9097374091	.001895286269	527.6247796
1803 silver, .9 fine	5.555555556	85.73531328	.1786152360	5.598626536
1803 silver, fine	5	77.16178195	.1607537124	6.220696151

Silver to Gold Ratio (1803) = 17.2222222

[1] Cowles Commission for Research in Economics, Silver Money, p.25
[2] Clare, George, A Money Market Primer, p.74
[3] Cowles Commission for Research in Economics, Silver Money, pp. 28-29

Table 4
MINT DEFINITION OF SWISS COINS

Law of January 31, 1860[1]	.2903225806 gram gold, fine -> 1 franc
Law of December 22, 1870[1]	.2903225806 gram gold, fine -> 1 franc
Law of November 6, 1885[1]	.2903225806 gram gold, fine -> 1 franc
Latin Monetary Union, December 23, 1865[2]	.2903225806 gram gold, fine -> 1 franc

	grams/franc	grains/franc	troy oz/franc	franc/troy oz
gold, fine	.2903225806	4.480361532	.009334086524	107.1342115
gold, .9 fine	.3225806452	4.97817948	.01037120725	96.4207903

[1] Pearson, Frank A. and George F. Warren, Gold and Prices, p. 175
[2] Cowles Commission for Research in Economics, Silver Money, pp. 28-29

Table 5
MINT DEFINITION OF DUTCH COINS

Law of May 28, 1901[1] 1 guilder of fine gold = .6048 grams

	grams/guilder	grains/guilder	troy oz/guilder	guilder/troy oz
gold, fine	.6048	9.333489144	.01944476905	51.42771289

[1] Pearson, Frank A. and George F. Warren, Gold and Prices, p. 175

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Table 6
MINT DEFINITION OF GERMAN COINS

Law of December 4, 1871[1]	500 gram gold, fine -> 1395 mark, .9 fine coins[2]
Law of August 30, 1924,	10^{12} papermark = 1 reichsmark
effective October 11, 1924[3]	500 gram gold, fine -> 1395 mark, .9 fine coins
October 15, 1931[4]	suspend gold payments

	grams/mark	grains/mark	troy oz/mark	mark/troy oz
gold mark, fine	.3584229391	5.531323339	.01152359029	86.77851042
gold mark, .9 fine	.3982477101	6.145914821	.01280398921	78.10065938

German Silver Coins Before the Unification of 1871[5]

Bremen	Thaler of 72 Grotes	$.8000/Thaler
Berlin	Thaler of 30 Groshen	$.7205/Thaler
Frankfurt	Florin of 60 Kreutzers	$.4120/Florin
Hamburg	Marc du Banque of 16 Shillings	$.3643/Marc

[1] Whitaker, Albert C., Foreign Exchange, p. 76
[2] Clare, George, A Money Market Primer, p. 115
[3] Bresciani-Turroni, Costantino, The Economics of Inflation, pp. 353-354
[4] Pearson, Frank A. and George F. Warren, Gold and Prices, p. 172
[5] American Journal of Mining, April 4, 1868, p. 210

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Table 7
MINT DEFINITION OF JAPANESE COINAGE

Act of May 10, 1871[1]	1.5 gram fine gold = 1 yen, coins .9 fine 416 grains silver, .9 fine = 1 yen
Act of March 26, 1897[2] effective Oct. 30, 1897	.75 gram fine gold = 1 yen, coins .9 fine 24.26094 gram silver, .8 fine = 1 yen
January 11, 1931[3]	restore gold payments
December 13, 1931[4]	suspend gold payments

OFFICIAL GOLD PRICES

April 1934	1 gram fine gold	=	2.95 yen
January 1935	1 gram fine gold	=	3.10 yen
May 1936	1 gram fine gold	=	3.50 yen
April 30, 1938	1 gram fine gold	=	3.861 yen
January 20, 1946	1 gram fine gold	=	17 yen
July 17, 1947	1 gram fine gold	=	75 yen
September 25, 1947	1 gram fine gold	=	150 yen
July 22, 1949	1 gram fine gold	=	385 yen
March 1, 1950	1 gram fine gold	=	401 yen
February 2, 1952	1 gram fine gold	=	405 yen

	grams/yen	grains/yen	troy oz/yen	yen/troy oz	silver/gold
May 10, 1871 gold	1.5	23.14853458	.04822611371	20.73565384	
May 10, 1871 silver	24.26071499	374.4	.78	1.282051282	16.17381
March 26, 1897 gold	.75	11.57426729	.02411305686	41.47130767	
March 26, 1897 silver	21.56528	21.56528	.6933397637	1.442294316	28.75370667
July, 1937 gold	.285714	4.4092401	.0091859168	108.86229	
May 11, 1953 gold	.00246853	.038095233	.000079365068	12.600	

[1] Shinjo, Hiroshi, History of the Yen, p. 21
[2] Shinjo, Hiroshi, History of the Yen, pp. 78-79
[3] Shinjo, Hiroshi, History of the Yen, pp. 78-79
[4] Pearson, Frank A. and George F. Warren, Gold and Prices, p. 172
[5] Pick, Franz and Rene Sedillot, All the Moinies of the World, pp. 601-603

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Table 8
MINT DEFINITION OF CANADIAN COINS

Law of May 4, 1910[1] 23.22 grains of fine gold = 1 dollar
October 19, 1931[2] suspend gold payments

	grams/dollar	grains/dollar	troy oz/dollar	dollar/troy oz
gold, fine	1.504630882	23.22	.048375	20.67183462

[1] Pearson, Frank A. and George F. Warren, Gold and Prices, p. 175
[2] Pearson, Frank A. and George F. Warren, Gold and Prices, p. 172

Table 9
MINT DEFINITION OF THE MEXICAN COINS

Law of 1897 1 Mexican Peso = 750 milligrams of fine gold[1]
Dec. 18, 1946 1 Mexican Peso = 183.042 milligrams of fine gold[2]
June 17, 1949 1 Mexican Peso = 102.737 milligrams of fine gold[3]
April 19, 1954 1 Mexican Peso = 71.0837 milligrams of fine gold[4]

	grams/peso	grains/peso	troy oz/peso
fine gold, 1897	.75	11.57426729	.02411305686
fine gold, 1946	.183042	2.8247693	.0058849357
fine gold, 1949	.102737	1.5854739	.0033030705
fine gold, 1954	.0710937	1.0971432	.002285715

[1] Pick, Franz, All the Monies of the World, page 397.
[2] Pick, Franz, All the Monies of the World, page 398.

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Table 10
MINT DEFINITION OF AUSTRALIAN COINS

September	4,	1909	1 Australian pound	=	7.32238	grams fine gold[1]
November	17,	1947	1 Australian pound	=	2.86507	grams fine gold[1]
September	18,	1949	1 Australian pound	=	1.99062	grams fine gold[1]
February	14,	1966	1 Australian dollar	=	.995311	grams fine gold[2]

	grams/unit	grains/unit	troy oz/unit
fine gold, 1909 £	7.32238	113.00157	.23541995
fine gold, 1947 £	2.86507	44.21478	.092114126
fine gold, 1949 £	1.990622	30.719987	.064
fine gold, 1966 $	.995311	15.36	.032

[1] Pick, Franz. All the Monies of the World, page 432.
[2] Pick, Franz. All the Monies of the World, page 112.

Table 11
MINT DEFINITION OF NEW ZEALAND COINS

1907			1 New Zealand pound	=	7.32238	grams fine gold[1]
August	19,	1948	1 New Zealand pound	=	3.58124	grams fine gold[1]
September	19,	1949	1 New Zealand pound	=	2.48828	grams fine gold[1]
October	27,	1961	1 New Zealand pound	=	2.4713	grams fine gold[1]
July	10,	1967	1 New Zealand dollar	=	1.23565	grams fine gold[2]
November	21,	1967	1 New Zealand dollar	=	.99531	grams fine gold[2]

	grams/unit	grains/unit	troy oz/unit
fine gold, 1907 £	7.32238	113.00157	.23541995
fine gold, 1948 £	3.58124	55.26851	.11513952
fine gold, 1949 £	2.488282	38.4	.08
fine gold, 1961 £	2.4713	38.136614	.07945128
fine gold, July 1967 £	1.23565	19.06899	.039727064
fine gold, Nov. 1967	.99531	15.36	.032

[1] Pick, Franz. All the Monies of the World. Pages 447-448.
[2] Pick, Franz. All the Monies of the World. Page 123.

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Table 12
MINT DEFINITION OF SOUTH AFRICAN COINS

1920		1 South African pound	=	7.32238 gram fine gold[1]
December 8,	1946	1 South African pound	=	3.58134 gram fine gold[1]
September 18,	1949	1 South African pound	=	2.48828 gram fine gold[1]
February 14,	1961	1 South African rand	=	1.24414 gram fine gold[2]

	grams/unit	grains/unit	troy oz/unit
fine gold, 1920 £	7.32238	113.00157	.23541995
fine gold, 1946 £	3.58134	55.268513	.11514273
fine gold, 1949 £	2.48828	38.4	.08
fine gold, 1961 $	1.24414	19.2	.04

[1] Pick, Franz. All the monies of the World, pages 450-451.
[2] Pick, Frank. All the monies of the World, page 465.

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Table 13
Dates of Estimated Quotations For the Hamburg Marc Du Banque

Jan 4, 1861-Dec 27,1861
Jan 8, 1862
Jan 22, 1862
Feb 8, 1862
Feb 22, 1862
Mar 18, 1862
Jun 21, 1862
Jul 3, 1863
Jul 16, 1864
Dec 30, 1864
Jul 7, 1871
Oct 13, 1871
Dec 22, 1871
Apr 26, 1872
Jun 21, 1872
Jul 12, 1872
Aug 9, 1872
Dec 6, 1872
Dec 27, 1872
Jan 10, 1873
Jan 24, 1873
Apr 4, 1873
May 30, 1873
Aug 22, 1873
Sep 26, 1873
Jan 16, 1874
Jan 30, 1874
Feb 13, 1874
Jul 17, 1874
Nov 6, 1874
Jan 8, 1875
Jan 29, 1875
Feb 26, 1875
Mar 19, 1875
Apr 2, 1875
Apr 16, 1875
Apr 23, 1875
May 21, 1875
Jun 18, 1875
Sep 10, 1875-Sep 24,1875
Oct 22, 1875-Nov 5,1875
Feb 18, 1876
Mar 10, 1876
Mar 31, 1876
Apr 14, 1876-Apr 21,1876
May 19, 1876
Jul 28, 1876-Aug. 4,1876
Aug 18, 1876-Aug 25,1876
Jun 22, 1877

Table 14
Dates of Estimated Quotations For the Frankfurt Florin

Jan 4, 1861-Dec 27, 1861
Jan 8, 1862
Jan 22, 1862
Feb 8, 1862
Feb 22, 1862
Mar 8, 1862
Jun 21, 1862
Jul 3, 1863
Jun 25, 1864-Jul 16,1864
Aug 27, 1864-Sep 17,1864
Oct 1, 1864-Oct 29,1864
Nov 26, 1864
Dec 12, 1864-Dec 30,1864
Jul 7, 1871
Oct 13, 1871
Dec 22, 1871
Apr 26, 1872
Jun 21, 1872
Jul 12, 1872
Aug 9, 1872
Dec 6, 1872
Dec 27, 1872
Jan 10, 1873
Jan 24, 1873
Apr 4, 1873
May 30, 1873
Aug 22, 1873
Sep 26, 1873
Jan 16, 1874
Jan 30, 1874
Feb 13, 1874
Jul 17, 1874
Nov 6, 1874
Jan 8, 1875
Jan 29, 1875
Feb 26, 1875
Mar 19, 1875
Apr 2, 1875
Apr 16, 1875
Apr 23, 1875
May 21, 1875
Jun 18, 1875
Sep 10, 1875-Sep 24,1875
Oct 22, 1875-Nov 3,1875
Feb 18, 1876
Mar 10, 1876
Mar 31, 1876
Apr 14, 1876-Apr 21,1876
May 19, 1876
Jul 28, 1876-Aug 4,1876
Aug 18, 1876-Aug 25,1876
Sep 8, 1876-Sep 22,1876
Jun 22, 1877
Dec 7, 1877
Feb 7, 1878
Nov 28, 1878

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Table 15
Dates of Estimated Quotations For the Berlin Thaler

Jan 4, 1861-Dec 27,1867
Jan 8, 1862
Jan 22, 1862
Feb 8, 1862
Feb 22, 1862
Mar 8, 1862
Jun 21, 1862
Jul 3, 1863
Jul 16, 1864
Sep 17, 1864-Oct 8,1874
Dec 30, 1864
Oct 13, 1871
Dec 22, 1871
Apr 26, 1872
Jun 21, 1872
Jul 12, 1872
Aug 9, 1872
Dec 6, 1872
Dec 27, 1872
Jan 10, 1873
Jan 24, 1873
Mar 28, 1873-Apr 4,1873
May 30, 1873
Aug 1, 1873
Aug 22, 1873
Sep 26, 1873
Jan 16, 1874
Jan 30, 1874
Feb 13, 1874
Jul 3, 1874
Jul 17, 1874
Sep 25, 1874
Nov 6, 1874
Jan 8, 1875
Jan 29, 1875
Feb 26, 1875-Mar 5,1875
Mar 19, 1875
Apr 2, 1875
Apr 16, 1875-Apr 23,1875
May 21, 1875
Jun 18, 1875
Sep 10, 1875-Sep 24,1875
Oct 22, 1875-Nov 3,1875
Dec 31, 1875
Feb 18, 1876
Mar 10, 1876
Mar 31, 1876
Apr 14, 1876-Apr 21,1876
May 19, 1876
Jul 28, 1876-Aug 4,1876
Aug 18, 1876-Aug 25,1876
Sep 8, 1876-Sep 22,1876
Jun 22, 1877
Dec 7, 1877

Table 16
Dates of Estimated Quotations For the Bremen Thaler

Jan 4, 1861-Dec 29,1865
Jul 7, 1871
Aug 25, 1871
Oct 13, 1871
Dec 22, 1871
Apr 26, 1872
Jun 21, 1872
Jul 12, 1872
Aug 9, 1872
Dec 6, 1872
Dec 27, 1872
Jan 10, 1873
Jan 24, 1873
Mar 28, 1873-Apr 4,1873
May 30, 1873
Aug 22, 1873
Sep 26, 1873
Jan 16, 1874
Jan 30, 1874
Feb 13, 1874
Jul 3, 1874
Jul 17, 1874
Sep 25, 1874
Nov 6, 1874
Jan 8, 1875
Jan 29, 1875
Feb 26, 1875-Mar 5,1875
Mar 19, 1875
Apr 2, 1875
Apr 16, 1875-Apr 23,1875
May 21, 1875
Jun 18, 1875
Sep 10, 1875-Sep 24,1875
Oct 22, 1875-Nov 5,1875
Dec 31, 1875
Feb 18, 1876
Mar 10, 1876
Mar 31, 1876
Apr 14, 1876-Apr 21,1876
May 19, 1876
Jul 28, 1876-Aug 4,1876
Aug 18, 1876-Aug 25,1876
Sep 8, 1876-Sep 22,1876
Jun 22, 1877
Dec 7, 1877

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Table 17
Dates of Estimated Quotations For the Swiss Franc

Jan 4, 1861-Dec 27,1861
Jan 1, 1862-Dec 28,1866*
Aug 5, 1870
Aug 26, 1870
Sep 30, 1870-Nov 18,1870
Jun 16, 1871-Jun 23,1871
Jul 14, 1871-Aug 4,1871
Sep 29, 1871-Oct 13,1871
Dec 22, 1871
Apr 26, 1872
Jun 21, 1872
Jul 12, 1872
Aug 9, 1872
Oct 4, 1872-Oct 11,1872
Dec 6, 1872
Dec 27, 1872
Jan 10, 1873
Jan 24, 1873
Mar 7, 1873
Apr 4, 1873-Apr 18,1873
May 30, 1873
Jul 18, 1873
Aug 22, 1873
Sep 26, 1873
Oct 24, 1873-Oct 31,1873
Dec 19, 1873
Jan 16, 1874
Jan 30, 1874
Feb 27, 1874
May 29, 1874-Jun 12,1874
Nov 6, 1874
Jan 8, 1875
Jan 29, 1875
Mar 19, 1875
Apr 2, 1875
May 21, 1875
Jun 18, 1875
Sep 10, 1875-Sep 24,1875
Oct 22, 1875-Nov 3,1875
Feb 18, 1876
Mar 10, 1876
Mar 31, 1876
Apr 14, 1876-Apr 21,1876
May 19, 1876
Jul 28, 1876-Aug 4,1876
Aug 18, 1876-Aug 25,1876
Jun 22, 1877
Dec 7, 1877
Feb 7, 1879
Nov 28, 1879
Mar 5, 1880
Oct 29, 1880
Nov 26, 1880
Dec 24, 1880-Dec 31,1880
Jan 7, 1881-Dec 31,1912*
May 31, 1913
Jun 21, 1913-Jun 14,1913
Jul 5, 1913
Aug 30, 1913

* French franc quotations used as a proxy for Swiss franc quotations,

Dates of Market Suspensions for the Swiss Franc

Jul 27, 1914-Aug 31,1914
Mar 6, 1933-Mar 11,1933
Jun 15, 1941-Feb 4, 1946
Dec 20, 1971

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Table 18
Dates of Estimated Quotations for the French Franc

Jan 4, 1861-Dec 27,1861	Feb 26, 1875	Apr 14, 1892
Jan 8, 1862	Mar 19, 1875	Nov 20, 1892
Jan 22, 1862	Dec 23, 1881	Mar 30, 1893
Feb 8, 1862	Jan 6, 1882-Jan 13,1882	May 31, 1913
Feb 22, 1862	Jun 22, 1883	Jul 5, 1913
Jan 8, 1875	Jul 6, 1883	Aug 30, 1913
Jan 29, 1875	Dec 31, 1891	

Dates of Market Suspensions for the French Franc

Aug 1, 1914 - Aug 16, 1914
Mar 6, 1933 - Mar 11, 1933
Jun 17, 1940 - Jul 31, 1945
Jan 26, 1948 - Feb 9, 1948
Oct 18, 1948 - Oct 29, 1948
Aug 12, 1957 - Aug 16, 1957
Dec 26, 1958
Nov 20, 1968 - Nov 22, 1968
Dec 26, 1958
Aug 16, 1971 - Aug 20, 1971
Dec 20, 1971

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Table 19
Dates of Estimated Quotations For the Netherlands Guilder

Jan 4, 1861-Dec 27, 1861
Jan 8, 1862
Jan 22, 1862
Feb 8, 1862
Feb 22, 1862
Mar 8, 1862
Jun 21, 1862
Jul 3, 1863
Jul 9, 1864-Aug 13, 1864
Aug 27, 1864-Sep 3, 1864
Sep 17, 1864-Oct 8, 1864
Dec 30, 1864
Jul 7, 1871
Oct 13, 1871
Dec 22, 1871
Apr 26, 1872
Jun 21, 1872
Jul 12, 1872
Aug 9, 1872
Dec 6, 1872
Dec 27, 1872
Jan 10, 1873
Jan 24, 1873
Apr 4, 1873
Aug 22, 1873
Sep 26, 1873
Jan 16, 1874
Jan 30, 1874
Nov 6, 1874
Jan 8, 1875
Jan 29, 1875
Mar 19, 1875
Apr 2, 1875
Apr 16, 1875-Apr 23, 1875
May 21, 1875
Jun 18, 1875
Sep 10, 1875-Sep 24, 1875
Oct 22, 1875-Nov 3, 1875
Feb 18, 1876
Mar 10, 1876
Mar 31, 1876
Apr 14, 1876-Apr 21, 1876
May 19, 1876
Jul 28, 1876-Aug 4, 1876
Aug 18, 1876-Aug 25, 1876
Nov 10, 1876-Nov 17, 1876
Jun 22, 1877
Dec 7, 1877
Feb 7, 1879
Nov 28, 1879
Mar 5, 1879
Oct 29, 1880
Nov 26, 1880
Dec 24, 1880-Dec 31, 1880
Jan 14, 1881
Jun 24, 1881
Jul 15, 1881-Jul 29, 1881
Aug 12, 1881-Aug 26, 1881
Dec 23, 1881
Jan 6, 1882-Jan 13, 1882
Jun 22, 1883
Jul 6, 1883
Aug 17, 1883
Dec 21, 1883
Jan 4, 1884-Jan 23, 1884
Feb 8, 1884
Mar 2, 1884
Mar 16, 1884-Mar 30, 1884
Sep 11, 1885
Jun 25, 1886
Aug 20, 1886
Mar 16, 1888
May 11, 1888
Jun 15, 1888
Feb 1, 1889
Jun 14, 1889
Sep 27, 1889
Oct 25, 1889
May 2, 1890
Nov 28, 1890
Jan 30, 1891
Jul 31, 1891-Aug 7,1891
Nov 13, 1891
Dec 4, 1891-Dec 11,1891
Jan 22, 1892
Feb 12, 1892
Jun 15, 1894
Mar 22, 1895
Jul 5, 1895
Aug 21, 1896
Sep 24, 1897
Oct 29, 1897
Dec 10, 1897
Sep 23, 1898
May 31, 1907
Mar 27, 1908
Sep 20, 1912
May 12, 1913
May 23, 1913
May 31, 1913
Jun 3, 1913
Jun 4, 1913
Jun 18, 1913
Jul 5, 1913
Aug 6, 1913
Aug 30, 1913

Data of Market Suspensions for the Netherlands Guilder

Aug 1, 1914-Aug 16, 1914
Mar 6, 1933-Mar 11, 1933
May 10, 1940-Nov 1, 1945
Nov 20, 1968
Aug 16, 1971-Aug 22, 1921
Dec 27, 1971

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Table 20
Dates of Estimated Quotations For the German Mark

Feb 7, 1879
Nov 28, 1879
Mar 5, 1880
Dec 24, 1880
Dec 31, 1880
Jan 14, 1881
Jun 24, 1881
Jul 15, 1881-Jul 29, 1881
Aug 12, 1881-Aug 26, 1881
Dec 23, 1881
Jan 6, 1882-Jan 13, 1882
Jun 22, 1883
Jul 6, 1883
Aug 17, 1883
Dec 21, 1883
Jan 4, 1884-Jan 25, 1884
Feb 8, 1884
May 2, 1884
May 16, 1884-May 30, 1884
Jul 3, 1884
Sep 11, 1885
Jun 25, 1886
Aug 20, 1886

Mar 16, 1888
May 11, 1888
Feb 1, 1889
Jun 14, 1889
Sep 27, 1889
Jan 30, 1891
Jul 31, 1891-Aug 7, 1891
Nov 13, 1891
Dec 4, 1891-Dec 11, 1891
Jun 15, 1894
Jul 5, 1895
Oct 29, 1897
Dec 10, 1897
Mar 22, 1901
Mar 27, 1908
May 31, 1913
Jul 5, 1913
Aug 30, 1913
Sep 4, 1913
Apr 5, 1917-May 11, 1917

from May 18,1917-Jul 11,1919
calculated from neutral
rates of SF/DM in Zurich and Irving National
Bank's SF/$ in New York, both quoted in the Economist

Dates of Market Suspensions for the German mark

Aug 1, 1913-Aug 16, 1914
Mar 6, 1933-Mar 11, 1933
Sep 11, 1939
Nov 2, 1939
Jan 15, 1941-Jun 25, 1950
May 9, 1952-Apr 9, 1954
Nov 20, 1968-Nov 21, 1968
Aug 16, 1971-Aug 20, 1971
Dec 20, 1971

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Table 21
Dates of Estimated Quotations For the Canadian Dollar

Mar 21, 1913	Oct 3, 1914	Apr 6, 1917
Mar 22, 1913	Oct 10, 1914	Jun 5, 1917
Apr 10, 1914	Oct 17, 1914	May 31, 1919
Aug 1, 1914	Oct 24, 1914	Jul 5, 1919
Aug 3, 1914	Nov 21, 1914	Jul 7, 1919
Aug 22, 1914	Nov 28, 1914	Aug 30, 1919
Aug 29, 1914	Apr 2, 1915	Sep 2, 1919
Sep 12, 1914	Jan 22, 1916	Sep 20, 1919
Sep 19, 1914	Apr 21, 1916	
Sep 26, 1914	Dec 30, 1916	

Dates of Market Suspensions of the Canadian Dollar

Mar 6, 1933-Mar 11,1933

Table 22
Dates of Estimated Quotations For the Japanese Yen

Apr 10, 1914	Jan 5, 1917	Aug 30, 1919
Apr 21, 1915	Mar 31, 1919	Sep 2, 1914
Dec 30, 1916	Jul 5, 1917	Sep 20, 1914
Apr 6, 1917	Jul 12, 1919	

Dates of Market Suspensions for the Japanese Yen

Mar 6, 1933-Mar 11, 1933
Jul 26, 1941-Aug 31, 1945
Aug 16, 1971-Aug 30, 1971
Dec 20, 1971

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Table 23
Dates of Estimated Quotations For the Mexican Pesos

May 31, 1919
Jul 5, 1919
Jul 12, 1919
Aug 30, 1919
Sep 2, 1919
Sep 20, 1919
Aug 13, 1982

Dates of Market Suspensions for the Mexican Peso

May 11, 1920-May 14,1920
Jan 7, 1921
Mar 6, 1933-Mar 11,1933
Mar 13, 1933
Mar 21, 1933
Jul 22, 1948-Oct 11,1948
Aug 16, 1971-Aug 20,1971
Dec 20, 1971-Dec 21,1971
Jun 23, 1972-Jun 28,1972

Table 24
Dates of Estimated Quotations for the Australian Dollar

May31, 1913
Jul 5, 1913

Dates of Market Suspensions for the Australian Dollar

Mar 6, 1933-Mar 11,1933
Aug 16, 1971-Aug 20,1971
Dec 20, 1971-Dec 21,1971
Jun 26, 1972-Jun 28,1972
Feb 13, 1973
Mar 2, 1973

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Table 25
Dates of Estimated Quotations for the New Zealand Dollar

May 31, 1913
Jul 5, 1913

Dates of Market Suspensions for the New Zealand Dollar

Mar 6, 1933-Mar 11, 1933
Aug 16, 1971-Aug 20, 1971
Dec 20, 1971-Dec 27, 1971
Jun 26, 1972-Jun 28, 1972
Feb 13, 1973
Mar 2, 1973
Jul 12, 1984
Oct 31, 1985-Nov 1, 1985

Table 26
Dates of Estimated Quotations for the South African Rand

May 13, 1913
Jul 5, 1913
Apr 26, 1920-Apr 30, 1920
Dec 27, 1932-Dec 31, 1932
Apr 6, 1990

Dates of Market Suspensions for the South African Rand

Dec 20, 1971-Dec 23, 1971
Mar 6, 1933-Mar 11, 1933
Aug 16, 1971-Aug 20, 1971
Jun 26, 1972-Jun 28, 1972
Feb 13, 1973
Mar 2, 1973
Mar 7, 1973-Mar 8, 1973
Jun 21, 1974
Jan 24, 1979-Jan 26, 1979
Aug 28, 1985-Aug 30, 1985
Apr 12, 1993

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Table 27
FOREIGN EXCHANGE QUOTATIONS BY DISCOUNT FROM 1899 THROUGH 1915

Beginning on November 10, 1899 the Commercial and Financial Chronicle began quoting French francs on a new basis. This new quotation form consisted of a quotation plus or minus a fraction. In subsequent years this practice was extended to the German mark and the Dutch guilder and was eventually abandoned at the outbreak of World War I on July 31, 1914. The new method of quotation evolved because of a need for finer increments in quoting currencies than the traditional methods. The traditional quotation methods expressed the currencies in decimal form with increments as eights or sixteenths:

British pound	$4.86 1/8 per pound, increment by 1/8 cents U.S
French franc	5.12 francs per dollar, increment by 5/8 centimes or approximately 1/8 cents U.S.
German mark	$.95 1/16 per four marks, increments by 1/16 cents U.S.
Dutch guilder	$.40 1/16 per guilder, increments by 1/16 cents U.S.

While the increment was either 1/8 or 1/16 cents U.S., this increment represented a much larger or smaller change in the different currencies:

1/8 cents U.S.	is approximately	.025% of a British pound
5/8 centimes	is approximately	.120% of a French franc
1/16 cents U.S.	is approximately	.26% of a German mark
1/16 cents U.S.	is approximately	.15% of a Dutch guilder

So instead of showing finer degrees of incremental change by showing smaller fractions[1], the convention which evolved was to modify the quotation with a fraction (say 1/16) which represented a fraction of 1% of the currency's quoted rate. For example:

5.19 3/8 less 1/16 is read as 5.19375 French francs per U.S. dollar less 1/16 of 1%.

This translates into:

5.19375-(5.19375/100x.0625)= 5.19375 x (1-(.01 x .0625)
= 5.19375x(1-.000625) = 5.19050390625
or 5.1905 French francs/$, rounded

The confusing point is that literally the quotation appears to be 5.19 3/8 less 1/16 = 5.19 5/16 = 5.193125 French francs per dollar, which is wrong. Thus the equations for calculating French francs, Swiss francs, German marks and Dutch guilders between 1900 and 1915 reflect this peculiar method of quotation.

[1] Foreign Exchange, Albert Whitaker, D. Appleton & Co., New York and London, 1933, pp. 72-77

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Table 28
FREQUENT FOREIGN EXCHANGE TERMS

Foreign exchange bills in New York are generally quoted in three terms:

1) bankers drafts on bankers
2) merchants drafts on bankers, and
3) merchants drafts on merchants.

Bankers drafts on bankers are the highest quality and are frequently referred to as simply bankers bills. Rates on bankers bills have been exclusively used in the development of the data base.

Foreign exchange bills can also be classified by time. Listed below are frequently encountered terms of duration from shortest to largest:

1) telegraphic transfers or "cables" (same day)
2) sight or demand (immediately or after a short grace period upon presentation)
3) 3 day, 7 day or 10 day (payable on demand after 3, 7 or 10 days)
4) 30, 60 or 90 days or 4 or 6 months (payable on demand after 30, 60 or 90 days or 4 or 6 months).

Any bills of 10 days or less duration are often referred to as short bills. Any bills longer than 10 days (usually 30 days to 6 months) are often referred to as long bills.

Also encountered are the expressions buying rates and selling rates. Buying rates refer to the banks price for buying bills while the selling rate refers to a banks rate for selling bills.

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