[] Dendrochronology Program Library Run SBA\_A Program COF 17:22 Wed 01 Feb 2017 Page 1

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[] P R O G R A M C O F E C H A Version 6.06P 29984

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 QUALITY CONTROL AND DATING CHECK OF TREE-RING MEASUREMENTS

 File of DATED series: sba\_all.txt

 CONTENTS:

 Part 1: Title page, options selected, summary, absent rings by series

 Part 2: Histogram of time spans

 Part 3: Master series with sample depth and absent rings by year

 Part 4: Bar plot of Master Dating Series

 Part 5: Correlation by segment of each series with Master

 Part 6: Potential problems: low correlation, divergent year-to-year changes, absent rings, outliers

 Part 7: Descriptive statistics

 RUN CONTROL OPTIONS SELECTED VALUE

 1 Cubic smoothing spline 50% wavelength cutoff for filtering

 32 years

 2 Segments examined are 50 years lagged successively by 25 years

 3 Autoregressive model applied A Residuals are used in master dating series and testing

 4 Series transformed to logarithms Y Each series log-transformed for master dating series and testing

 5 CORRELATION is Pearson (parametric, quantitative)

 Critical correlation, 99% confidence level .3281

 6 Master dating series saved N

 7 Ring measurements listed N

 8 Parts printed 1234567

 9 Absent rings are omitted from master series and segment correlations (Y)

 Time span of Master dating series is 1641 to 2015 375 years

 Continuous time span is 1641 to 2015 375 years

 Portion with two or more series is 1661 to 2015 355 years

 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 \*C\* Number of dated series 85 \*C\*

 \*O\* Master series 1641 2015 375 yrs \*O\*

 \*F\* Total rings in all series 14576 \*F\*

 \*E\* Total dated rings checked 14556 \*E\*

 \*C\* Series intercorrelation .632 \*C\*

 \*H\* Average mean sensitivity .226 \*H\*

 \*A\* Segments, possible problems 13 \*A\*

 \*\*\* Mean length of series 171.5 \*\*\*

 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 ABSENT RINGS listed by SERIES: (See Master Dating Series for absent rings listed by year)

 No ring measurements of zero value

PART 2: TIME PLOT OF TREE-RING SERIES: 17:22 Wed 01 Feb 2017 Page 2

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 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050 Ident Seq Time-span Yrs

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 . . . . . . . . . . . . . . . . <==============> . . BAB021 1 1835 1980 146

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 . . . . . . . . . . . . . . . . <=============> . . BAB042 6 1843 1980 138

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PART 2: TIME PLOT OF TREE-RING SERIES: 17:22 Wed 01 Feb 2017 Page 3

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 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050 Ident Seq Time-span Yrs

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 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050

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 1650 -.425 1 1700 -.300 5 1750 .584 17 1800 -1.436 35 1850 .221 50

 1651 .454 1 1701 1.105 5 1751 -.078 18 1801 -1.061 35 1851 -.552 50

 1652 -.509 1 1702 -.171 5 1752 -.464 18 1802 .824 35 1852 .646 50

 1653 3.056 1 1703 -.032 5 1753 -1.556 18 1803 -.263 36 1853 .211 53

 1654 1.436 1 1704 -1.125 5 1754 -.942 19 1804 .157 36 1854 .479 53

 1655 -1.991 1 1705 -1.041 5 1755 -.426 19 1805 .262 37 1855 .604 53

 1656 -1.843 1 1706 1.073 5 1756 1.235 19 1806 -.308 36 1856 -.206 54

 1657 -.490 1 1707 1.034 6 1757 -1.011 19 1807 .825 36 1857 -1.227 54

 1658 -1.995 1 1708 -.734 6 1758 -.288 20 1808 -.147 36 1858 .002 54

 1659 -.716 1 1709 .294 6 1759 2.046 20 1809 -1.415 36 1859 .589 54

 1660 .481 1 1710 -.002 6 1760 .813 20 1810 .824 36 1860 -.932 55

 1661 -.206 2 1711 .325 6 1761 .245 20 1811 1.061 36 1861 -1.402 55

 1662 -.250 2 1712 -2.458 6 1762 -.846 21 1812 -.079 36 1862 -.867 56

 1663 1.048 2 1713 -1.548 6 1763 -.067 22 1813 -.126 36 1863 -.487 56

 1664 .268 2 1714 .083 6 1764 .597 23 1814 .744 36 1864 -.507 58

 1665 .504 2 1715 .665 8 1765 .534 24 1815 .600 36 1865 .324 59

 1666 -.306 2 1716 .855 8 1766 .990 25 1816 -2.453 36 1866 1.042 60

 1667 1.606 2 1717 1.295 8 1767 -1.069 26 1817 -.294 36 1867 .096 60

 1668 1.297 2 1718 .751 8 1768 .915 26 1818 .291 37 1868 .070 60

 1669 .027 2 1719 1.068 8 1769 1.018 26 1819 .095 37 1869 1.388 60

 1670 -3.974 2 1720 .780 9 1770 -.088 27 1820 -.845 37 1870 -.318 60

 1671 -.998 2 1721 -1.421 10 1771 -.212 28 1821 -.099 37 1871 -.627 60

 1672 -.331 2 1722 -.983 10 1772 -1.514 28 1822 .192 38 1872 .511 60

 1673 1.114 2 1723 -.381 10 1773 -2.287 28 1823 -.492 38 1873 -.406 60

 1674 1.152 2 1724 -1.650 10 1774 -1.938 28 1824 .353 38 1874 -1.679 61

 1675 .652 2 1725 .606 10 1775 .130 29 1825 .259 39 1875 1.059 63

 1676 -1.567 2 1726 .243 10 1776 .418 29 1826 -.209 39 1876 .526 63

 1677 .784 2 1727 .285 10 1777 -.600 29 1827 1.894 39 1877 -.245 64

 1678 -.376 2 1728 -.591 10 1778 .469 29 1828 .323 39 1878 -.316 65

 1679 -1.704 2 1729 1.001 10 1779 .875 29 1829 -1.105 40 1879 -1.603 65

 1680 .203 2 1730 1.190 10 1780 .541 30 1830 .260 40 1880 .526 65

 1681 -.561 2 1731 .010 10 1781 1.111 30 1831 .751 40 1881 -1.352 65

 1682 1.711 2 1732 .362 11 1782 1.073 30 1832 -.286 40 1882 .780 67

 1683 1.006 2 1733 1.085 11 1783 .466 30 1833 -.425 40 1883 .684 67

 1684 -.360 2 1734 .193 13 1784 .112 30 1834 -1.955 40 1884 .836 67

 1685 -.341 2 1735 -1.164 13 1785 .287 30 1835 -.041 42 1885 .766 69

 1686 -.070 2 1736 -2.670 13 1786 .135 31 1836 .474 42 1886 .857 69

 1687 -.558 2 1737 -.309 13 1787 .676 32 1837 1.623 42 1887 -.075 69

 1688 1.101 2 1738 .383 13 1788 .505 32 1838 -.150 42 1888 -.300 69

 1689 -.458 3 1739 .753 13 1789 -1.131 32 1839 .290 43 1889 1.224 69

 1690 1.546 3 1740 1.636 13 1790 -1.455 32 1840 -.252 43 1890 -.570 69

 1641 .471 1 1691 -.604 3 1741 .788 14 1791 .599 32 1841 -1.242 44 1891 .193 70

 1642 1.787 1 1692 .413 3 1742 .627 16 1792 -.156 32 1842 1.320 44 1892 .817 71

 1643 -.371 1 1693 -1.480 3 1743 -.072 16 1793 .176 32 1843 -.525 45 1893 .026 72

 1644 .906 1 1694 1.561 4 1744 .607 16 1794 .075 32 1844 .721 46 1894 -1.387 72

 1645 -.763 1 1695 1.459 5 1745 .869 16 1795 -.656 32 1845 -.854 47 1895 -.542 74

 1646 -3.183 1 1696 .083 5 1746 -1.488 16 1796 .847 32 1846 -1.239 49 1896 .057 75

 1647 .340 1 1697 -.680 5 1747 .523 17 1797 1.215 33 1847 .162 49 1897 1.119 76

 1648 1.557 1 1698 -2.030 5 1748 -.360 17 1798 .136 34 1848 .520 50 1898 1.287 77

 1649 .767 1 1699 -.091 5 1749 -1.440 17 1799 -1.155 35 1849 1.900 50 1899 -.537 77

PART 3: Master Dating Series: 17:22 Wed 01 Feb 2017 Page 5

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 Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab Year Value No Ab

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 1900 -.681 77 1950 .854 82 2000 -.248 28

 1901 -2.010 77 1951 2.126 82 2001 .501 28

 1902 -1.587 77 1952 -.157 82 2002 1.262 28

 1903 -.675 77 1953 -.481 82 2003 -.347 28

 1904 .789 78 1954 -2.552 82 2004 .930 28

 1905 -.193 78 1955 -.189 82 2005 -.527 28

 1906 .512 79 1956 -.344 82 2006 -.574 28

 1907 1.229 79 1957 .515 82 2007 -1.920 28

 1908 .767 79 1958 .930 82 2008 1.046 28

 1909 .723 80 1959 -1.169 82 2009 .436 28

 1910 -.358 80 1960 .343 82 2010 1.051 28

 1911 -1.098 80 1961 .426 82 2011 .329 28

 1912 1.905 80 1962 .647 82 2012 -1.661 27

 1913 -.782 80 1963 .379 82 2013 .861 26

 1914 -1.633 80 1964 .096 82 2014 -.636 26

 1915 1.257 80 1965 -1.255 82 2015 -.043 25

 1916 .726 80 1966 -1.683 82

 1917 -.338 81 1967 -.016 82

 1918 -1.291 81 1968 -.569 82

 1919 .193 81 1969 .013 82

 1920 -.350 81 1970 .948 82

 1921 -.501 81 1971 .104 81

 1922 -.485 81 1972 -1.731 81

 1923 -.045 81 1973 1.608 81

 1924 2.077 81 1974 1.507 81

 1925 -.095 81 1975 .754 81

 1926 .040 81 1976 .422 81

 1927 1.035 81 1977 -.927 81

 1928 1.643 81 1978 .389 80

 1929 .356 81 1979 -.767 79

 1930 -.409 81 1980 -1.260 78

 1931 -.712 81 1981 1.267 28

 1932 -.160 81 1982 1.251 28

 1933 -.988 81 1983 -.160 28

 1934 -2.430 81 1984 -1.487 28

 1935 1.128 81 1985 .905 28

 1936 -1.738 81 1986 .296 28

 1937 .299 81 1987 .351 28

 1938 1.271 80 1988 -2.540 28

 1939 .348 80 1989 .312 28

 1940 -.427 79 1990 .552 28

 1941 -.963 80 1991 .342 28

 1942 .490 80 1992 .185 28

 1943 -.619 80 1993 .983 28

 1944 -.979 80 1994 -1.258 28

 1945 .138 80 1995 -.527 28

 1946 -.213 80 1996 -.494 28

 1947 .428 81 1997 -.773 28

 1948 1.104 81 1998 1.001 28

 1949 1.135 82 1999 1.318 28

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PART 4: Master Bar Plot: 17:22 Wed 01 Feb 2017 Page 6

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 Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value

 1650---b 1700---a 1750-------B 1800-f 1850------A 1900--c 1950--------C

 1651-------B 1701---------D 1751----@ 1801-d 1851--b 1901h 1951----------I

 1652--b 1702----a 1752---b 1802--------C 1852-------C 1902f 1952----a

 1653----------L 1703----@ 1753f 1803----a 1853------A 1903--c 1953---b

 1654----------F 1704-e 1754-d 1804-----A 1854-------B 1904--------C 1954j

 1655h 1705-d 1755---b 1805------A 1855-------B 1905----a 1955----a

 1656g 1706---------D 1756---------E 1806---a 1856----a 1906-------B 1956---a

 1657---b 1707---------D 1757-d 1807--------C 1857-e 1907---------E 1957-------B

 1658h 1708--c 1758---a 1808----a 1858-----@ 1908--------C 1958---------D

 1659--c 1709------A 1759----------H 1809-f 1859-------B 1909--------C 1959-e

 1660-------B 1710-----@ 1760--------C 1810--------C 1860-d 1910---a 1960------A

 1661----a 1711------A 1761------A 1811---------D 1861-f 1911-d 1961-------B

 1662----a 1712j 1762--c 1812----@ 1862--c 1912----------H 1962-------C

 1663---------D 1713f 1763----@ 1813----a 1863---b 1913--c 1963------B

 1664------A 1714-----@ 1764-------B 1814--------C 1864--b 1914g 1964-----@

 1665-------B 1715--------C 1765-------B 1815-------B 1865------A 1915---------E 1965-e

 1666---a 1716--------C 1766---------D 1816j 1866---------D 1916--------C 1966g

 1667----------F 1717---------E 1767-d 1817---a 1867-----@ 1917---a 1967-----@

 1668---------E 1718--------C 1768--------D 1818------A 1868-----@ 1918-e 1968--b

 1669-----@ 1719---------D 1769---------D 1819-----@ 1869----------F 1919-----A 1969-----@

 1670p 1720--------C 1770----@ 1820--c 1870---a 1920---a 1970---------D

 1671-d 1721-f 1771----a 1821----@ 1871--c 1921--b 1971-----@

 1672---a 1722-d 1772f 1822-----A 1872-------B 1922---b 1972g

 1673---------D 1723---b 1773i 1823---b 1873---b 1923----@ 1973----------F

 1674---------E 1724g 1774h 1824------A 1874g 1924----------H 1974----------F

 1675-------C 1725-------B 1775-----A 1825------A 1875---------D 1925----@ 1975--------C

 1676f 1726------A 1776------B 1826----a 1876-------B 1926-----@ 1976------B

 1677--------C 1727------A 1777--b 1827----------H 1877----a 1927---------D 1977-d

 1678---b 1728--b 1778-------B 1828------A 1878---a 1928----------G 1978------B

 1679g 1729---------D 1779--------C 1829-d 1879f 1929------A 1979--c

 1680-----A 1730---------E 1780-------B 1830------A 1880-------B 1930---b 1980-e

 1681--b 1731-----@ 1781---------D 1831--------C 1881-e 1931--c 1981---------E

 1682----------G 1732------A 1782---------D 1832---a 1882--------C 1932----a 1982---------E

 1683---------D 1733---------D 1783-------B 1833---b 1883--------C 1933-d 1983----a

 1684---a 1734-----A 1784-----@ 1834h 1884--------C 1934j 1984f

 1685---a 1735-e 1785------A 1835----@ 1885--------C 1935---------E 1985--------D

 1686----@ 1736k 1786-----A 1836-------B 1886--------C 1936g 1986------A

 1687--b 1737---a 1787--------C 1837----------F 1887----@ 1937------A 1987------A

 1688---------D 1738------B 1788-------B 1838----a 1888---a 1938---------E 1988j

 1689---b 1739--------C 1789-e 1839------A 1889---------E 1939------A 1989------A

 1690----------F 1740----------G 1790f 1840----a 1890--b 1940---b 1990-------B

 1641-------B 1691--b 1741--------C 1791-------B 1841-e 1891-----A 1941-d 1991------A

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 1643---a 1693f 1743----@ 1793-----A 1843--b 1893-----@ 1943--b 1993---------D

 1644--------D 1694----------F 1744-------B 1794-----@ 1844--------C 1894-f 1944-d 1994-e

 1645--c 1695----------F 1745--------C 1795--c 1845--c 1895--b 1945-----A 1995--b

 1646m 1696-----@ 1746f 1796--------C 1846-e 1896-----@ 1946----a 1996---b

 1647------A 1697--c 1747-------B 1797---------E 1847-----A 1897---------D 1947-------B 1997--c

 1648----------F 1698h 1748---a 1798-----A 1848-------B 1898---------E 1948---------D 1998---------D

 1649--------C 1699----@ 1749-f 1799-e 1849----------H 1899--b 1949---------E 1999----------E

PART 4: Master Bar Plot: 17:22 Wed 01 Feb 2017 Page 7

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 Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value Year Rel value

 2000----a

 2001-------B

 2002---------E

 2003---a

 2004---------D

 2005--b

 2006--b

 2007h

 2008---------D

 2009-------B

 2010---------D

 2011------A

 2012g

 2013--------C

 2014--c

 2015----@

PART 5: CORRELATION OF SERIES BY SEGMENTS: 17:22 Wed 01 Feb 2017 Page 5

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 Correlations of 50-year dated segments, lagged 25 years

 Flags: A = correlation under .3281 but highest as dated; B = correlation higher at other than dated position

 Seq Series Time\_span 1650 1675 1700 1725 1750 1775 1800 1825 1850 1875 1900 1925 1950 1975

 1699 1724 1749 1774 1799 1824 1849 1874 1899 1924 1949 1974 1999 2024

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 1 BAB021 1835 1980 .41 .56 .74 .75 .77 .80

 2 BAB022 1846 1980 .64 .63 .72 .75 .84 .84

 3 BAB031 1732 1970 .64 .53 .54 .59 .56 .58 .65 .59 .57

 4 BAB032 1751 1939 .53 .33B .42 .52 .50 .52 .50

 5 BAB041 1864 1980 .39 .43 .40 .53 .56

 6 BAB042 1843 1980 .26A .40 .54 .71 .71 .69

 7 BAB051 1841 1980 .57 .63 .79 .82 .76 .69

 8 BAB052 1846 1980 .62 .64 .82 .77 .79 .77

 9 BAB061 1695 1980 .64 .63 .63 .68 .55 .52 .48 .51 .66 .65 .70 .72

 10 BAB062 1694 1980 .65 .61 .54 .58 .50 .47 .35 .37 .56 .61 .64 .62

 11 BAB071 1707 1977 .65 .71 .74 .53 .55 .54 .61 .77 .76 .76 .76

 12 BAB072 1689 1978 .61 .66 .76 .73 .55 .55 .61 .65 .71 .78 .78 .76

 13 BAB081 1882 1980 .60 .81 .79 .79

 14 BAB082 1862 1980 .66 .78 .78 .79 .78

 15 BAB091 1856 1980 .56 .70 .77 .74 .74

 16 BAB092 1822 1979 .44 .48 .63 .81 .84 .67 .65

 17 BAB101 1641 1980 .43 .45 .46 .51 .42 .25A .28A .39 .58 .53 .51 .50 .47

 18 BAB102 1754 1980 .38 .17B .40 .63 .73 .59 .56 .65 .62

 19 BAB111 1825 1980 .38 .60 .75 .79 .77 .78

 20 BAB112 1853 1980 .69 .72 .71 .72 .70

 21 BAB121 1734 1980 .63 .63 .61 .57 .47 .28A .49 .49 .47 .47

 22 BAB122 1762 1980 .52 .60 .66 .50 .53 .76 .66 .60 .60

 23 BAB131 1835 1980 .72 .77 .70 .61 .65 .66

 24 BAB132 1798 1980 .78 .77 .65 .46 .59 .71 .72 .72

 25 BAB141 1741 1937 .48 .52 .52 .62 .61 .47 .63 .73

 26 BAB141 1941 1980 .37

 27 BAB142 1763 1980 .62 .58 .65 .63 .29B .46 .82 .72 .68

 28 BAB151 1818 1980 .46 .54 .49 .64 .81 .55 .52

 29 BAB161 1734 1980 .67 .74 .63 .67 .59 .44 .56 .71 .69 .67

 30 BAB162 1766 1980 .58 .54 .58 .44 .46 .71 .74 .77 .78

 31 BAB171 1797 1980 .65 .65 .66 .67 .75 .72 .56 .54

 32 BAB172 1860 1980 .62 .71 .84 .73 .76

 33 BAB181 1866 1980 .80 .79 .84 .70 .69

 34 BAB182 1839 1980 .74 .71 .75 .79 .79 .80

 35 BAB191 1764 1980 .62 .73 .79 .70 .72 .81 .79 .72 .74

 36 BAB192 1799 1980 .73 .76 .64 .76 .83 .82 .75 .77

 37 BAB201 1787 1980 .34 .47 .71 .70 .62 .61 .64 .62

 38 BAB202 1874 1980 .71 .70 .68 .85 .85

 39 BAB211 1720 1980 .63 .71 .67 .56 .75 .83 .77 .79 .76 .79 .77

 40 BAB212 1771 1980 .67 .69 .69 .67 .70 .81 .84 .84 .82

 41 BAB221 1758 1980 .51 .45 .67 .77 .75 .84 .83 .81 .79

 42 BAB222 1805 1980 .62 .75 .76 .87 .82 .78 .74

 43 BAB231 1742 1805 .68 .62 .58

 44 BAB231 1829 1980 .56 .60 .75 .52 .54 .54

 45 BAB232 1786 1980 .41 .53 .47 .47 .71 .76 .78 .68

 46 BAB241 1715 1980 .74 .79 .77 .64 .68 .69 .69 .76 .77 .73 .69

 47 BAB242 1767 1980 .69 .63 .66 .67 .68 .81 .85 .82 .74

 48 BAB261 1661 1980 .46 .47 .46 .55 .64 .60 .59 .55 .51 .58 .66 .74 .73

 49 BAB262 1747 1980 .57 .62 .74 .73 .65 .71 .68 .72 .78 .71

 50 BAB281 1715 1980 .69 .60 .49 .54 .55 .52 .57 .60 .57 .62 .63

 51 BAB282 1721 1980 .74 .74 .56 .50 .61 .58 .65 .68 .77 .77 .78

 52 BAB291 1780 1980 .32A .51 .63 .64 .68 .62 .61 .66

 53 BAB292 1775 1980 .40 .56 .76 .65 .69 .79 .69 .70

 54 BAB301 1770 1980 .60 .59 .67 .70 .78 .88 .83 .60 .61

 55 BAB302 1803 1980 .71 .77 .73 .78 .85 .78 .76

 56 BAB311 1765 1980 .57 .51 .62 .56 .55 .77 .80 .72 .69

 57 BAB312 1742 1980 .61 .56 .66 .74 .53 .44 .71 .79 .69 .65

 58 SBA01B 1895 2015 .69 .71 .79 .59 .52

 59 SBA02A 1875 2015 .45 .67 .81 .73 .75

 60 SBA02B 1904 2015 .70 .73 .68 .68

 61 SBA03A 1844 2015 .37 .30A .46 .73 .81 .83 .79

 62 SBA03B 1845 2015 .22B .20B .45 .68 .67 .62 .57

 63 SBA04A 1896 2015 .54 .58 .40 .52 .62

 64 SBA04B 1898 2015 .57 .61 .67 .73 .71

 65 SBA05A 1875 2011 .39 .59 .57 .61 .49

 66 SBA05B 1906 2015 .68 .66 .61 .45

 67 SBA06A 1864 2015 .54 .55 .69 .74 .75 .68

 68 SBA06B 1897 2015 .46 .43 .27B .52 .72

 69 SBA07A 1885 2014 .57 .73 .77 .64 .65

 70 SBA07B 1909 2015 .71 .74 .54 .46

 71 SBA08A 1877 2015 .32A .53 .67 .64 .55

 72 SBA08B 1892 2015 .70 .66 .76 .77 .65

 73 SBA09A 1865 2015 .70 .76 .77 .76 .77 .63

 74 SBA10A 1878 2015 .61 .73 .76 .75 .71

 75 SBA10B 1895 2015 .42 .47 .53 .64 .70

 76 SBA11A 1891 2015 .75 .81 .74 .77 .71

 77 SBA11B 1893 2015 .83 .87 .85 .76 .71

 78 SBA12A 1853 2015 .45 .62 .76 .68 .66 .69

 79 SBA12B 1853 2015 .47 .61 .78 .75 .72 .64

 80 SBA13A 1848 2015 .37 .35 .53 .69 .74 .75 .73

 81 SBA13B 1885 2015 .69 .77 .76 .70 .65

 82 SBA14A 1882 2015 .51 .79 .82 .83 .76

 83 SBA14B 1917 2012 .40 .52 .70 .64

 84 SBA15A 1949 2015 .73 .75 .75

 85 SBA15B 1947 2015 .69 .70 .72

 Av segment correlation .44 .56 .63 .64 .60 .54 .60 .57 .58 .66 .71 .70 .69 .65

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 For each series with potential problems the following diagnostics may appear:

 [A] Correlations with master dating series of flagged 50-year segments of series filtered with 32-year spline,

 at every point from ten years earlier (-10) to ten years later (+10) than dated

 [B] Effect of those data values which most lower or raise correlation with master series

 Symbol following year indicates value in series is greater (>) or lesser (<) than master series value

 [C] Year-to-year changes very different from the mean change in other series

 [D] Absent rings (zero values)

 [E] Values which are statistical outliers from mean for the year

====================================================================================================================================

 BAB021 1835 to 1980 146 years Series 1

 [B] Entire series, effect on correlation ( .646) is:

 Lower 1837< -.017 1854< -.010 1863> -.010 1845> -.010 1857> -.009 1862> -.008 Higher 1954 .023 1936 .012

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1863 +3.1 SD

====================================================================================================================================

 BAB022 1846 to 1980 135 years Series 2

 [B] Entire series, effect on correlation ( .735) is:

 Lower 1899< -.013 1854< -.012 1902> -.011 1863> -.010 1913> -.008 1935< -.007 Higher 1954 .014 1972 .008

====================================================================================================================================

 BAB031 1732 to 1970 239 years Series 3

 [B] Entire series, effect on correlation ( .591) is:

 Lower 1902> -.010 1916< -.009 1760< -.008 1772> -.008 1783< -.007 1790> -.006 Higher 1736 .013 1901 .009

====================================================================================================================================

 BAB032 1751 to 1939 189 years Series 4

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1775 1824 -10 .35\*-.05 -.22 -.07 .05 .07 .01 .17 .19 -.11 .33| .26 -.24 .00 -.01 -.13 -.16 .25 -.20 -.17 .07

 [B] Entire series, effect on correlation ( .473) is:

 Lower 1805< -.016 1902> -.014 1893< -.012 1818< -.012 1852< -.011 1772> -.010 Higher 1816 .014 1774 .011

 1775 to 1824 segment:

 Lower 1805< -.052 1818< -.040 1790> -.033 1789> -.032 1819< -.024 1801> -.020 Higher 1816 .095 1809 .038

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1902 +3.2 SD

====================================================================================================================================

 BAB041 1864 to 1980 117 years Series 5

 [B] Entire series, effect on correlation ( .461) is:

 Lower 1910< -.040 1913> -.017 1948< -.017 1954> -.015 1886< -.014 1864> -.012 Higher 1936 .022 1934 .017

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1864 +3.1 SD

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 BAB042 1843 to 1980 138 years Series 6

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1843 1892 0 .22 -.21 .03 .14 -.05 -.01 -.16 .09 -.28 -.12 .26\*-.12 -.03 .07 .22 -.17 .21 .07 -.15 .13 .06

 [B] Entire series, effect on correlation ( .523) is:

 Lower 1851< -.017 1849< -.015 1845> -.014 1879> -.013 1957< -.012 1864> -.011 Higher 1934 .033 1901 .012

 1843 to 1892 segment:

 Lower 1845> -.038 1849< -.036 1879> -.032 1864> -.026 1862> -.025 1884< -.024 Higher 1881 .045 1869 .035

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1845 +3.0 SD; 1864 +3.3 SD

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 BAB051 1841 to 1980 140 years Series 7

 [B] Entire series, effect on correlation ( .686) is:

 Lower 1980> -.012 1979> -.012 1866< -.009 1842< -.008 1863> -.008 1862> -.008 Higher 1954 .023 1934 .014

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 BAB052 1846 to 1980 135 years Series 8

 [B] Entire series, effect on correlation ( .731) is:

 Lower 1858< -.025 1863> -.011 1934> -.011 1883< -.009 1866< -.008 1933> -.008 Higher 1954 .024 1879 .007

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1863 +3.0 SD

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 BAB061 1695 to 1980 286 years Series 9

 [B] Entire series, effect on correlation ( .621) is:

 Lower 1902> -.008 1972> -.008 1829> -.007 1971< -.006 1750< -.005 1925< -.004 Higher 1954 .017 1816 .006

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 BAB062 1694 to 1980 287 years Series 10

 [B] Entire series, effect on correlation ( .549) is:

 Lower 1883< -.009 1864> -.008 1902> -.007 1854< -.005 1800> -.005 1878< -.005 Higher 1954 .018 1712 .011

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1864 +3.9 SD; 1954 -4.6 SD

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 BAB071 1707 to 1977 271 years Series 11

 [B] Entire series, effect on correlation ( .675) is:

 Lower 1821< -.008 1866< -.008 1816> -.008 1740< -.008 1945< -.005 1841> -.005 Higher 1954 .012 1934 .010

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 BAB072 1689 to 1978 290 years Series 12

 [B] Entire series, effect on correlation ( .668) is:

 Lower 1821< -.012 1830< -.010 1816> -.009 1974< -.009 1903< -.008 1732< -.008 Higher 1736 .010 1934 .008

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 BAB081 1882 to 1980 99 years Series 13

 [B] Entire series, effect on correlation ( .691) is:

 Lower 1883< -.099 1969< -.008 1903< -.008 1895> -.008 1945< -.005 1942< -.005 Higher 1936 .019 1912 .010

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 BAB082 1862 to 1980 119 years Series 14

 [B] Entire series, effect on correlation ( .715) is:

 Lower 1873> -.011 1862> -.011 1969< -.009 1899> -.008 1874> -.008 1977> -.007 Higher 1934 .013 1912 .009

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 BAB091 1856 to 1980 125 years Series 15

 [B] Entire series, effect on correlation ( .676) is:

 Lower 1862> -.012 1963< -.009 1961< -.009 1955< -.008 1954> -.007 1911> -.007 Higher 1934 .015 1951 .012

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 BAB092 1822 to 1979 158 years Series 16

 [B] Entire series, effect on correlation ( .653) is:

 Lower 1961< -.015 1963< -.011 1832< -.010 1834> -.010 1857> -.009 1852< -.009 Higher 1936 .015 1912 .010

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 BAB101 1641 to 1980 340 years Series 17

 [\*] Early part of series cannot be checked from 1641 to 1660 -- not matched by another series

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

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 1775 1824 0 -.18 -.07 -.04 .10 .10 .14 .15 .05 -.15 -.02 .25\*-.01 -.45 .05 -.08 .03 .01 -.03 .19 .13 .12

 1800 1849 0 .06 -.13 -.05 .18 -.02 .26 .02 .03 -.31 -.02 .28\*-.23 -.12 -.11 .04 .02 -.06 -.02 .01 .01 -.12

 [B] Entire series, effect on correlation ( .435) is:

 Lower 1666> -.027 1950< -.010 1848< -.008 1705> -.007 1980> -.006 1816> -.006 Higher 1670 .025 1712 .010

 1775 to 1824 segment:

 Lower 1816> -.044 1779< -.040 1799> -.037 1811< -.034 1791< -.020 1777> -.017 Higher 1790 .030 1789 .029

 1800 to 1849 segment:

 Lower 1848< -.049 1816> -.044 1829> -.034 1834> -.026 1839< -.023 1811< -.023 Higher 1837 .044 1841 .039

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 1665 1666 4.2 SD

 [E] Outliers 4 3.0 SD above or -4.5 SD below mean for year

 1666 +5.0 SD; 1705 +3.2 SD; 1861 +3.1 SD; 1980 +3.2 SD

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 BAB102 1754 to 1980 227 years Series 18

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1775 1824 -1 .16 -.02 .13 .07 .01 -.04 -.21 .05 -.11 .32\* .17| .09 -.14 .16 -.10 -.04 -.05 -.06 -.04 .02 -.06

 [B] Entire series, effect on correlation ( .523) is:

 Lower 1802< -.014 1816> -.012 1968< -.011 1911> -.011 1799> -.009 1975< -.009 Higher 1954 .022 1936 .012

 1775 to 1824 segment:

 Lower 1802< -.062 1799> -.036 1817< -.027 1820> -.021 1812> -.018 1798< -.010 Higher 1800 .079 1814 .021

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1911 +3.2 SD

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 BAB111 1825 to 1980 156 years Series 19

 [B] Entire series, effect on correlation ( .637) is:

 Lower 1963< -.017 1827< -.016 1873< -.013 1834> -.011 1825< -.007 1917> -.007 Higher 1934 .019 1936 .015

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 BAB112 1853 to 1980 128 years Series 20

 [B] Entire series, effect on correlation ( .685) is:

 Lower 1963< -.027 1865< -.009 1970< -.009 1921> -.007 1977> -.007 1945< -.006 Higher 1972 .010 1934 .009

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 BAB121 1734 to 1980 247 years Series 21

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1850 1899 0 -.08 -.09 -.26 .08 .07 .06 .19 .19 .12 .05 .28\* .03 .06 -.12 -.07 .04 -.16 -.08 -.15 -.22 -.01

 [B] Entire series, effect on correlation ( .525) is:

 Lower 1949< -.018 1736> -.009 1954> -.009 1811< -.007 1870> -.007 1832> -.006 Higher 1816 .027 1773 .012

 1850 to 1899 segment:

 Lower 1870> -.040 1897< -.032 1889< -.030 1851> -.025 1859< -.024 1873> -.023 Higher 1860 .046 1898 .040

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1816 -5.2 SD

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 BAB122 1762 to 1980 219 years Series 22

 [B] Entire series, effect on correlation ( .614) is:

 Lower 1855< -.012 1791< -.010 1942< -.010 1774> -.008 1806> -.007 1860> -.007 Higher 1816 .025 1773 .005

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1806 +3.1 SD

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 BAB131 1835 to 1980 146 years Series 23

 [B] Entire series, effect on correlation ( .665) is:

 Lower 1918> -.014 1968< -.013 1914> -.011 1959> -.009 1917> -.007 1965> -.007 Higher 1954 .028 1901 .012

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1918 +3.2 SD

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 BAB132 1798 to 1980 183 years Series 24

 [B] Entire series, effect on correlation ( .658) is:

 Lower 1878< -.029 1959> -.012 1891< -.009 1881> -.007 1890> -.006 1860> -.006 Higher 1816 .026 1954 .013

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 BAB141 1741 to 1937 197 years Series 25

 [B] Entire series, effect on correlation ( .564) is:

 Lower 1751< -.024 1814< -.013 1774> -.011 1872< -.010 1753> -.010 1841> -.009 Higher 1816 .019 1773 .015

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 BAB141 1941 to 1980 40 years Series 26

 [B] Entire series, effect on correlation ( .368) is:

 Lower 1948< -.068 1951< -.057 1941> -.040 1960< -.015 1947< -.012 1956> -.012 Higher 1954 .165 1974 .030

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1941 +3.4 SD; 1957 +3.1 SD

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 BAB142 1763 to 1980 218 years Series 27

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1850 1899 -2 .09 .18 -.30 -.02 -.09 -.05 .19 -.16 .33\*-.05 .29| .00 -.09 -.07 -.04 .05 -.15 .18 -.17 -.18 -.01

 [B] Entire series, effect on correlation ( .594) is:

 Lower 1883< -.053 1879> -.019 1774> -.012 1980> -.009 1961< -.007 1954> -.005 Higher 1773 .012 1936 .012

 1850 to 1899 segment:

 Lower 1883< -.198 1879> -.080 1869< -.016 1855< -.014 1851> -.013 1876< -.011 Higher 1881 .041 1897 .030

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1879 +3.8 SD

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 BAB151 1818 to 1980 163 years Series 28

 [B] Entire series, effect on correlation ( .547) is:

 Lower 1974< -.024 1883< -.014 1846> -.013 1818< -.011 1842< -.009 1966> -.009 Higher 1936 .023 1934 .021

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1846 +3.2 SD

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 BAB161 1734 to 1980 247 years Series 29

 [B] Entire series, effect on correlation ( .629) is:

 Lower 1863< -.023 1882< -.010 1778< -.008 1883< -.007 1881> -.007 1755< -.005 Higher 1816 .011 1773 .008

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1839 +3.2 SD; 1863 -4.6 SD

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 BAB162 1766 to 1980 215 years Series 30

 [B] Entire series, effect on correlation ( .625) is:

 Lower 1863< -.048 1782< -.009 1910> -.006 1807< -.006 1805< -.006 1778< -.006 Higher 1954 .012 1934 .011

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1863 -6.1 SD

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 BAB171 1797 to 1980 184 years Series 31

 [B] Entire series, effect on correlation ( .640) is:

 Lower 1944< -.013 1954> -.010 1965> -.009 1815< -.007 1960< -.007 1871> -.007 Higher 1934 .017 1816 .013

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 BAB172 1860 to 1980 121 years Series 32

 [B] Entire series, effect on correlation ( .699) is:

 Lower 1860> -.019 1895< -.013 1958< -.011 1894> -.010 1957< -.007 1922> -.007 Higher 1934 .019 1901 .012

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1882 +3.2 SD

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 BAB181 1866 to 1980 115 years Series 33

 [B] Entire series, effect on correlation ( .735) is:

 Lower 1968< -.018 1958< -.015 1966> -.009 1882< -.008 1957< -.007 1910> -.007 Higher 1934 .018 1879 .008

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 BAB182 1839 to 1980 142 years Series 34

 [B] Entire series, effect on correlation ( .762) is:

 Lower 1902< -.017 1950< -.010 1882< -.009 1899> -.009 1956> -.008 1873> -.008 Higher 1879 .006 1951 .006

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 BAB191 1764 to 1980 217 years Series 35

 [B] Entire series, effect on correlation ( .725) is:

 Lower 1774> -.014 1855< -.007 1788< -.007 1860> -.006 1821< -.005 1786< -.005 Higher 1816 .014 1834 .007

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 BAB192 1799 to 1980 182 years Series 36

 [B] Entire series, effect on correlation ( .750) is:

 Lower 1799> -.009 1855< -.008 1956> -.006 1838> -.006 1954> -.005 1847< -.005 Higher 1816 .012 1834 .008

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 BAB201 1787 to 1980 194 years Series 37

 [B] Entire series, effect on correlation ( .563) is:

 Lower 1816> -.010 1904< -.010 1971< -.010 1790> -.008 1801> -.008 1851> -.008 Higher 1827 .010 1934 .010

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 BAB202 1874 to 1980 107 years Series 38

 [B] Entire series, effect on correlation ( .766) is:

 Lower 1923< -.070 1922> -.008 1931> -.005 1940< -.005 1911> -.005 1943> -.005 Higher 1954 .018 1934 .012

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 BAB211 1720 to 1980 261 years Series 39

 [B] Entire series, effect on correlation ( .730) is:

 Lower 1792< -.011 1729< -.010 1724> -.008 1942< -.008 1817< -.007 1742< -.006 Higher 1954 .011 1934 .008

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 BAB212 1771 to 1980 210 years Series 40

 [B] Entire series, effect on correlation ( .741) is:

 Lower 1838< -.007 1773> -.007 1954> -.005 1874> -.005 1855< -.005 1977> -.004 Higher 1936 .005 1924 .004

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 BAB221 1758 to 1980 223 years Series 41

 [B] Entire series, effect on correlation ( .716) is:

 Lower 1795> -.011 1796< -.007 1816> -.005 1797< -.005 1760< -.004 1781< -.004 Higher 1936 .006 1972 .005

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1795 +3.0 SD

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 BAB222 1805 to 1980 176 years Series 42

 [B] Entire series, effect on correlation ( .727) is:

 Lower 1816> -.020 1805< -.009 1874> -.009 1822< -.008 1942< -.008 1857> -.007 Higher 1934 .006 1912 .005

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 BAB231 1742 to 1805 64 years Series 43

 [B] Entire series, effect on correlation ( .625) is:

 Lower 1761< -.044 1783< -.031 1798< -.025 1800> -.014 1769< -.010 1789> -.007 Higher 1773 .043 1746 .024

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 BAB231 1829 to 1980 152 years Series 44

 [B] Entire series, effect on correlation ( .586) is:

 Lower 1935< -.028 1831< -.011 1976< -.010 1970< -.009 1856< -.009 1863> -.009 Higher 1954 .035 1972 .010

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 BAB232 1786 to 1980 195 years Series 45

 [B] Entire series, effect on correlation ( .571) is:

 Lower 1864< -.023 1857> -.020 1976< -.012 1789> -.011 1820> -.009 1980> -.007 Higher 1834 .014 1934 .012

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1857 +3.7 SD

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 BAB241 1715 to 1980 266 years Series 46

 [B] Entire series, effect on correlation ( .713) is:

 Lower 1816> -.007 1977> -.006 1910> -.006 1965> -.005 1961< -.005 1963< -.005 Higher 1736 .007 1936 .006

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 BAB242 1767 to 1980 214 years Series 47

 [B] Entire series, effect on correlation ( .709) is:

 Lower 1832< -.008 1857> -.006 1977> -.006 1816> -.006 1873< -.005 1821> -.005 Higher 1834 .006 1874 .005

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 BAB261 1661 to 1980 320 years Series 48

 [B] Entire series, effect on correlation ( .572) is:

 Lower 1666< -.028 1730< -.016 1804< -.010 1733< -.009 1834> -.008 1872< -.007 Higher 1670 .026 1816 .013

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 1665 1666 -4.0 SD

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1666 -5.0 SD

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 BAB262 1747 to 1980 234 years Series 49

 [B] Entire series, effect on correlation ( .683) is:

 Lower 1839< -.011 1980> -.009 1787< -.009 1774> -.008 1936> -.007 1965> -.006 Higher 1816 .018 1954 .011

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 BAB281 1715 to 1980 266 years Series 50

 [B] Entire series, effect on correlation ( .587) is:

 Lower 1774> -.016 1885< -.009 1870> -.008 1834> -.008 1966> -.008 1777> -.006 Higher 1759 .007 1736 .007

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1774 +3.4 SD; 1870 +3.0 SD

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 BAB282 1721 to 1980 260 years Series 51

 [B] Entire series, effect on correlation ( .655) is:

 Lower 1834> -.015 1884< -.012 1800< -.008 1777> -.008 1790> -.007 1835< -.006 Higher 1816 .010 1934 .008

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1834 +3.4 SD

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 BAB291 1780 to 1980 201 years Series 52

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1780 1829 0 .12 -.11 .14 .13 .09 -.19 -.02 .19 -.44 -.22 .32\*-.20 -.15 .11 .22 .21 .20 -.07 -.29 -.02 .06

 [B] Entire series, effect on correlation ( .573) is:

 Lower 1884< -.011 1797< -.011 1802< -.011 1800> -.009 1848< -.009 1796< -.009 Higher 1936 .016 1954 .011

 1780 to 1829 segment:

 Lower 1797< -.039 1802< -.039 1800> -.036 1796< -.032 1780< -.026 1801> -.020 Higher 1816 .097 1829 .050

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1791 +3.1 SD

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 BAB292 1775 to 1980 206 years Series 53

 [B] Entire series, effect on correlation ( .621) is:

 Lower 1777< -.042 1800> -.008 1884< -.008 1961< -.007 1799> -.006 1802< -.006 Higher 1951 .010 1936 .009

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1777 -5.7 SD; 1791 +3.3 SD

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 BAB301 1770 to 1980 211 years Series 54

 [B] Entire series, effect on correlation ( .670) is:

 Lower 1820< -.017 1839< -.013 1954> -.010 1962< -.009 1797< -.007 1774> -.006 Higher 1816 .012 1934 .009

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 BAB302 1803 to 1980 178 years Series 55

 [B] Entire series, effect on correlation ( .742) is:

 Lower 1875< -.010 1961< -.007 1809< -.006 1824< -.006 1868< -.005 1804> -.005 Higher 1834 .008 1934 .008

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 BAB311 1765 to 1980 216 years Series 56

 [B] Entire series, effect on correlation ( .652) is:

 Lower 1870< -.027 1971< -.020 1834> -.009 1800> -.007 1947< -.006 1822< -.006 Higher 1816 .011 1901 .009

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 BAB312 1742 to 1980 239 years Series 57

 [B] Entire series, effect on correlation ( .639) is:

 Lower 1865< -.028 1972< -.010 1806< -.008 1839< -.007 1751> -.005 1884> -.005 Higher 1816 .018 1834 .008

 [E] Outliers 3 3.0 SD above or -4.5 SD below mean for year

 1865 -5.6 SD; 1884 +3.6 SD; 1972 -6.9 SD

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 SBA01B 1895 to 2015 121 years Series 58

 [B] Entire series, effect on correlation ( .637) is:

 Lower 1988> -.029 1977> -.015 1985< -.010 1904< -.009 1899> -.008 2010< -.006 Higher 1954 .015 1936 .012

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 SBA02A 1875 to 2015 141 years Series 59

 [B] Entire series, effect on correlation ( .674) is:

 Lower 1912< -.025 1882< -.020 1957< -.017 1979< -.014 1925> -.007 1889< -.007 Higher 1954 .014 1936 .011

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 SBA02B 1904 to 2015 112 years Series 60

 [B] Entire series, effect on correlation ( .667) is:

 Lower 1988> -.016 2014> -.012 2005> -.010 1959> -.009 1911< -.008 1925> -.007 Higher 1934 .014 2012 .014

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 SBA03A 1844 to 2015 172 years Series 61

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

 --------- ---- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---

 1850 1899 0 -.17 -.12 -.09 .15 .01 -.21 -.05 .00 -.11 .14 .30\*-.08 -.03 .00 -.02 -.10 .20 .24 -.05 .06 -.07

 [B] Entire series, effect on correlation ( .656) is:

 Lower 1869< -.013 1860> -.011 1875< -.011 1892< -.011 1879> -.009 1890> -.009 Higher 1988 .017 1954 .016

 1850 to 1899 segment:

 Lower 1869< -.043 1860> -.040 1875< -.036 1892< -.035 1890> -.032 1879> -.029 Higher 1874 .080 1857 .075

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 SBA03B 1845 to 2015 171 years Series 62

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

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 1845 1894 -7 -.03 -.05 -.10 .28\* .03 -.19 -.14 -.08 -.05 .05 .22|-.23 -.17 .15 .06 .20 .12 .12 -.17 -.08 -.14

 1850 1899 -7 -.04 -.01 -.07 .22\* .16 -.29 -.04 -.08 -.19 .04 .20|-.12 -.11 .05 .06 .08 .03 .14 -.12 -.13 -.11

 [B] Entire series, effect on correlation ( .508) is:

 Lower 1848< -.018 1869< -.011 1969< -.011 1988> -.011 1972> -.010 1882< -.008 Higher 1954 .012 1874 .010

 1845 to 1894 segment:

 Lower 1848< -.044 1869< -.032 1860> -.025 1882< -.023 1879> -.022 1851> -.016 Higher 1857 .097 1849 .062

 1850 to 1899 segment:

 Lower 1869< -.036 1882< -.026 1860> -.024 1879> -.020 1851> -.016 1859< -.015 Higher 1857 .117 1874 .068

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 SBA04A 1896 to 2015 120 years Series 63

 [B] Entire series, effect on correlation ( .498) is:

 Lower 1897< -.031 1951< -.021 1900> -.014 1984> -.013 1954> -.012 1948< -.011 Higher 1988 .055 1936 .018

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1900 +3.3 SD

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 SBA04B 1898 to 2015 118 years Series 64

 [B] Entire series, effect on correlation ( .651) is:

 Lower 1903> -.013 2006< -.012 2003> -.011 1908< -.011 1899> -.010 1924< -.010 Higher 1988 .036 2007 .012

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 SBA05A 1875 to 2011 137 years Series 65

 [B] Entire series, effect on correlation ( .511) is:

 Lower 1894> -.017 1887< -.016 1973< -.013 1927< -.012 1903> -.012 2005> -.011 Higher 1954 .029 1934 .019

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1903 +3.8 SD

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 SBA05B 1906 to 2015 110 years Series 66

 [B] Entire series, effect on correlation ( .558) is:

 Lower 2003< -.026 2012> -.021 1916< -.017 1977< -.014 1985< -.009 2009< -.009 Higher 1954 .026 1924 .015

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 SBA06A 1864 to 2015 152 years Series 67

 [B] Entire series, effect on correlation ( .645) is:

 Lower 1880< -.032 1989< -.014 1875< -.011 1994> -.011 1894> -.009 1928< -.008 Higher 1954 .023 1988 .015

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 SBA06B 1897 to 2015 119 years Series 68

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

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 1925 1974 1 .20 -.19 -.12 -.12 -.08 -.07 -.02 -.08 -.37 .27 .27| .41\*-.14 .11 -.26 -.20 .16 -.02 .05 -.09 .07

 [B] Entire series, effect on correlation ( .513) is:

 Lower 1936> -.035 1954> -.028 1953< -.028 1935< -.023 1994> -.017 1951< -.016 Higher 1988 .054 1901 .012

 1925 to 1974 segment:

 Lower 1936> -.071 1935< -.049 1954> -.048 1953< -.034 1951< -.030 1952> -.024 Higher 1959 .041 1972 .039

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 1935 1936 4.1 SD

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1936 +3.5 SD

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 SBA07A 1885 to 2014 130 years Series 69

 [B] Entire series, effect on correlation ( .639) is:

 Lower 1912< -.019 1997< -.019 1889< -.018 1894> -.015 1998< -.012 1988> -.010 Higher 1954 .016 1934 .015

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 SBA07B 1909 to 2015 107 years Series 70

 [B] Entire series, effect on correlation ( .573) is:

 Lower 1989< -.030 1988> -.029 1994> -.012 1909< -.011 2001< -.009 2003< -.007 Higher 1934 .028 1954 .024

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1987 +3.0 SD

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 SBA08A 1877 to 2015 139 years Series 71

 [A] Segment High -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 +0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

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 1877 1926 0 .09 .07 .22 .09 .09 -.18 -.13 -.03 -.10 -.25 .32\* .06 -.11 .04 -.05 .19 -.08 -.14 -.10 .00 -.20

 [B] Entire series, effect on correlation ( .509) is:

 Lower 1992< -.022 1885< -.014 1943< -.012 1984> -.011 1894> -.009 1914> -.008 Higher 1954 .029 1936 .009

 1877 to 1926 segment:

 Lower 1885< -.037 1894> -.023 1914> -.022 1877> -.020 1902> -.019 1879> -.016 Higher 1913 .056 1912 .036

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 SBA08B 1892 to 2015 124 years Series 72

 [B] Entire series, effect on correlation ( .694) is:

 Lower 1902> -.020 2007> -.016 1992< -.014 1912< -.013 1966> -.010 1925> -.008 Higher 1988 .029 1954 .026

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1902 +3.3 SD

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 SBA09A 1865 to 2015 151 years Series 73

 [B] Entire series, effect on correlation ( .691) is:

 Lower 2003< -.040 1947< -.019 1873< -.007 1978< -.007 1894> -.006 1879> -.006 Higher 1988 .017 1954 .011

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 2003 -4.6 SD

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 SBA10A 1878 to 2015 138 years Series 74

 [B] Entire series, effect on correlation ( .696) is:

 Lower 1894> -.018 1984> -.012 1977> -.008 2014< -.006 1990< -.006 1934> -.005 Higher 1988 .026 1954 .018

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 SBA10B 1895 to 2015 121 years Series 75

 [B] Entire series, effect on correlation ( .573) is:

 Lower 1934> -.040 1935< -.038 1954> -.024 1899> -.018 1987< -.017 1918> -.010 Higher 1936 .021 1972 .016

 [C] Year-to-year changes diverging by over 4.0 std deviations:

 1934 1935 -4.2 SD

 [E] Outliers 2 3.0 SD above or -4.5 SD below mean for year

 1899 +3.2 SD; 1934 +3.7 SD

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 SBA11A 1891 to 2015 125 years Series 76

 [B] Entire series, effect on correlation ( .740) is:

 Lower 2010< -.012 1925> -.011 1953< -.009 1899> -.009 1968> -.007 1969< -.007 Higher 1988 .023 1954 .021

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 SBA11B 1893 to 2015 123 years Series 77

 [B] Entire series, effect on correlation ( .766) is:

 Lower 1994> -.026 2009< -.016 2007< -.012 1895> -.010 2014> -.010 1978< -.006 Higher 1988 .020 1954 .009

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 SBA12A 1853 to 2015 163 years Series 78

 [B] Entire series, effect on correlation ( .639) is:

 Lower 1962< -.019 1905< -.015 1894> -.008 1888< -.008 1873> -.007 1889< -.007 Higher 1934 .017 1912 .008

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 SBA12B 1853 to 2015 163 years Series 79

 [B] Entire series, effect on correlation ( .640) is:

 Lower 2007> -.019 1869< -.010 1962< -.010 2006< -.009 1874> -.009 1908< -.009 Higher 1988 .029 1936 .012

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 SBA13A 1848 to 2015 168 years Series 80

 [B] Entire series, effect on correlation ( .596) is:

 Lower 1853< -.023 1860> -.018 1901> -.012 1867< -.009 1878> -.008 1964< -.008 Higher 1988 .023 1936 .012

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1860 +3.4 SD

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 SBA13B 1885 to 2015 131 years Series 81

 [B] Entire series, effect on correlation ( .690) is:

 Lower 1994> -.021 1984< -.017 1899> -.012 1925> -.011 1959> -.008 1908< -.005 Higher 1954 .025 1988 .020

 [E] Outliers 1 3.0 SD above or -4.5 SD below mean for year

 1994 +3.1 SD

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 SBA14A 1882 to 2015 134 years Series 82

 [B] Entire series, effect on correlation ( .707) is:

 Lower 1893< -.030 2008< -.020 1882< -.019 1896< -.010 2012> -.009 1897< -.005 Higher 1954 .024 1934 .015

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 SBA14B 1917 to 2012 96 years Series 83

 [B] Entire series, effect on correlation ( .505) is:

 Lower 1935< -.029 1918> -.022 1934> -.020 1924< -.015 2012> -.014 1927< -.012 Higher 1954 .058 1988 .031

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 SBA15A 1949 to 2015 67 years Series 84

 [B] Entire series, effect on correlation ( .710) is:

 Lower 1977> -.020 1949< -.019 1954> -.016 2007> -.013 2009< -.011 1982< -.009 Higher 1988 .037 2012 .019

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 SBA15B 1947 to 2015 69 years Series 85

 [B] Entire series, effect on correlation ( .720) is:

 Lower 1970< -.018 1965> -.016 1974< -.013 1968> -.011 1973< -.011 2014> -.010 Higher 1954 .029 2007 .016

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 Corr //-------- Unfiltered --------\\ //---- Filtered -----\\

 No. No. No. with Mean Max Std Auto Mean Max Std Auto AR

 Seq Series Interval Years Segmt Flags Master msmt msmt dev corr sens value dev corr ()

 --- -------- --------- ----- ----- ----- ------ ----- ----- ----- ----- ----- ----- ----- ----- --

 1 BAB021 1835 1980 146 6 0 .646 1.61 3.69 .572 .465 .265 2.80 .508 .022 1

 2 BAB022 1846 1980 135 6 0 .735 2.07 3.67 .667 .501 .251 2.61 .545 -.019 1

 3 BAB031 1732 1970 239 9 0 .591 .95 2.81 .456 .814 .212 2.69 .412 .018 1

 4 BAB032 1751 1939 189 7 1 .473 1.02 2.39 .378 .758 .182 2.93 .583 .012 1

 5 BAB041 1864 1980 117 5 0 .461 1.87 5.08 .832 .815 .166 2.57 .376 -.048 5

 6 BAB042 1843 1980 138 6 1 .523 2.25 4.52 .906 .782 .194 2.62 .470 -.016 1

 7 BAB051 1841 1980 140 6 0 .686 2.36 5.65 .906 .725 .189 2.55 .346 .006 1

 8 BAB052 1846 1980 135 6 0 .731 2.39 6.13 .868 .757 .186 2.57 .435 -.012 1

 9 BAB061 1695 1980 286 12 0 .621 1.12 2.31 .478 .852 .177 2.67 .407 -.014 1

 10 BAB062 1694 1980 287 12 0 .549 1.01 2.05 .370 .820 .176 2.48 .282 -.007 1

 11 BAB071 1707 1977 271 11 0 .675 1.18 2.89 .468 .708 .236 2.96 .461 .039 1

 12 BAB072 1689 1978 290 12 0 .668 1.02 2.76 .502 .805 .230 2.81 .467 -.016 1

 13 BAB081 1882 1980 99 4 0 .691 2.65 5.60 1.145 .712 .254 2.61 .445 -.055 1

 14 BAB082 1862 1980 119 5 0 .715 2.77 6.57 1.207 .703 .234 2.88 .556 -.041 1

 15 BAB091 1856 1980 125 5 0 .676 1.34 3.88 .562 .696 .204 3.00 .527 .066 1

 16 BAB092 1822 1979 158 7 0 .653 1.59 4.41 .701 .552 .255 2.92 .451 -.040 1

 17 BAB101 1641 1980 340 13 2 .435 .99 2.17 .368 .667 .223 2.71 .440 .019 1

 18 BAB102 1754 1980 227 9 1 .523 1.34 4.41 .935 .907 .167 2.80 .454 -.054 1

 19 BAB111 1825 1980 156 6 0 .637 1.85 4.71 .658 .532 .240 2.77 .526 -.019 2

 20 BAB112 1853 1980 128 5 0 .685 1.84 4.75 .859 .621 .297 2.74 .529 -.059 1

 21 BAB121 1734 1980 247 10 1 .525 .91 2.41 .282 .619 .199 2.54 .286 .005 1

 22 BAB122 1762 1980 219 9 0 .614 .75 1.51 .215 .579 .194 2.52 .334 .042 1

 23 BAB131 1835 1980 146 6 0 .665 .86 1.77 .243 .616 .181 2.67 .471 .003 1

 24 BAB132 1798 1980 183 8 0 .658 .88 2.19 .316 .773 .157 2.62 .400 .053 1

 25 BAB141 1741 1937 197 8 0 .564 1.14 5.11 .714 .847 .186 2.75 .446 .031 1

 26 BAB141 1941 1980 40 1 0 .368 .64 1.07 .140 .591 .122 2.69 .515 -.074 1

 27 BAB142 1763 1980 218 9 1 .594 1.02 2.13 .255 .638 .151 2.68 .379 -.014 1

 28 BAB151 1818 1980 163 7 0 .547 1.23 2.23 .399 .669 .190 2.60 .444 -.013 1

 29 BAB161 1734 1980 247 10 0 .629 .77 2.59 .309 .623 .216 2.75 .414 .058 1

 30 BAB162 1766 1980 215 9 0 .625 .78 1.81 .287 .645 .206 2.61 .330 .004 1

 31 BAB171 1797 1980 184 8 0 .640 .80 1.95 .250 .719 .169 2.79 .468 .006 1

 32 BAB172 1860 1980 121 5 0 .699 1.34 3.20 .446 .713 .164 2.81 .432 .058 1

 33 BAB181 1866 1980 115 5 0 .735 1.44 2.75 .530 .551 .263 2.83 .590 -.006 1

 34 BAB182 1839 1980 142 6 0 .762 1.57 3.87 .599 .346 .304 2.63 .436 .031 1

 35 BAB191 1764 1980 217 9 0 .725 1.07 2.40 .317 .581 .206 2.63 .436 -.007 1

 36 BAB192 1799 1980 182 8 0 .750 .98 1.91 .262 .517 .215 2.42 .347 -.054 2

 37 BAB201 1787 1980 194 8 0 .563 1.43 5.72 1.143 .882 .244 2.96 .461 -.006 3

 38 BAB202 1874 1980 107 5 0 .766 2.87 7.64 1.461 .720 .256 2.85 .470 -.025 1

 39 BAB211 1720 1980 261 11 0 .730 1.04 2.87 .525 .789 .257 2.72 .512 -.010 1

 40 BAB212 1771 1980 210 9 0 .741 1.18 2.67 .458 .702 .242 2.94 .469 .038 1

 41 BAB221 1758 1980 223 9 0 .716 1.56 4.68 .712 .729 .258 2.67 .402 -.023 1

 42 BAB222 1805 1980 176 7 0 .727 1.73 3.20 .551 .494 .258 2.68 .394 .012 1

 43 BAB231 1742 1805 64 3 0 .625 .58 1.31 .258 .601 .289 2.65 .533 .040 1

 44 BAB231 1829 1980 152 6 0 .586 .95 2.39 .324 .678 .193 2.62 .429 -.045 1

 45 BAB232 1786 1980 195 8 0 .571 1.31 3.48 .573 .789 .204 2.85 .427 -.001 2

 46 BAB241 1715 1980 266 11 0 .713 1.07 2.53 .473 .589 .319 2.66 .402 .027 1

 47 BAB242 1767 1980 214 9 0 .709 1.02 2.39 .429 .628 .285 2.73 .473 .000 2

 48 BAB261 1661 1980 320 13 0 .572 .70 2.15 .320 .754 .253 2.82 .434 -.016 1

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 Corr //-------- Unfiltered --------\\ //---- Filtered -----\\

 No. No. No. with Mean Max Std Auto Mean Max Std Auto AR

 Seq Series Interval Years Segmt Flags Master msmt msmt dev corr sens value dev corr ()

 --- -------- --------- ----- ----- ----- ------ ----- ----- ----- ----- ----- ----- ----- ----- --

 49 BAB262 1747 1980 234 10 0 .683 .98 2.52 .357 .672 .224 2.63 .423 .026 1

 50 BAB281 1715 1980 266 11 0 .587 1.07 3.15 .449 .713 .223 2.91 .434 .005 1

 51 BAB282 1721 1980 260 11 0 .655 .94 2.99 .432 .740 .248 2.66 .407 .020 1

 52 BAB291 1780 1980 201 8 1 .573 .93 2.97 .346 .602 .210 2.73 .385 -.028 1

 53 BAB292 1775 1980 206 8 0 .621 1.07 3.51 .422 .643 .213 2.89 .329 .006 2

 54 BAB301 1770 1980 211 9 0 .670 .95 2.87 .357 .469 .235 3.01 .426 .046 1

 55 BAB302 1803 1980 178 7 0 .742 1.21 2.28 .364 .370 .242 2.75 .472 -.014 1

 56 BAB311 1765 1980 216 9 0 .652 1.11 4.03 .533 .743 .231 2.60 .385 .012 2

 57 BAB312 1742 1980 239 10 0 .639 .85 2.79 .333 .634 .208 2.85 .310 -.021 1

 58 SBA01B 1895 2015 121 5 0 .637 2.18 5.20 1.034 .703 .273 2.66 .412 .014 2

 59 SBA02A 1875 2015 141 5 0 .674 2.02 4.01 .622 .455 .247 2.82 .519 -.033 1

 60 SBA02B 1904 2015 112 4 0 .667 2.25 4.44 .665 .308 .278 2.71 .556 -.003 1

 61 SBA03A 1844 2015 172 7 1 .656 1.42 2.78 .515 .719 .225 2.67 .453 .008 1

 62 SBA03B 1845 2015 171 7 2 .508 1.33 3.56 .511 .712 .230 2.61 .370 -.015 1

 63 SBA04A 1896 2015 120 5 0 .498 1.69 3.76 .647 .626 .236 2.70 .449 -.004 1

 64 SBA04B 1898 2015 118 5 0 .651 2.00 4.45 .819 .562 .269 2.79 .480 .003 1

 65 SBA05A 1875 2011 137 5 0 .511 1.52 4.31 .621 .720 .210 2.73 .506 .043 3

 66 SBA05B 1906 2015 110 4 0 .558 1.91 4.88 .707 .609 .244 2.71 .443 -.078 1

 67 SBA06A 1864 2015 152 6 0 .645 2.58 4.79 .856 .608 .221 2.64 .506 -.003 2

 68 SBA06B 1897 2015 119 5 1 .513 3.69 16.53 1.902 .752 .261 2.52 .440 -.040 1

 69 SBA07A 1885 2014 130 5 0 .639 2.26 5.44 .831 .520 .259 2.74 .524 .004 1

 70 SBA07B 1909 2015 107 4 0 .573 2.24 4.11 .691 .529 .228 2.71 .467 .028 1

 71 SBA08A 1877 2015 139 5 1 .509 2.50 8.27 1.033 .704 .238 2.71 .483 -.055 2

 72 SBA08B 1892 2015 124 5 0 .694 3.21 10.32 1.576 .752 .234 2.59 .451 -.023 2

 73 SBA09A 1865 2015 151 6 0 .691 1.91 3.68 .668 .498 .272 2.64 .411 -.004 1

 74 SBA10A 1878 2015 138 5 0 .696 1.76 4.07 .534 .587 .216 2.84 .510 -.038 1

 75 SBA10B 1895 2015 121 5 0 .573 1.67 3.72 .621 .707 .217 2.80 .581 -.008 2

 76 SBA11A 1891 2015 125 5 0 .740 2.32 3.72 .625 .153 .278 2.67 .491 .061 1

 77 SBA11B 1893 2015 123 5 0 .766 2.13 3.60 .596 .319 .284 2.58 .428 -.019 2

 78 SBA12A 1853 2015 163 6 0 .639 1.64 4.89 .600 .550 .235 2.81 .517 -.020 1

 79 SBA12B 1853 2015 163 6 0 .640 1.73 3.40 .601 .694 .220 2.58 .372 .017 1

 80 SBA13A 1848 2015 168 7 0 .596 1.68 4.63 .719 .700 .253 2.83 .408 -.033 2

 81 SBA13B 1885 2015 131 5 0 .690 2.23 5.46 .932 .735 .251 2.59 .423 .040 1

 82 SBA14A 1882 2015 134 5 0 .707 1.32 3.29 .396 .430 .231 2.72 .499 .015 1

 83 SBA14B 1917 2012 96 4 0 .505 2.30 4.24 .736 .470 .270 2.45 .451 .003 1

 84 SBA15A 1949 2015 67 3 0 .710 4.20 6.51 .981 .237 .228 2.61 .598 -.001 1

 85 SBA15B 1947 2015 69 3 0 .720 4.03 6.64 1.085 .408 .239 2.56 .440 -.023 1

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 Total or mean: 14576 594 13 .632 1.43 16.53 .566 .655 .226 3.01 .437 .000

 - = [ COFECHA SBA\_ACOF ] = -