# Appendices

# Appendix 1. Measuring the Rate of Dissolution

**Identification and measurement**

The dependent variable in the empirical analysis is the rate of regime dissolution. This is the extent of dissolution over time. We must therefore specify the onset and end of dissolution. Further, we must apply a consistent measure across a diverse set of historical cases.

The rate of dissolution, as presented graphically in Figure 1, is defined as the fraction of countries remaining in the system over time. The process of dissolution is taken to end when (1) all member countries have exited the regime *or* (2) the regime is *de jure* terminated.

Before measuring the dissolution processes, we have to determine the operational onset of the regime. This requires the existence of some coherent set of rules, norms, and practices that countries adopt to govern their international monetary relations. The operational onset date represents the beginning of the “sampling window” in Figure 1. The sampling window ends when the process of dissolution is complete.

The coding of the dates for any regime involves questions of fact and degree. Careful judgments are needed on both the operational onset and end date sides (Obstfeld and Taylor 2004). In particular:

* When tracking the process of members exiting a regime, an important choice arises between *de facto* (the adoption of policies that violate the “rules of the game”) and *de jure* acts of departure.
* The *de jure* termination of a regime is defined as any legal act that was *intended* to, *and* had the *effect* of, permanently winding-up a system. It is important to note that some major legal decisions that significantly undermined regimes, such as Britain’s decision to leave the interwar gold-exchange standard in September 1931 and Nixon’s decision to close the gold window in August 1971, do not meet this definition.

The following subsections A1.1. to A.1.4 describe the application of these measurement criteria to the four main historical cases shown in Figure 1. Tables A.1.1. to A.1.4 provide a complete record of the relevant dates together with the historical sources.

## A.1.1. The interwar gold exchange standard

The operational onset of the interwar system is defined as 1922. The plans for reconstructing the international gold standard were laid at the Brussels (1920) and Genoa (1922) conferences. Using the postwar plans, the “gold exchange standard was restored worldwide in the period of 1924-27” (Bordo and MacDonald 2003). The adoption of the interwar regime by a country is measured as *de facto* stabilization under a fixed rate with full convertibility or *de jure* adoption of the gold exchange standard (Kremmer 1950; Officer 2001; Wolf and Yousef 2007).

A country is coded as leaving the gold standard in a given year if either it officially suspended the gold standard or depreciated the value of its currency during that year (Wolf and Yousef 2007). In many cases, countries did both simultaneously. If the decisions occurred in subsequent years, the earlier year is coded as the exit year. Table A.1.1. also records the imposition of exchange controls, but this is not used for the purposes of coding Figure 1. The end of the dissolution process is defined *de facto* by the decision of all remaining countries to leave the gold bloc in 1936, although it is arguable that the interwar system had collapsed well before this.

**Table A.1.1.** **Adherence of 50 countries to the interwar gold exchange standard**

**Membership Exit event dates Duration**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Country name** | **Suspension** | **Exchange controls** | **Depreciation relative to gold** | **Start** | **End** |
| Argentina | Dec-29 | Oct-31 | Nov-29 | 1927 | 1929 |
| Australia | Dec-29 | - | Mar-30 | 1925 | 1929 |
| Austria | Apr-33 | Oct-31 | Sep-31 | 1923 | 1931 |
| Belgium | Mar-35 | Mar-35 | Mar-35 | 1925 | 1935 |
| Bolivia | Sep-31 | Oct-31 | Mar-30 | 1928 | 1931 |
| Brazil | - | May-31 | Dec-29 | 1927 | 1929 |
| Bulgaria | - | - | - | 1927 | 1931 |
| Canada | Oct-31 | - | Sep-31 | 1926 | 1931 |
| Chile | Apr-32 | Jul-31 | Apr-32 | 1926 | 1932 |
| Columbia | Sep-31 | Sep-31 | Jan-32 | 1923 | 1931 |
| Costa Rica | - | Jan-32 | Jan-32 | 1922 | 1932 |
| Cuba | Nov-33 | Jun-34 | Apr-33 | 1919/22\* | 1933 |
| Czechoslovakia |  | Oct-31 | Feb-34 | 1926 | 1931 |
| Denmark | Sep-31 | Nov-31 | Sep-31 | 1927 | 1931 |
| Ecuador | Feb-32 | May-32 | Jun-32 | 1927 | 1932 |
| Egypt | Sep-31 | - | Sep-31 | 1925 | 1931 |
| El Salvador | Oct-31 | Aug-33 | Oct-31 | 1920 | 1931 |
| Estonia | Jun-33 | Nov-31 | Jun-33 | 1928 | 1933 |
| Finland | Oct-31 | - | Oct-31 | 1926 | 1931 |
| France | - | - | Sep-36 | 1928 | 1936 |
| Germany | - | Jul-31 | - | 1924 | 1931 |
| Greece | Apr-32 | Sep-31 | Apr-32 | 1928 | 1932 |

*Continued on next page*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Country name** | **Suspension** | **Exchange controls** | **Depreciation** | **Start** | **End** |
| Guatemala | - | - | Apr-33 | 1924 | 1933 |
| Honduras | - | Mar-34 | Apr-33 | 1931 | 1933 |
| Hungary | - | Jul-31 | - | 1925 | 1931 |
| India | Sep-31 | - | Sep-31 | 1927 | 1931 |
| Indonesia | Sep-36 | - | Sep-36 | 1925 | 1936 |
| Italy | - | May-34 | Mar-34 | 1927 | 1934 |
| Japan | Dec-31 | Jul-32 | Dec-31 | 1930 | 1931 |
| Mexico | Sep-36 | - | Aug-31 | 1925 | 1936 |
| Netherlands | Sep-31 | - | Sep-36 | 1925 | 1931 |
| New Zealand | Nov-32 | - | Apr-30 | 1929 | 1932 |
| Nicaragua | Sep-31 | Nov-31 | Jan-32 | 1918/22\* | 1931 |
| Norway | - | - | Sep-31 | 1928 | 1931 |
| Panama | - | - | Apr-33 | 1919/22\* | 1933 |
| Paraguay | - | Aug-32 | Nov-29 | 1927 | 1929 |
| Peru | May-32 | - | Apr-32 | 1931 | 1932 |
| Philippines | - | - | Apr-33 | 1919/22\* | 1933 |
| Poland | - | Apr-36 | xxx-1936 | 1927 | 1936 |
| Portugal | Dec-31 | Oct-22 | Oct-31 | - | 1931 |
| Romania | - | May-32 | Jul-35 | 1929 | 1935 |
| Siam | May-32 | - | Jun-32 | 1928 | 1932 |
| South Africa | Dec-32 | Jan-33 | - | 1925 | 1932 |
| Sweden | Sep-31 | - | Sep-31 | 1924 | 1931 |
| Switzerland | - | - | Sep-36 | 1925 | 1936 |
| United Kingdom | Sep-31 | - | Sep-31 | 1925 | 1931 |
| United States | Apr-33 | Mar-33 | Apr-33 | 1919/22\* | 1933 |

*Continued on next page*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Country name** | **Suspension** | **Exchange controls** | **Depreciation** | **Start** | **End** |
| Uruguay | Dec-29 | Sep-31 | Apr-29 | 1927 | 1931 |
| Venezuela | - | Dec-36 | Sep-30 | 1927 | 1936 |
| Yugoslavia | - | Oct-31 | Oct-31 | 1931 | 1931 |

Note: \* Left censored, country had returned to gold before the operational onset of the interwar-gold exchange standard.

## A.1.2. The Bretton Woods system

The 92 members of Bretton Woods system are identified as a subset of the 134 countries that became IMF’s members at some stage between 1945 and 1978. Following de Vries (1986), adherence to the Bretton Woods system is measured as either the formal adoption *and* effective operation of IMF declared par values *or* an equivalent status without an operative par value achieved through the adoption of a fixed exchange rate or effectively stable unified rates. This identifies regime participation through the interlocking network of stable exchange parities based on the U.S. pledge to convert the dollar into gold at a fixed rate. Table A.1.2. refers to this institution as the “$-gold par network”. It is worth noting that half of the IMF’s official members never joined the Bretton Woods system.

The operational onset of the regime begins at the point that West European countries made their currencies convertible on 27 December 1958. There is general agreement that it was only from this point that the Bretton Woods system cohered and operated as intended (Bordo and Eichengreen 1993).

The literature usually dates the collapse of the Bretton Woods system as 15 August 1971 (Bordo and Eichengreen 1993; de Vries 1986). On this date, the *de jure* gold convertibility of the U.S. dollar was suspended. The par values agreed with the IMF became inoperative, because actual exchange rates no longer reflected them. However, although the paper’s analytical framework is primarily designed to model the politics leading to this historical juncture, to code all countries as leaving the system in August 1971 would over determine the end date, and be inconsistent with the identification approach described above.[[1]](#footnote-1)

In a substantive sense, such an approach would obscure important attempts to save the system. In particular, the 1971 Smithsonian Agreement, which created an amended dollar standard, that allowed currencies to fluctuate around a 2.25% band, that survived until March 1973. It would also miss significant prior events, such as the termination of the Gold Pool in March 1968, which had already *de facto* ended the gold convertibility of the U.S. dollar.

Therefore, a country is coded as leaving the system in a given year if it ceased to maintain one of the following Bretton Woods “consistent” – defined as essentially fixed – exchange rate regimes: (1) pre announced peg or currency board arrangement; (2) pre announced horizontal band narrower than or equal to +/-2% (3) de facto peg; (4) pre announced crawling peg; or (5) de facto moving band narrower than or equal to +/-1%. In many cases, countries moved from maintaining a preannounced peg to a de facto crawling band, moving band, or managed float at some point between 1971 and 1975 (Ilzetzki, Reinhart, and Rogoff 2018). Table A.1.2. records this as the “ERR change” date.

The end of the dissolution period is defined *de jure* as December 1978 when Article IV of the International Monetary Fund’s Articles of Agreement was amended. Through the course of 1975 a series of international agreements codified the changes between 1971 and 1974 that brought into being a regime of floating rates for major currencies. The agreements in large part settled the intensive debates over monetary reform that had been ongoing since August 1971. Between June and November 1975, countries agreed on the international monetary status of gold and SDRs and provided a broad framework for exchange rate flexibility in a post-Bretton Woods era. The amended Article IV provided for freedom of choice in exchange arrangements, but members were subject to collaboration with, and surveillance by, the Fund. (The text also gave IMF members the right to return to a par value system.) The amended Article IV was endorsed without significant further changes in January 1976 as part of sweeping constitutional reforms and eventually came into force in December 1978 (see de Vries 1986, 111-169).

## Table A.1.2. Adherence of 92 countries to the Bretton Woods system

**Membership Exit event dates Duration**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Join IMF** | **Par value** | **$-gold par network** | **ERR change** | **Other** | **Start** | **End** |
| Afghanistan | Jul-55 | Mar-63 | \*\*\* | NA | NA | NA | NA |
| Algeria | Sep-63 | \*\*\* | 1949-1964 | 1971 | - | 1958 | 1971 |
| Argentina | Sep-56 | Jan-57 | 1964-1970 | 1970 | - | 1964 | 1970 |
| Australia | Aug-47 | Nov-47 | 1946-1975 | 1975 | - | 1958 | 1975 |
| Austria | Aug-48 | May-53 | 1953-1970 | 1970 | - | 1958 | 1970 |
| Bahamas | Aug-73 | \*\*\* | 1947- | \* | - | 1958 | \* |
| Bangladesh | Aug-72 | \*\*\* | 1972-1973 | 1973 | - | NA | NA |
| Belgium | Dec-45 | Dec-46 | 1954 | \* | 1973(a) | 1958 | 1973 |
| Bolivia | Dec-45 | Dec-46 | \*\*\* | NA | - | NA | NA |
| Botswana | Jul-68 | \*\*\* | (NSLT) | NA | NA | NA | NA |
| Bahrain | Sep-72 | \*\*\* | 1960 | \* |  | 1958 | \* |
| Brazil | Jan-46 | Jul-48 | \*\*\* | NA | - | NA | NA |
| Burundi | Sep-63 | Jan-65 | 1946 | \* | - | 1958 | \* |
| Cameroon | Jul-63 | \*\*\* | (NSLT) | NA | NA | NA | NA |
| Cambodia | Dec-69 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Canada | Dec-45 | Dec-46 | 1962-1970 | 1970 | - | 1958 | 1970 |
| Central African Republic | Jul-63 | \*\*\* | (NSLT) | NA | NA | NA | NA |
| Chad | Jul-60 | \*\*\* | (NSLT) | NA | NA | NA | NA |
| Chile | Dec-45 | Dec-46 | \*\*\* | NA | NA | NA | NA |
| China | Dec-45 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Colombia | Dec-45 | Dec-46 | \*\*\* | NA | NA | NA | NA |
| Congo, Dem. Rep. | Dec-63 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Costa Rica | Dec-46 | Dec-46 | 1946-1962 | 1962 | - | 1958 | 1962 |

*Continued on next page*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Join IMF** | **Par value** | **$-gold par network** | **ERR change** | **Other** | **Start** | **End** |
| Cuba | Dec-46 | Dec-46 | - | - | - | - | - |
| Cyprus | Dec-61 | Jul-62 | 1946-1974 | 1974 | - | 1958 | 1974 |
| Czech Rep. | Dec-45 | Dec-46 | \*\*\* | NA | NA | NA | NA |
| Denmark | Dec-46 | Dec-46 | 1946-1972 | 1972 | - | 1958 | 1972 |
| Dominican Rep. | Dec-45 | Dec-48 | 1948-1960 | 1960 | - | 1958 | 1960 |
| Ecuador | Dec-45 | Dec-46 | \*\*\* | NA | NA | NA | NA |
| Egypt | Dec-45 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| El Salvador | Mar-67 | Dec-46 | 1946-1961 | 1961 | - | 1958 | 1961 |
| Ethiopia | Dec-45 | Dec-46 | 1946- | \* | - | 1958 | \* |
| Finland | Jan-48 | Jul-51 | 1958-1972 | 1972 | - | 1958 | 1972 |
| Fiji | May-71 | \*\*\* | 1947-1975 | 1975 | - | 1958 | 1975 |
| France | Dec-45 | Dec-46 | 1958-1969(b) | 1969 | Apr-67(c) | 1958 | 1969 |
| Gabon | Sep-63 | \*\*\* | (NSLT) | NA | NA | NA | NA |
| Gambia | Sep-67 | \*\*\* | 1965- | \* | - | 1965 | \* |
| Germany | Aug-52 | Jan-53 | 1954-1973 | 1971 | Sep-69, Mar-73(d) | 1958 | 1971 |
| Ghana | Sep-57 | Nov-58 | 1969-1972 | 1972 | - | 1969 | 1972 |
| Greece | Dec-45 | Mar-61 | 1954-1965 | 1965 | - | 1958 | 1965 |
| Guatemala | Dec-45 | Dec-46 | 1946- | \* | - | 1958 | \* |
| Guinea | Sep-63 | \*\*\* | 1961-1971 | 1971 | - | 1961 | 1971 |
| Haiti | Sep-53 | Apr-54 | 1946- | \* | - | 1958 | \* |
| Honduras | Dec-45 | Dec-46 | 1950- | \* | - | 1958 | \* |
| Iceland | Dec-45 | Dec-46 | \*\*\* | NA | NA | NA | NA |
| India | Dec-45 | Dec-46 | 1946- | \* | - | 1958 | \* |
| Indonesia | Apr-54 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Iran | Dec-45 | Dec-46 | 1957-1973 |  | 1973 | 1958 | 1973 |

*Continued on next page*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Join IMF** | **Par value** | **$-gold par network** | **ERR change** | **Other** | **Start** | **End** |
| Iraq | Dec-45 | Dec-46 | 1946-xxxx | \* | - | 1958 | \* |
| Ireland | Aug-57 | May-58 | 1946-xxxx | \* | - | 1958 | \* |
| Israel | Jul-54 | Mar-57 | 1962-1970 | \* | - | 1962 | \* |
| Italy | Mar-47 | Mar-60 | 1953-1972 | 1972 | - | 1958 | \* |
| Ivory Coast | Mar-63 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Indonesia | Apr-54 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Jamaica | Feb-63 | Mar-63 | 1946-xxxx | \* | - | 1958 | \* |
| Japan | Aug-52 | May-53 | 1964-(e) | 1973 | - | 1964 | 1973 |
| Jordan | Aug-52 | Oct-53 | 1946-xxxx | \* | - | 1958 | \* |
| Kenya | Feb-64 | \*\*\* | 1967-xxxx | \* |  | 1967 | \* |
| Korea | Aug-55 | \*\*\* | NA | NA | NA | NA | NA |
| Kuwait | Sep-62 | Apr-63 | 1965-1975 | 1975 | - | 1958 | 1975 |
| Laos | Jul-61 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Lebanon | Apr-47 | Jul-47 | \*\*\* | NA | NA | NA | NA |
| Lesotho | Jul-68 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Liberia | Mar-62 | Mar-62 | (NSLT) | NA | NA | NA | NA |
| Libya | Sep-58 | Aug-59 | 1956-1972 | 1972 | - | 1958 | 1972 |
| Luxembourg | Dec-45 | Dec-46 | 1946-1970 | 1970 | - | 1958 | 1970 |
| Madagascar | Sep-63 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Malawi | Jul-65 | \*\*\* | 1964-1974 | 1974 | - | 1964 | 1974 |
| Malaysia | Mar-58 | Jul-62 | 1946-xxxx | \* | - | 1958 | 1976 |
| Mali | Sep-63 | \*\*\* | 1964-xxxx | \* | - | 1964 | \* |
| Malta | Sep-68 | \*\*\* | 1950-1972 | 1972 | - | 1958 | 1972 |
| Mauritania | Sep-63 | \*\*\* | \*\*\* | NA | NA | NA | NA |
| Mauritius | Sep-68 | \*\*\* | 1946-1974 | 1974 | - | 1958 | 1974 |
| Mexico | Dec-45 | Dec-46 | 1946-xxxx | \* | - | 1958 | \* |

*Continued on next page*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Join IMF** | **Par value** | **$-gold par network** | **ERR change** | **Other** | | **Start** | | **End** |
| Morocco | Dec-58 | Oct-59 | 1946-1973 | 1973 | - | | 1958 | | 1973 |
| Myanmar | Jan-52 | - | 1946-1975 | 1975 | - | | 1958 | | 1975 |
| Nepal | Sep-61 | \*\*\* | 1959-xxxx | \* | - | | 1959 | | \* |
| Netherlands | Dec-45 | Dec-46 | 1952-1971 | 1971 | - | | 1958 | | 1971 |
| New Zealand | Aug-61 | Oct-61 | 1946-197 | 1974 | - | | 1958 | | 1974 |
| Nicaragua | Mar-46 | Dec-46 | 1963-xxxx | \* | - | | 1963 | | \* |
| Niger | Apr-63 | \*\*\* | (NSLT) | NA | NA | | NA | | NA |
| Nigeria | Mar-61 | Apr-63 | 1946-1973 | 1973 | - | | 1958 | | 1973 |
| Norway | Dec-45 | Dec-46 | 1957-1973 | 1973 | - | | 1958 | | 1973 |
| Oman | Dec-71 | \*\*\* | 1970-xxxx | \* | - | | NA | | NA |
| Pakistan | Jul-50 | Mar-51 | \*\*\* | NA | NA | | NA | | NA |
| Paraguay | Dec-45 | Dec-46 | \*\*\* | NA | NA | | NA | | NA |
| Peru | Dec-45 | Dec-45 | 1960-1968 | 1968 | - | | 1960 | | 1968 |
| Philippines | Dec-45 | Dec-46 | 1946-1969 | 1969 | - | | 1958 | | 1969 |
| Poland | Dec-45 | \*\*\* | \*\*\* | NA | NA | | NA | | NA |
| Portugal | Mar-61 | Jun-62 | 1946-1973 | 1973 | - | | 1958 | | 1973 |
| Qatar | Sep-72 | \*\*\* | 1959-xxxx | \* | - | | 1959 | | \* |
| Rwanda | Sep-63 | \*\*\* | \*\*\* | NA | NA | | NA | | NA |
| Romania | Dec-72 | \*\*\* | \*\*\* | NA | NA | | NA | | NA |
| Saudi Arabia | Aug-57 | Jan-60 | 1960-xxxx | \* | - | | 1960 | | \* |
| Senegal | Aug-62 | \*\*\* | (NSLT) | NA | NA | | NA | | NA |
| Sierra Leone | Sep-62 | Aug-65 | 1965-1973 | 1973 | - | | 1965 | | 1973 |
| Singapore | Aug-66 | \*\*\* | 1946-1972 | 1972 | - | | 1958 | | 1972 |
| Western Samoa | Dec-71 | \*\*\* | \*\*\* | NA | NA | | NA | | NA |
| Somalia | Aug-62 | Jun-63  *Continued on next page* | 1961-xxxx | \* | - | | 1958 | | \* |
| **Country name** | **Join IMF** | **Par value** | **$-gold par network** | **ERR change** | **Other** | **Start** | | **End** | |
| South Africa | Dec-45 | Dec-46 | 1962-1973 | 1973 | - | 1962 | | 1973 | |
| Spain | Sep-58 | Jul-59 | 1961-1973 | 1973 | - | 1961 | | 1973 | |
| Sri Lanka | Apr-50 | \*\*\* | 1946-1968 | 1968 | - | 1958 | | 1968 | |
| Sudan | Sep-57 | Jul-59 | 1946-1975 | 1975 | - | 1959 | | 1975 | |
| Swaziland | Sep-69 | \*\*\* | NSLT | NA | NA | NA | | NA | |
| Sweden | Aug-51 | Nov-51 | 1955-1973 | 1973 | - | 1958 | | 1973 | |
| Switzerland(f) | May-92 | --- | 1946-1971 | 1971 | - | 1958 | | 1971 | |
| Syrian Arab Republic | Apr-47 | Jul-47 | \*\*\* | NA | NA | NA | | NA | |
| Tanzania | Sep-62 | \*\*\* | 1966-1972 | 1972 | - | 1966 | | 1972 | |
| Thailand | May-49 | Oct-63 | 1964-xxxx | - | - | 1964 | | \* | |
| Togo | Aug-62 | \*\*\* | NSLT | NA | NA | NA | | NA | |
| Trinidad & Tobago | Sep-63 | Feb-65 | 1946-xxxx | \* | - | 1958 | | \* | |
| Tunisia | Apr-58 | Sep-64 | 1960-1974 | 1974 | - | 1960 | | 1974 | |
| Turkey | Mar-47 | Jun-47 | \*\*\* | NA | NA | NA | | NA | |
| Uganda | Sep-63 | \*\*\* | 1946-1972 | 1972 | - | 1963 | | 1972 | |
| United Arab Emirates | Sep-72 | \*\*\* | NA | NA | NA | NA | | NA | |
| United Kingdom | Dec-45 | Dec-46 | 1946-1972 | 1972 | 1967(f) | 1958 | | 1972 | |
| United States of America | Dec-45 | Dec-46 | 1946-1972 | 1972 | 1968, 1971(g) | 1958 | | 1972 | |
| Upper Volta | May-63 | \*\*\* | 1963-xxxx | \* | - | 1963 | | 1972 | |
| Uruguay | Dec-45 | Oct-60 | 1967-1970 | 1970 | - | 1967 | | 1970 | |
| Venezuela | Dec-46 | Apr-47 | 1946-xxxx | \* | - | 1958 | | \* | |
| Viet-Nam | Sep-56 | \*\*\* | \*\*\* | NA | NA | NA | | NA | |
| Yemen | Sep-69 | \*\*\* | \*\*\* | NA | NA | NA | | NA | |

*Continued on next page*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Join IMF** | **Par value** | **$-gold par network** | **ERR change** | **Other** | **Start** | **End** |
| Yugoslavia | Dec-45 | May-49 | \*\*\* | NA | NA | NA | NA |
| Zambia | Sep-65 | \*\*\* | 1946-1972 | 1972 | - | 1958 | 1972 |

Note: \*\*\* Never declared a par value or joined the $-dollar par network; \* Right censored, country had not exited by 1978; NSLT, no separate legal tender; ERR change, exchange rate regime change.   
(a) Exited with Germany; (b) Membership coding from point of convertibility; (c) 1967, secretly left the gold pool; (d) 1969, first floated unilaterally; 1973, floating against the dollar; (e) Membership coding from point of convertibility; (f) 1967, devaluation of pound breaches first defense of the US dollar; (g) 1968, termination of the gold pool; 1971, closure of the gold window.

Table A.1.2. *Continued from previous*

## A.1.3. The Latin Union

## The act of joining the Latin Union is identified as the adoption of the 1803 French bimetallic standard, known as the Napoleonic standard (Einaudi 2001; Helleiner 2003; Willis 1901). This includes countries that would, either simultaneously or later, become signatories of the *Convention de 1865* and members of the Latin Monetary Union (LMU), *and* states that adopted the Napoleonic standard but never joined the LMU. The operational onset of the Latin Union is defined as 1865 in Figure 1, although the multilateral foundations of the spontaneous regime had in fact been in place since 1832 when Belgium joined France and Piedmont on the Napoleonic standard.[[2]](#footnote-2)

## If, in a given year, a country *de jure* adopts the gold standard or *de jure* leaves (or is expelled from) the Latin Union it is coded as exiting the system (Einaudi 2001; Helleiner 2003; Timini 2017; Willis 1901). The difficult issue is that most members operated on limping bimetallic standards after adopting the gold standard, where both gold and silver were legal tender but only gold could be freely minted. The LMU and informal Latin Union practices coordinated the management of limping gold standards after 1878. To manage this tension, *de jure* departure from the 1865 treaty is coded as the measure of exit for formal members of the LMU, while the *de jure* adoption of the gold standard is used as the measure of exit for non-LMU members.[[3]](#footnote-3)

## It is worth noting that the process of decline in the Latin Union case had actually begun at least by 1870 (Flandreau 2000). This is some years before the fraction of countries remaining in the system falls below 1 in Figure 1. This discrepancy arises because France masked the process of decline through the admission of new Latin Union members on ever more restrictive and limited terms as discussed in the case study.

## Table A.1.3: Adherence of 26 countries to the Latin Union

**Membership Date of exit Duration**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Type** | **Gold** | **De jure** | **Other** | **Start** | **End** |
| Algeria | Colonial | 1892 | - | - | 1830 | 1927 |
| Austria-Hungary | Informal- | 1892 | - | - | 1867 | 1892 |
| Belgium | 1865 Convention | 1878 | 1927 | 1925 | 1832 | 1878,1925 |
| Bulgaria | Informal+ | 1905 | - | - | 1880 | 1905 |
| Columbia | Informal+ | 1887 | - | - | 1871 | 1887 |
| Congo Free State\* | Colonial | - | - | - | NA | NA |
| Finland | Informal+ | 1915 | - | - | 1877 | 1915 |
| France | 1865 Convention | 1878 | 1927 | - | 1803 | 1878,1927 |
| Greece | 1865 Convention | 1885 | 1908 | - | 1867 | 1885,1908 |
| Italy | 1865 Convention | 1884 | 1927 | 1892 | 1862 | 1884,1927 |
| Italian Eritrea | Colonial | 1884 | - | - | NA | NA |
| Liechtenstein | Colonial | - | - | - | - | - |
| Monaco | Protectorate | - | - | - | - | - |
| Montenegro | Informal(a) | - | - | - | - | - |
| Peru | Informal | 1901 | - | - | 1863 | 1901 |
| Poland | Informal | - | 1926 | - | 1926 | 1926 |
| Pontifical State | Informal | - | - | 1870 | 1866 | 1870 |
| Romania | Informal | 1890 | - | - | 1867 | 1890 |
| Russia | Informal(b) | 1895 | - | - | 1886 | 1895 |
| San Marino | Informal(a) | - | - | - | - | - |
| Serbia | Informal(a) | 1903 | - | - | 1878 | 1903 |
| Spain | Informal(b) | - | - | - | - | - |
| Sweden | Informal | 1872 | - | - | - | - |

*Continued on next page*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Condition** | **Gold** | **De Jure** | **Other** | **Start** | **End** |
| Switzerland | 1865 Convention | 1878 | 1927 | 1921 | 1850 | 1878, 1921 |
| Tunisia | Informal | - | - | - | NA | NA |
| Venezuela | Informal | 1887 | - | - | 1871 | 1887 |

Note: (a) Had formal application to join the LMU rejected; (b) Uniquely joined on a gold basis.

Table A.1.3 – *Continued from previous page*

## A.1.4: The Sterling Area

The participation by a country in the Sterling Area is defined as pegging to the pound sterling, maintaining the majority of its foreign exchange reserves in sterling, and, after WWII, *de jure* inclusion in the List of Scheduled Territories under the 1947 Exchange Control Act. The operational onset is defined as 1931 though the foundations of the regime in 19th century British economic hegemony were established long before this. The start date of membership is defined as when countries left the gold-exchange standard and de facto joined the Sterling Area.

Establishing when countries left the Sterling Area may seem straightforward. However, as with other exchange rate regimes, this is actually a complex and involved task. With the exception of those members that left at the outbreak of WWII, most Sterling Area countries had not officially left the Sterling Area before the UK made significant alterations to the system in 1972. Before then, there were notably few *de jure* departures (defined as an official removal from the List of Scheduled Territories or a declared political intention to withdraw by a member state), as it was not generally in the UK’s interest formally to expel members.

It is therefore necessary to establish when countries *de facto* left the Sterling Area. The first definition of *de facto* departure is when countries made a decisive transition away from holding the majority of their FX reserves in sterling form (de Bromhead, et al. 2020). As a secondary measure, the month in which countries stopped pegging their currencies to sterling using the data from Ilzetzki, Reinhart, and Rogoff (2018) is coded. Formal acts of declared *de jure* departure are also recorded. If the decisions of exit occurred in subsequent years, the earlier year is coded as the exit year.

The end of the dissolution process is defined *de jure* as October 1979 when British exchange control regulations were abolished. By this time, only a handful of countries remained in the system.

## Table A.1.4. Adherence of 68 countries to the Sterling Area

**Membership Measure of exit Duration**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Later name** | **Reserves** | **£ Peg** | **De Jure** | **Start** | **End** |
| Aden | PDR of Yemen | Jun-72 | - | - | 1931 | 1972 |
| Australia | Australia | Jul-72 | - | - | 1931 | 1972 |
| Botswana | Botswana | - | Oct-72 | - | 1931 | 1972 |
| British Somaliland | Somalia | Jul-60 | Jul-60 | Jul-60 | 1931 | 1960 |
| British West Indies | Bahamas | - | May-66 | - | 1931 | 1966 |
| British West Indies | Barbados | Apr-78 | Jul-75 | - | 1931 | 1975 |
| British West Indies | Bermuda | - | Jul-70 | - | 1931 | 1970 |
| British West Indies | Belize | xxx-76 | May-76 | - | 1931 | 1976 |
| British West Indies | Dominica | - | Jul-76 | - | 1931 | 1976 |
| British West Indies | Grenada | - | Jul-76 | - | 1931 | 1976 |
| British West Indies | Guyana | Jul-75 | Oct-75 | - | 1931 | 1965 |
| British West Indies | Jamaica | Dec-74 | Jan-73 | - | 1931 | 1975 |
| British West Indies | Saint Lucia | - | Jul-76 | - | 1931 | 1976 |
| British West Indies | Saint Vincent | - | Jul-76 | - | 1931 | 1976 |
| British West Indies | Trinidad & Tobago | Jul-74 | May-76 | - | 1931 | 1974 |
| Burma | Myanmar | Dec-64 | Jul-74 | Oct-64 | 1931 | 1964 |
| Ceylon | Sri Lanka | Apr-76 | May-76 | - | 1931 | 1976 |
| Cyprus | Cyprus | Oct-73 | Jun-72 | - | 1931 | 1973 |
| Denmark | Denmark | - | xxx-39 | - | 1931 | 1939 |
| East Africa | Kenya | - | Oct-71 | - | 1931 | 1971 |
| East Africa | Tanzania | Apr-76 | Aug-71 | - | 1931 | 1971 |
| East Africa | Uganda | Feb-72 | Oct-71 | - | 1931 | 1971 |
| Egypt | Egypt | Jan-61 | xxx-50 | Jun-47 | 1931 | 1947 |
| Estonia | Estonia | - | - | xxx-39 | 1933 | 1939 |
| Fiji | Fiji | - | Feb-75 | - | 1931 | 1975 |

*Continued on next page*

Table A.1.4 – *Continued from previous page*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Country name** | **Later name** | **Reserves** | **£ Peg** | **De Jure** | **Start** | **End** |
| Finland | Finland | - | - | xxx-39 | 1933 | 1939 |
| Gibraltar | Gibraltar | - | - | - | 1931 | \* |
| Hong Kong | Hong Kong | xxx-75 | Jul-72 | - | 1931 | 1972 |
| Iceland | Iceland | - | Dec-70 | - | 1931 | 1970 |
| India | India | Sep-66 | Mar-79 | - | 1931 | 1966 |
| Iraq | Iraq | Dec-59 | Jul-72 | - | 1931 | 1959 |
| Irish Republic | Ireland | Oct-74 | Mar-79 | - | 1931 | 1974 |
| Jordan | Jordan | Nov-67 | Aug-71 | Jul-50 | 1931 | 1950 |
| Latvia | Latvia | - | - | xxx-39 | 1933 | 1939 |
| Lesotho | Lesotho | - | Oct-72 | - | 1931 | 1972 |
| Libya | Libya | Apr-67 | Dec-71 | Dec-71 | 1931 | 1967 |
| Malaya | Brunei Darussalam | xxx-77 | Jun-72 | - | 1931 | 1972 |
| Malaya | Malaysia | Jun-69 | Sep-75 | - | 1931 | 1969 |
| Malaya | Singapore | Jun-67 | Jun-72 | - | 1931 | 1967 |
| Malta | Malta | Aug-73 | Dec-77 | - | 1931 | 1973 |
| Mauritius | Mauritius | May-76 | Jan-76 | - | 1931 | 1976 |
| New Zealand | New Zealand | May-74 | Dec-71 | - | 1932 | 1971 |
| Pakistan | Bangladesh | Apr-74 | Jan-83 | - | 1931 | 1974 |
| Pakistan | Pakistan | Nov-71 | Sep-71 | - | 1931 | 1971 |
| Palestine | Israel | Apr-51 | Aug-70 | May-48 | 1931 | 1948 |
| Palestine | Palestine | - | - | May-48 | 1931 | 1948 |
| Papua New Guinea | Papua New Guinea | - | Dec-71 | - | 1931 | 1971 |
| Persian Gulf | Bahrain | xxx-69 | Jun-72 | - | 1931 | 1969 |
| Persian Gulf | Kuwait | Mar-68 | May-69 | - | 1931 | 1968 |
| Persian Gulf | Oman | May-72 | May-70 | - | 1931 | 1969 |
| Persian Gulf | Qatar | xxx-69 | Jun-72 | - | 1931 | 1969 |

*Continued on next page*

Table A.1.4 – *Continued from previous page*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **First known** | **Later name** | **Reserves** | **£ Peg** | **De Jure** | **Start** | **End** |
| Persian Gulf | United Arab Emirates | xxx-69 | Sep-66 | - | 1931 | 1966 |
| Portugal | - | - | - | xxx-39 | 1936 | 1939 |
| Rhodesia & Nyasaland | Malawi | Jul-73 | Nov-73 | - | 1931 | 1973 |
| Rhodesia & Nyasaland | Zimbabwe | - | Aug-71 | Nov-65 | 1931 | 1965 |
| Rhodesia & Nyasaland | Zambia | Jan-74 | Dec-71 | - | 1931 | 1971 |
| Seychelles | Seychelles | - | Jan-76 | - | 1931 | 1976 |
| South Africa | South Africa | Jan-66 | Oct-72 | - | 1931 | 1966 |
| South & West Cameroon | Cameroon | - | Apr-62 | - | 1931 | 1962 |
| Sudan | Sudan | Jun-67 | Sep-72 | Jun-47 | 1931 | 1967 |
| Swaziland | Swaziland | - | Oct-72 | - | 1931 | 1972 |
| Sweden | Sweden | - | - | xxx-39 | 1931 | 1939 |
| Thailand | - | - | - | xxx-39 | - | 1939 |
| West Africa | Gambia | Apr-78 | Jan-81 | - | 1931 | \* |
| West Africa | Ghana | Aug-77 | Nov-71 | - | 1931 | 1971 |
| West Africa | Nigeria | Aug-75 | Oct-73 | - | 1931 | 1973 |
| West Africa | Sierra Leone | - | Aug-74 | - | 1931 | 1974 |
| Western Samoa | Western Samoa | - | Dec-71 | - | 1931 | 1971 |

Note: \* Right censored, country had not exited by 1979.

# Appendix 2. International System Types and Adherents

# A.2.1. The classification of system types

# The identification criteria applied here, and throughout the paper, for negotiated orders are: (1) member states participate under a multilateral negotiated design that is agreed *ex ante*; and (2) the *ex post* use of institutionalized collective bargaining, and repeated (ongoing) concerted adjustments, to manage emergent problems in international monetary cooperation. The spontaneous orders are defined in opposition by: (1) the absence of an *ex ante* negotiated design, with the regime instead being brought into existence primarily by the atomized choices of states;[[4]](#footnote-4) and (2) the absence of *ex post* institutionalized collective bargaining, with ad hoc adjustments and bilateral exchanges instead being used to manage emergent problems in international monetary cooperation. These criteria can be thought about as two “hoop tests” that together establish a decisive standard. A system must “jump through” two associated hoops to be considered a clear example of one of the two types of order; all other orders are considered mixed.

**A.2.2. The number of system members**

For the whole period up to 1939, the memberships of the gold and bimetallic systems are plotted against the primary vertical axis as percentages of samples (n=50) that also include countries on silver and inconvertible paper standards. For the pre-1914 period, a country is coded as joining the classical gold standard when it adopted the free convertibility of its currency exclusively into gold (Eichengreen 2008; Obstfeld and Taylor 2004). The countries with de jure bimetallic standards are coded as bimetallic (Bordo and Kyland 1995). For the inter-war period, a country is coded as joining gold in the year that it de facto stabilized or restored de jure convertibility, and as leaving the system in the year that it de jure suspended convertibility or depreciated its currency (Officer 2001).

For the post-WWII period, the raw numbers of nominal adherents to systems are plotted against the secondary vertical axis. The member count for the Bretton Woods system includes countries with effective par values, with par values and minor additional currency practices, and with fixed or stable unitary rates even if they didn’t have par values (de Vries 1986). Countries are coded as being on floating rates according the *de facto* standard of maintaining crawling band, moving band, or managed float from 1946 until 2000 (Ilzetzki, Reinhart, and Rogoff 2018).

# A.2.3. The floating exchange rate system

The floating exchange rate system that emerged in the 1970s poses particular classificatory challenges, since it only weakly passes the “no ex ante design” test and arguably fails the “institutionalized collective bargaining” test. To elaborate, while there was no grand design that states collectively agreed upon, there was a significant measure of state involvement in the process of regime formation, and the existing international cooperative machinery was used to move from fixed, to managed floating, and, ultimately, to fully floating exchange rates. The Fund ultimately sanctioned the floating exchange rate practices that had emerged since the collapse of Bretton Woods in 1978. In the ex post management of the system, there have been elements of ongoing concerted international action such as in the Bank for International Settlements and Bretton Woods meetings, combined with more ad hoc arrangements, such as the 1985 Plaza Accord, and frequent bilateral adjustments. Even though the floating system case does not perfectly correspond to the ideal types outlined, it is nonetheless fruitful to consider the floating system from the perspective of the kinds of leadership and interstate patterns of cooperation and conflict that follow from its hybrid historical structure.

# Appendix 3. Classifying Regional System Types and Durations

The systems are categorized as either negotiated or spontaneous orders according to the criteria established in Appendix 2. The regime duration dates are defined using the criteria set out in Appendix 1.

It is important to note one apparent exception to the classification in the literature. Susan Strange (1971) classified the Sterling Area as a negotiated currency order. However, her work focused on the final years of the Sterling Area system, when contractual supports were introduced to support the transition of the pound from an international to a national currency. She would not have disagreed that the Sterling Area had spontaneous foundations that were predominantly economic rather than political.

Two further points of clarification are needed. First, colonial based systems, that were reconstituted as negotiated orders at the time countries achieved independence, such as the Southern African Monetary Union, CFA Franc Zone and East Caribbean Currency Area, are defined as negotiated orders. Second, there were moments of rupture and reconstitution in several of the negotiated systems, including the rouble zone, Snake, and EMS. The point of final termination is taken as the end of the system to simplify the presentation.

# Appendix 4. A Note on Methods

In “most similar” research designs the compared cases are similar on specified variables other than X1 and/or Y. Most similar designs are often understood in quasi-statistical terms. However, while it is true that general cross-case correlations are being used to probe the theory, it is misleading to think about causal inference in quasi-statistical terms in comparative historical studies, because the cases are not truly independent. It is arguable that the observed outcomes are not artefacts of the common historical foundations of the respective systems, but instead arise because actors have reacted to lessons from the past. For example, the American use of cooptation in the Bretton Woods system might be viewed as a continuation of similar devices invented by Britain in the interwar period. However, this apparent “Galton problem”, the non-independence of the cases, represents an asset of a careful comparative historical inquiry, since we can see systems that were actually designed to be different, such as the interwar and Bretton Woods regimes, nevertheless evolving through common logics governed by deeper structural-historical forces and processes that actors often do not fully recognize themselves. Further, we can better understand thwarted attempts to replicate past governance successes, arising when the actors find themselves on entirely different historical-structural tracks, perhaps best encapsulated by the failure in the interwar period to reconstruct through negotiated agreements the spontaneous classical gold standard. In this context, it is also important to stress that the inferences used to test the theoretical framework are not limited to the cross-case structural variables that are used to match and compare cases. The study also relies on causal process observations (CPOs) and mechanism data, surfaced through within-case process tracing of the unfolding events of regime development and change over time, to validate its argument (Mahoney 2010).

**References**

Bordo, Michael and Barry Eichengreen. eds., 1993. *A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform.* University of Chicago Press.

Bordo, Michael and Ronald MacDonald. 2003. “The Inter-war Gold Exchange Standard: Credibility and Monetary Independence.” *Journal of International Money and Finance*, 22(1): 1-32.

de Bromhead, Alan, David Jordan, Francis Kennedy, and Jack Seddon. 2020. “The Sterling Area Revisited Data Set.” (data available upon request).

Eichengreen, Barry. 2008. *Globalizing Capital: A History of the International Monetary System.* 2nd ed. Princeton, NJ: Princeton University Press.

Einaudi, L. 2001. *Money and Politics: European Monetary Unification and the International Gold Standard* (1865-1873), Oxford: Oxford University Press.

Flandreau, Marc. 2000. “The Economics and Politics of Monetary Unions: A Reassessment of the Latin Monetary Union, 1865-1871.” *Financial History* 7(1): 25-44.

Ilzetzki, Ethan, Carmen Reinhart, and Kenneth Rogoff. 2017. “Country Chronologies and Background Material to Exchange Rate Arrangements into the 21st Century: Will the Anchor Currency Hold?” NBER Working Paper no. 23135, 2017.

* “Replication Data for: ‘Exchange Arrangements Entering the TwentyFirst Century: Which Anchor Will Hold?’,” Harvard Dataverse (2018), doi: 10.7910/DVN/IDEXPY.

Helleiner, Eric. 2003, *The Making of National Money: Territorial Currencies in Historical Perspective*, New York: Cornell University Press.

Obstfeld, Maurice and Alan Taylor. 2004. *Global Capital Markets: Integration, Crisis, and Growth.* Cambridge: Cambridge University Press.

Officer, Laurence. 2001., “Gold Standard.” In *EH.Net Encyclopedia*, R. Waples, ed.

October 1, 2001 URL <http://www.eh.net/encyclopedia/contents/officer/gold.standard.php>.

Kemmerer, David. 1954. “Statement.” In *Hearings on the Gold Reserve Act Amendments, U.S. Senate 83d Congress, Second Session, 299–302*. Washington: Government Printing Office.

Kydland, Finn and Michael Bordo. 1995. “The Gold Standard as a Rule: An Essay in Exploration.” *Explorations in Economic History* 32(4): 423-464.

Mahoney, James. 2010. “After KKV: The New Methodology of Qualitative Research.” *World Politics* 62(1): 120-147.

Wolf, Holger, and Tarik Yousef. 2007. “Breaking the Fetters: Why did Countries Exit the Interwar Gold Standard?” In *The New Comparative Economic History: Essays in Honor of Jeffrey G. Williamson.* Alan M. Taylor, Timothy J. Hatton, Kevin H. O'Rourke eds. 241-266: Cambridge, MA:MIT Press.

De Vries, Margaret G. 1986. *The IMF in a Changing World, 1945-85.* Washington, DC: International Monetary Fund.

Strange, Susan. 1971. *Sterling and British Policy: A Political Study of an International Currency in Decline.* Oxford: Oxford University Press.

Timini, Jacopo. 2017. “Currency Unions and Heterogenous Trade Effects: The Case of the Latin Monetary Union.” *Banco de España,* *Documentos de Trabajo* No. 1739.

Willis, Henry P. 1901. *A History of the Latin Monetary Union: A Study of International Monetary Action. New* York; Greenwood Press.

1. However, the handful of countries that both joined the IMF and first adopted fixed exchange rates after August 1971 are excluded from the analysis. It is not meaningful to say countries joined the Bretton Woods system once the gold window had been closed. [↑](#footnote-ref-1)
2. Before the LMU treaty was signed, Piedmont (1816), Belgium (1832), Switzerland (1850), and Italy (1862) had adopted the Napoleonic standard. [↑](#footnote-ref-2)
3. The conclusion that the system declined slowly is not affected by using the adoption of the gold standard as the date of departure for all members. [↑](#footnote-ref-3)
4. The requirement that for a system to be classified as a negotiated member states must join under an *ex ante* negotiated design means spontaneous systems that later get codified can remain classified as spontaneous orders. However, three further hurdles must be passed: (1) the pattern of atomized member adoption on bespoke terms must continue after the international act of codification; (2) the negotiated international agreement must not encompass all the members of the spontaneous system; and (3) there must be no institutionalized collective bargaining to manage the regime on an ongoing basis after the negotiated contract is established. [↑](#footnote-ref-4)