I Don’t Want Your Dollars: Reverse Speculative Attacks and the Collapse of BrettonWoods (1971-1973)

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I Don't Want Your Dollars: Reverse Speculative Attacks and the Collapse of Bretton Woods (1971-1973)*

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Abstract

We interpret the collapse of the Bretton Woods system as a sequence of speculative attacks on dollar parities between 1971 and 1973, driven by the fundamental incompatibility of asymmetric monetary policies and capital mobility with fixed exchange rates. A permanent increase in US domestic credit growth in the 1960s, combined with increasingly integrated international capital markets, rendered the dollar parities unsustainable in the sense of the classic monetary trilemma. In a two-country model of balance of payments crises in which the US rate of domestic credit growth exceeds that of its partner, we show that when the US does not defend its parities through foreign exchange intervention, the burden of sustaining the peg falls entirely on foreign central banks' willingness to absorb dollar inflows as reserves. The existence of an upper bound on their dollar holdings is sufficient to trigger an endogenous collapse through a "reverse" speculative attack, in which reserves accumulate at partner countries' central banks rather than run down at the center. The model accounts for the timing of crises, the dynamics of reserve accumulation and capital flows, stable trade balances, and the evolution of inflation under the peg. We support this interpretation with new evidence from central bank balance sheets and policy deliberations drawn from archival sources.

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I Introduction

In the spring of 1971, the collapse of the Bretton Woods system did not begin through a formal declaration but through a sudden breakdown. In the first three months of the year, the Deutsche Bundesbank purchased roughly 2 billion US dollars (USD) to defend the mark's parity; in April, it purchased another billion.[1] Pressure then intensified sharply: a billion USD was added to the Bundesbank's balance sheet on May 3 and 4 alone, and in the first 40 minutes of trading on May 5, the Bundesbank was compelled to purchase an additional billion. At that point, foreign-exchange operations were suspended, and the mark peg was abandoned (Bordo et al., 2015b).

A few months later, Japan experienced a similar dynamic. Between January and July 1971, the Bank of Japan accumulated roughly four billion USD in foreign reserves. Following the Nixon Shock, which formally suspended official dollar convertibility into gold on August 15, speculative inflows intensified: in the next two weeks, the Bank of Japan absorbed an additional 4 billion, including 1.3 billion in the two days following the announcement (James, 1996). By the end of the month, Japan had also abandoned its peg. New parities among major economies were negotiated in December 1971 under the Smithsonian Agreement, but the respite proved short-lived. A fresh wave of speculative attacks in February–March 1973 dealt the final blow to the international monetary order agreed at Bretton Woods in 1944, and ushered in the era of generalized floating.

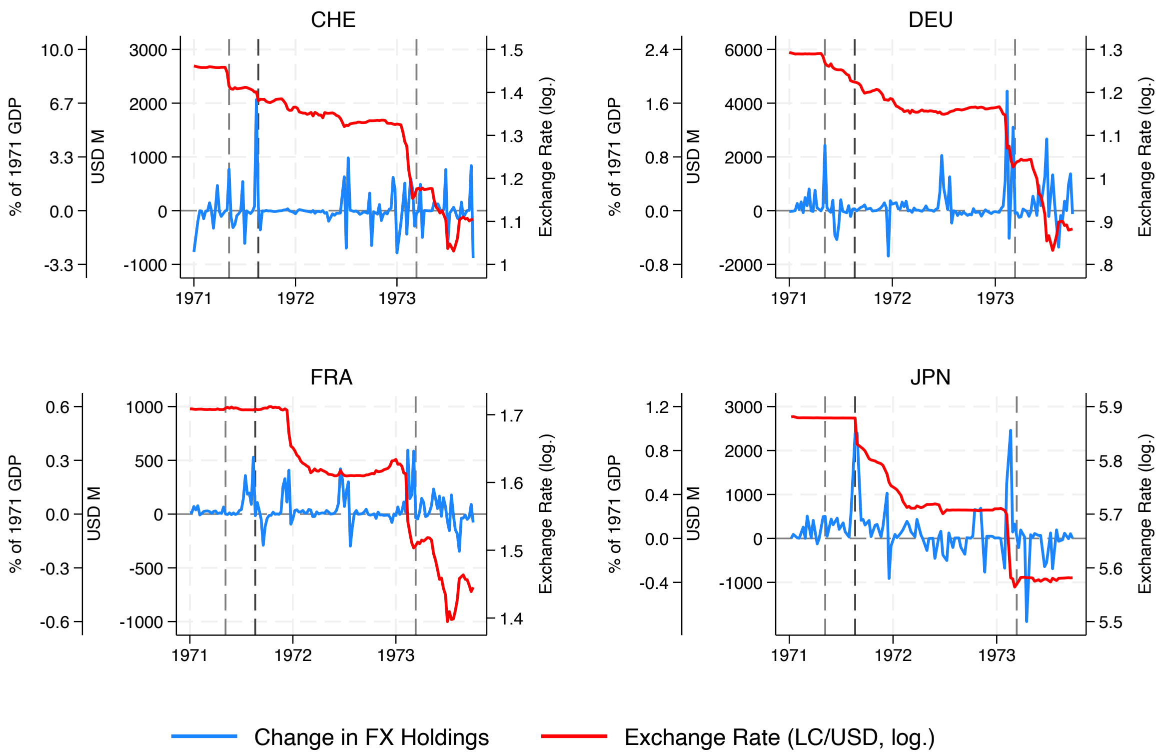
The end of the Bretton Woods system is one of the most consequential episodes in 20th-century international monetary history. In this paper, we interpret its collapse as a sequence of speculative attacks on the US dollar that took place between May 1971 and March 1973. During these attacks, investors sold their USD positions to non-US major central banks at the pegged exchange rate. We argue that the massive scale of US dollar purchases and the resulting accumulation of currency risk on central bank balance sheets triggered the abandonment of the fixed exchange rate system, which had sustained monetary stability in the postwar era. Figure 1 documents this directly: each panel shows weekly changes in central bank foreign exchange holdings alongside the log exchange rate for major partner economies. Large spikes in reserve accumulation coincide precisely with the May and August 1971 crisis episodes and again in March 1973.[2] The counterpart of these reserve movements was private capital flows, not current account imbalances. The United States ran a current account surplus in every year between 1960 and 1970; even in 1971–1973, quarterly shortfalls never exceeded 0.5% of GDP.[3] The dollar balances absorbed by partner central banks reflected private portfolio reallocations rather than a trade-driven supply of dollars. At the time, the rapidly expanding Eurodollar market made offshore dollar claims highly substitutable for partner-currency deposits, enabled by a sharp rise in de facto international capital mobility throughout the 1960s despite the formal persistence of capital controls (Obstfeld and Taylor, 2004).

[1] Germany's and Japan's GDPs in 1970 were each approximately USD 220 billion, so every billion dollars purchased by their respective central banks represented about 0.5% of GDP.

[2] The same pattern extends to the other advanced economies, as documented in Appendix Figure A.1.

[3] See Appendix Figure A.2.

Figure 1: Weekly Changes in Central Bank Foreign Exchange Holdings

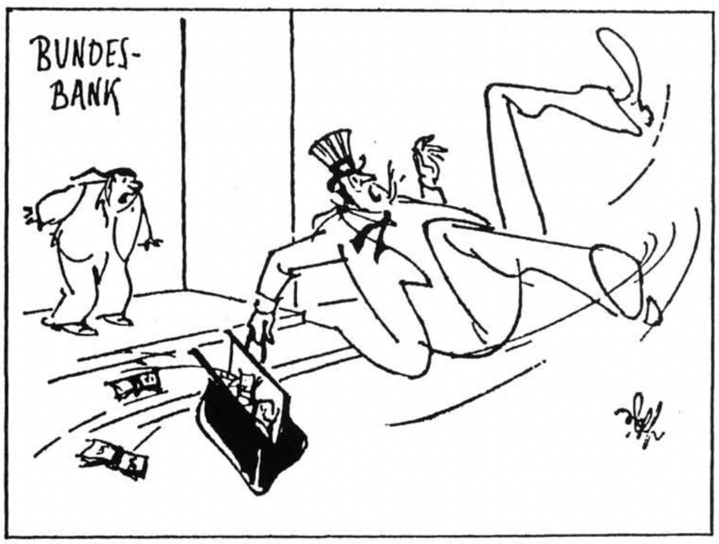


Sources: Schweizerische Nationalbank, Deutsche Bundesbank, Baubeau (2018), Bank of Japan, BIS, World Bank WDI. Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float. The figure combines weekly changes in foreign-exchange assets drawn from central bank balance sheets with reported intervention (purchase) data when available. Balance-sheet changes reflect movements in foreign currency asset positions, while reported intervention series measure net foreign exchange purchases. Exchange rates are quoted as local currency units per USD; a fall denotes a revaluation of the local currency.

Our narrative is guided by a two-country model of speculative attacks that extends the seminal contribution of Krugman (1979). Under free capital mobility, divergent rates of domestic credit expansion across countries generate persistent pressures on central bank balance sheets, which eventually trigger a speculative attack that ends the exchange rate peg. We depart from Krugman's model by considering reverse speculative attacks; that is, attacks in which the strong-currency country is the target. We assume that a tight-money, strong-currency country can temporarily defend the peg through reserve accumulation, while the anchor country—the loose-money side—does not intervene in the foreign exchange market. An upper bound on the reserve stock of the weak currency held by the strong-currency central bank drives speculators' incentives to run on the currency peg. The model characterizes monetary and price dynamics before, during, and after a reverse speculative attack. Consistent with our empirical framing, monetary policy is neutral with respect to the real allocation: the trade balance is constant and the current account is independent of monetary policy up to a small seigniorage transfer; the entire mechanism operates through the capital account. We support this interpretation with historical evidence from central bank balance sheets and foreign exchange interventions.

This interpretation closely mirrors how policymakers themselves understood the events. Partner countries' central banks recognized the incompatibility of fixed exchange rates, divergent monetary policies, and free capital mobility; identified US domestic credit expansion as the driving force; and explicitly acknowledged a binding limit on their willingness to continue accumulating dollar reserves. The limit on the European and Japanese central banks' appetite for US dollar reserves is illustrated in the Fritz Wolf cartoon in Figure 2. The US side of the asymmetry was captured by Treasury Secretary John Connally, who reportedly told a gathering of European finance ministers at the Rome G-10 meeting in November 1971 that "the dollar is our currency, but it's your problem" (Gyohten and Volcker, 1992).

Figure 2: I Don't Want Your Dollars



„Ich will deine Dollars nicht!"

Source: Drawing by Fritz Wolf, originally published in *Neue Osnabrücker Zeitung* (1971); reproduced from James (1996).

We map our interpretation onto the conventional framing of the end of Bretton Woods, which, as synthesized by Bordo (1993), identifies three classic problems behind the regime's collapse: an adjustment problem (who bears the burden of correcting balance-of-payments imbalances, and through what mechanism), a liquidity problem (whether the system supplies enough reserves to finance world output growth), and a confidence problem (whether the United States could credibly honor the convertibility of outstanding dollar liabilities into gold). On the adjustment problem, we align with Bordo (1993) and Obstfeld (1993): the system's main mechanisms for correcting "fundamental" imbalances were peg realignments and capital controls, leaving it structurally prone to speculative attacks, a mechanism our model makes precise. On the liquidity and confidence problems, we depart from standard narratives. After March 1968 the dollar's gold convertibility was effectively moot, so the confidence problem became immaterial for the 1971–1973 crises; the liquidity problem, once detached from gold, reduced to the question of foreign central banks' willingness to hold dollar reserves, precisely the margin our analysis emphasizes. Our interpretation is thus closest in spirit to the monetary imbalance view of Bordo (2020), which identifies US inflation and monetary expansion as the fundamental source of growing international pressures.[4]

Our interpretation centers on the mechanics by which divergent monetary stances across countries brought the system down. Under the peg, goods-market arbitrage tied inflation rates together across countries, with the common rate governed by the global money supply. As US monetary expansion outpaced domestic dollar demand, the excess liquidity spilled across borders, forcing partner central banks to absorb the flows through reserve accumulation and endogenously expand their own money supplies. The regime thus transmitted US credit expansion directly to foreign economies, forcing them to import inflation while accumulating currency risk on their balance sheets: long in depreciating dollars, short in their own appreciating currencies. The existence of a limit on what partner central banks would tolerate, at the scale the regime required, was sufficient to render collapse inevitable. Neither real variables nor rigidities played a significant role in the system's demise.

A precedent for applying this framework to Bretton Woods is Garber (1993), who proposed a model of speculative attacks to explain the breakdown of the dollar-gold parity. Garber's paper was not without controversy: in the published discussion, Krugman argued that speculative attack models were parables for capital flight in Latin America and were not useful for analyzing Bretton Woods, which he saw as driven by the adjustment problem rather than liquidity issues. Garber disagreed, contending that the two are not mutually exclusive: "What leads to a speculative attack is that there is a limit on the amount of financing that the monetary authority is willing to use to maintain the fixed exchange rate system". Our analysis vindicates Garber's position by supplying the formal two-country apparatus his intuition called for, in a setting in which only the strong-currency central bank intervenes in the foreign exchange market while the weak-currency country does not—an asymmetry that mirrors the institutional architecture of Bretton Woods.

A large historical literature analyzes the end of the Bretton Woods regime, with Bordo (1993) a natural starting point, followed by work analyzing the system's internal inconsistencies, adjustment failures, and political economy dimensions (Angel, 1991; James, 1996; Schenk, 2010; Bordo and Eichengreen, 2013; Bordo et al., 2015a,b; Bordo, 2020; Garten, 2021; Naef, 2022). We add to this literature by elucidating through a theoretical model the role of reverse speculative attacks in the critical episodes of 1971–1973 and by providing new empirical evidence consistent with this mechanism. The analysis complements contemporaneous policy accounts, archival sources, and retrospective memoirs that document the constraints faced by policymakers during the system's final years (Emminger, 1986; Silber, 2012; Volcker and Harper, 2018).

The theoretical literature on speculative attacks descends from the canonical first-generation framework of Krugman (1979), recast by Calvo (1987) as a modern dynamic general equilibrium model with optimizing agents. We extend Calvo's formulation to two countries and characterize

[4]We interpret the emphasis on inflation in the historical literature as referring to excessive domestic credit growth rather than differential inflation outcomes: as figures A.9 and 8 document, inflation rates were broadly similar across countries during the Bretton Woods period, diverging only after the system's collapse.

equilibria with *reverse* speculative attacks—in which the strong-currency country is the target. Within the same lineage, work that allows for reverse speculative attacks in one-country models begins with the 'selling attacks' of Grilli (1986) and continues with Amador et al. (2016) and Amador et al. (2020).

Finally, the paper relates to the literature on endogenous selection of the international monetary system. In contrast to existing work that places the determination of regime outcomes primarily on the hegemon (Farhi and Maggiori, 2018; Gourinchas et al., 2019), this paper emphasizes a setting in which the binding constraints governing regime continuation originate in partner economies, shifting effective control over regime outcomes away from the anchor country.

The remainder of the paper is organized as follows. Section II documents the monetary and exchange rate policy environment of the period and establishes the four empirical patterns that motivate the model. Section III develops the two-country model of reverse speculative attacks, characterizes the equilibrium, provides a quantitative illustration using US, German, and Japanese data, and corroborates the model's mechanisms with contemporary accounts drawn from central bank archives and policy deliberations. Section IV concludes.

II Monetary and Exchange Rate Policy: 1958–1973

The collapse of the Bretton Woods fixed exchange rate system was not a single event but the endpoint of a decade-long accumulation of monetary imbalances and increasing capital mobility. It proceeded in two stages. First, there was a run on the dollar-gold exchange rate, then a sequence of runs on the cross-currency exchange rate pegs. This section documents the run on the Gold Pool before turning to the 1968–1973 trends that motivate the model in Section III.

II.1 The Gold Pool

On December 27, 1958, the core Bretton Woods countries made their currencies "convertible". Currency convertibility had been one of the Marshall Plan's founding conditionalities, and its restoration marked the Bretton Woods system's transition from postwar reconstruction to full operation. Under the system, the dollar was pegged to gold at 35 USD per ounce and each partner currency to the dollar. The parallel market premia on major European currencies and the yen narrowed sharply and effectively disappeared by the early 1960s.[5] Capital controls were progressively liberalized over the course of the decade and de facto capital mobility rose well ahead of the formal removal of restrictions (Obstfeld and Taylor, 2004). Against this background, the Eurodollar market emerged and expanded rapidly in the 1960s, intermediating offshore dollar claims that circumvented the residual capital controls and interest-rate restrictions. The market provided a low-friction channel for private agents to shift between dollar and partner-currency positions: a holder of Eurodollar deposits could move into Euro-DEM deposits, the counterparty bank would sell dollars for marks in the spot market, and the Bundesbank, committed to the parity,

[5] See Appendix Figure A.3.

would stand on the other side of the trade.[6] By 1971, the external US-dollar liabilities of banks in eight European countries had climbed to 71 billion dollars (McKinnon, 1977).

The gold market at the time was anchored in London, where the Bank of England intervened to defend the gold peg. To stabilize the private market price of gold, the central banks of the United States, Germany, the United Kingdom, France, Italy, Belgium, the Netherlands, and Switzerland established the London Gold Pool in 1961, committing to coordinated gold sales and purchases to absorb imbalances (Schenk, 2010, 2013; Naef, 2022). The Bank of England acted as the sole operating agent, transacting daily on behalf of all members and settling with them monthly in proportion to their quotas. The Pool itself foreshadowed the tensions that came to a head between 1968 and 1973. Had the United States been unconditionally committed to converting dollars at 35 USD/oz on demand, there would have been no need for the Pool: any central bank intervening to defend its parity could have presented its accumulated dollars at the US Treasury and obtained gold automatically. The Pool's role in stabilizing the London market price at 35 USD/oz thus reveals an implicit commitment by member central banks to hold dollars rather than convert them, and to share the cost of defending the parity by selling their own gold reserves into the private market when needed. Gavin (2004) interprets this arrangement as central to the Cold War bargain: European financial support for the dollar in exchange for US military support for European security.

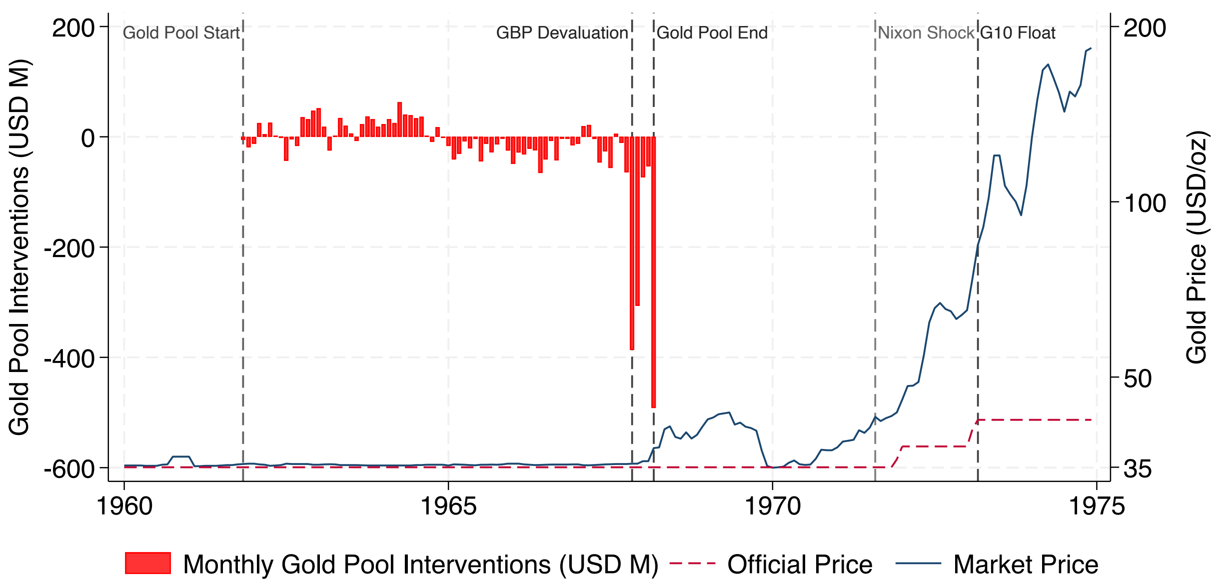
Tensions surfaced whenever partner countries' central banks sought to step out of this implicit commitment, whether by selling dollars for gold in the London market—forcing the Pool to defend 35 USD/oz by selling other members' gold reserves—or by presenting dollars at the US Treasury for direct conversion (Naef, 2022). The two leading European cases of the late 1960s illustrate sharply asymmetric responses. France added roughly USD 1.5 billion of gold to its reserves between 1965 and 1966 and withdrew from the Pool in June 1967, in step with its 1966 withdrawal from NATO's integrated military command (Bordo et al., 2019). Germany, by contrast, made its acceptance of the constraint explicit. In a letter to Federal Reserve Chairman William McChesney Martin Jr. of 30 March 1967, Bundesbank President Karl Blessing wrote: "By refraining from converting US dollars into gold from the US Treasury, the Bundesbank has always intended to contribute to international monetary cooperation and to avoid disruptive influences on the foreign exchange and gold markets. You can be assured that the Bundesbank will continue to adhere to this policy in the future and will fully play its part in international monetary cooperation" (Blessing, 1967)[7]. Taken together, these episodes show that the US gold window for official transactions was never automatic—it was the object of continuous political negotiation.

[6] "Consequently, wide interest-arbitrage incentives opened in favor of domestic European markets over both the United States money market and the Euro-dollar market, and large amounts of dollars were taken up by European borrowers– banks and non banks–for conversion into local currencies. German business firms in particular were heavy borrowers, but there were sizable flows of other countries as well. With many currencies at or near their upper intervention points, European central banks were obliged to absorb the dollars offered on the exchanges, which added to their international reserves while simultaneously expanding domestic liquidity and thereby tending to negate their policies of restraint" (Coombs, 1971).

[7] Zimmermann (2000) places the Blessing letter in the context of the trilateral offset negotiations between Germany, the United States, and the United Kingdom over the cost of Allied forces stationed on German soil.

The Gold Pool collapsed in March 1968 under a speculative attack of the kind later formalized by Krugman (1979), reflecting the interplay of the problems of adjustment, liquidity, and confidence identified by Bordo (1993). The high rate of domestic credit growth in the US created an excess supply of dollars, which the Pool absorbed through gold sales in the London market. This drain on the Pool's resources accelerated after sterling's devaluation in November 1967 and culminated in the run on the Pool's gold stock that forced its dissolution (Naef, 2022). Figure 3 illustrates these dynamics. In the aftermath of the crisis, a two-tier gold market arrangement formally separated the official and private gold prices, with a premium emerging in the private market. This effectively suspended dollar-gold convertibility in all but name: the US gold stock remained broadly frozen after 1968, reflecting the de facto end of gold as the system's anchor.[8] From that point on, currency cross rates remained pegged, supported by foreign-exchange interventions by partner central banks. The Nixon Shock on August 15, 1971 merely formalized the regime that followed the 1968 run. Writing in its immediate aftermath, Friedman concluded that "the official price is wholly symbolic, and so is the monetary role of gold" (Friedman, 1971a).

Figure 3: Gold Pool Interventions and the Market Price of Gold



Sources: Naef (2022) and Bank for International Settlements.

II.2 Cross-Country Pegs

We can now document four empirical patterns for the 1968–1973 period that discipline and motivate our two-country model of balance-of-payments crises. First, the United States experienced sustained monetary expansion, driven by the accumulation of net domestic assets, while net foreign assets remained broadly stable. Second, non-US Group of Ten (G-10) economies pursued

[8]See Appendix Figure A.4.

relatively restrictive domestic credit policies; under the exchange rate peg, their monetary base expanded endogenously through the accumulation of net foreign assets.[9] Third, repeated runs on the dollar—most prominently in May 1971 and February–March 1973—took the form of sudden, large, and accelerating reserve accumulation by foreign central banks, culminating in the abandonment of the peg; that is, reverse speculative attacks. Fourth, following the transition to generalized floating, inflation rates and price levels diverged sharply across countries, marking the breakdown of the common price-level path implied by fixed exchange rates.

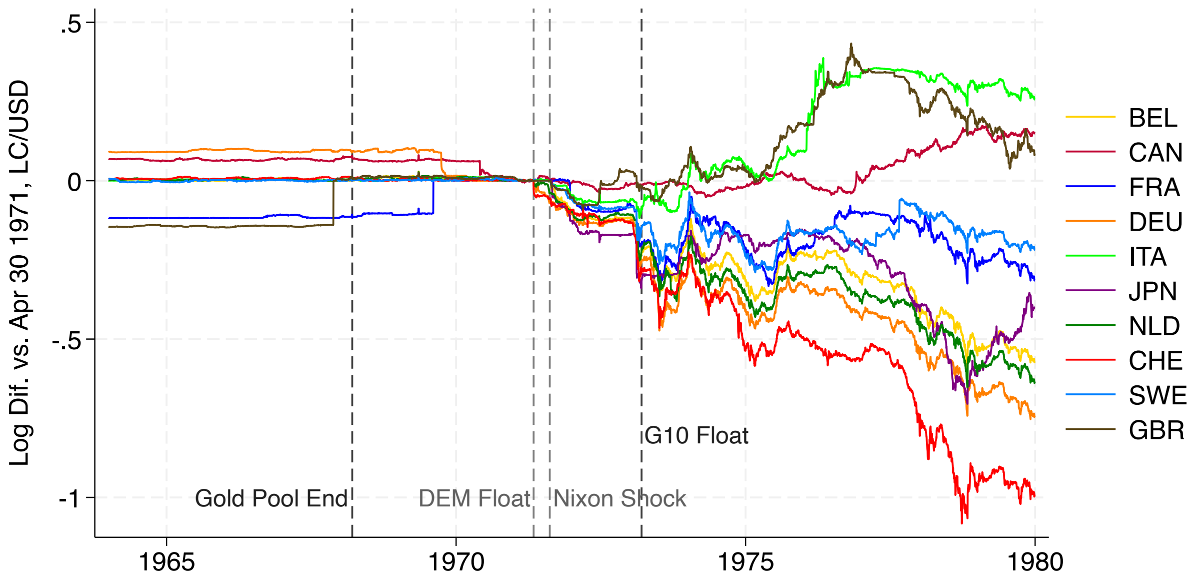
The end of Bretton Woods came as a sequence of disruptions between 1971 and 1973 that culminated in generalized floating. These events appear as sharp discontinuities in nominal exchange rates in Figure 4.[10] Parity pressures had intensified in 1969: the French franc was devalued in August, and the Deutsche Mark was revalued in September of that year. After a brief period of calm, a new wave of speculative pressures brought the regime to a crisis. As documented in the introduction, on May 5, 1971 Germany suspended foreign-exchange operations and on May 10 allowed the mark to float when markets reopened; the Netherlands, Switzerland, and Belgium followed shortly.[11] On August 15, 1971, the Nixon Shock formally suspended official gold convertibility and introduced wage and price controls alongside a temporary import surcharge. The announcement was followed by a speculative attack on the yen, which forced the Bank of Japan to abandon its peg by the end of the month. A negotiated realignment followed in December 1971 under the Smithsonian Agreement, which "formalized what foreign exchange markets had already in large part delivered" (Irwin, 2013). The agreement devalued the dollar against other currencies through a devaluation against gold (from 35 to 38 USD/oz), reset central parities, and widened intervention bands. By this point, however, the gold parity was largely symbolic: with dollar-gold convertibility suspended, the Smithsonian realignment was less a restoration of the Bretton Woods architecture than a managed step toward floating exchange rates. The new pegs proved short-lived, and by February 1973 the system again came under attack. The United States devalued the dollar a second time, to 42.22 USD/oz on February 12. Japan floated within days, and on March 16 a G-10 communiqué formally accepted the temporary floating arrangements that effectively marked the end of the Bretton Woods system.

[9] The Group of Ten is a group of countries that participated since 1962 in the General Arrangements to Borrow, an agreement to provide liquidity to the International Monetary Fund (IMF), and included initially the United States, the United Kingdom, Belgium, Canada, France, Italy, Japan, the Netherlands, and the central banks of West Germany and Sweden. Switzerland became an associate after 1964.

[10] See key windows zoomed in Appendix Figure A.5 and the corresponding real exchange-rate movements in Appendix Figure A.6.

[11] Contemporary observers disagreed on whether the May 1971 episode was best understood as a "mark crisis" reflecting idiosyncratic German conditions or as a more general crisis of confidence in the dollar (Yeager, 1976, p. 512). Writing in May 1971, Friedman argued that the absence of simultaneous flight into the franc, sterling, or yen pointed to a German-specific episode (Friedman, 1971b).

Figure 4: Nominal Exchange Rate (LC/USD), Daily (1964–1979)



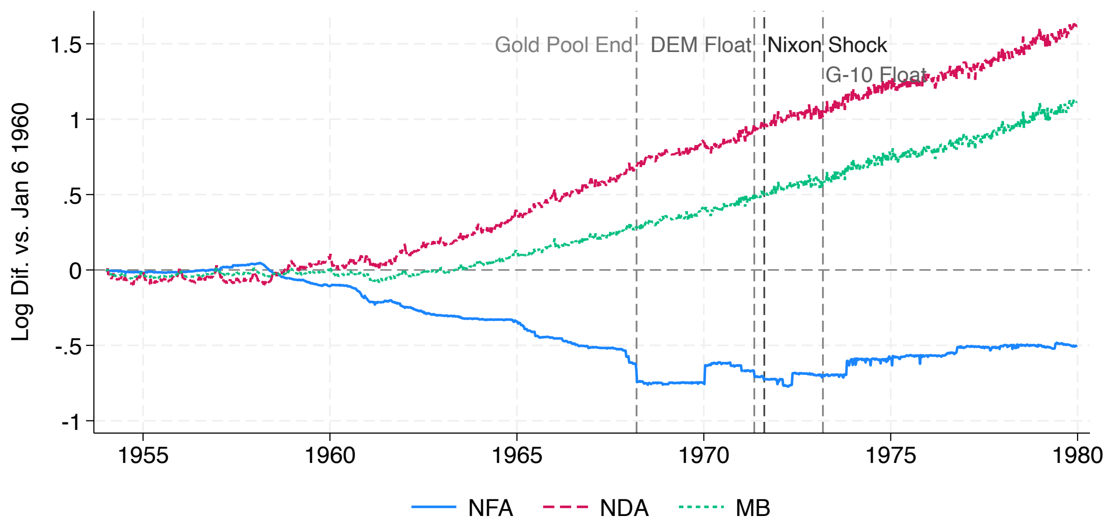
Source: Bank for International Settlements. Missing daily observations are filled forward using the last available rate. A positive log change represents a nominal appreciation of the US dollar vis-à-vis the currency indicated in the legend.

Figure 5 documents the monetary pressures that preceded the collapse. From the early 1960s onward, the Federal Reserve's net domestic assets expanded steadily. Net foreign assets fell through the Gold Pool era as gold reserves were drawn down, then stabilized after March 1968 when the Pool dissolved and gold convertibility was effectively suspended. The expansion in domestic credit was not only large in absolute terms but proceeded at a pace that exceeded most partner economies. Table 1 documents the asymmetry in domestic credit growth across G-10 economies.[12] Each entry reports domestic credit growth estimated over two windows: the last Bretton Woods decade (1964–1973) and the post-Gold Pool period (1968–1973). For the United States, parentheses report Newey–West standard errors; for all other countries, parentheses report the t-statistic for the one-sided test that US domestic credit growth exceeds that of the comparator country, based on Driscoll–Kraay standard errors from a pooled two-country regression. US net domestic assets grew at roughly 8 percent per year in log terms, or around 4–4.6 percent when correcting by real GDP growth—a pace that exceeded most partner economies by a statistically significant margin. Germany and Japan, the two countries at the center of the 1971 crises, show growth-adjusted differentials of roughly 5–6 percentage points for Germany and 6–9 percentage points for Japan across the two windows, significant at the 10 percent level or better. The post-Gold Pool window produces larger differences in credit growth for France, the UK, and Sweden, reflecting the relative acceleration of US monetary expansion in the late 1960s. Canada and Italy

[12]The Netherlands and Switzerland are excluded because their NDA levels are negative over part of the sample, precluding a log-linear trend estimation. As Figure 6 and Appendix Figure A.8 show, their NDA growth during this period is negative in the Netherlands and approximately zero in Switzerland; including them would only reinforce the cross-country pattern.

are notable exceptions: Canada shows a near-zero growth-adjusted differential of 0.3 percentage points in the later window, while Italy's domestic credit growth outpaced even the United States over both periods. Consistent with the model in Section III, Canada experienced no speculative pressure on its dollar parity (it abandoned its peg in May 1970), while Italy faced runs against the lira rather than the dollar.

Figure 5: US Federal Reserve - Weekly Balance Sheet



Source: Bao et al. (2018).

Table 1: Net Domestic Assets Growth

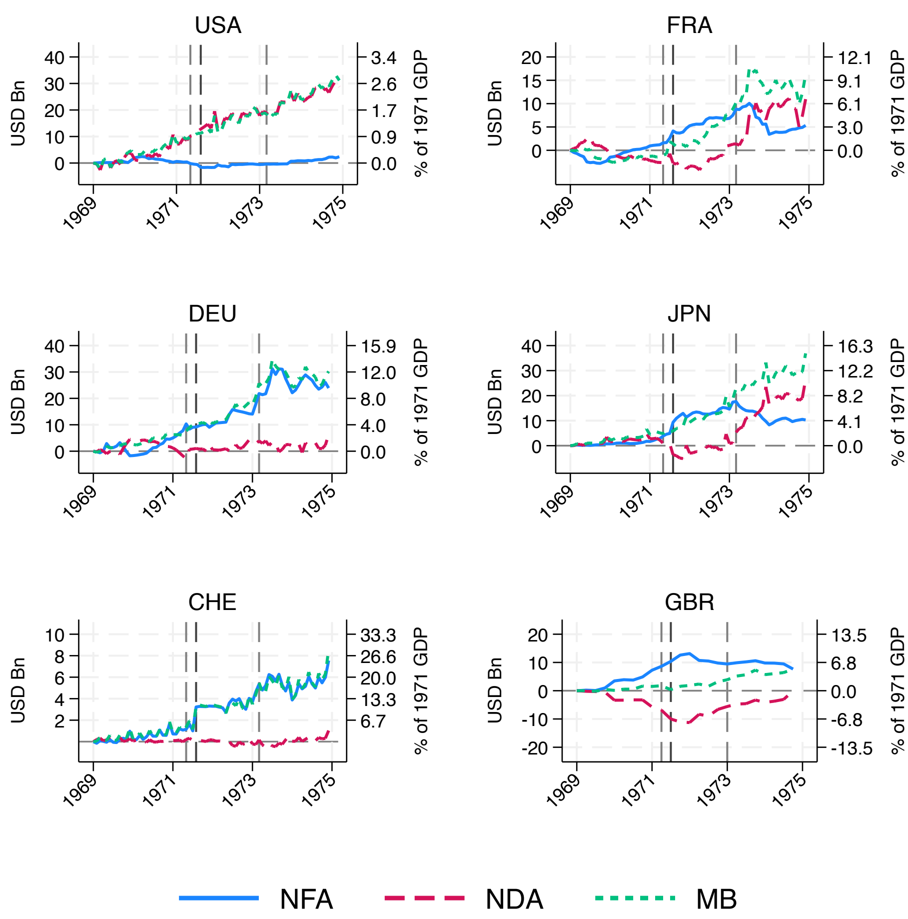
		1964–1973		1968–1973	
	Min. Year	NDA (log)	Growth-Adjusted	NDA (log)	Growth-Adjusted
BEL	1964	-0.0334***	-0.0804***	-0.1132***	-0.1689***
		(14.13)	(14.89)	(8.79)	(9.76)
CAN	1964	0.0664***	0.0172***	0.0903	0.0430
		(2.33)	(3.65)	(-1.44)	(0.49)
DEU	1968	0.0371	-0.0110*	0.0371	-0.0110**
		(1.26)	(1.47)	(1.28)	(1.68)
FRA	1964	0.0897	0.0371	0.0345*	-0.0224***
		(-0.90)	(0.30)	(1.63)	(2.43)
GBR	1964	0.0015***	-0.0306***	-0.0781***	-0.1125***
		(4.84)	(4.31)	(5.02)	(5.02)
ITA	1964	0.1555	0.1047	0.1952	0.1484
		(-9.38)	(-8.13)	(-17.52)	(-15.60)
JPN	1965	0.0662	-0.0154**	0.0211	-0.0440**
		(0.52)	(1.96)	(1.22)	(1.86)
SWE	1964	0.0869	0.0525	-0.0128***	-0.0494***
		(-0.32)	(-0.67)	(2.77)	(2.84)
USA	1964	0.0810***	0.0401***	0.0806***	0.0464***
		(0.0016)	(0.0016)	(0.0024)	(0.0024)

Source: IMF Monetary and Financial Statistics (central bank balance sheets) and World Bank World Development Indicators (GDP). NDA is computed as reserve money minus net foreign assets. For each country c we estimate $\log \text{NDA}_{c,t} = \alpha_c + \theta_c t + \varepsilon_t$ by OLS and report the annualized trend $\hat{\theta}_c$ (multiplied by 12 for monthly data, or 4 for quarterly data; United Kingdom only). The growth-adjusted column reports $\hat{\theta}_c - g_c$, where g_c is the average annual real GDP growth rate over the same window, computed from WDI annual data at the window endpoints. For the United States, parentheses report Newey–West standard errors. For all other countries, parentheses report the t-statistic for the one-sided test $H_0: \theta_{\text{US}} \leq \theta_c$ against $H_1: \theta_{\text{US}} > \theta_c$, based on Driscoll–Kraay standard errors from a pooled two-country regression with the United States; $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

As Bordo (2020) emphasizes, the central tension of the Gold Pool period was the difficulty of reconciling the US monetary expansion with the external constraint of gold convertibility—a tension that ultimately broke in the speculative attack on the dollar-gold peg. After 1968, with gold convertibility suspended and the US no longer intervening in foreign exchange markets, the Bretton Woods system had entered its final phase as a dollar-peg system sustained entirely by foreign central banks' willingness to accumulate dollar reserves. The United States and partner central banks deployed a range of tools to prolong this arrangement, including expanded forward market operations, an enlarged network of Federal Reserve swap lines, and the creation of Special Drawing Rights, but none addressed the underlying monetary inconsistencies driving reserve accumulation (Bordo et al., 2015a,b). With US domestic credit expanding faster than in other major economies and

US net foreign assets barely declining after the end of the Gold Pool, parities could be maintained only if partner countries' central banks absorbed dollar inflows by accumulating foreign assets, so that their net foreign assets rose even as US gold losses slowed. This is exactly what the data show. Figure 6 documents a marked rise in net foreign assets for the major G-10 economies, most notably France, Germany, Japan, Switzerland, and even the United Kingdom, both in levels and notably as a share of GDP. A similar pattern is evident for Belgium, the Netherlands, and Sweden, but less so for Canada and Italy.[13] These inflows continued to sustain the parities through large-scale reserve accumulation by partner countries until 1973, when speculative pressures finally triggered the major currencies' decision to float.

Figure 6: G-10 Central Banks Balance Sheet (1969–1974)



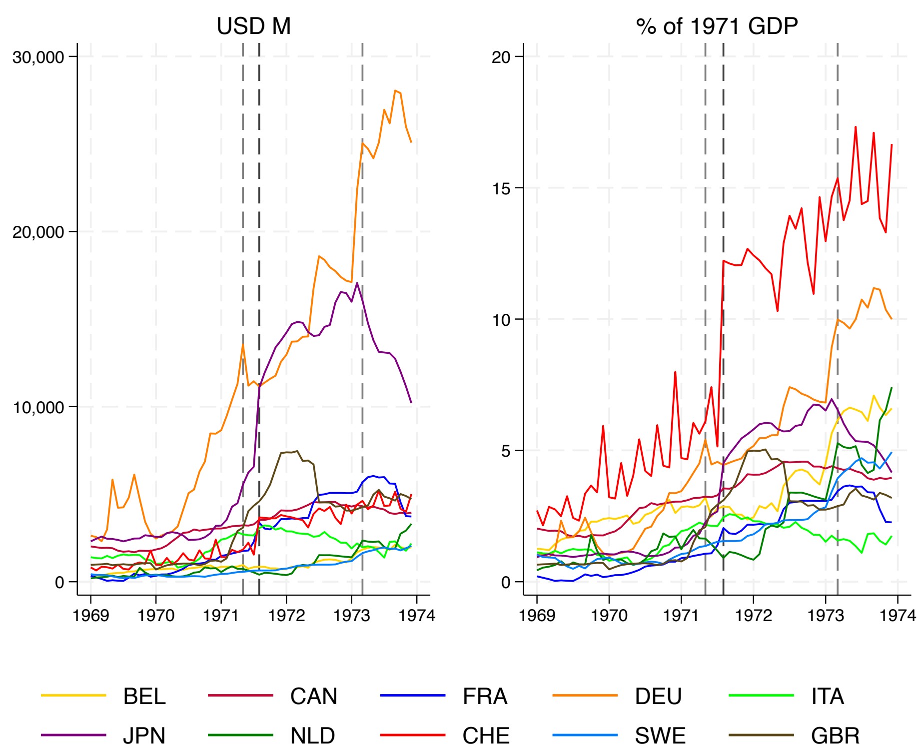
Sources: IMF Monetary and Financial Statistics; BIS (exchange rates); World Bank WDI (GDP). Balance-sheet variables are expressed as changes relative to the base year and scaled by 1970 GDP (in current USD). Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float.

Monthly data on official foreign exchange reserves provide more direct evidence of reverse speculative attacks in the final phase of Bretton Woods. Figure 7 shows sharp increases in reserve

[13] See Appendix Figure A.7 and Appendix Figure A.8.

holdings around the major regime disruptions.[14] Foreign exchange reserves surged in Germany in the months preceding the May 1971 suspension of intervention and float of the Deutsche Mark, consistent with capital inflows betting on revaluation. Similar reserve surges occur for Japan and other major economies immediately following the August 1971 Nixon Shock, as well as again in early 1973 after the February devaluation of the dollar against gold and before the G-10 decision to float. When scaled by GDP, the magnitude of these inflows is striking for smaller economies such as Belgium, the Netherlands, and Switzerland, indicating that the speculative pressures associated with the collapse of the system were not confined to its largest members but were broadly shared across the G-10. Moreover, spot reserve changes likely understate the scale of intervention, since central banks also accumulated forward dollar positions outside measured reserve stocks: by May 1971, the Bundesbank held roughly 2.7 billion USD in forward dollar commitments (Coombs, 1971).

Figure 7: Central Banks Monthly Foreign Exchange Reserves



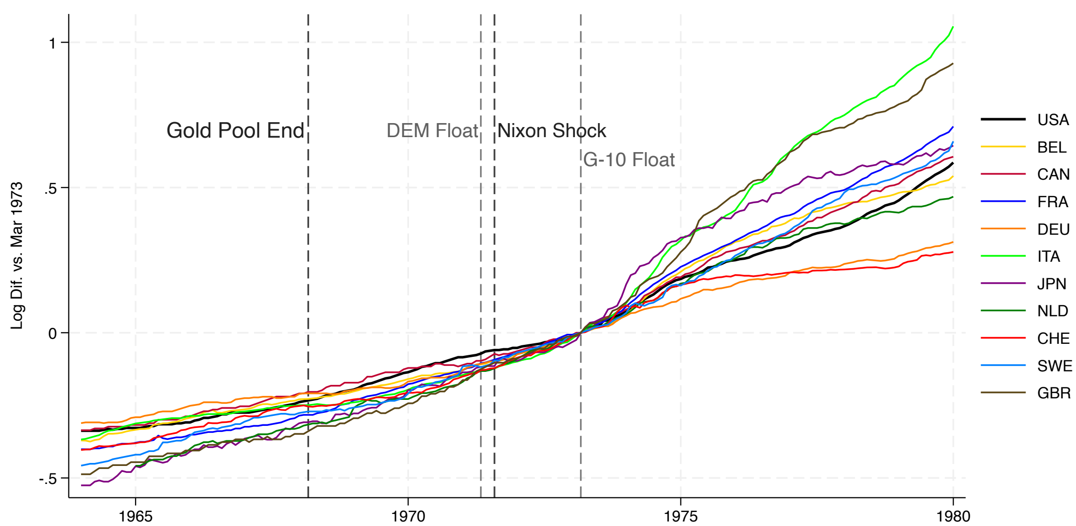
Sources: IMF International Liquidity (foreign currency reserves), World Bank World Development Indicators (GDP in current USD). Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float.

Weekly balance sheet series allow a higher-frequency view of intervention dynamics. Using archival reports from national central banks, and work from Baubeau (2018) and Naef (2022), we

[14] Reserves were not exclusively in US dollars, but the dollar dominated official reserve portfolios during this period: in 1970 about 74 percent of global currency reserves were held in dollars, rising to 76 percent by 1973 (Eichengreen et al., 2018).

reconstruct changes in weekly foreign exchange holdings for a subset of countries. Figure 1 documents sharp increases in foreign exchange assets for Germany, France, Japan, and Switzerland in May and August 1971, consistent with heavy dollar sales to central banks ahead of the breakdown of parities.[15] Germany and Japan show the sharpest spikes around the May and August 1971 episodes, respectively. France displays a distinct pattern, with particularly large reserve movements around the Smithsonian Agreement. Pressures on major economies' exchange rates intensified again in February–March 1973, when speculative inflows surged across countries as the system entered its final crisis phase. Comparable dynamics for the United Kingdom, Sweden, Netherlands and Belgium, and Canada are shown in Appendix Figure A.1, with Canada standing out as an outlier without any large reserve movements in the period. Overall, the weekly series point to episodic but highly synchronized reverse speculative attacks across countries during the final two years of the regime.

Figure 8: Price Level



Source: Bank for International Settlements.

Figure 8 shows the evolution of price levels across countries. Prior to the breakdown of the system, inflation rates were broadly aligned, with the modest differentials that did exist consistent with a Balassa–Samuelson effect, given differences in relative productivity growth of the tradable and nontradable sectors across countries. After the end of the peg system, inflation rates diverged, although the consequences were initially delayed by the wage and price controls introduced alongside the Nixon Shock in August 1971. By 1980, the US price level had diverged sharply from low-inflation partner countries such as Germany and Switzerland.[16]

[15] The Federal Reserve's 1971 Annual Report documented some of these dynamics contemporaneously, presenting a chart of joint reserve and exchange-rate movements for Germany, Japan, France, and Switzerland that closely parallels Figure 1 (Federal Reserve, 1972).

[16] Appendix Figure A.9 shows a consistent divergence in inflation rates.

III Model

This section develops a two-country, perfect-foresight model designed to interpret the empirical patterns documented above—most notably, large-scale reserve accumulation in partner countries, synchronized inflation under the peg, and the eventual collapse of parities following a sudden burst of sustained speculative inflows. The framework builds on the canonical first-generation model of Krugman (1979) and is adapted to allow for *reverse* speculative attacks: under a pegged exchange rate, sustained monetary expansion in the anchor country generates persistent money market pressure that is absorbed by reserve accumulation in partner countries. As long as the peg is maintained, inflation is jointly determined across countries by the global evolution of domestic credit. When foreign official reserves reach an upper bound, the fixed exchange rate regime is abandoned, and the system transitions endogenously to a float.

III.1 Economic Environment

Consider a perfect-foresight, one-good, two-country endowment economy. We think of the US as the home country and Germany or Japan as the foreign country. In each country, there is a representative household and a government. Agents trade money and bonds denominated in local and foreign currency, as well as the consumption good. Trade and capital mobility are frictionless.

Foreign variables are identified by an asterisk (*). The nominal exchange rate E_t is units of home currency per unit of foreign currency. The currency devalues at rate $\epsilon_t = \frac{\dot{E}_t}{E_t}$. The nominal interest rates are i_t and i_t^*. With a single traded good, the law of one price implies

$$P_t = E_t P_t^*. \tag{1}$$

Inflation is $\pi_t \equiv \dot{P}_t / P_t$ and $\pi_t^* \equiv \dot{P}_t^* / P_t^*$. Free trade and free capital mobility imply the no-arbitrage conditions

$$i_t = i_t^* + \epsilon_t, \tag{2}$$

$$\pi_t = \pi_t^* + \epsilon_t. \tag{3}$$

Equations (2) and (3) imply equal real interest rates across countries, $r_t = r_t^*$, where $r_t \equiv i_t - \pi_t$. During Bretton Woods, $\epsilon_t = 0$, hence $\pi_t = \pi_t^*$ in this one-good baseline. We assume, for simplicity, a constant endowment in each country so that

$$y_t = y \text{ and } y_t^* = y^* \text{ for all } t. \tag{4}$$

III.1.1 Monetary and Fiscal Policy

We use a superscript to denote the holder of an asset and a subscript to denote its currency denomination. An empty superscript refers to the home private household, * to the foreign private household, and g, g^* to the home and foreign governments. Subscripts h, f denote assets denominated in home and foreign currency. The home central bank's nominal balance sheet is

$$M^g_{f,t} E_t + D_{h,t} = M_{h,t} + M^{g^*}_{h,t} + NW_{h,t}. \tag{5}$$

Assets are foreign reserves $M^g_{f,t}$ (claims on foreigners) and net domestic assets $D_{h,t}$ (claims on the government/financial sector). Liabilities are money held by the home private sector $M_{h,t}$ and the foreign central bank's holdings of home-currency reserves $M^{g^*}_{h,t}$. The net worth of the central bank is $NW_{h,t}$. We assume central bank international reserves do not earn interest. In real terms, equation (5) is

$$m^g_{f,t} + d_{h,t} = m_{h,t} + m^{g^*}_{h,t} + nw_{h,t}. \tag{6}$$

The home government's nominal budget constraint is $\dot{B}^g_{h,t} = \dot{D}_{h,t} - \dot{NW}_{h,t} + P_t \tau_t + i_t B^g_{h,t}$, where τ_t is the primary surplus (lump-sum taxes), $B^g_{h,t}$ are government assets in home currency, $D_{h,t}$ is central bank's credit to the government and $\dot{NW}_{h,t}$ are central bank profits not transferred to the government. Dividing by the price level and using $\dot{D}_{h,t}/P_t = \dot{d}_{h,t} + \pi_t d_{h,t}$ and $\dot{NW}_t/P_t = \dot{nw}_{h,t} + \pi_t nw_{h,t}$, the real government's budget constraint is

$$\dot{b}^g_{h,t} = \dot{d}_{h,t} - \dot{nw}_{h,t} + \pi_t(d_{h,t} - nw_{h,t}) + \tau_t + (i_t - \pi_t) b^g_{h,t}. \tag{7}$$

Eliminating intra-public-sector claims, $d_{h,t}$ and $nw_{h,t}$, yields the consolidated public-sector real budget constraint. We define the government's net asset position as $a^g_t \equiv m^g_{f,t} + b^g_{h,t} - m_{h,t} - m^{g^*}_{h,t}$, which measures consolidated public wealth as the difference between the government's claims on the foreign central bank and its bond holdings, and its monetary liabilities to the domestic private sector and to the foreign central bank. For any time path x_t, we then define the left and right limits at portfolio reallocation date T as $x_{T^-} \equiv \lim_{t \uparrow T} x_t, x_{T^+} \equiv \lim_{t \downarrow T} x_t$, and when x_t is continuous at T, we write $x_T \equiv x_{T^-} = x_{T^+}$. Given portfolio reallocation times Θ, the law of motion $\dot{a}^g_t = r_t a^g_t + \tau_t + i_t \left(m_{h,t} + m^{g^*}_{h,t} - m^g_{f,t} \right)$ implies

$$0 = a^g_0 + \int_0^\infty \left(\tau_t + i_t (m_{h,t} + m^{g^*}_{h,t} - m^g_{f,t}) \right) e^{-\int_0^t r_s ds} dt, \tag{8a}$$

$$a^g_T = m^g_{f,T^+} + b^g_{h,T^+} - m_{h,T^+} - m^{g^*}_{h,T^+} = m^g_{f,T^-} + b^g_{h,T^-} - m_{h,T^-} - m^{g^*}_{h,T^-} \qquad \text{for } T \in \Theta. \tag{8b}$$

Equation (8a) is standard. The jump restriction (8b) states that at portfolio reallocation times $T \in \Theta$, consolidated public-sector real wealth is preserved across the reallocation. The foreign central bank balance sheet and consolidated budget constraints are analogous:

$$m_{h,t}^{g^*} + d_{f,t}^* = m_{f,t}^* + m_{f,t}^g + nw_{f,t}^*, \tag{9a}$$

$$0 = a_0^{g^*} + \int_0^\infty \left(\tau_t^* + i_t^* \left(m_{f,t}^* + m_{f,t}^g - m_{h,t}^{g^*}\right)\right) e^{-\int_0^t r_s ds} dt, \tag{9b}$$

$$a_T^{g^*} = m_{h,T^+}^{g^*} + b_{f,T^+}^{g^*} - m_{f,T^+}^* - m_{f,T^+}^g = m_{h,T^-}^{g^*} + b_{f,T^-}^{g^*} - m_{f,T^-}^* - m_{f,T^-}^g \qquad \text{for } T \in \Theta. \tag{9c}$$

The policy environment during the Bretton Woods period is captured by three assumptions governing domestic credit creation, fiscal policy, and exchange rate policy.

Assumption 1 (Monetary Policy)

- *Home country domestic credit and net worth:* $\frac{\dot{D}_{h,t}}{D_{h,t}} = \theta > 0$, $NW_{h,0} = 0$ *and* $\dot{NW}_{h,t} = \dot{E}_t M_{f,t}^g$.
- *Foreign country domestic credit and net worth:* $\frac{\dot{D}_{f,t}^*}{D_{f,t}^*} = \theta^* < \theta$, $NW_{f,0}^* = 0$ *and* $\dot{NW}_{f,t}^* = -\frac{\dot{E}_t}{E_t}\frac{M_{h,t}^{g^*}}{E_t}$.

Assumption 1 captures the empirical patterns documented in Section II. The home country (the United States) follows a monetary policy with sustained domestic credit expansion relative to the foreign country, $\theta^* < \theta$. For tractability, we also assume that exchange-rate valuation effects are absorbed by central bank net worth and are not distributed to the treasury.

Assumption 2 (Fiscal Policy)

- *Home country fiscal policy:* $\tau_t = -r_t b_{h,t}^g$ *for* $t \neq T$, *and* $b_{h,T^+}^g = b_{h,T^-}^g$.
- *Foreign country fiscal policy:* $\tau_t^* = -r_t b_{f,t}^{g^*}$ *for* $t \neq T$, *and* $b_{f,T^+}^{g^*} = b_{f,T^-}^{g^*}$.

Assumption 2 is a simple way to assume a balanced budget in a Ricardian economy and restricts, for simplicity, open market operations with bonds at the time of the speculative attack.

Assumption 3 (Exchange Rate Policy)

1. *Fixed Exchange Rate for* $0 < t < T$: $E_t = E$, *fixed home currency reserves,* $m_{f,t}^g = 0$, *and market determined foreign international reserves* $m_{h,t}^{g^*}$.
2. *Floating Exchange Rate for* $t \geq T$: E_t *is market determined and nominal reserve positions are fixed, such that* $M_{h,t}^{g^*} = \bar{M}_h^{g^*} = \bar{m}_h^{g^*} P_{T^-}$.
3. *Regime Switch: the exchange rate regime switches at* T *when the post-switch foreign reserve position reaches its upper bound,* $m_{h,T^+}^{g^*} = \bar{m}_h^{g^*}$.

Assumption 3 captures the essence of the exchange rate policy adopted by the US and its G-10 partners during the 1968–1973 period. A fixed exchange rate regime is maintained as long as foreign official reserves can absorb incoming capital flows; once these reserves reach an upper bound, the peg is abandoned, and the economy transitions to a floating exchange rate regime. To capture reverse speculative attacks observed in the data, we restrict attention to equilibria in which reserve accumulation occurs entirely in the foreign country. While modeled as an exogenous upper bound, the reserve limit should be interpreted as capturing political, institutional, or monetary-control constraints that made continued intervention increasingly costly for G-10 countries, as documented in the historical record.

III.1.2 Households

The home household chooses consumption, money holdings, and portfolio positions in home- and foreign-currency bonds. Their nominal flow budget constraint is

$$\begin{aligned} \dot{M}_{h,t} + E_t \dot{B}_{f,t} + \dot{B}_{h,t} &= P_t(y - c_t - \tau_t) + i_t B_{h,t} + E_t i_t^* B_{f,t} && t \neq T, \\ M_{h,T^+} + E_T B_{f,T^+} + B_{h,T^+} &= M_{h,T^-} + E_T B_{f,T^-} + B_{h,T^-} && T \in \Theta. \end{aligned}$$

At portfolio reallocation times $T \in \Theta$, households can reshuffle asset holdings without changing their nominal wealth. For the household's problem to have a solution in the perfect foresight model with no financial frictions, wealth must be bounded, and hence the exchange rate must be a continuous function of time, i.e., it cannot jump at T.

The home household's optimization problem in real terms is derived by dividing by the price level P_t and using $\dot{B}/P = \dot{b} + \pi b$ so that,

$$\max_{c_t, m_{h,t}, a_t} \int_0^\infty u(c_t, m_{h,t}) e^{-\rho t} dt \text{ s.t. } \begin{cases} \dot{a}_t = r_t a_t + y - c_t - i_t m_{h,t} - \tau_t \\ a_0 \text{ given and } \lim_{t\to\infty} a_t e^{-\rho t} \geq 0, \end{cases} \tag{10}$$

where real wealth is $a_t = m_{h,t} + b_{f,t} + b_{h,t}$, with $m_{h,t} \equiv M_{h,t}/P_t$, $b_{h,t} \equiv B_{h,t}/P_t$, and $b_{f,t} \equiv E_t B_{f,t}/P_t$. With separable, differentiable preferences, the optimality conditions satisfy

$$\frac{u_m\left(m_{h,t}\right)}{u_c\left(c_t\right)} = i_t, \tag{11a}$$

$$\frac{\dot{c}_t}{c_t} = -\frac{u_c(c_t)}{u_{cc}(c_t)c_t}\left(r_t - \rho\right), \tag{11b}$$

$$\int_0^\infty \left(c_t + i_t m_{h,t} - \tau_t\right) e^{-\int_0^t r_s ds} dt = a_0 + \int_0^\infty y e^{-\int_0^t r_s ds} dt, \tag{11c}$$

$$a_T = m_{h,T^+} + b_{f,T^+} + b_{h,T^+} = m_{h,T^-} + b_{f,T^-} + b_{h,T^-}. \tag{11d}$$

Equation (11a) characterizes the money demand. The household equates the marginal rate of substitution between real money balances and consumption to the nominal interest rate. Equation (11b) is the standard Euler equation governing intertemporal consumption choices. The intertemporal budget constraint (11c) is obtained by integrating the flow constraint forward and imposing the transversality condition, and is such that the present discounted value of expenditures, including the opportunity cost of holding money, equals initial wealth plus the present discounted value of income. At portfolio reallocation dates $T \in \Theta$, households adjust the composition of their asset holdings without changing nominal wealth. Equation (11d) imposes the continuity of nominal asset values at the time of regime changes. The foreign household's conditions are analogous:

$$\frac{u_m\left(m^*_{f,t}\right)}{u_c\left(c^*_t\right)} = i^*_t, \tag{12a}$$

$$\frac{\dot{c}^*_t}{c^*_t} = -\frac{u_c(c^*_t)}{u_{cc}(c^*_t)c^*_t}\left(r^*_t - \rho\right), \tag{12b}$$

$$\int_0^\infty \left(c^*_t + i^*_t m^*_{f,t} - \tau^*_t\right) e^{-\int_0^t r^*_s ds}\, dt = a^*_0 + \int_0^\infty y^* e^{-\int_0^t r^*_s ds}\, dt, \tag{12c}$$

$$a^*_T = m^*_{f,T^+} + b^*_{f,T^+} + b^*_{h,T^+} = m^*_{f,T^-} + b^*_{f,T^-} + b^*_{h,T^-}. \tag{12d}$$

Aggregating private and public budget constraints yields the home-country net foreign asset dynamics

$$\dot{\bar{a}}_t = r_t \bar{a}_t + y - c_t + i_t\left(m^{g^*}_{h,t} - m^g_{f,t}\right), \tag{13}$$

where $\bar{a}_t \equiv a_t + a^g_t$, and analogously for the foreign country.

III.2 Equilibrium

Aggregate consistency requires goods, money, and bond markets to clear:

$$c_t + c^*_t = y + y^*, \tag{14a}$$

$$m_{h,t} + m^*_{f,t} = d_{h,t} + d^*_{f,t} \qquad \text{for } t \le T, \tag{14b}$$

$$m_{h,t} = \frac{M_{h,t}}{P_t} \text{ and } m^*_{f,t} = \frac{M^*_{f,t}}{P^*_t} \qquad \text{for } t \ge T, \tag{14c}$$

$$b_{h,t} + b^g_{h,t} + b^*_{h,t} = 0, \tag{14d}$$

$$b_{f,t} + b^{g^*}_{f,t} + b^*_{f,t} = 0. \tag{14e}$$

Under a peg, free trade, and free capital mobility, there is only one world money market clearing condition equation (14b). Free trade and the fixed exchange rate imply there is only one price level to be determined, while free capital mobility under a peg implies that the money supply in each country and reserves are endogenous.[17] Under floating, the two conditions in equation (14c) must hold to determine the two price levels. Equations (14d) and (14e) are redundant by Walras law if

[17] Assumption 1 implies $\dot{NW}_{h,t} = \dot{NW}^*_{f,t} = 0$. Since $NW_{h,0} = NW^*_{f,0} = 0$, we have $nw_{h,t} = nw^*_{f,t} = 0$ for all $t < T$, so equation (14b) reduces to the condition $m_{h,t} + m^*_{f,t} = d_{h,t} + d^*_{f,t}$.

the rest of the equations (14) hold.

Definition 1 (Competitive Equilibrium) *Given initial world wealth distribution satisfying* $a_0 + a_0^g = -a_0^* - a_0^{g^*}$*, a constant endowment* y *in each country, and policies satisfying Assumptions 1, 2, and 3, a* Competitive Equilibrium *is a regime-switch time* T*; paths for quantities*

$$(a_t, a_t^*, a_t^g, a_t^{g^*}, m_{h,t}, m_{f,t}^*, b_{h,t}, b_{h,t}^g, b_{h,t}^*, b_{f,t}, b_{f,t}^*, b_{f,t}^{g^*}, c_t, c_t^*)_{t\geq 0};$$

prices $(r_t, i_t, P_t, r_t^*, i_t^*, P_t^*)_{t\geq 0}$*; an exchange-rate path* $(E_t)_{t\geq 0}$ *with* $E_t = E$ *for* $t < T$ *and market-determined* E_t *for* $t \geq T$*; and reserve holdings* $(m_{h,t}^{g^*})_{t\in[0,T]}$*, such that:*

(i) The law of one price (1) and uncovered interest parity (2) hold.

(ii) The public-sector constraints (6), (8), and (9) are satisfied.

(iii) Households optimize, satisfying (11) and (12).

(iv) Aggregate consistency conditions (14) hold.

III.3 Characterization of equilibrium.

This section fully characterizes the equilibrium. In order to obtain a closed-form solution, we restrict attention to separable preferences.

Assumption 4 (Preferences) *Preferences are separable in consumption and real money balances. We assume CES money demand with country-specific shifters* α, α^**:*

$$u(c_t, m_t) = \frac{c_t^{1-\sigma}}{1-\sigma} + \alpha \frac{m_t^{1-\sigma}}{1-\sigma}.$$

Assumption 4 and the household's optimization problem imply the money demand functions

$$m(i_t, c) = c\left(\frac{\alpha}{i_t}\right)^{1/\sigma}, \qquad m^*(i_t^*, c^*) = c^*\left(\frac{\alpha^*}{i_t^*}\right)^{1/\sigma}. \tag{15}$$

Real Equilibrium. The real equilibrium of this economy is purposely simple. Assumption 4 and the definition of equilibrium imply that the equilibrium interest rates are

$$r_t = \rho \text{ for all } t. \tag{16}$$

The equilibrium interest rates in equation (16) follow directly from the assumptions of free capital mobility, the separability of preferences, and a constant endowment. Free capital mobility and perfect foresight imply $r_t = r_t^*$. Under Assumption 4, equation (11b) and equation (12b) imply that consumption growth is identical across countries—i.e., $\frac{\dot{c}_t}{c_t} = \frac{\dot{c}_t^*}{c_t^*} = \frac{1}{\sigma}(r_t - \rho)$. At the same time, a constant aggregate endowment and market clearing, equation (14a), imply a constant aggregate consumption. Since both countries have identical consumption growth, the only feasible path is zero growth. Substituting back into the Euler equation, this implies $r_t = \rho$ for all t. Equilibrium consumption is:

$$c = y + \rho\left(a_0 + a_0^g\right) + \rho \int_0^\infty i_t\left(m_{h,t}^{g^*} - m_{f,t}^g\right)e^{-\rho t}\,dt, \tag{17a}$$

$$c^* = y^* + \rho\left(a_0^* + a_0^{g^*}\right) - \rho \int_0^\infty i_t\left(m_{h,t}^{g^*} - m_{f,t}^g\right)e^{-\rho t}\,dt. \tag{17b}$$

Consumption equals permanent income: the constant endowment y plus the interest income on initial national wealth $\bar{a}_0$, plus the annuitized present value of net seigniorage transfers. An analogous expression determines c^* for the foreign country. In a two-country environment, the seigniorage transfers are purely redistributive and sum to zero globally. When $m_{h,t}^{g^*} > 0$ and $m_{f,t}^g = 0$, home country consumers benefit from the "inflation tax" paid by foreigners. Assumption 4 yields a clean separation between consumption and monetary dynamics, which helps make the case that the balance-of-payments imbalances under Bretton Woods are independent of real variables, such as trade balance dynamics.

Monetary Equilibrium: Prices. Solving for the monetary equilibrium requires finding the equilibrium price levels P_t and P_t^*, as well as the regime-switch time T, which are jointly determined by the money market clearing conditions, the no arbitrage condition for goods, the continuity of prices as a function of time, and the household's boundary conditions.[18] No arbitrage in goods (1) implies that the exchange rate E determines the ratio P_t/P_t^* under a peg and the prices P_t/P_t^* determine the floating exchange rate E_t after the fixed exchange rate regime collapses.

The money market equilibrium conditions are differential equations of the type studied in Sargent and Wallace (1973), with the nuance that they are different before and after the regime-switch time T. We solve for the path of P_t using the domestic money market clearing condition for $t \geq T$ and the global market clearing condition for $t \leq T$. The money market equilibrium conditions under floating exchange rates are

$$D_{h,0}e^{\theta t} - P_T\bar{m}_h^{g^*} = P_t m(\rho + \pi_t, c) \qquad \text{for } t \geq T, \tag{18a}$$

$$D_{f,0}^* e^{\theta^* t} + P_T^*\bar{m}_h^{g^*} = P_t^* m^*(\rho + \pi_t^*, c^*) \qquad \text{for } t \geq T. \tag{18b}$$

The left-hand side of each equation (18) is the money supply, while the right-hand side is the demand for nominal money balances—the product of the demand for real money balances and the price level. The money supply under the floating regime on the left-hand side of equation (18) is driven by the evolution of domestic credit. The fixed exchange rate regime ends when the foreign country's reserves reach an upper bound $\bar{m}_h^{g^*}$. After the regime change, nominal reserve positions are fixed at the bound. The home money supply equals domestic credit minus foreign

[18] The continuity of prices is necessary for the existence of an equilibrium in a perfect foresight model with no borrowing constraints. We derive the equilibrium by solving for the price level after and before the switch to floating rates and imposing $P_T = \lim_{\delta\to 0} P_{T+\delta} = \lim_{\delta\to 0} P_{T-\delta}$, and the analogous condition for P_t^*.

official holdings of home-currency reserves, while the foreign money supply equals domestic credit plus the value of those reserves at the switch. Since the money demand depends on inflation ($\pi_t = \dot{P}_t/P_t$), each money market clearing condition is a differential equation. It has a unique solution because equation (10) implies the boundary condition $\lim_{s\to\infty} e^{-\rho\sigma s} P_s^{-\sigma} = 0$. The solution to the money market clearing conditions in equation (18), derived in Appendix A.3.1, is:

$$P_t = \left[\sigma\alpha c^\sigma \int_t^\infty \left(D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds\right]^{-1/\sigma} \qquad \text{for } t \geq T, \tag{19a}$$

$$P_t^* = \left[\sigma\alpha^*(c^*)^\sigma \int_t^\infty \left(D_{f,0}^* e^{\theta^* s} + P_T^* \bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds\right]^{-1/\sigma} \qquad \text{for } t \geq T. \tag{19b}$$

The home domestic price level depends on a weighted average of the future money supplies, $M_t = D_{h,0}e^{\theta t} - P_T \bar{m}_h^{g^*}$. The foreign price level has an equivalent expression. For the fixed exchange rate regime, there is only one price to determine since the fixed exchange rate $E_t = E$ and free trade imply $P_t^* = P_t/E$ for $t < T$. The global money market clearing condition, equation (14b), becomes

$$D_{h,0}e^{\theta t} + ED_{f,0}^* e^{\theta^* t} = P_t\Big(m(\rho + \pi_t, c) + m^*(\rho + \pi_t, c^*)\Big). \tag{20}$$

The left-hand side of equation (20) is the global money supply, while the right-hand side is the global money demand. Equation (20) is a differential equation, and by the continuity of P_t, its boundary condition is the equilibrium price at P_T under the floating regime—determined by equation (19a). The solution for the price level is

$$P_t^{-\sigma} = \sigma\Big(c\,\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma}\Big)^\sigma \int_t^T \left(D_{h,0}e^{\theta s} + ED_{f,0}^* e^{\theta^* s}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds + e^{-\rho\sigma(T-t)} P_T^{-\sigma} \qquad \text{for } t \leq T. \tag{21}$$

The price level at t is determined by the anticipated price level at the time of the regime switch, P_T, and by the evolution of the global money supply, $D_{h,0}e^{\theta t} + ED_{f,0}^* e^{\theta^* t}$, between t and T. It is convenient to define the rescaled collapse prices at time of the attack $\widetilde{P} \equiv e^{-\theta T} P_T$ and $\widetilde{P^*} \equiv e^{-\theta^* T} P_T^*$, which satisfy the fixed point equations

$$\widetilde{P} = \left[\sigma\alpha c^\sigma \int_0^\infty \left(D_{h,0}e^{\theta s} - \widetilde{P}\,\bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma s}\, ds\right]^{-\frac{1}{\sigma}}, \tag{22a}$$

$$\widetilde{P^*} = \left[\sigma\alpha^*(c^*)^\sigma \int_0^\infty \left(D_{f,0}^* e^{\theta^* s} + \widetilde{P^*}\bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma s}\, ds\right]^{-\frac{1}{\sigma}}. \tag{22b}$$

Because neither equation contains T, both $\widetilde{P}$ and $\widetilde{P^*}$ are constants determined solely by monetary policy and structural parameters. Let T^- and T^+ denote the instants immediately before and after the regime switch at T. The following lemma characterizes inflation dynamics:

Lemma 1 (Inflation Dynamics) *Under Assumptions 1–4, the path for inflation has the following properties:*

1. *Floating exchange rate regime:*

   (a) *Home Country: for all* $t \geq T^{+}: \pi_t > \theta$ *and* $\lim_{t\to\infty} \pi_t = \theta$.

   (b) *Foreign country: for all* $t \geq T^{+}: \pi_t^* = 0$ *when* $\theta^* = 0$, $\pi_t^* \in (-\rho, \max(\theta^*, 0))$ *for* $\theta^* \neq 0$, *and*

$$\lim_{t\to\infty} \pi_t^* = \begin{cases} \theta^* & \text{for } \theta^* \geq 0 \\ 0 & \text{for } \theta^* \leq 0. \end{cases}$$

2. *Fixed exchange rate regime:*

   (a) *For all* $t \leq T^{-}$, $\pi_{T^+}^* < \pi_t < \pi_{T^+}$, *where we assume* $\theta D_{h,0} + \theta^* E D_{f,0}^* \geq 0$ *for the first inequality.*

   (b) *For all* $t \leq T^{-}$:

$$\theta^* < \pi_t < \theta \iff \frac{c\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma}}{D_{h,0}/\widetilde{P} + D_{f,0}^*/\widetilde{P}^*} \in \left((\rho+\theta^*)^{1/\sigma}, (\rho+\theta)^{1/\sigma}\right), \tag{23}$$

   where $\widetilde{P}, \widetilde{P}^*$ *satisfy equation (22).*

Proof See Appendix A.3.2.

Under the peg, inflation is common across countries, $\pi_t = \pi_t^*$, determined jointly by the global money market clearing condition equation (20). Lemma 1 establishes that, at the moment of collapse, the common peg inflation rate lies strictly between the two post-collapse country-specific rates: $\pi_{T^+}^* < \pi_{T^-} < \pi_{T^+}$. The upper bound applies to the entire pre-collapse path unconditionally; the lower bound applies whenever the world money supply is non-decreasing. Peg inflation is strictly bounded between the two countries' domestic credit growth rates, $\theta^* < \pi_t < \theta$ for all $t < T$, if and only if equation (23) holds, which requires world real money demand at the moment of the attack to be neither so large nor so small as to place the common peg nominal interest rate outside the interval $(\rho + \theta^*, \rho + \theta)$. Both conditions are satisfied by our quantitative illustration with the United States, Germany, and Japan data.

After the regime switch, inflation paths diverge sharply. In the home country, inflation jumps on impact above θ and then converges monotonically back to θ from above. In the foreign country, inflation falls at the switch and then converges upward to θ^* for $\theta^* > 0$, and to zero when $\theta^* \leq 0$. When $\theta^* < 0$, inflation converges to zero because, as domestic credit becomes zero as $t \to \infty$, the money supply converges to the fixed level of reserves.[19] Nominal interest rates inherit these dynamics via $i = \rho + \pi$ and $i^* = \rho + \pi^*$; both jump at T, with the home rate jumping up and the foreign rate falling. By equation (3), the depreciation rate jumps from zero to $\epsilon_{T^+} = \pi_{T^+} - \pi_{T^+}^* > 0$ and converges to a constant from above.

Monetary Equilibrium: Capital Flows under the Peg. Under the peg, the home central bank balance sheet equation (6) and Assumption 3 imply $m_{h,t}^{g^*} = d_{h,t} - m_{h,t}$: foreign official holdings

[19] Assumption 1 guarantees that the capital gains and losses from reserve holdings are absorbed by the central bank's net worth and are not monetized.

of home-currency reserves equal the excess of real domestic credit over home money demand. Reserve accumulation therefore reflects the gap between the rate at which the home country creates credit and the rate at which the world absorbs it through money demand, as derived in Appendix A.3.3:

$$\dot{m}^{g^*}_{h,t} = (\theta - \pi_t)\, d_{h,t} + \frac{1}{\sigma}\, m_{h,t}\, \frac{\dot{\pi}_t}{\rho + \pi_t}, \qquad t \leq T. \tag{24}$$

The first term captures the direct effect of credit expansion: when $\pi_t < \theta$, real domestic credit grows faster than prices, and the excess flows abroad as reserves, which is always the case in our quantitative illustration. The second term captures the indirect effect through money demand: when peg inflation rises, real money demand falls, freeing additional resources that are absorbed as reserves. Using the world money-market condition under the peg and dividing by the outstanding stock of reserves, equation (24) can be rewritten as

$$\frac{\dot{m}^{g^*}_{h,t}}{m^{g^*}_{h,t}} = (\theta - \theta^W_t)\, \frac{m_{h,t}}{m^{g^*}_{h,t}} + (\theta - \pi_t), \qquad t \leq T, \tag{25}$$

where $\theta^W_t \equiv \dot{M}^W_t / M^W_t$ and $M^W_t = D_{h,0} e^{\theta t} + E D^*_{f,0} e^{\theta^* t}$ is the world money supply. The rate at which reserves grow equals the rate of real domestic credit growth, $\theta - \pi_t$, plus an amplification term that captures the excess of home credit growth over world money growth, scaled by the ratio of home real balances to the existing reserve stock.

In the model, reserve accumulation is almost entirely a capital-account phenomenon. Since consumption is constant in both countries, the trade balance is constant, and the only current-account flow is the seigniorage transfer that foreign reserve holdings imply: foreign central banks hold non-interest-bearing dollar reserves, effectively paying an inflation tax to the United States, which enters the US current account as a positive transfer. This term is quantitatively small in empirically relevant calibrations and has the opposite sign from the conventional narrative that focuses on current account imbalances: reserve accumulation abroad raises the US current account through seigniorage rather than lower it. The balance-of-payments imbalance under Bretton Woods therefore operated primarily through the capital account. Excess dollar liquidity created by US domestic credit expansion was intermediated through private capital flows and ultimately absorbed by foreign central banks as official reserves.

Monetary Equilibrium: The Speculative Attack. A speculative attack occurs when agents anticipate that the foreign central bank's accumulation of international reserves is approaching its upper bound and that a change of regime is imminent. At the moment of the switch, domestic nominal interest rates rise, reducing demand for home money, while foreign rates fall, increasing demand for foreign money. Since the foreign central bank is still supporting the peg at T, it accommodates private portfolio shifts by purchasing home currency in exchange for its own liabilities, producing the discrete jump in reserve holdings visible in Figure 1. The regime-switch time T is pinned down by the requirement that the foreign price level P^*_t be continuous at T. Under the peg, PPP implies $P^*_{T^-} = P_{T^-}/E$; under the float, $P^*_{T^+}$ is given by equation (19b). Continuity requires $P_T = EP^*_T$. The continuity condition $P_T = EP^*_T$ is equivalent to:

$$\frac{\widetilde{P}}{\widetilde{P}^*}\, e^{(\theta-\theta^*)T} \;=\; E, \qquad \Rightarrow \qquad T \;=\; \frac{\ln(E\widetilde{P}^*/\widetilde{P})}{\theta-\theta^*}. \tag{26}$$

The left-hand side of equation (26) is strictly increasing in T since $\theta > \theta^*$, while the right-hand side is a positive constant, so equation (26) has at most one solution. Proposition 1 provides necessary and sufficient conditions for the existence of a speculative attack under a parametric restriction on initial monetary conditions.

Proposition 1 (Reverse Speculative Attack) *In an economy satisfying Assumptions 1–4, suppose*

$$\Lambda \equiv \frac{D_{h,0}}{E\,D^*_{f,0}} < \frac{c\left(\dfrac{\alpha}{\rho+\theta}\right)^{1/\sigma}}{c^*\left(\dfrac{\alpha^*}{\rho+\theta^*}\right)^{1/\sigma}}, \tag{27}$$

where c and c^* are determined by equation (17).

The fixed exchange rate regime collapses at a unique finite date $0 < T < \infty$ if, and only if,

(i) $\theta > \theta^*$, *and*

(ii) $\bar{m}_h^{g^*} < \infty$.

Proof See Appendix A.3.4.

Proposition 1 states that a finite collapse time requires exactly two asymmetries: faster home credit growth, $\theta > \theta^*$, and a finite bound on foreign reserve accumulation, $\bar{m}_h^{g^*} < \infty$. If credit growth rates are equal, P_T/P^*_T is constant in T and the switch condition equation (26) is never reached; if the reserve bound is infinite, the collapse date is pushed to infinity. With both asymmetries in place, the foreign central bank reaches its reserve ceiling at a unique finite date, triggering a reverse speculative attack and an endogenous collapse of the peg. The collapse is therefore driven not by the level of inflation, which is common across countries under the peg, but by the divergence in domestic credit growth. The parameter restriction equation (27) is sufficient for $T = \frac{\ln(E\widetilde{P}^*/\widetilde{P})}{\theta-\theta^*}$ in equation (26) to be positive when $\theta > \theta^*$, since it guarantees $E\widetilde{P}^*/\widetilde{P} > 1$ at $\bar{m}_h^{g^*} = 0$ and $E\widetilde{P}^*/\widetilde{P}$ is monotonically increasing in $\bar{m}_h^{g^*}$ by equation (22).

The collapse date T and the size of the reverse speculative attack both depend on the structural parameters of the model in intuitive ways. Given the initial relative nominal credit position Λ, the equilibrium collapse date and the size of the attack can be written as functions

$$T = T\Big(\Lambda,\, \bar{m}_h^{g^*},\, \theta-\theta^*\Big) \qquad \text{and} \qquad \Delta = \Delta\Big(\bar{m}_h^{g^*},\, \theta-\theta^*\Big),$$

holding the real allocation (c, c^*) fixed.[20] The exchange rate E and the nominal credit levels $(D_{h,0}, D^*_{f,0})$ enter T only through Λ, reflecting the model's neutrality with respect to redenomination of nominal variables.

Lemma 2 (Comparative Statics) *Under Assumptions 1–4 and holding the real allocation (c, c^*) fixed:*

(a) The collapse date $T(\Lambda, \bar{m}^{g^*}_h, \theta - \theta^*)$ satisfies, for general θ^*, where $\Lambda \equiv \frac{D_{h,0}}{ED^*_{f,0}}$

$$\frac{\partial T}{\partial \Lambda} = -\frac{1}{(\theta - \theta^*)\,\Lambda} < 0, \qquad \frac{\partial T}{\partial \bar{m}^{g^*}_h} > 0, \qquad \frac{\partial T}{\partial \theta} < 0, \quad \frac{\partial T}{\partial \theta^*} > 0.$$

(b) The size of the reverse speculative attack, $\Delta \equiv m^{g^*}_{h,T^+} - m^{g^*}_{h,T^-} = m_{h,T^-} - m_{h,T^+} > 0$, is independent of Λ and satisfies $\partial\Delta/\partial\theta > 0$. If, in addition, $\theta^* \geq 0$, then $\partial\Delta/\partial\bar{m}^{g^*}_h > 0$.

Proof See Appendix A.3.5.

A larger initial credit position Λ brings the collapse forward, as does faster home credit growth θ, by accelerating reserve accumulation under the peg; a larger reserve bound $\bar{m}^{g^*}_h$ delays the collapse. The size of the attack, defined as the discrete increase in foreign reserve holdings at the moment of collapse, equals the drop in home real money demand as inflation jumps upward. It is strictly increasing in home credit growth θ and, when $\theta^* \geq 0$, in the reserve bound $\bar{m}^{g^*}_h$; but it is independent of Λ: the relative credit position governs when the regime collapses, not how large the resulting portfolio shift is.

The equilibrium also pins down the portfolio counterpart of the attack on the private-sector side. Let $\mathbf{b}_t \equiv b_{h,t} + b_{f,t}$ and $\mathbf{b}^*_t \equiv b^*_{h,t} + b^*_{f,t}$ denote the total real bond holdings of home and foreign households, respectively, summed across home- and foreign-currency denominations. From the household portfolio reallocation conditions equation (11d) and equation (12d), together with bond market clearing equation (14d)–equation (14e) and continuity of domestic credit, government bond holdings, and prices across the regime switch, the change in private bond positions at T satisfies

$$\mathbf{b}_{T^+} - \mathbf{b}_{T^-} = \Delta = -\left(\mathbf{b}^*_{T^+} - \mathbf{b}^*_{T^-}\right).$$

The attack therefore transfers Δ worth of bonds, in real terms, from foreign to home households. Home households, facing a higher nominal interest rate, reduce their real money holdings by Δ and raise their total bond holdings by the same amount; foreign households, facing a lower nominal interest rate, do the reverse. Under uncovered interest parity, equation (2), home- and foreign-currency bonds are perfect substitutes in household portfolios, so the currency composition of this reshuffle is indeterminate: only the totals $\mathbf{b}_t$ and $\mathbf{b}^*_t$ are pinned down by the equilibrium. The

[20] Changing θ, $\bar{m}^{g^*}_h$, or Λ also shifts (c, c^*) through the annuitized seigniorage term $\rho \int_0^\infty i_t(m^{g^*}_{h,t} - m^{g}_{f,t})e^{-\rho t}dt$ in equation (17a). This term is quantitatively small relative to the endowment in any empirically relevant calibration, so the partial-equilibrium signs reported below carry through.

foreign central bank intermediates the corresponding cross-currency flow, absorbing Δ in home currency onto its balance sheet and issuing foreign currency of equal real value in exchange.

III.4 Quantitative Illustration

This section uses US, German, and Japanese data from the final years of Bretton Woods to illustrate the mechanics and quantitative magnitudes implied by the model. We show how a speculative attack unfolds and produces a sudden, discrete shift of dollar holdings from private portfolios onto the balance sheets of partner countries' central banks.

The framework is intentionally stylized and abstracts from several features of the data that likely matter for inflation. In particular, we omit a non-traded sector, which could generate inflation differentials across G-10 countries through Harrod–Balassa–Samuelson effects; we do not capture Nixon's wage-and-price controls of August 1971, which likely held down measured US inflation through 1972; and we do not model the 1973 oil shock or heterogeneous monetary accommodation to it across G-10 countries, which in our framework would correspond to differences in θ and could help account for the cross-country divergence of inflation after the collapse. The model is also not intended to apply to Canada and Italy: Proposition 1 requires $\theta > \theta^*$ as a necessary condition for a reverse speculative attack, a condition that is not satisfied for Canada even before the country had floated the dollar, or for Italy, where domestic credit expanded faster than in the United States. Consistent with this, neither country experienced a reverse speculative attack in the data.

Taking the model to the data also requires a convention for mapping historical time into model time. In the model, the speculative attack is instantaneous. In the historical episode, by contrast, the transition from the first attacks on the pegs to generalized floating spanned roughly 18 to 22 months, depending on the starting date. The Bundesbank abandoned its peg on May 5, 1971, after the first speculative attack; the Bank of Japan followed on August 28, 1971. The Smithsonian Agreement of December 18, 1971, then reset parities, but the new pegs were themselves attacked and collapsed in February and March 1973, culminating in the temporary floating arrangements formally accepted by the G-10 on March 16.

We therefore implement two mappings from the model to the data. In both, time is measured in years and the initial date is January 1, 1970, so that $T = 1$ denotes January 1, 1971. In the first mapping, T is the end of the month of the first speculative attack (May 1971 for Germany; August 1971 for Japan), and the size of the attack is measured by the partner country's central bank's dollar purchases over the 30 days preceding T. In the second mapping, T is March 1973, and the size of the attack is measured by cumulative dollar purchases from the onset of the first attack through that date. In both cases, the finite accumulation window—30 days in the first mapping, the full transition in the second—is the empirical counterpart to the point mass of reserve losses that the model concentrates at T.

We proceed in three steps to calibrate the model. First, we fix output levels (y, y^*) using World Bank WDI data. We calibrate country size using the average size of US GDP relative to Germany and Japan over the period 1968–1973, normalizing $y + y^* = 1$. We then set $c = y$ and $c^* = y^*$, so that the resource constraint $c + c^* = 1$ holds.[21] Second, we set credit growth using the 1964-1973 estimates from Table 1, correcting for real GDP growth, and normalize $E = 1$. Third, we calibrate five parameters, the initial nominal credit stocks $(D_{h,0}, D^*_{f,0})$, the money-demand shifters (α, α^*), and the foreign reserve upper bound $\bar{m}_h^{g^*}$, by normalizing $P_0 = 1$ and matching four observations: the initial ratios of net domestic assets to output $(d_{h,0}/y, d^*_{f,0}/y^*)$, the initial foreign monetary base net of gold reserves as a share of output, $(m^*_{f,0} - g^*_{f,0})/y^*$, and the historical date of the speculative attack T. In the model, the net-of-gold monetary base is the counterpart of $m^*_{f,0}/y^*$, since the model abstracts from gold and other official reserve assets such as SDRs, and treats reserve accumulation as foreign official holdings of home-currency claims. The home monetary base is not an independent observation: the home balance sheet identity implies $m_{h,0} + m_{h,0}^{g^*} = d_{h,0}$, so private home money demand, $m_{h,0}$, is pinned by the initial stocks of reserves in the foreign central bank, $m_{h,0}^{g^*}$, and domestic credit, $d_{h,0}$. We describe the calibration algorithm in Appendix A.4. Table 2 reports the assigned inputs, while Table 3 reports the calibrated parameters for all four episodes. The money-demand shifters (α, α^*) are stable across calibrations; most of the adjustment across attack dates occurs through the reserve ceiling $\bar{m}_h^{g^*}$.

Table 2: Calibration Assumptions

Var.	Description	Source	DEU	JPN
σ	Inverse intertemporal elasticity of substitution	Assumption	2	
ρ	Discount rate	Assumption	0.05	
E_0	Fixed exchange rate	Assumption	1	
θ	US dom. credit growth	IMF, WB	0.040	
y	US real GDP share (1968–1973)	WB	0.789	0.778
y^*	Foreign real GDP share (1968–1973)	WB	0.211	0.222
θ^*	Foreign dom. credit growth	IMF, WB	-0.011	-0.015

[21] Equation (17a) implies that, conditional on the path of reserve holdings, the level of initial home national wealth $\bar{a}_0 \equiv a_0 + a_0^g$ acts as an initial condition that shifts the level of home consumption one-for-one. Setting $c = y$ is therefore equivalent to choosing $\bar{a}_0$ so that initial national wealth exactly offsets the present value of seigniorage revenues accruing to the home country over the equilibrium path. The world resource constraint equation (14a) then pins down $c^* = y^*$ given global asset-market clearing $\bar{a}_0 + \bar{a}_0^* = 0$.

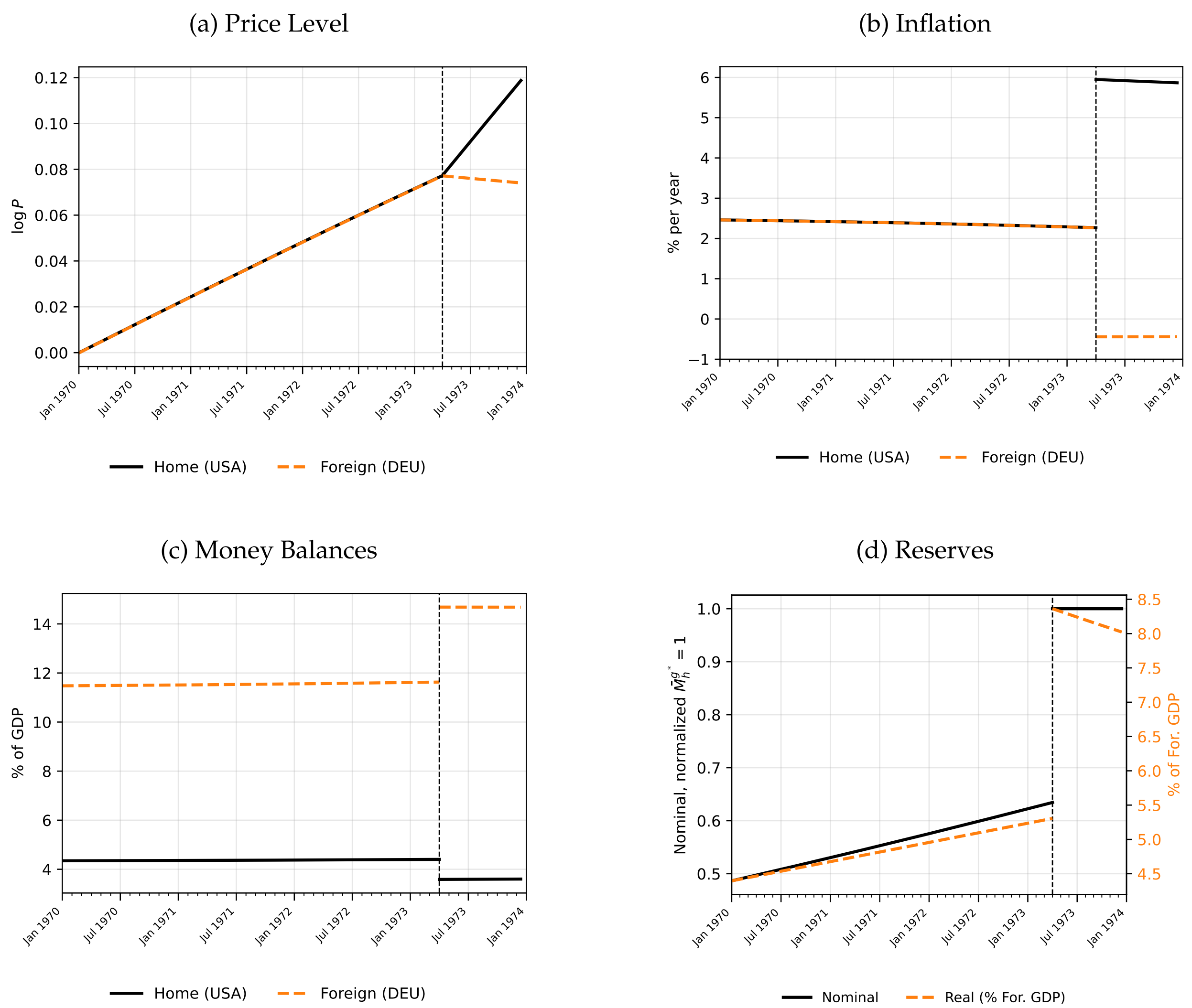
Table 3: Calibration Results

	DEU		JPN	
	May 1971	Mar 1973	Aug 1971	Mar 1973
Observations				
$d_{h,0}/y$	0.055	0.055	0.055	0.055
$d^*_{f,0}/y^*$	0.071	0.071	0.052	0.052
$m^*_{f,0}/y^*$	0.115	0.115	0.063	0.063
$g^*_{f,0}/y^*$	0.024	0.024	0.006	0.006
T	1.417	3.250	1.667	3.250
Parameters				
α	1.38×10^{-4}	1.41×10^{-4}	2.06×10^{-4}	2.09×10^{-4}
α^*	9.62×10^{-4}	9.83×10^{-4}	3.05×10^{-4}	3.10×10^{-4}
$\bar{m}_h^{g^*}/y^*$	0.078	0.084	0.037	0.040

Figure 9 reports the calibrated equilibrium dynamics before and after the collapse of the peg.[22] The model delivers the intended mechanism. Panels a and b show that, under the fixed exchange rate regime, inflation is equal across countries, reflecting PPP and the common price level implied by the peg. During this phase, inflation lies between the domestic credit growth rates of both countries. Following the crisis, inflation paths diverge and converge to country-specific credit growth rates: in the partner country, inflation falls immediately, while in the US, inflation declines gradually to θ as domestic credit continues to expand. Price levels mirror these dynamics. While prices move in lockstep prior to the crisis, they diverge sharply once the peg collapses, leading to a depreciation of the nominal exchange rate. Panel c shows that real money balances decline slowly during the pre-crisis phase as rising inflation erodes money demand, then jump discretely at the regime switch. Panel d shows that the foreign country gradually accumulates reserves prior to the speculative attack at time T, followed by a discrete jump at the moment of collapse. Although nominal reserve holdings remain elevated thereafter, their real value declines over time due to continued inflation in the home country.

[22] Figure A.10 reports dynamics for the March 1973 episode using Japan as the foreign economy.

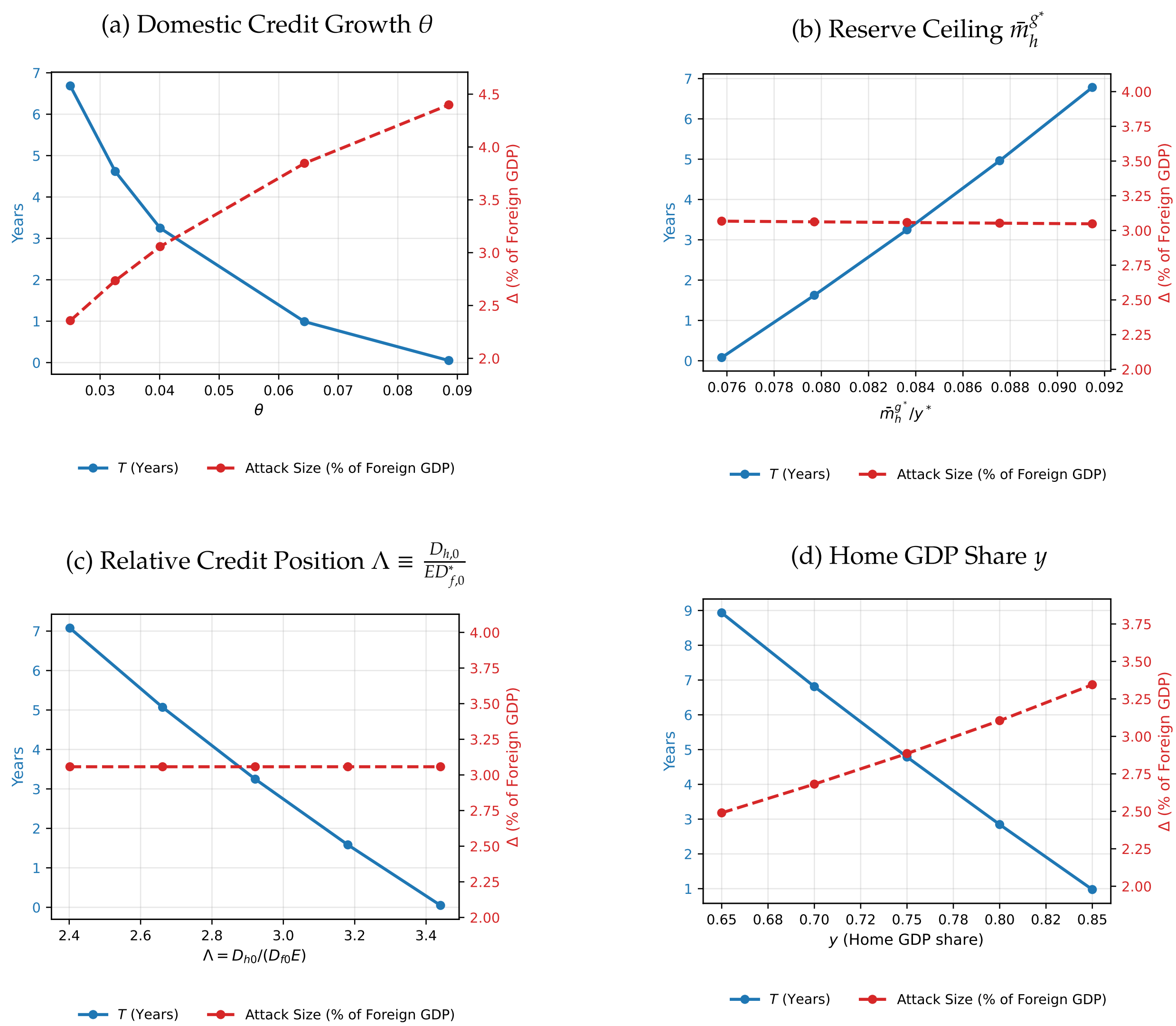
Figure 9: Calibrated Model Results — Germany, March 1973 Crisis



Notes: Paths are computed from the baseline Germany (March 1973) calibration.

The model's comparative statics—formalized in Lemma 2—show that the timing of the attack depends critically on the growth rate of domestic credit, the foreign reserve ceiling, and the two central banks' initial relative domestic credit position. Figure 10 summarizes how each parameter affects the attack date T and the size of the discrete jump in reserves at $t = T$, Δ. Panel a shows that higher home credit growth θ compresses the period of reserve accumulation. Appendix Figure A.11 illustrates the underlying dynamics: higher θ raises inflation both before and after the crisis, and reduces real money balances in the pre-crisis phase. Panel b shows that a larger reserve ceiling $\bar{m}_h^{g^*}$ mainly delays the crisis with only a small increase in the size of the attack, while a sufficiently low ceiling likewise triggers an immediate collapse. Appendix Figure A.12 confirms that the inflation and price paths are relatively insensitive to $\bar{m}_h^{g^*}$. Panel c shows that a higher relative credit position $\Lambda = D_{h0}/(D_{f0}E)$ compresses the period of reserve accumulation and, when sufficiently large, produces an instantaneous attack, while Δ remains invariant to Λ. Panel d shows the role of country size: a smaller home economy both delays the attack and reduces the reserve jump at collapse.

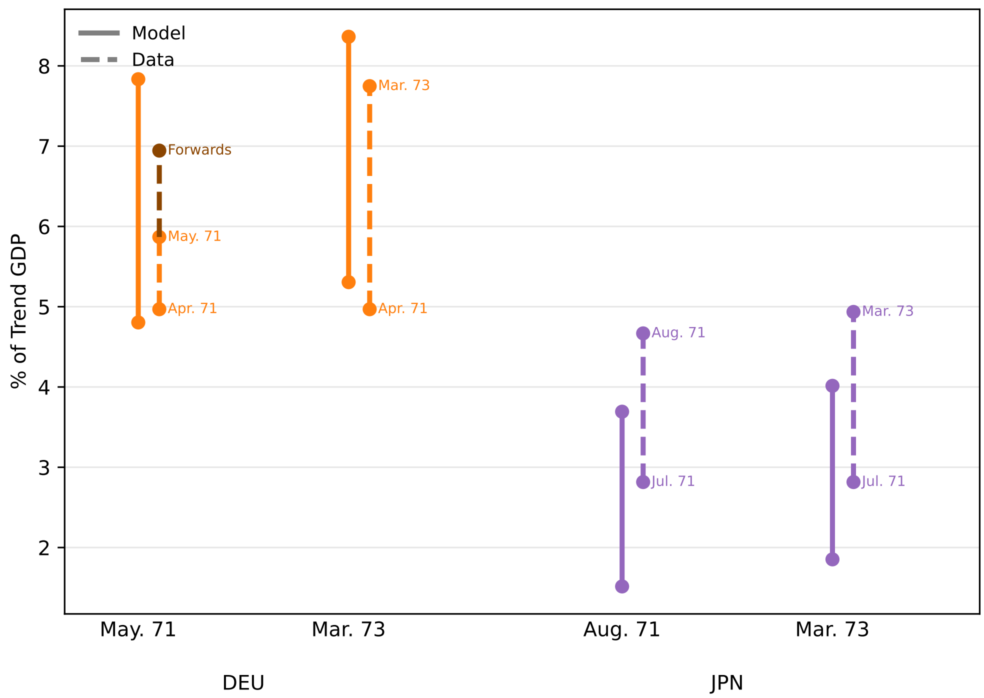
Figure 10: Comparative Statics



Notes: Each panel varies one parameter at a time, holding all others at their baseline values from the Germany (March 1973) calibration. The left axis (blue, solid) reports the attack date T; the right axis (red, dashed) reports the size of the discrete reserve jump Δ at T, expressed as a percent of foreign GDP. The middle point in each panel corresponds to the baseline calibration. In panel d, all size-dependent parameters ($d_{h,0}, d^*_{f,0}, \bar{m}_h^{g^*}$) are scaled proportionally with y^*.

Figure 11 illustrates how the country-specific calibrations and time conventions map into different predicted sizes of the portfolio shift, Δ. For each country, we compare the model to two empirical episodes: the initial 1971 attack and the March 1973 collapse. The model captures the order of magnitude of the attacks and the qualitative ranking across countries. In Germany, the model predicts a first-attack portfolio shift of about 3% of trend GDP. The change in official foreign-currency reserves between April and May 1971 was only about 0.8%, but the Bundesbank's outstanding forward dollar position grew by roughly 2.7 billion USD over the same window (Coombs, 1971), which raises the empirical magnitude to close to 2% of trend GDP, closer to the model's prediction. For the full transition window, the model's predicted cumulative purchases, about 3% of trend GDP, closely match the observed German accumulation of about 2.7%. The Japanese attack magnitudes are likewise within roughly half a percentage point of trend GDP of the model's predictions in both episodes. The reserve ceiling that triggers the attack—the upper endpoint of each vertical line—is moderately overpredicted for Germany and underpredicted for Japan.

Figure 11: Comparative Statics — Attack Size



Notes: Each column reports the reserve change for a given country-episode. Solid lines show the model-implied change in real foreign reserves, $m_h^{g^*}/y^*$, at the attack date T. Dashed lines show the observed change in official foreign-currency holdings as a share of trend GDP. Trend GDP is constructed by regressing log annual current-dollar GDP on a linear time trend over 1968–1973. Given the fitted annualized log growth rate $\hat{b}$, trend GDP at horizon s months after the pre-attack month is $\widehat{\text{GDP}}_s = \text{GDP}_{\text{prev}} \exp(\hat{b}s/12)$ where GDP_{prev} is log-linearly interpolated current-dollar GDP in the month preceding the attack. For the 1971 episodes, the dashed segment runs from the month before the attack to the attack month: May 1971 for Germany and August 1971 for Japan. For March 1973, it runs from the 1971 attack through the final G-10 float. The "Forwards" marker adds the Bundesbank's forward dollar commitments reported by Coombs (1971).

The calibrated model reproduces the four empirical patterns of Section II: the asymmetric expansion of US net domestic assets, the endogenous expansion of partner monetary bases through reserve accumulation, the timing and magnitude of the May 1971, August 1971, and February–March 1973 attacks, and the post-1973 inflation divergence.[23]

[23]The model predicts deflation for the foreign (strong-currency) country following the float, which is not consistent with

III.5 Contemporary Accounts

Beyond the empirical patterns documented in Section II, policymakers' own accounts—drawn from memoirs, IMF staff documents, and Bundesbank and Swiss National Bank internal records—provide direct support for the three theoretical mechanisms at the heart of the model: the incompatibility of fixed exchange rates, uncoordinated monetary policies, and capital mobility; the role of US domestic credit expansion as the driving force; and the existence of a binding upper limit on partner central banks' willingness to accumulate dollar reserves.

The incompatibility between the fixed exchange rates and divergent monetary policies under free capital mobility was widely understood by participants as the root cause of the speculative attacks that brought down the system. Paul Volcker, at the time Undersecretary of the Treasury for Monetary Affairs, recalled in his joint account with Toyoo Gyohten that the move to generalized floating reflected not any positive assessment of flexible exchange rates but "a last resort when, by general assent, the effort to maintain par values or central rates seemed too difficult in the face of speculative movements of capital across the world's exchanges" (Gyohten and Volcker, 1992, p. 124). At a Bundesbank council meeting in March 1971, Otmar Emminger, then Vice President of the Bundesbank, warned that the high-interest-rate policy risked being "self-defeating", as the resulting foreign exchange inflows would shake confidence in the exchange-rate structure leading to credit policy being "completely overrun by speculative—that is, non-interest-induced—foreign funds".[24] In his memoirs, Emminger described the mechanism precisely: "It was no longer the German monetary authorities, but rather the liquidity-policy oscillations originating in American credit policy, as well as the speculative back-and-forth of the wandering dollar masses, that during this period largely determined the money supply of the German economy and thereby also the success or failure of German stabilization policy" (Emminger, 1986). IMF staff had a similar view in their consultations with Germany: "The independence of the authorities was, however, seriously compromised by the continuing inflows of funds from abroad initially induced from early 1970 onward by the persistence of interest rate differentials in favor of Germany."[25]

The identification of US domestic credit expansion as the driving force behind these pressures is equally prominent in contemporary accounts. The Swiss National Bank's directorate noted in May 1971 that the American authorities had begun to loosen their previously restrictive monetary policy since the second half of 1970, and that the resulting changes in interest-rate differentials had caused "ever-greater funds to flow above all into the Federal Republic of Germany, but also into Switzerland".[26] Volcker was blunt on the same point: when Arthur Burns pleaded for a restoration of fixed exchange rates, his "instinctive comment, given the dollar couldn't possibly be stabilized unless we tackled our inflation problem, was 'Then you'd better get back to Washington

the higher inflation observed in many partner economies after 1971. This discrepancy reflects other factors absent from the baseline model, specifically the shift in partner economies' monetary policy following the transition to floating, and specifically after the 1973 oil shock.

[24] *Deutsche Bundesbank*, Protokoll der 335. Sitzung des Zentralbankrats, 31 March 1971 (Historisches Archiv der Deutschen Bundesbank, B330/6157-1).

[25] *International Monetary Fund*, Staff Report for the 1972 Article VIII Consultation, 1972 (IMF Archives, doc. 212137).

[26] *Schweizerische Nationalbank*, Direktoriumsprotokoll Nr. 460, 13 May 1971.

and tighten money."' (Volcker and Harper, 2018).

The limit on reserve accumulation—the model's $\bar{m}_h^{g^*}$—is not merely our theoretical construct but a constraint that policymakers named explicitly in real time as the decisive factor triggering each abandonment of the peg. Günther Schleiminger, executive director for Germany at the IMF, characterized the authorities' efforts to absorb the liquidity generated by capital inflows as "Sisyphus labours" (IMF, 1971). IMF staff concluded that by late April 1971 the Bundesbank had determined "that it could no longer continue to add indefinitely to this commitment."[27] At the May 5 Bundesbank council meeting, Friedrich Wilhelm von Schelling stated that "the Bundesbank had gone, in its accumulation of dollars, to the limit of what is bearable," while Emminger described an "acute emergency" caused by "progressively swelling dollar inflows . . . for which there are virtually no quantitative limits".[28] The Swiss National Bank faced the same constraint simultaneously. Peter Jäggi, then Vice President of the SNB's Bank Council, articulated the regime's fundamental fragility most directly in a February 1973 memorandum: "Legally, we find ourselves since August 1971 in a 'no man's land,' . . . pushed against our will from a legally founded system of fixed exchange rates into an unregulated system, which can be nothing other than a fundamental regime of floating," adding that "if a massive slide gets underway—which is easily possible because of the huge 'avalanche slope' of the Eurodollar mass—then the unrestricted takeover of dollars cannot be justified" (Swiss National Bank, 1973). Jelle Zijlstra, president of De Nederlandsche Bank at the time, was equally unambiguous in his memoirs: "we held dollars only up to an amount that we considered a working stock; what exceeded that, we wished to exchange for gold or something that could be put on a par with it" (Zijlstra, 1978).

Additional contemporaneous evidence from the IMF, the Bundesbank, and the Swiss National Bank is collected in Appendix A.5, while selected press coverage of the May 1971 crisis is reported in Appendix A.6.

IV Final Remarks

This paper interprets the collapse of the Bretton Woods system of fixed exchange rates during 1971–1973 as a sequence of speculative attacks on the US dollar driven by persistent asymmetries in domestic credit growth. With the Federal Reserve expanding domestic credit, while the Bundesbank and the Bank of Japan pursued tight domestic credit policies, excess dollar liquidity flowed abroad and was absorbed by partner central banks, endogenously expanding their monetary bases. The model shows that any upper bound on these banks' willingness to continue accumulating reserves—whether imposed by currency risk, inflation tolerance, institutional mandate, or political constraints—makes a speculative attack inevitable. Consistent with the balance-sheet evidence and contemporaneous policy accounts, the framework accounts for the buildup of reserve imbalances and the size of the reverse speculative attacks, as well as the absence of attacks in

[27] *International Monetary Fund*, Staff Report SM/71/140, 1971 (IMF Archives, doc. 169161).
[28] *Deutsche Bundesbank*, Protokoll der 337. Sitzung des Zentralbankrats, 5 May 1971.

Canada and Italy. In our stylized model, the exchange rate does not jump at the regime switch; extending the framework to allow for discrete devaluations, along the lines of Broner (2008), is a natural direction for future work.

We take the divergence in domestic credit growth as given. One natural interpretation, which we do not formalize, is that the asymmetry reflects a commitment problem. The United States was bound by the Bretton Woods regime to maintain money creation consistent with the nominal anchor; in practice, the Federal Reserve accommodated inflation expectations rather than pursue the monetary contraction it perceived as politically costly, a pattern Sargent (1999) rationalizes through adaptive learning over an apparent Phillips-curve tradeoff. The US expansionary monetary policy can also be interpreted as the bad equilibrium of Barro and Gordon (1983a,b): a central bank that cannot commit to low inflation validates expectations of monetary expansion, even though all parties would be better off under a commitment to price stability. The historical evidence is consistent with this reading: sustained political pressures shaped US monetary policy under Johnson and Nixon, while the Bundesbank and the Bank of Japan remained committed to containing domestic credit growth.[29] This asymmetry in commitment, under fixed exchange rates and capital mobility, forced partner economies to absorb US monetary expansion until the currency risk on their balance sheets became untenable. Why some partner economies proved more resistant to these inflationary pressures while others did not, whether due to differences in political preferences stemming from past inflationary episodes, to differences in central bank independence, or to other institutional features, remains an open question.

[29]See Bremner (2008); Hetzel (2008) on Martin's accommodation of Vietnam-era fiscal expansion, and Abrams (2006); Ferrell (2010); Drechsel (2026) on Burns's expansionary stance ahead of the 1972 election.

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A Appendix

A.1 Additional Notes to Figures

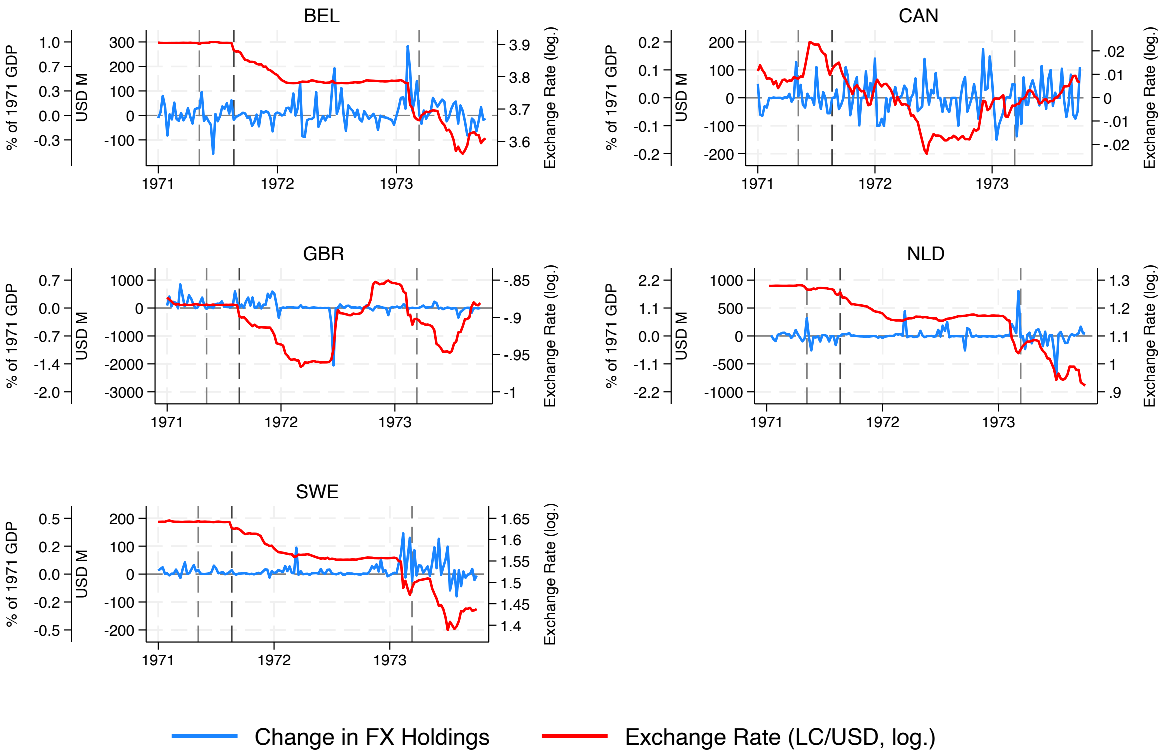
Figure 1. Sources: Schweizerische Nationalbank, *Ausweise der Schweizerischen Nationalbank* (weekly *Devisenbestände* - "foreign-exchange holdings"); Deutsche Bundesbank, *Monatsbericht*, "Aktiva und Passiva der Deutschen Bundesbank" (weekly *Guthaben bei ausländischen Banken und Geldmarktanlagen im Ausland* - "deposits with foreign banks and money-market investments abroad"); Baubeau (2018) (Banque de France: weekly *Disponibilités à vue à l'étranger* - "cash on demand abroad" - and *Avances au Fonds de stabilisation des changes / Autres opérations* - "advances to the Exchange Equalization Fund / other operations"); Bank of Japan, 営業毎旬報告 - Ten-day balance sheet report (海外資産勘定 - "foreign asset account"); Bank for International Settlements (exchange rates); World Bank World Development Indicators (GDP). Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float. The figure combines weekly changes in foreign-exchange assets drawn from central bank balance sheets with reported intervention (purchase) data when available. Balance-sheet changes reflect movements in foreign currency asset positions, while reported intervention series measure net foreign exchange purchases. Exchange rates are quoted as local currency units per USD; a fall denotes a revaluation of the local currency.

Figure 5. Source: Bao et al. (2018). Net Foreign Assets (NFA) include gold or gold certificates and foreign financial assets, net of foreign liabilities. The Monetary Base (MB) includes currency and deposits. Net Domestic Assets (NDA) are computed residually as MB minus NFA, and consist of credit to banks and other financial institutions, credit to the nonfinancial private sector, credit to the central government, credit to government agencies, and mortgage-backed securities and other assets, net of amounts owed to banks (other than reserve deposits), amounts owed to government, other liabilities, other legal tender, and the net worth of the Federal Reserve System.

Figure 6. Sources: IMF Monetary and Financial Statistics (central bank balance sheets), Bank for International Settlements (exchange rates) and World Bank World Development Indicators (GDP). NFA denotes net foreign assets (foreign assets net of foreign liabilities). Net domestic assets (NDA) is computed as reserve money (monetary base or MB) minus NFA. Balance-sheet variables are expressed as changes relative to the base year and scaled by 1970 GDP (in current USD). Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float.

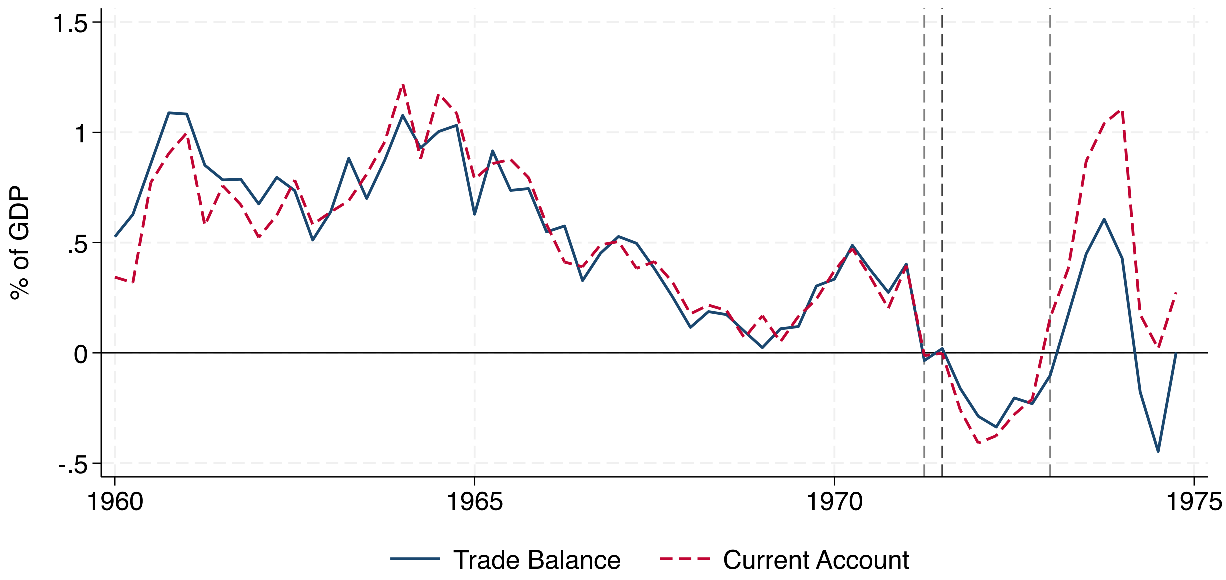
A.2 Additional Figures

Figure A.1: Weekly Changes in Central Bank Foreign Exchange Holdings – Additional



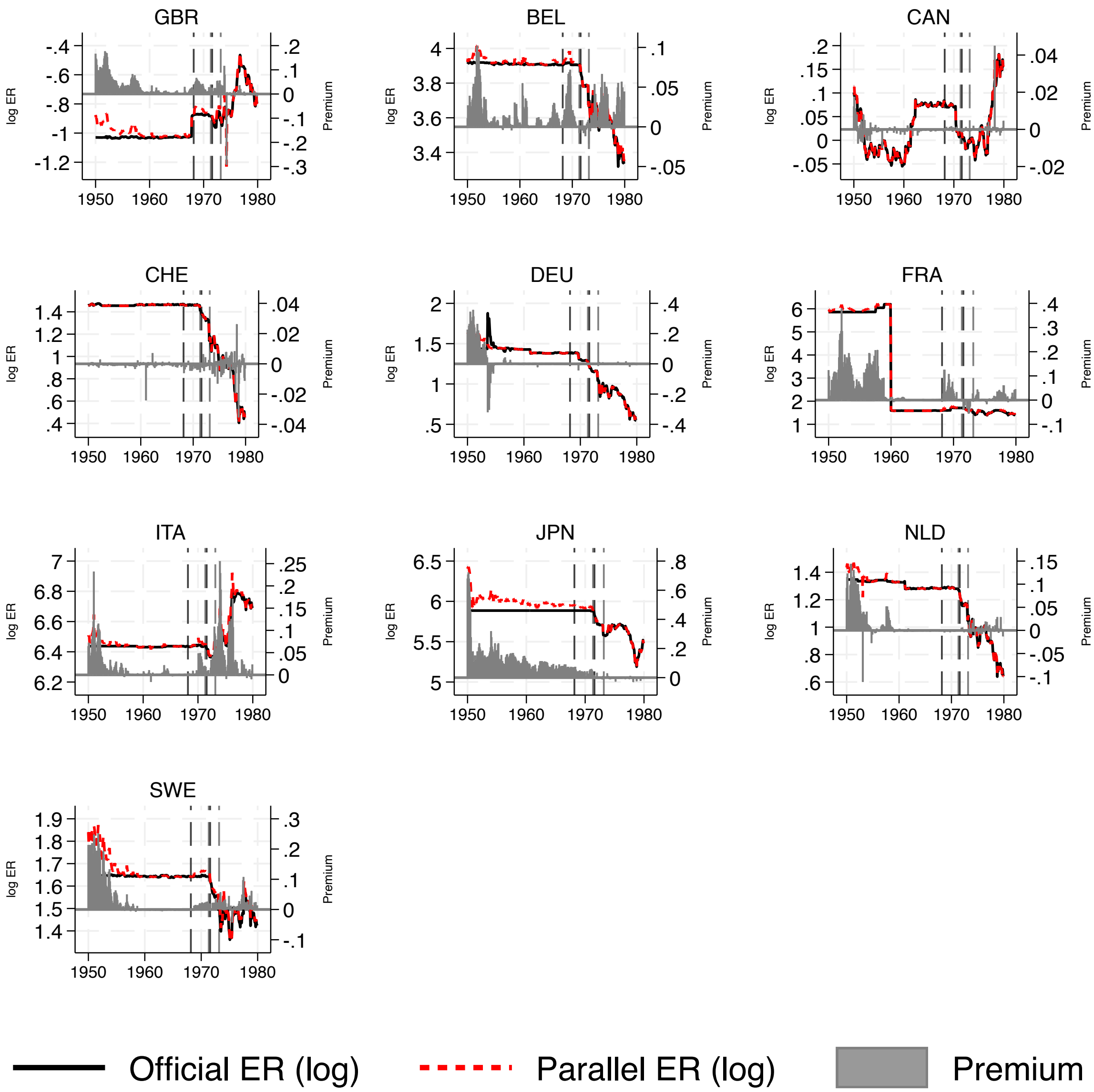
Sources: National Bank of Belgium, weekly returns published in the *Moniteur Belge* (weekly *Foreign currencies*); Bank of Canada, *Statistical Summary* (weekly balance sheet, up to November 1971) and *Bank of Canada Review* (thereafter), with foreign exchange positions measured as foreign currency assets minus foreign currency liabilities; Naef (2022) (Bank of England: daily *Total intervention in USD (excluding customer operations)*); De Nederlandsche Bank, *Verkorte balans van De Nederlandsche Bank* (weekly *Vorderingen en geldswaardige papieren luidende in goud of in buitenlandse geldsoorten* - "claims and marketable securities denominated in gold or foreign currencies"); Sveriges Riksbank, *Årsbok* (Annual Report), Table A:13 "*Guld och utländska valutor varje rapportdag*" (weekly *Utländska statspapper, fordringar hos utländsk bank eller bankir, nettobelopp, samt utrikes växlar* - "foreign government securities, claims on foreign banks and bankers, net, and bills payable abroad"); Bank for International Settlements (exchange rates); World Bank World Development Indicators (GDP). Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float. The figure combines weekly changes in foreign-exchange assets drawn from central bank balance sheets with reported intervention (purchase) data when available. Balance-sheet changes reflect movements in foreign currency asset positions, while reported intervention series measure net foreign exchange purchases. Exchange rates are quoted as local currency units per USD; a fall denotes a revaluation of the local currency.

Figure A.2: Current Account and Trade Balance



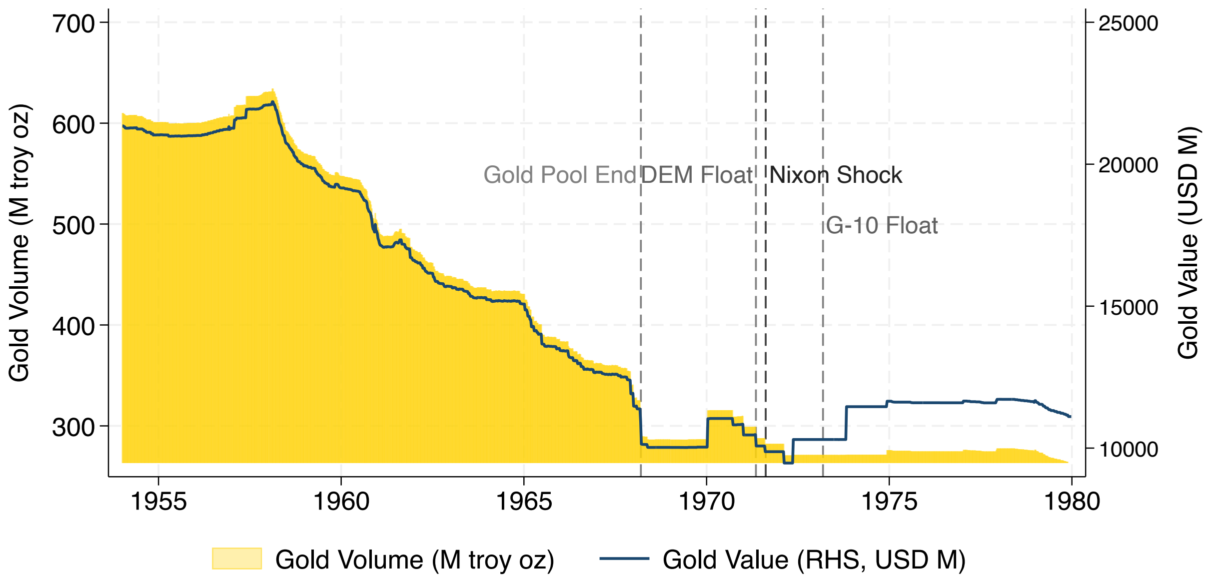
Source: FRED. Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float.

Figure A.3: Official and Parallel Exchange Rates



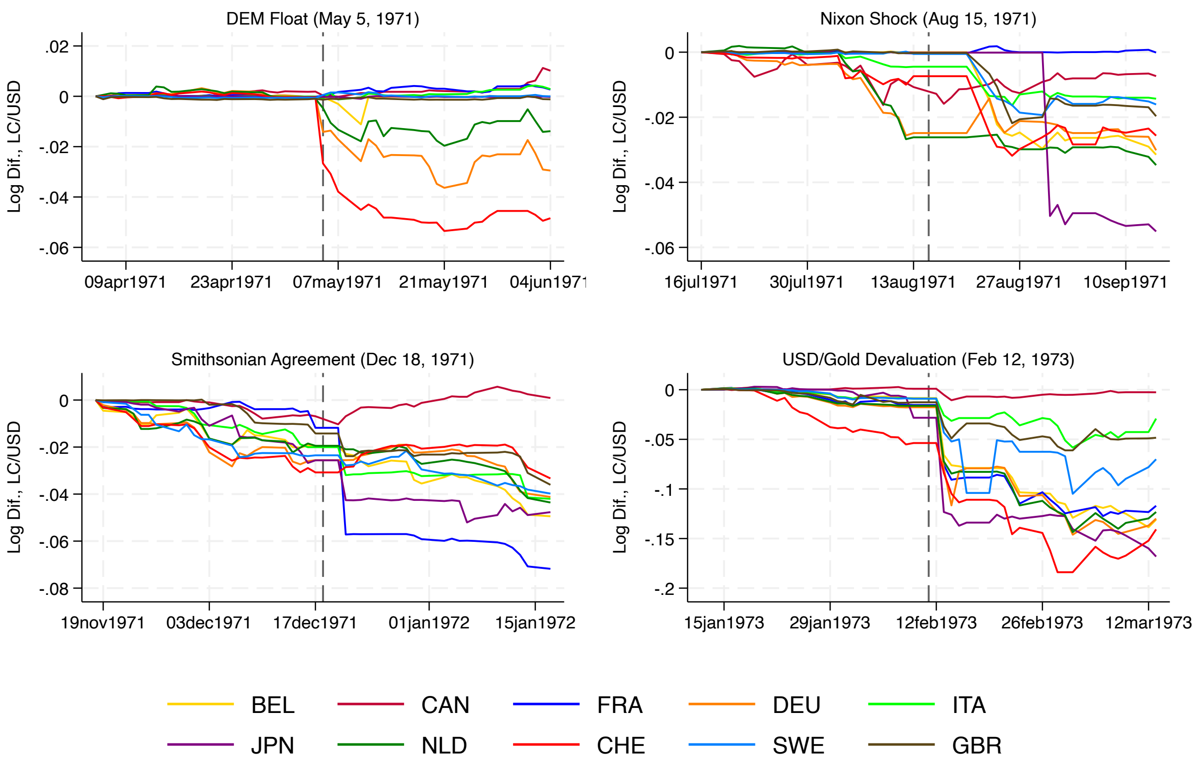
Source: Finaeon. Premium is the percentage by which the market price exceeds the official price. Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float.

Figure A.4: Federal Reserve Gold Holdings



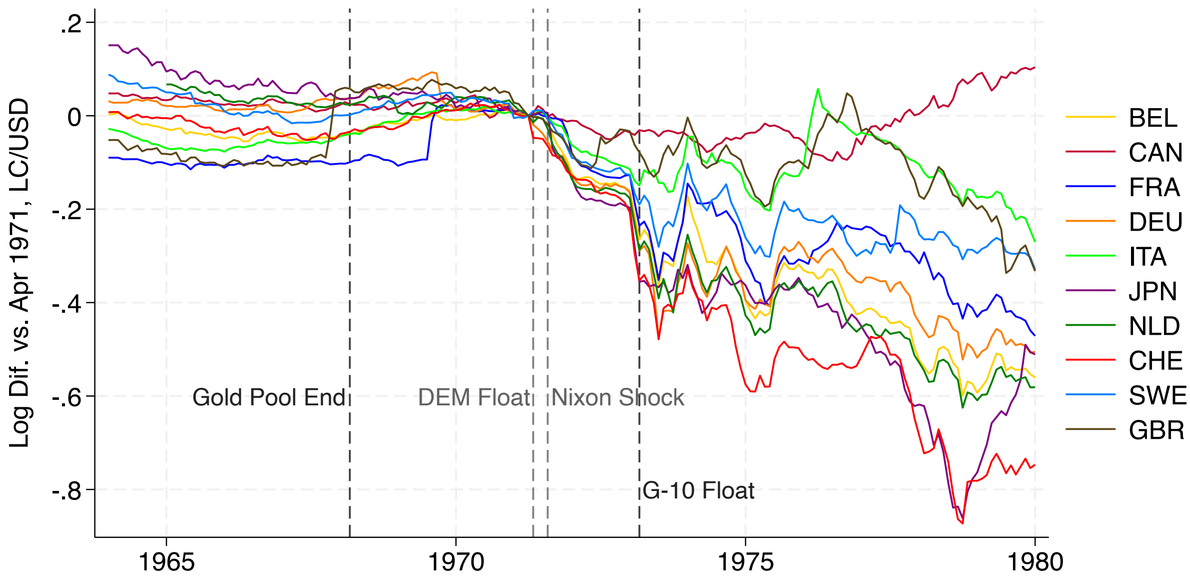
Source: Bao et al. (2018).

Figure A.5: Nominal Exchange Rate (LC/USD), Daily



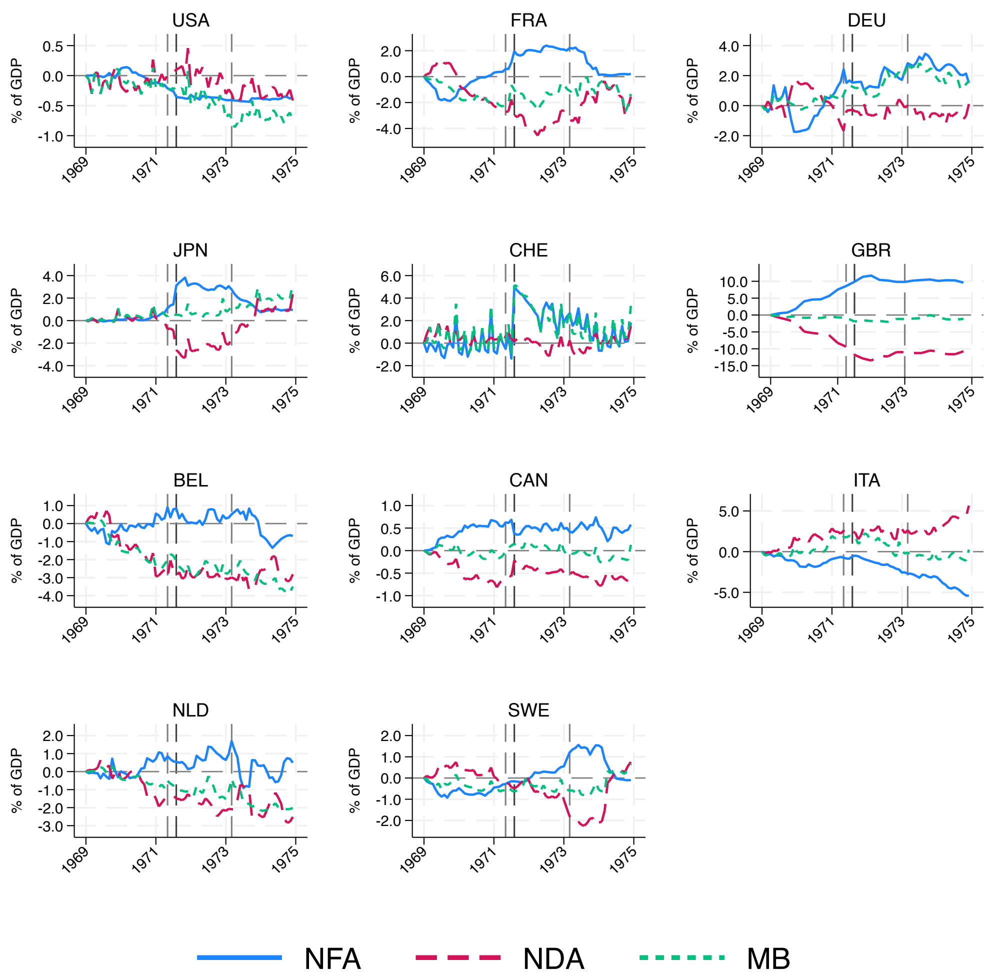
Source: Bank for International Settlements. Missing daily observations are filled forward using the last available rate. A positive log change represents a nominal appreciation of the US dollar vis-à-vis the currency indicated in the legend.

Figure A.6: Real Exchange Rate (LC/USD), Monthly (1964–1979)



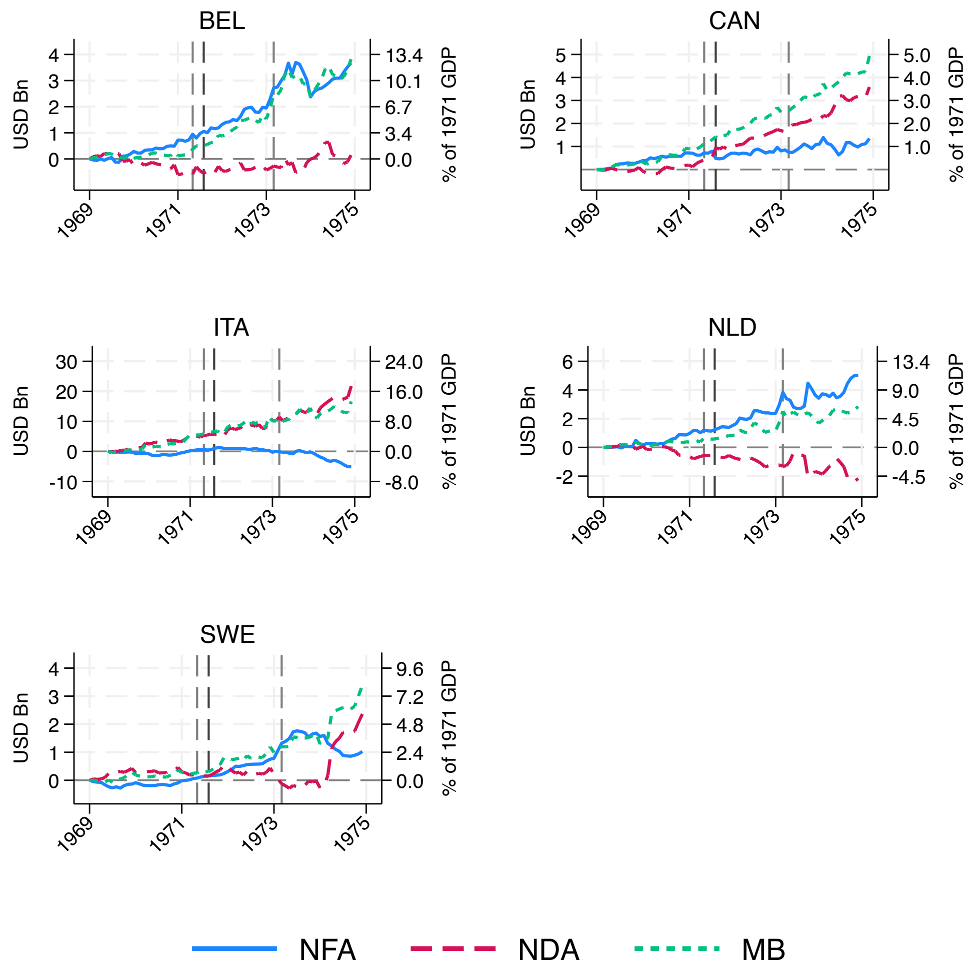
Source: Bank for International Settlements. Real exchange rates are constructed as the nominal exchange rate adjusted for relative CPIs. A positive log change represents a real appreciation of the US dollar vis-à-vis the currency indicated in the legend.

Figure A.7: G-10 Central Banks Balance Sheet (1969–1974), Changes as % of GDP



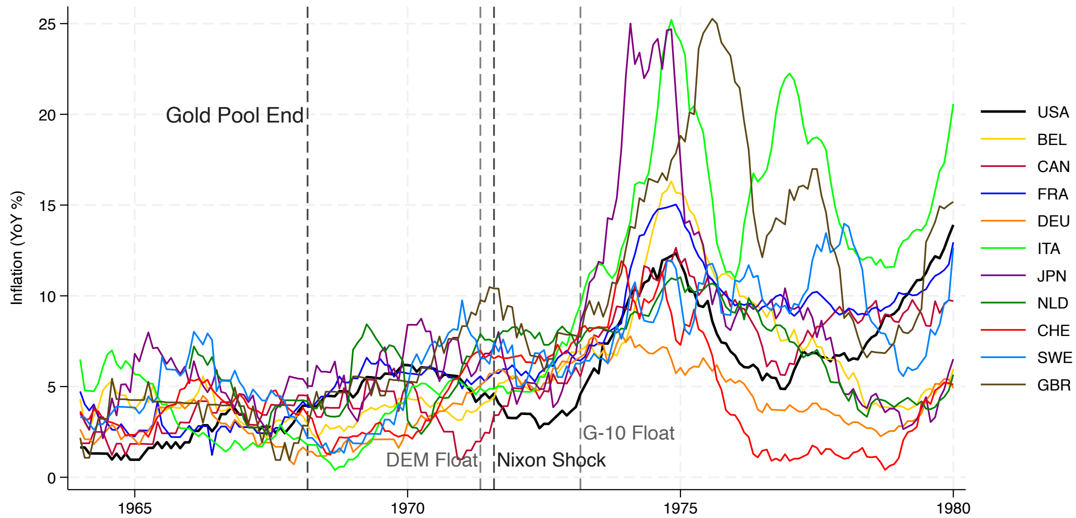
Sources: IMF Monetary and Financial Statistics (central bank balance sheets) and World Bank World Development Indicators (GDP). NFA denotes net foreign assets (foreign assets net of foreign liabilities). Net domestic assets (NDA) are computed as reserve money (monetary base, MB) minus NFA. Balance-sheet variables are expressed as changes in ratios relative to the base year (i.e., $100 \times [(X_t/GDP_t) - (X_0/GDP_0)]$). Annual GDP (in local currency units) is linearly interpolated in logs to obtain monthly (or quarterly, for the United Kingdom) observations for scaling purposes. Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float.

Figure A.8: G-10 Central Banks Balance Sheet (1969–1974)



Sources: IMF Monetary and Financial Statistics (central bank balance sheets), Bank for International Settlements (exchange rates) and World Bank World Development Indicators (GDP). NFA denotes net foreign assets (foreign assets net of foreign liabilities). Net domestic assets (NDA) is computed as reserve money (monetary base or MB) minus NFA. Balance-sheet variables are expressed as changes relative to the base year and scaled by 1970 GDP (in current USD). Dashed lines represent the May 1971 DEM float, August 1971 Nixon Shock and March 1973 G-10 float.

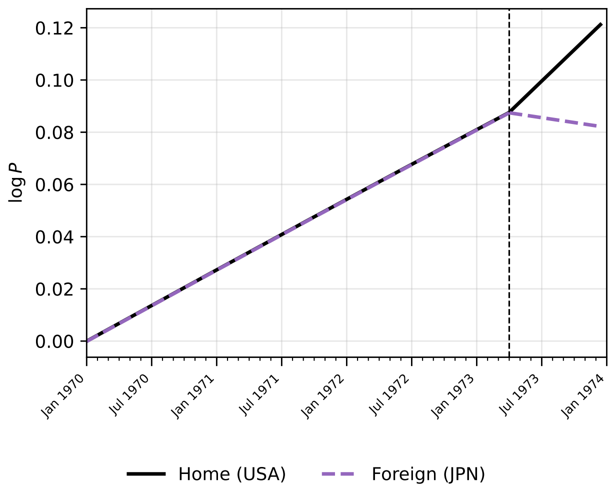
Figure A.9: Inflation



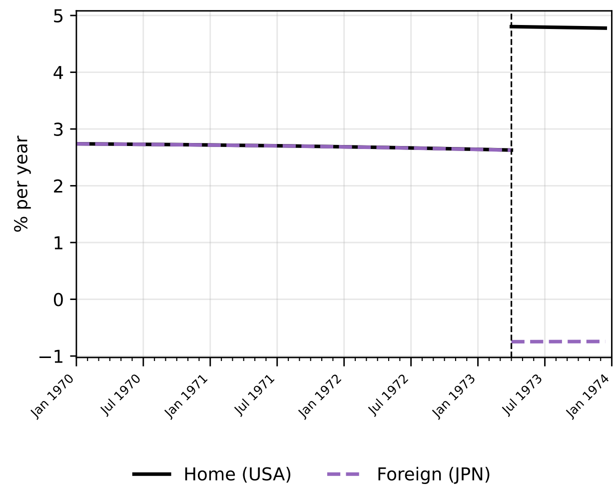
Source: Bank for International Settlements.

Figure A.10: Calibrated Model Results — Japan, March 1973 Crisis

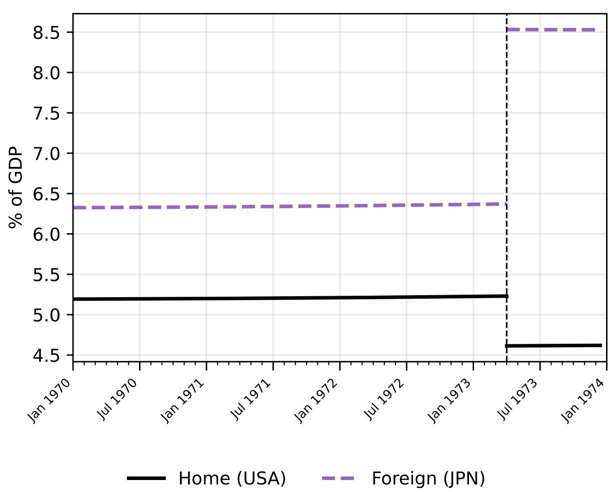
(a) Price Level



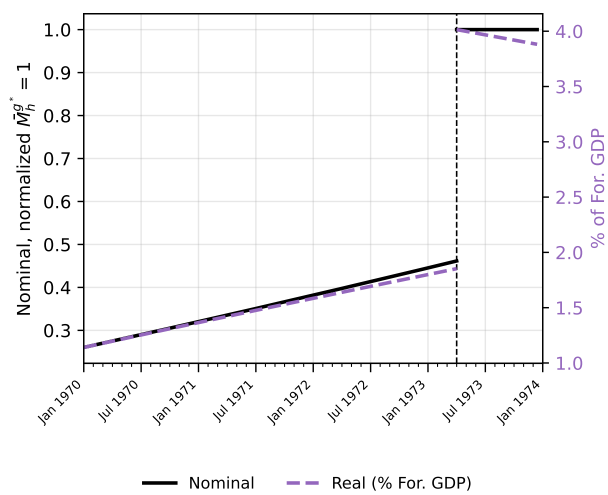
(b) Inflation



(c) Money Balances

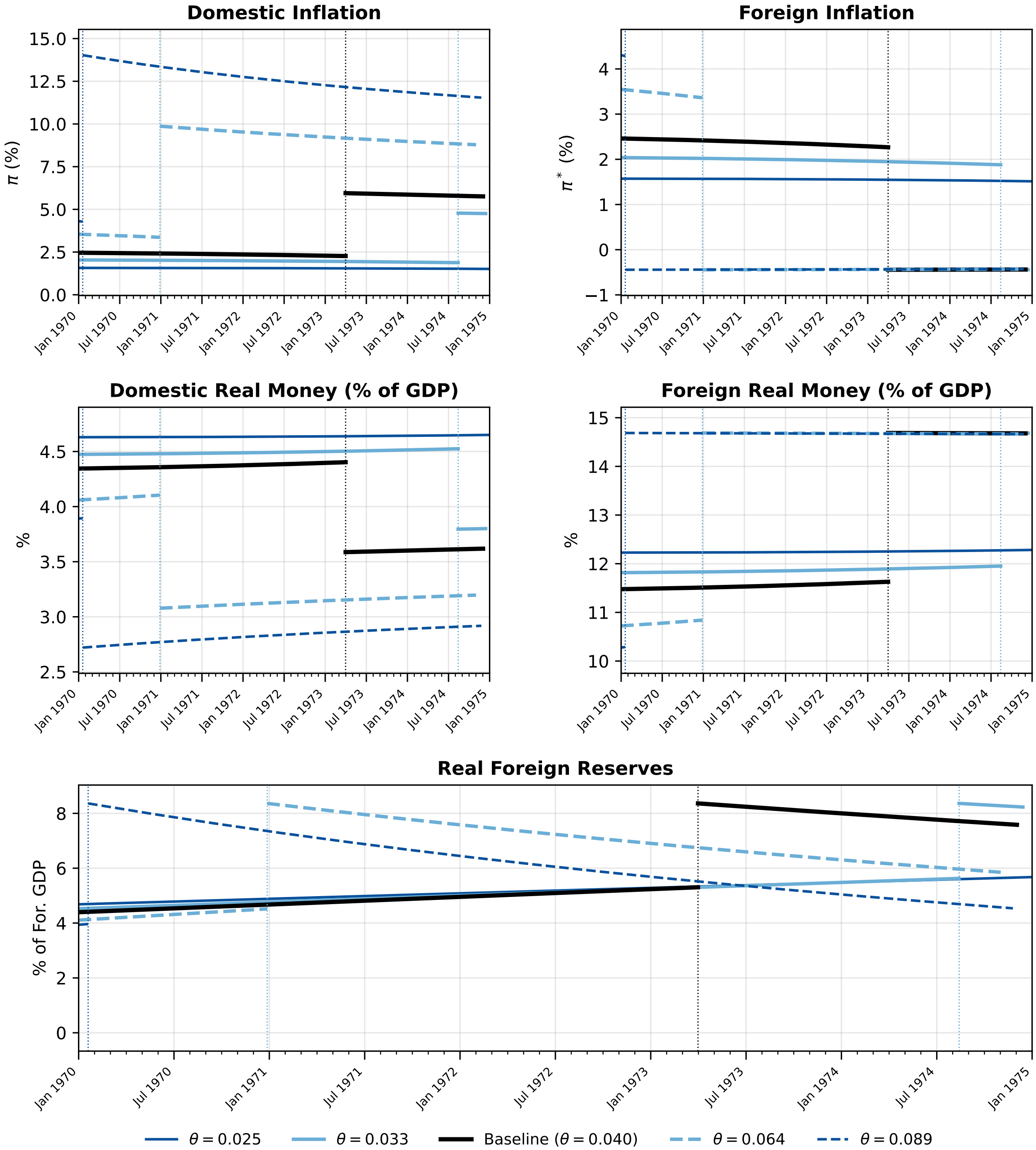


(d) Reserves



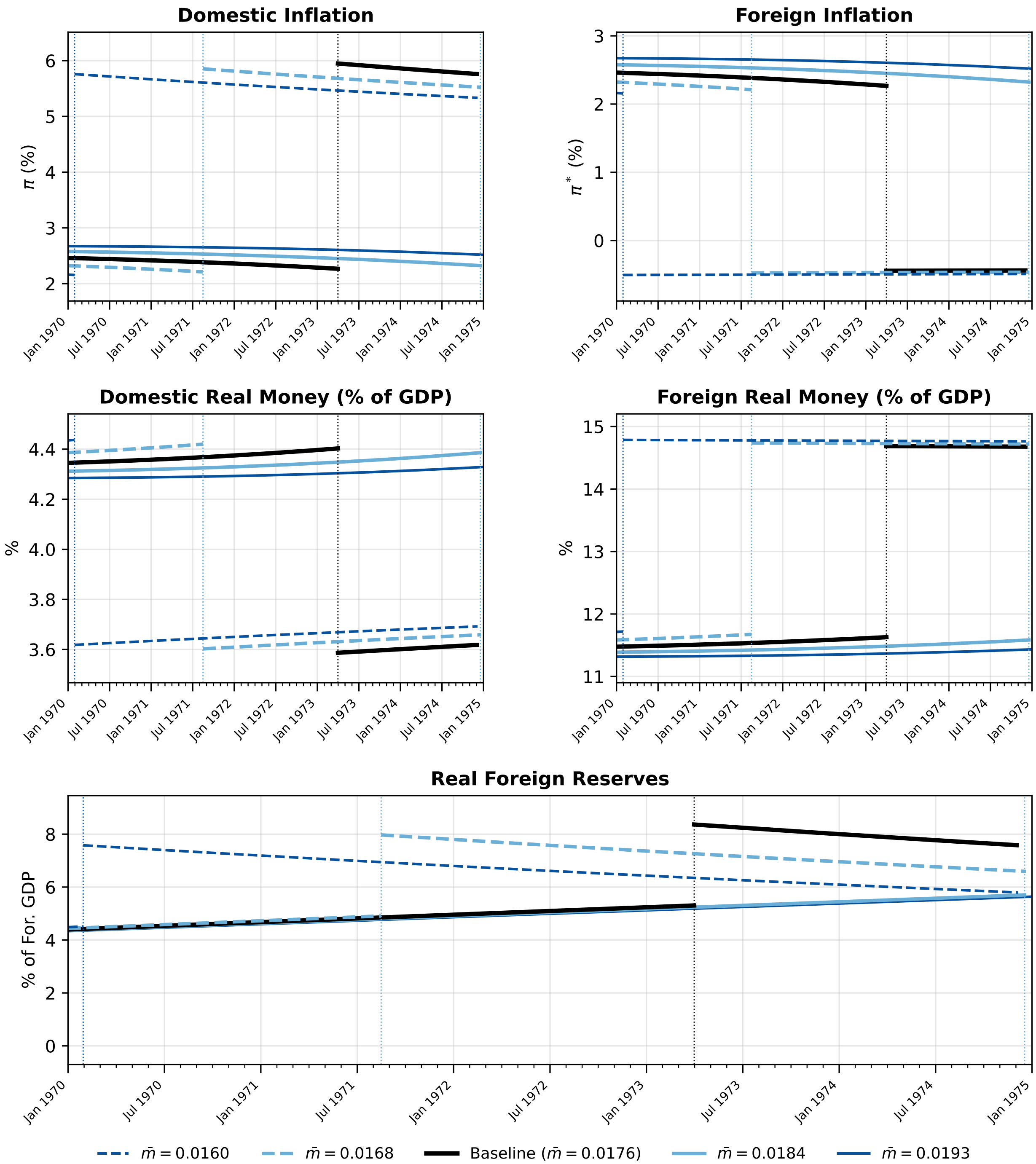
Notes: Paths are computed from the baseline Japan (March 1973) calibration.

Figure A.11: Calibrated Model Results - Comparative Statics θ



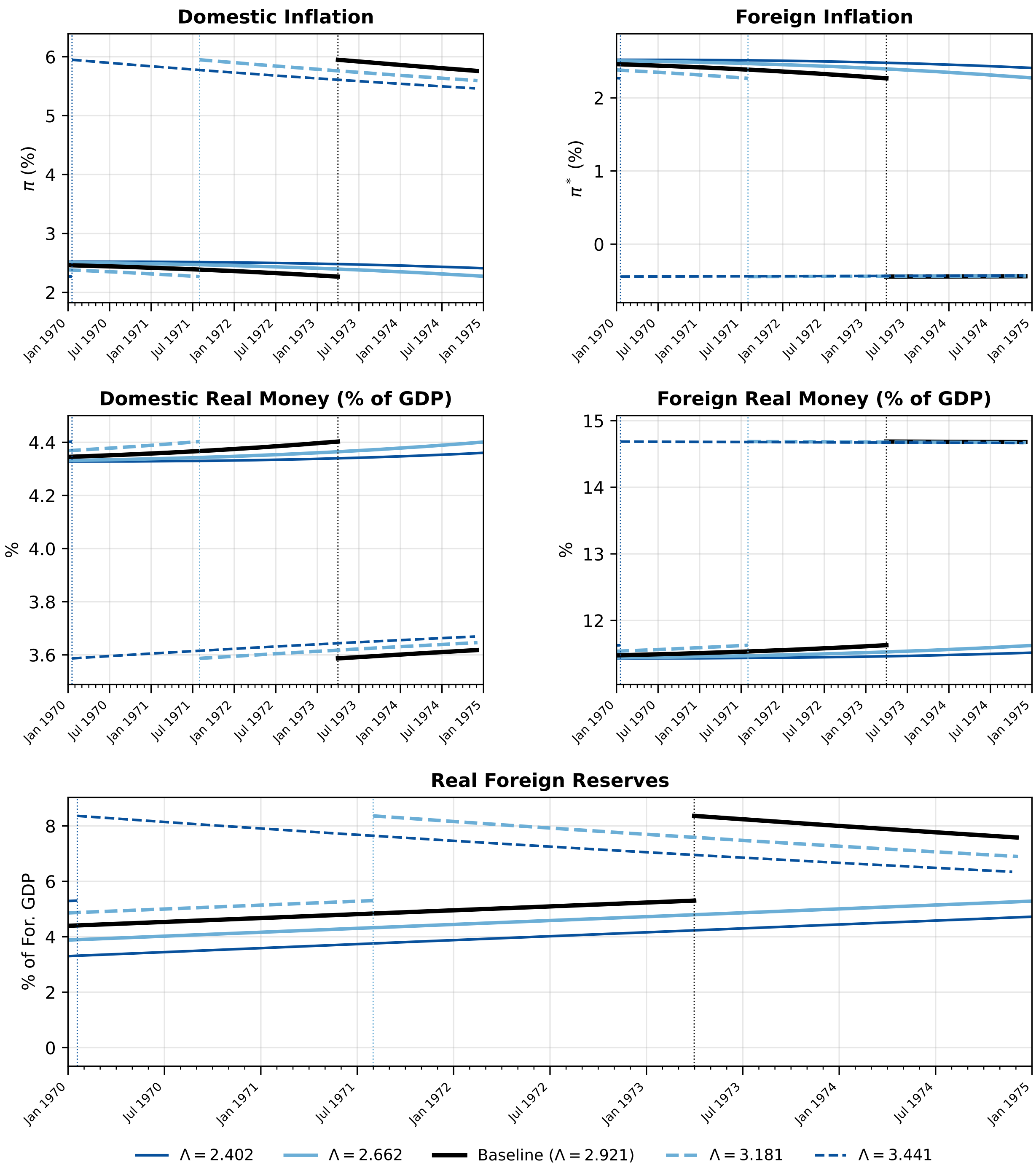
Notes: Comparative statics are computed using the Germany (March 1973) baseline calibration.

Figure A.12: Calibrated Model Results - Comparative Statics $\bar{m}_h^{g^*}$



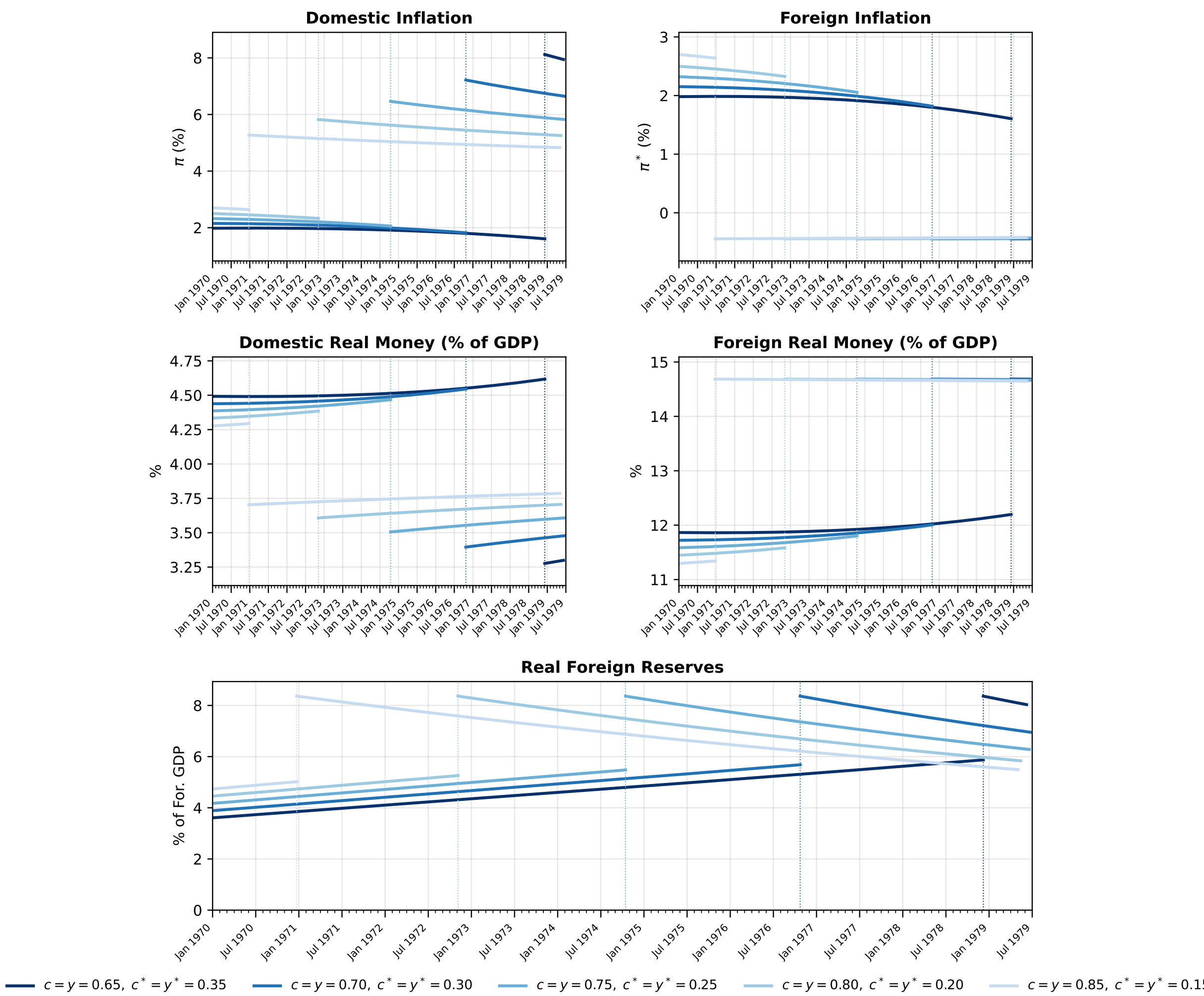
Notes: Comparative statics are computed using the Germany (March 1973) baseline calibration.

Figure A.13: Calibrated Model Results - Comparative Statics $\Lambda \equiv \frac{D_{h,0}}{ED^*_{f,0}}$



Notes: Comparative statics are computed using the Germany (March 1973) baseline calibration.

Figure A.14: Calibrated Model Results - Comparative Statics Size



Notes: Comparative statics are computed using the Germany (March 1973) baseline calibration.

A.3 Proofs

A.3.1 Derivation of Prices and Inflation

A.3.1.1 Home prices under floating exchange rate — $P_t, t \geq T$. Under a float, nominal reserve positions are constant and money market clearing in the home country is

$$M_t \equiv D_{h,0}e^{\theta t} - P_T \bar{m}_h^{g^*} = P_t\, m(\rho + \pi_t, c), \qquad t \geq T. \tag{A1}$$

Substituting CES money demand equation (15):

$$M_t = P_t\, c \left(\frac{\alpha}{\rho + \pi_t}\right)^{1/\sigma} \quad \Rightarrow \quad \alpha \left(\frac{M_t}{c}\right)^{-\sigma} = P_t^{-\sigma}\left(\rho + \pi_t\right). \tag{A2}$$

Using $\pi_t = \dot{P}_t / P_t$,

$$P_t^{-\sigma}\left(\rho + \pi_t\right) = \rho P_t^{-\sigma} + \dot{P}_t\, P_t^{-(\sigma+1)}. \tag{A3}$$

Combining equation (A2) and equation (A3) and letting $z_t \equiv P_t^{-\sigma}$, so that $\dot{z}_t = -\sigma P_t^{-(\sigma+1)}\dot{P}_t$, yields the linear ODE

$$\dot{z}_t - \rho\sigma z_t = -\sigma\alpha \left(\frac{M_t}{c}\right)^{-\sigma}. \tag{A4}$$

The general solution to equation (A4) is

$$z_t = Ce^{\rho\sigma t} + \sigma\alpha \int_t^\infty \left(\frac{M_s}{c}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds, \tag{A5}$$

where C is a constant of integration. Since $M_s = D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*}$ is strictly increasing in s (as $\dot{M}_s = \theta D_{h,0} e^{\theta s} > 0$), for all $s \geq t$ we have $M_s \geq M_t$, so $(M_s/c)^{-\sigma} \leq (M_t/c)^{-\sigma}$. Hence the particular solution satisfies

$$\sigma\alpha \int_t^\infty \left(\frac{M_s}{c}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds \leq \frac{\alpha}{\rho}\left(\frac{M_t}{c}\right)^{-\sigma} \to 0 \quad \text{as } t \to \infty,$$

since $M_t = D_{h,0}e^{\theta t} - P_T \bar{m}_h^{g^*} \to \infty$. So $Ce^{\rho\sigma t}$ dominates z_t for large t. If $C < 0$, then $z_t < 0$ for all sufficiently large t, contradicting $z_t = P_t^{-\sigma} > 0$. If $C > 0$, then $z_t \to \infty$, implying $P_t \to 0$ and hence $m_{h,t} = M_t/P_t \to \infty$. Since $a_t = m_{h,t} + b_{h,t} + b_{f,t}$, if $a_t \to \infty$ the home household's transversality condition is violated. Hence $b_{h,t}$ or $b_{f,t}$ must diverge to $-\infty$ to offset the divergence of $m_{h,t}$. Without loss of generality suppose $b_{h,t} \to -\infty$. By home bond market clearing equation (14d) and Assumption 2, which keeps $b_{h,t}^g$ bounded, we have $b_{h,t}^* \to +\infty$. But then foreign real wealth $a_t^* = m_{f,t}^* + b_{h,t}^* + b_{f,t}^* \to \infty$, violating the foreign household's transversality condition. Hence $C = 0$ and the unique equilibrium price path is

$$P_t = \left[\sigma\alpha c^\sigma \int_t^\infty \left(D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds\right]^{-1/\sigma} \qquad \text{for } t \geq T. \tag{A6}$$

P_T is defined implicitly:

$$P_T = \left[\sigma\alpha c^\sigma \int_T^\infty \left(D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma(s-T)}\, ds\right]^{-1/\sigma}. \tag{A7}$$

A.3.1.2 Home inflation under floating exchange rate — π_t for $t \geq T^+$. The inflation rate is the derivative of $\log(P_t)$, with the prices in equation (A6), that is,

$$\pi_t = -\rho + \frac{1}{\sigma} \frac{\left(D_{h,0}e^{\theta t} - P_T \bar{m}_h^{g^*}\right)^{-\sigma}}{\int_t^\infty \left(D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds}. \tag{A8}$$

As $t \to \infty$, the constant reserve term $P_T \bar{m}_h^{g^*}$ becomes negligible relative to $D_{h,0}e^{\theta t}$, so $\pi_t \to \theta$. We can also see that the money demand condition at $t = T^+$ gives

$$\frac{\alpha c^\sigma}{\rho + \pi_{T^+}} = \left(\frac{D_{h,0}e^{\theta T} - P_T \bar{m}_h^{g^*}}{P_T}\right)^\sigma. \tag{A9}$$

Since $P_T \bar{m}_h^{g^*} > 0$, we have $D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*} < D_{h,0}e^{\theta s}$ for all $s \geq T$, and in particular $M_T \equiv D_{h,0}e^{\theta T} - P_T \bar{m}_h^{g^*} < D_{h,0}e^{\theta T}$. For $s \geq T$,

$$D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*} - M_T\, e^{\theta(s-T)} = P_T \bar{m}_h^{g^*} \left(e^{\theta(s-T)} - 1\right) \geq 0,$$

with strict inequality for $s > T$. Hence $\left(D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*}\right)^{-\sigma} \leq M_T^{-\sigma}\, e^{-\theta\sigma(s-T)}$, so

$$P_T^{-\sigma} = \sigma \alpha c^\sigma \int_T^\infty \left(D_{h,0}e^{\theta s} - P_T \bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma(s-T)}\, ds < \frac{\alpha}{\rho + \theta} \left(\frac{M_T}{c}\right)^{-\sigma}.$$

Rearranging and substituting into equation (A9):

$$\frac{\alpha}{\rho + \pi_{T^+}} = \left(\frac{M_T}{P_T c}\right)^\sigma < \frac{\alpha}{\rho + \theta},$$

and therefore

$$\pi_{T^+} > \theta > 0.$$

Moreover, differentiating equation (A8) with respect to time yields $\dot{\pi}_t = \sigma(\pi_t + \rho)(\pi_t - \mu_t)$, where $\mu_t = \theta \dfrac{D_{h,0}e^{\theta t}}{D_{h,0}e^{\theta t} - P_T \bar{m}_h^{g^*}} > \theta$ is decreasing in t with $\mu_t \to \theta$. Suppose, for contradiction, that $\pi_{t_0} \geq \mu_{t_0}$ at some $t_0 \geq T$. Then $\dot{\pi}_{t_0} \geq 0$ while $\dot{\mu}_{t_0} < 0$, so $\pi_t - \mu_t$ is strictly increasing through t_0, $\dot{\pi}_t$ becomes strictly positive and bounded away from zero, and π_t diverges — contradicting $\pi_t \to \theta$. Hence $\pi_t < \mu_t$ and $\dot{\pi}_t < 0$ for all $t \geq T$, so π_t decreases monotonically from $\pi_{T^+} > \theta$ to θ.

A.3.1.3 Foreign prices and inflation under floating exchange rate — P_t^*, π_t^*, $t \geq T$.

Under a float, nominal reserve positions are frozen at their time-T values. The foreign central bank balance sheet equation (9a) and Assumption 1 imply that valuation changes in the reserve position are absorbed by net worth, so that foreign money market clearing reduces to

$$M_t^* \;\equiv\; D_{f,0}^* \, e^{\theta^* t} + P_T^* \bar{m}_h^{g^*} \;=\; P_t^* \, m^*(\rho + \pi_t^*, c^*), \qquad t \geq T. \tag{A10}$$

Following Appendix Section A.3.1.1 and applying the same transversality argument, the unique equilibrium foreign price and inflation paths are

$$P_t^* = \left[\sigma\alpha^*(c^*)^{\sigma} \int_t^{\infty} (M_s^*)^{-\sigma} \, e^{-\rho\sigma(s-t)} \, ds\right]^{-1/\sigma}, \qquad t \geq T, \tag{A11}$$

$$\pi_t^* = -\rho + \frac{1}{\sigma} \frac{\left(M_t^*\right)^{-\sigma}}{\displaystyle\int_t^{\infty} \left(M_s^*\right)^{-\sigma} e^{-\rho\sigma(s-t)} \, ds}. \tag{A12}$$

We establish three properties valid for all $\theta^* < \theta$.

(i) Lower bound: $\pi_{T^+}^* > -\rho$. Evaluating equation (A10) at $t = T^+$ and using CES money demand equation (15):

$$\rho + \pi_{T^+}^* \;=\; \alpha^* \left(\frac{c^*}{m_{f,T^+}^*}\right)^{\sigma}, \qquad m_{f,T^+}^* = \frac{M_T^*}{P_T^*} > 0. \tag{A13}$$

Since $m_{f,T^+}^* > 0$ (for $D_{f,0}^* > 0$ and $\bar{m}_h^{g^*} > 0$) and $\alpha^* > 0$, we have $i_{T^+}^* = \rho + \pi_{T^+}^* > 0$ for any θ^*.

(ii) Upper bound: $\pi_t^* < \max(\theta^*, 0)$. *Case* $\theta^* > 0$: Since $P_T^* \bar{m}_h^{g^*} > 0$, for $s > T$:

$$M_s^* = D_{f,0}^* e^{\theta^* s} + P_T^* \bar{m}_h^{g^*} \;<\; M_T^* \, e^{\theta^*(s-T)},$$

so $(M_s^*)^{-\sigma} > (M_T^*)^{-\sigma} e^{-\theta^*\sigma(s-T)}$ and therefore

$$\int_T^{\infty} (M_s^*)^{-\sigma} e^{-\rho\sigma(s-T)} \, ds \;>\; \frac{(M_T^*)^{-\sigma}}{(\rho + \theta^*)\sigma}.$$

Substituting into equation (A12) at $t = T$: $\pi_{T^+}^* < -\rho + (\rho + \theta^*) = \theta^*$. Since $\pi_t^* \nearrow \theta^*$ (proved in (iii) below), $\pi_t^* < \theta^*$ for all finite $t > T$.

Case $\theta^* < 0$: M_t^* is strictly decreasing ($\dot{M}_t^* = \theta^* D_{f,0}^* e^{\theta^* t} < 0$), so $M_s^* < M_t^*$ for all $s > t$. Hence $(M_s^*)^{-\sigma} > (M_t^*)^{-\sigma}$ for $s > t$, and

$$\int_t^{\infty} (M_s^*)^{-\sigma} e^{-\rho\sigma(s-t)} \, ds \;>\; \frac{(M_t^*)^{-\sigma}}{\rho\sigma},$$

giving $\pi_t^* < -\rho + \rho = 0 = \max(\theta^*, 0)$.

Case $\theta^* = 0$. In this case M_s^* is constant, and we have $\pi_t^* = 0$. Combining cases:

$$-\rho \;<\; \pi_{T^+}^* \;\leq\; \pi_t^* \;\leq\; \max(\theta^*, 0) \qquad \text{for all } t \geq T. \tag{A14}$$

In particular $i_t^* = \rho + \pi_t^* > 0$ throughout the post-collapse path, for any θ^*.

As $t \to \infty$: if $\theta^* > 0$, $D_{f,0}^* e^{\theta^* t}$ dominates $P_T^* \bar{m}_h^{g^*}$ and by the same calculation as in Appendix Section A.3.1.2 with θ replaced by θ^*, $\pi_t^* \to \theta^*$; if $\theta^* \leq 0$, $D_{f,0}^* e^{\theta^* t} \to 0$, $M_t^* \to P_T^* \bar{m}_h^{g^*}$ (constant), and $\pi_t^* \to 0$. In both cases $\pi_t^* \nearrow \max(\theta^*, 0)$.

A.3.1.4 Home prices under fixed exchange rate — $P_t, t \le T$

. Under the peg, PPP implies $P_t = EP_t^*$ and inflation is common across countries, given $\epsilon_t = 0$. World money market clearing under the peg is

$$M_t^W \equiv D_{h,0}e^{\theta t} + ED_{f,0}^* e^{\theta^* t} = P_t\Big(m(\rho + \pi_t, c) + m^*(\rho + \pi_t, c^*)\Big). \tag{A15}$$

Under CES with country-specific money-demand shifters α (home) and α^* (foreign),

$$\begin{aligned} m(\rho + \pi_t, c) + m^*(\rho + \pi_t, c^*) &= c\left(\frac{\alpha}{\rho + \pi_t}\right)^{1/\sigma} + c^*\left(\frac{\alpha^*}{\rho + \pi_t}\right)^{1/\sigma} \\ &= \left(\frac{1}{\rho + \pi_t}\right)^{1/\sigma}\Big(c\,\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma}\Big). \end{aligned} \tag{A16}$$

Define the constant

$$\kappa \equiv c\,\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma}.$$

Substituting equation (A16) into equation (A15) yields

$$M_t^W = P_t\,\kappa\left(\frac{1}{\rho + \pi_t}\right)^{1/\sigma} \quad \Rightarrow \quad \kappa^\sigma M_t^{W-\sigma} = \rho P_t^{-\sigma} + \dot{P}_t\, P_t^{-(\sigma+1)}. \tag{A17}$$

Let $z_t \equiv P_t^{-\sigma}$. Then z_t solves the linear ODE

$$\dot{z}_t - \rho\sigma z_t = -\sigma\,\kappa^\sigma\, M_t^{W-\sigma}.$$

Using the terminal condition P_{T^-} inherited from the post-crisis solution and integrating from t to T,

$$z_t = \sigma\,\kappa^\sigma \int_t^T M_s^{W-\sigma} e^{-\rho\sigma(s-t)}\,ds + e^{-\rho\sigma(T-t)} z_T, \qquad z_T = P_{T^-}{}^{-\sigma}.$$

Hence the pre-switch price level is

$$P_t = \left[\sigma\,\kappa^\sigma \int_t^T \left(D_{h,0}e^{\theta s} + ED_{f,0}^* e^{\theta^* s}\right)^{-\sigma} e^{-\rho\sigma(s-t)}\,ds + e^{-\rho\sigma(T-t)} P_{T^-}{}^{-\sigma}\right]^{-1/\sigma}, \qquad t < T, \tag{A18}$$

and $P_t^* = P_t/E$.

A.3.1.5 Home inflation under fixed exchange rate — π_t for $t \leq T^-$.

The derivative of $\log(P_t)$ in equation (A18) is

$$\pi_t = -\rho + \kappa^\sigma \left(\frac{P_t}{D_{h,0}e^{\theta t} + ED^*_{f,0}e^{\theta^* t}} \right)^\sigma ,$$

which recovers the aggregate world money demand on the left of equation (A17). Let $V_t^{-1} = \rho + \pi_t$. Substituting for P_t with equation (A18) and simplifying yields,

$$\pi_t = -\rho + \frac{1}{\sigma \int_t^T \left(\frac{M_s^W}{M_t^W} \right)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds + e^{-\rho\sigma(T-t)}\kappa^{-\sigma} \left(\frac{P_T}{M_t^W} \right)^{-\sigma}} = -\rho + \frac{1}{V_t}$$

Differentiating the world money market equilibrium $M_t^W = P_t \kappa V_t^{1/\sigma}$ yields $\dot{V}_t = \sigma V_t(\mu_t - \pi_t) = -\sigma + \sigma(\rho + \mu_t)V_t$, where $\mu_t \equiv \dot{M}_t^W / M_t^W$. Hence

$$\dot{\pi}_t > 0 \iff \dot{V}_t < 0 \iff \mu_t < \pi_t.$$

A.3.2 Proof of Lemma 1

Under Assumptions 1–4, the path for inflation has the following properties:

1. Floating exchange rate regime ($t \geq T^+$).
   (a) Home Country: for all $t \geq T^+ : \pi_t > \theta$ and $\lim_{t\to\infty} \pi_t = \theta$.
   (b) Foreign country: for all $t \geq T^+ : \pi_t^* = 0$ when $\theta^* = 0$, $\pi_t^* \in (-\rho, \max(\theta^*, 0))$ for $\theta^* \neq 0$, and

$$\lim_{t\to\infty} \pi_t^* = \begin{cases} \theta^* & \text{for } \theta^* \geq 0 \\ 0 & \text{for } \theta^* \leq 0. \end{cases}$$

2. Fixed exchange rate regime ($t \leq T^-$):
   (a) For all $t \leq T^-$, $\pi_{T^+}^* < \pi_t < \pi_{T^+}$, where we assume $\theta D_{h,0} + \theta^* E D_{f,0}^* \geq 0$ for the first inequality.
   (b) For all $t \leq T^-$:

$$\theta^* < \pi_t < \theta \iff \frac{c\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma}}{D_{h,0}/\widetilde{P} + D_{f,0}^*/\widetilde{P}^*} \in \left((\rho+\theta^*)^{1/\sigma}, (\rho+\theta)^{1/\sigma}\right), \tag{A19}$$

   where $\widetilde{P}, \widetilde{P}^*$ satisfy equation (22).

Proof We rely on the price solutions derived in Appendix Section A.3.1. Differentiating $\log P_t$ and $\log P_t^*$ from equation (19a)–equation (21) yields

$$\pi_t = -\rho + \frac{1}{\sigma} \frac{M_t^{-\sigma}}{\displaystyle\int_t^\infty M_s^{-\sigma} e^{-\rho\sigma(s-t)}\, ds}, \qquad t \geq T, \tag{A20}$$

$$\pi_t^* = -\rho + \frac{1}{\sigma} \frac{(M_t^*)^{-\sigma}}{\displaystyle\int_t^\infty (M_s^*)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds}, \qquad t \geq T, \tag{A21}$$

$$\frac{1}{\rho+\pi_t} = \sigma \int_t^T \left(\frac{M_t^W}{M_s^W}\right)^\sigma e^{-\rho\sigma(s-t)}\, ds + \frac{e^{-\rho\sigma(T-t)}}{\rho+\pi_{T^-}} \left(\frac{M_t^W}{M_T^W}\right)^\sigma, \qquad t \leq T, \tag{A22}$$

where $M_t \equiv D_{h,0} e^{\theta t} - P_T \bar{m}_h^{g^*}$, $M_t^* \equiv D_{f,0}^* e^{\theta^* t} + P_T^* \bar{m}_h^{g^*}$, and $M_t^W \equiv D_{h,0} e^{\theta t} + E D_{f,0}^* e^{\theta^* t}$. Since $\theta > \theta^*$ and both nominal credit stocks are positive,

$$e^{-\theta(s-t)} < \frac{M_t^W}{M_s^W} < e^{-\theta^*(s-t)}, \qquad s > t. \tag{A23}$$

Part (a): post-collapse inflation.

Home country. M_t is strictly increasing ($\dot{M}_t = \theta D_{h,0} e^{\theta t} > 0$), so $M_s > M_t e^{\theta(s-t)}$ for $s > t \geq T$. Hence $(M_s)^{-\sigma} < (M_t)^{-\sigma} e^{-\theta\sigma(s-t)}$ and

$$\int_t^\infty M_s^{-\sigma} e^{-\rho\sigma(s-t)}\, ds < \frac{M_t^{-\sigma}}{(\rho+\theta)\sigma}.$$

Substituting into equation (A20) gives $\pi_t > \theta$ for all $t > T$. As $t \to \infty$, $P_T \bar{m}_h^{g^*}/M_t \to 0$, so $M_t \sim D_{h,0} e^{\theta t}$ and the ratio in equation (A20) converges to $(\rho+\theta)\sigma$, giving $\pi_t \to \theta$.

Foreign country. Evaluating equation (A21) at $t = T^+$ with CES money demand gives $\rho + \pi_{T^+}^* = \alpha^*(c^*/m_{f,T^+}^*)^\sigma > 0$, so $\pi_{T^+}^* > -\rho$. For $\theta^* > 0$, M_t^* is strictly increasing and $M_s^* < M_t^* e^{\theta^*(s-t)}$ for $s > t$. The same argument as for the home country then gives $\pi_t^* < \theta^*$ for all $t > T$ and $\pi_t^* \to \theta^*$. For $\theta^* = 0$, M_t^* is constant, so the integral in equation (A21) equals $(M_t^*)^{-\sigma}/(\rho\sigma)$, giving $\pi_t^* = 0$ for all $t \geq T$. For $\theta^* < 0$, M_t^* is strictly decreasing ($\dot{M}_t^* = \theta^* D_{f,0}^* e^{\theta^* t} < 0$), so $(M_s^*)^{-\sigma} > (M_t^*)^{-\sigma}$ for $s > t$ and

$$\int_t^\infty (M_s^*)^{-\sigma} e^{-\rho\sigma(s-t)}\, ds > \frac{(M_t^*)^{-\sigma}}{\rho\sigma},$$

giving $\pi_t^* < 0 = \max(\theta^*, 0)$. As $t \to \infty$, $D_{f,0}^* e^{\theta^* t} \to 0$ so $M_t^* \to P_T^* \bar{m}_h^{g^*} > 0$; the integral then converges to $(P_T^* \bar{m}_h^{g^*})^{-\sigma}/(\rho\sigma)$ and $\pi_t^* \to 0 = \max(\theta^*, 0)$.

Part (b): pre-collapse inflation.

Behavior at the switch date. Adding the home and foreign floating money-market conditions at $t = T^+$, the reserve terms $\pm P_T \bar{m}_h^{g^*}$ cancel and give

$$M_T^W = P_T\Big[c\,\alpha^{1/\sigma}(\rho + \pi_{T^+})^{-1/\sigma} + c^*(\alpha^*)^{1/\sigma}(\rho + \pi_{T^+}^*)^{-1/\sigma}\Big]. \tag{A24}$$

The world money-market condition under the peg at $t = T^-$ gives

$$M_T^W = P_T\,\kappa\,(\rho + \pi_{T^-})^{-1/\sigma}, \tag{A25}$$

where $\kappa \equiv c\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma}$. Equating equation (A24) and equation (A25),

$$(\rho + \pi_{T^-})^{-1/\sigma} = w\,(\rho + \pi_{T^+})^{-1/\sigma} + (1 - w)\,(\rho + \pi_{T^+}^*)^{-1/\sigma}, \tag{A26}$$

where $w \equiv c\alpha^{1/\sigma}/\kappa \in (0, 1)$. Since $f(x) \equiv (\rho + x)^{-1/\sigma}$ is strictly decreasing and $\pi_{T^+} > \pi_{T^+}^*$ (part (a)), equation equation (A26) expresses $f(\pi_{T^-})$ as a strict convex combination of the distinct values $f(\pi_{T^+})$ and $f(\pi_{T^+}^*)$. Hence $\pi_{T^+}^* < \pi_{T^-} < \pi_{T^+}$.

Upper bound: $\pi_t < \pi_{T^+}$ for $t < T$. Apply the left inequality in equation (A23) to both the integral and the terminal term in equation (A22):

$$\frac{1}{\rho + \pi_t} > \frac{1 - e^{-(\rho+\theta)\sigma(T-t)}}{\rho + \theta} + \frac{e^{-(\rho+\theta)\sigma(T-t)}}{\rho + \pi_{T^-}}.$$

Since $\pi_{T^+} > \theta$ (part (a)) and $\pi_{T^+} > \pi_{T^-}$, both $(\rho + \theta)^{-1}$ and $(\rho + \pi_{T^-})^{-1}$ strictly exceed $(\rho + \pi_{T^+})^{-1}$, so

$$\frac{1 - e^{-(\rho+\theta)\sigma(T-t)}}{\rho + \theta} + \frac{e^{-(\rho+\theta)\sigma(T-t)}}{\rho + \pi_{T^-}} > \frac{1 - e^{-(\rho+\theta)\sigma(T-t)} + e^{-(\rho+\theta)\sigma(T-t)}}{\rho + \pi_{T^+}} = \frac{1}{\rho + \pi_{T^+}},$$

hence $\pi_t < \pi_{T^+}$.

Lower bound: $\pi_t > \pi_{T^+}^*$ under $\theta D_{h,0} + \theta^* E D_{f,0}^* \geq 0$. Apply the right inequality in equation (A23) and use $\pi_{T^-} > \pi_{T^+}^*$:

$$\frac{1}{\rho + \pi_t} < \frac{1 - e^{-(\rho+\theta^*)\sigma(T-t)}}{\rho + \theta^*} + \frac{e^{-(\rho+\theta^*)\sigma(T-t)}}{\rho + \pi_{T^+}^*}. \tag{A27}$$

For $\theta^* > 0$: $\pi_{T^+}^* < \theta^*$, so $(\rho + \theta^*)^{-1} < (\rho + \pi_{T^+}^*)^{-1}$ and the right-hand side of equation (A27) is strictly below $(\rho + \pi_{T^+}^*)^{-1}$. For $\theta^* = 0$: $\pi_{T^+}^* = 0$ and equation (A27) equals $\rho^{-1} = (\rho + \pi_{T^+}^*)^{-1}$. For $\theta^* < 0$: assuming $\theta D_{h,0} + \theta^* E D_{f,0}^* \geq 0$ ensures $\dot{M}_t^W \geq 0$, so $M_t^W / M_s^W \leq 1$ for $s \geq t$. Applying this to equation (A22) and using $\pi_{T^-} > \pi_{T^+}^*$:

$$\frac{1}{\rho + \pi_t} < \frac{1 - e^{-\rho\sigma(T-t)}}{\rho} + \frac{e^{-\rho\sigma(T-t)}}{\rho + \pi_{T^+}^*} = \frac{1}{\rho + \pi_{T^+}^*} - \underbrace{\left(1 - e^{-\rho\sigma(T-t)}\right)}_{>0}\underbrace{\left[\frac{1}{\rho + \pi_{T^+}^*} - \frac{1}{\rho}\right]}_{>0 \text{ since } \pi_{T^+}^* < 0} < \frac{1}{\rho + \pi_{T^+}^*}.$$

In all cases $(\rho + \pi_t)^{-1} < (\rho + \pi_{T^+}^*)^{-1}$, so $\pi_t > \pi_{T^+}^*$.

Bounds: $\theta^* < \pi_t < \theta, t \leq T^-$ Condition equation (23) is equivalent to $\pi_{T^-} \in (\theta^*, \theta)$. To see this, note that the parity condition at collapse $P_T = E_T P_T^*$ and the definitions $\widetilde{P} \equiv e^{-\theta T} P_T$, $\widetilde{P^*} \equiv e^{-\theta^* T} P_T^*$ give

$$D_{h,0} e^{\theta T} = \frac{D_{h,0}}{\widetilde{P}} \cdot P_T, \qquad D_{f,0}^* e^{\theta^* T} = \frac{D_{f,0}^*}{\widetilde{P^*}} \cdot P_T / E,$$

so the world credit stock satisfies $M_T^W = P_T \big(D_{h,0}/\widetilde{P} + D_{f,0}^*/\widetilde{P^*} \big)$. The world money-market condition at T^- gives $M_T^W = P_T \kappa \, (\rho + \pi_{T^-})^{-1/\sigma}$. Combining:

$$(\rho + \pi_{T^-})^{1/\sigma} \;=\; \frac{\kappa}{D_{h,0}/\widetilde{P} + D_{f,0}^*/\widetilde{P^*}}. \tag{A28}$$

Hence equation (23) is equivalent to $\pi_{T^-} \in (\theta^*, \theta)$.

For sufficiency, we first apply the lower bound $M_t^W / M_s^W > e^{-\theta(s-t)}$ from equation (A23) to equation (A22):

$$\frac{1}{\rho + \pi_t} \;>\; \frac{1 - e^{-(\rho+\theta)\sigma(T-t)}}{\rho + \theta} + \frac{e^{-(\rho+\theta)\sigma(T-t)}}{\rho + \pi_{T^-}}.$$

Since $\pi_{T^-} < \theta$, $(\rho + \pi_{T^-})^{-1} > (\rho + \theta)^{-1}$ and the right-hand side strictly exceeds $(\rho + \theta)^{-1}$, so $\pi_t < \theta$. Applying the upper bound $M_t^W / M_s^W < e^{-\theta^*(s-t)}$ from equation (A23) to equation (A22):

$$\frac{1}{\rho + \pi_t} \;<\; \frac{1 - e^{-(\rho+\theta^*)\sigma(T-t)}}{\rho + \theta^*} + \frac{e^{-(\rho+\theta^*)\sigma(T-t)}}{\rho + \pi_{T^-}}.$$

Since $\pi_{T^-} > \theta^*$, $(\rho + \pi_{T^-})^{-1} < (\rho + \theta^*)^{-1}$ and the right-hand side is strictly less than $(\rho + \theta^*)^{-1}$, so $\pi_t > \theta^*$. Hence $\theta^* < \pi_t < \theta$ for all $t \in [0, T)$.

For necessity, if $\theta^* < \pi_t < \theta$ for all $t \in [0, T^-]$, including the limit $t = T^-$. Then in particular $\pi_{T^-} \in (\theta^*, \theta)$, and equation (A28) yields equation (23) immediately.

A.3.3 Derivation of Reserves

The home real central bank balance sheet equation (6) is

$$d_{h,t} = m_{h,t} + m^{g^*}_{h,t} \qquad \Rightarrow \qquad m^{g^*}_{h,t} = d_{h,t} - m_{h,t}.$$

Differentiating gives

$$\dot{m}^{g^*}_{h,t} = \dot{d}_{h,t} - \dot{m}_{h,t}. \tag{A29}$$

Domestic credit obeys $\dot{D}_{h,t} = \theta D_{h,t}$. Since $d_{h,t} \equiv D_{h,t}/P_t$,

$$\dot{d}_{h,t} = \frac{\dot{D}_{h,t}}{P_t} - \frac{D_{h,t}}{P_t}\frac{\dot{P}_t}{P_t} = (\theta - \pi_t)d_{h,t}. \tag{A30}$$

Money demand under the peg is $m_{h,t} = c(\alpha/(\rho + \pi_t))^{1/\sigma}$, so with constant c,

$$\dot{m}_{h,t} = -\frac{1}{\sigma}m_{h,t}\frac{\dot{i}_t}{i_t} = -\frac{1}{\sigma}m_{h,t}\frac{\dot{\pi}_t}{\rho + \pi_t}. \tag{A31}$$

Combining equation (A29)–equation (A31),

$$\dot{m}^{g^*}_{h,t} = (\theta - \pi_t)d_{h,t} + \frac{1}{\sigma}m_{h,t}\frac{\dot{\pi}_t}{\rho + \pi_t}, \qquad t \leq T. \tag{A32}$$

It is useful to rewrite equation (A32) in terms of the growth rate of world nominal money under the peg. We take logs on equation (A17) and differentiate:

$$\frac{\dot{M}^W_t}{M^W_t} = \pi_t - \frac{1}{\sigma}\frac{\dot{\pi}_t}{\rho + \pi_t}. \tag{A33}$$

Define the growth rate of world nominal money under the peg as

$$\theta^W_t \equiv \frac{\dot{M}^W_t}{M^W_t} = \frac{\theta D_{h,0}e^{\theta t} + \theta^* E D^*_{f,0}e^{\theta^* t}}{D_{h,0}e^{\theta t} + E D^*_{f,0}e^{\theta^* t}} < \theta. \tag{A34}$$

Then equation (A33) implies

$$\frac{1}{\sigma}\frac{\dot{\pi}_t}{\rho + \pi_t} = \pi_t - \theta^W_t. \tag{A35}$$

Substituting equation (A35) into equation (A32),

$$\dot{m}^{g^*}_{h,t} = (\theta - \pi_t)d_{h,t} + m_{h,t}\left(\pi_t - \theta^W_t\right). \tag{A36}$$

Using $d_{h,t} = m_{h,t} + m^{g^*}_{h,t}$, we obtain

$$\begin{aligned} \dot{m}^{g^*}_{h,t} &= (\theta - \pi_t)\left(m_{h,t} + m^{g^*}_{h,t}\right) + m_{h,t}\left(\pi_t - \theta^W_t\right) \\ &= (\theta - \theta^W_t)m_{h,t} + (\theta - \pi_t)m^{g^*}_{h,t}. \end{aligned} \tag{A37}$$

We can divide by $m_{h,t}^{g^*}$ and obtain:

$$\frac{\dot{m}_{h,t}^{g^*}}{m_{h,t}^{g^*}} = (\theta - \theta_t^W)\,\frac{m_{h,t}}{m_{h,t}^{g^*}} + (\theta - \pi_t), \qquad t \leq T. \tag{A38}$$

A.3.4 Proof of Proposition 1

In an economy satisfying Assumptions 1–4, suppose

$$\frac{D_{h,0}}{E\,D^*_{f,0}} < \frac{c\left(\dfrac{\alpha}{\rho+\theta}\right)^{1/\sigma}}{c^*\left(\dfrac{\alpha^*}{\rho+\theta^*}\right)^{1/\sigma}}, \tag{A39}$$

where c and c^* are determined by equation (17). Then the fixed exchange rate regime collapses at a unique finite date $0 < T < \infty$ if, and only if,

(i) $\theta > \theta^*$, and

(ii) $\bar{m}_h^{g^*} < \infty$.

Proof We begin by establishing a general result on the ratio P_T/P_T^* that is used throughout. Define the rescaled variables $\widetilde{P}_T \equiv e^{-\theta T}P_T$ and $\widetilde{P}_T^* \equiv e^{-\theta^* T}P_T^*$. Substituting into equation (A7) evaluated at $t = T$ and changing variables $u = s - T$ yields

$$\widetilde{P}_T = \left[\sigma\alpha\int_0^\infty\left(\frac{D_{h,0}e^{\theta u} - \widetilde{P}_T\bar{m}_h^{g^*}}{c}\right)^{-\sigma} e^{-\rho\sigma u}du\right]^{-1/\sigma},$$

$$\widetilde{P}_T^* = \left[\sigma\alpha^*\int_0^\infty\left(\frac{D^*_{f,0}e^{\theta^* u} + \widetilde{P}_T^*\bar{m}_h^{g^*}}{c^*}\right)^{-\sigma} e^{-\rho\sigma u}du\right]^{-1/\sigma},$$

neither of which depends on T. Hence $\widetilde{P}_T = \widetilde{P}$ and $\widetilde{P}_T^* = \widetilde{P}^*$ are constants, and for any θ, θ^*,

$$\frac{P_T}{P_T^*} = \frac{\widetilde{P}}{\widetilde{P}^*}e^{(\theta-\theta^*)T}. \tag{A40}$$

This ratio is strictly increasing in T when $\theta > \theta^*$, constant when $\theta = \theta^*$, and strictly decreasing when $\theta < \theta^*$.

(*Only if*)

(i) $\theta > \theta^*$ is necessary. Suppose $\theta = \theta^*$. From equation (A40), $P_T/P_T^* = \widetilde{P}/\widetilde{P}^*$ is constant in T. From the rescaled equations, $\widetilde{P}$ satisfies the upper bound

$$\widetilde{P} \le \left(\frac{\rho+\theta}{\alpha}\right)^{1/\sigma}\frac{D_{h,0}}{c},$$

and $\widetilde{P}^*$ satisfies the lower bound

$$\widetilde{P}^* \ge \left(\frac{\rho+\theta^*}{\alpha^*}\right)^{1/\sigma}\frac{D^*_{f,0}}{c^*}.$$

Hence $\widetilde{P}/\widetilde{P}^* < E$ is implied by

$$\frac{D_{h,0}}{ED^*_{f,0}} < \frac{c\left(\dfrac{\alpha}{\rho+\theta}\right)^{1/\sigma}}{c^*\left(\dfrac{\alpha^*}{\rho+\theta^*}\right)^{1/\sigma}}, \tag{A41}$$

so $P_T/P_T^* = \widetilde{P}/\widetilde{P}^* < E$ for all T and the switch condition $P_T/P_T^* = E$ is never satisfied. Hence $T = \infty$.

(ii) $\bar{m}_h^{g^*} < \infty$ is necessary. Suppose $\bar{m}_h^{g^*} \to \infty$. From equation (A40), the collapse date T satisfies

$$T = \frac{\ln(E\widetilde{P}^*/\widetilde{P})}{\theta - \theta^*},$$

where $\widetilde{P}$ and $\widetilde{P}^*$ depend on $\bar{m}_h^{g^*}$. We show $\widetilde{P} \to 0$ and $\widetilde{P}^* \to \infty$, so that $T \to \infty$.
Home: $\widetilde{P} \to 0$. The integrand in the rescaled home equation is well-defined only when $D_{h,0}e^{\theta u} - \widetilde{P}\bar{m}_h^{g^*} > 0$ for all $u \geq 0$, which (since the LHS is increasing in u) requires $\widetilde{P} < D_{h,0}/\bar{m}_h^{g^*}$ at $u = 0$. Hence $\widetilde{P} \to 0$ as $\bar{m}_h^{g^*} \to \infty$.
Foreign: $\widetilde{P}^* \to \infty$. By analogous monotonicity, $\widetilde{P}^*$ is increasing in $\bar{m}_h^{g^*}$. The rescaled foreign equation gives the upper bound (using $D^*_{f,0}e^{\theta^* u} + \widetilde{P}^*\bar{m}_h^{g^*} \geq \widetilde{P}^*\bar{m}_h^{g^*}$):

$$(\widetilde{P}^*)^{-\sigma} \leq \sigma\alpha^*(c^*)^\sigma(\widetilde{P}^*\bar{m}_h^{g^*})^{-\sigma}\int_0^\infty e^{-\rho\sigma u}\,du = \frac{\alpha^*(c^*)^\sigma}{\rho}(\widetilde{P}^*\bar{m}_h^{g^*})^{-\sigma},$$

which rearranges to $\bar{m}_h^{g^*} \leq (\alpha^*/\rho)^{1/\sigma}c^*$. This bound is independent of $\widetilde{P}^*$; as $\bar{m}_h^{g^*}$ approaches it, $\widetilde{P}^*$ diverges to keep the equation satisfiable, and beyond it no equilibrium exists. Hence $\widetilde{P}^* \to \infty$ as $\bar{m}_h^{g^*} \to \infty$.

Since $\widetilde{P} \to 0$ and $\widetilde{P}^* \to \infty$, we have $\ln(E\widetilde{P}^*/\widetilde{P}) \to \infty$ and hence $T \to \infty$. No finite collapse date exists. Hence $\bar{m}_h^{g^*} < \infty$ is necessary.

(If)

Suppose $\theta > \theta^*$ and $\bar{m}_h^{g^*} < \infty$. From equation (A40), since $\theta > \theta^*$, P_T/P_T^* is strictly increasing in T and diverges as $T \to \infty$. It remains to show $P_0/P_0^* < E$, i.e. $\widetilde{P}/\widetilde{P}^* < E$, so that the intermediate value theorem applies. Evaluating equation (A7) at $t = T$ and then $T = 0$, since $D_{h,0}e^{\theta s} - P_0\bar{m}_h^{g^*} \leq D_{h,0}e^{\theta s}$,

$$P_0 \leq \left(\frac{\rho + \theta}{\alpha}\right)^{1/\sigma}\frac{D_{h,0}}{c}.$$

The condition $P_0/E < \widetilde{P}^*$ is therefore implied by the parameter restriction equation (27), which generalizes for arbitrary $\theta^* < \theta$ to

$$\frac{1}{E}\left(\frac{\rho + \theta}{\alpha}\right)^{1/\sigma}\frac{D_{h,0}}{c} < \left(\frac{\rho + \theta^*}{\alpha^*}\right)^{1/\sigma}\frac{D^*_{f,0}}{c^*},$$

since $\widetilde{P}^* \geq (\rho + \theta^*)^{1/\sigma}(\alpha^*)^{-1/\sigma}D^*_{f,0}/c^*$ from the rescaled foreign equation. By the intermediate value theorem, and strict monotonicity of equation (A40), there exists a unique finite $T > 0$ such that $P_T/P_T^* = E$, establishing $0 < T < \infty$.

A.3.5 Proof of Lemma 2

Under Assumptions 1–4 and holding the real allocation (c, c^*) fixed:

(a) The collapse date $T(\Lambda, \bar{m}_h^{g^*}, \theta - \theta^*)$ satisfies, for general θ^*, where $\Lambda \equiv \frac{D_{h,0}}{E D^*_{f,0}}$

$$\frac{\partial T}{\partial \Lambda} = -\frac{1}{(\theta - \theta^*)\,\Lambda} < 0, \qquad \frac{\partial T}{\partial \bar{m}_h^{g^*}} > 0, \qquad \frac{\partial T}{\partial \theta} < 0, \quad \frac{\partial T}{\partial \theta^*} > 0.$$

(b) The size of the reverse speculative attack, $\Delta \equiv m^{g^*}_{h,T^+} - m^{g^*}_{h,T^-} = m_{h,T^-} - m_{h,T^+} > 0$, is independent of Λ and satisfies $\partial\Delta/\partial\theta > 0$. If, in addition, $\theta^* \geq 0$, then $\partial\Delta/\partial\bar{m}_h^{g^*} > 0$.

Proof (a) Comparative statics for T. From the proof of Proposition 1, define $\hat{P} \equiv \widetilde{P}/D_{h,0}$ and $\hat{P}^* \equiv \widetilde{P}^*/D^*_{f,0}$. The rescaled equations show that $\hat{P}$ depends on $(\theta, \bar{m}_h^{g^*})$ and $\hat{P}^*$ on $(\theta^*, \bar{m}_h^{g^*})$. Taking logs of equation (A40) and using $P_T/P_T^* = E$ at the collapse date,[30]

$$(\theta - \theta^*)\,T = -\ln\Lambda + \ln\hat{P}^* - \ln\hat{P}, \qquad \Lambda \equiv \frac{D_{h,0}}{E\,D^*_{f,0}}. \tag{A42}$$

Effect of Λ. Differentiating equation (A42) implicitly:

$$(\theta - \theta^*)\,\frac{\partial T}{\partial \Lambda} = -\frac{1}{\Lambda} \quad\Longrightarrow\quad \frac{\partial T}{\partial \Lambda} = -\frac{1}{(\theta - \theta^*)\Lambda} < 0.$$

Effect of θ. Define

$$\Psi(\widetilde{P}, \theta) \equiv \widetilde{P}^{-\sigma} - \sigma\alpha c^{\sigma} \int_0^{\infty} \left(D_{h,0}e^{\theta s} - \widetilde{P}\,\bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma s}\, ds.$$

The implicit function theorem gives $\widetilde{P}_\theta = -\Psi_\theta/\Psi_{\widetilde{P}} > 0$, since

$$\Psi_\theta = \sigma^2\alpha c^{\sigma} \int_0^{\infty} \left(D_{h,0}e^{\theta s} - \widetilde{P}\,\bar{m}_h^{g^*}\right)^{-\sigma-1} D_{h,0}s\,e^{\theta s}e^{-\rho\sigma s}\, ds > 0,$$

$$\Psi_{\widetilde{P}} = -\sigma\widetilde{P}^{-\sigma-1} - \sigma^2\alpha c^{\sigma}\,\bar{m}_h^{g^*} \int_0^{\infty} \left(D_{h,0}e^{\theta s} - \widetilde{P}\,\bar{m}_h^{g^*}\right)^{-\sigma-1} e^{-\rho\sigma s}\, ds < 0.$$

Hence $\partial\ln\hat{P}/\partial\theta > 0$, and $\hat{P}^*$ does not depend on θ, so differentiating equation (A42) in θ:

$$T + (\theta - \theta^*)\,\frac{\partial T}{\partial \theta} = -\frac{\partial\ln\hat{P}}{\partial\theta} \quad\Longrightarrow\quad \frac{\partial T}{\partial \theta} = -\frac{T + \partial\ln\hat{P}/\partial\theta}{\theta - \theta^*} < 0.$$

The analogous argument applied to $\hat{P}^*$ yields $\partial T/\partial\theta^* > 0$.

Effect of $\bar{m}_h^{g^*}$. From the proof of Proposition 1, $\hat{P}$ is strictly decreasing and $\hat{P}^*$ strictly increasing in $\bar{m}_h^{g^*}$. Differentiating equation (A42):

$$\frac{\partial T}{\partial \bar{m}_h^{g^*}} = \frac{1}{\theta - \theta^*}\left[-\frac{\partial\ln\hat{P}}{\partial\bar{m}_h^{g^*}} + \frac{\partial\ln\hat{P}^*}{\partial\bar{m}_h^{g^*}}\right] > 0.$$

(b) Comparative statics for Δ. For the attack-size, we first see that, under the peg, Assumption 3 imposes $m^g_{f,t} = 0$ and Assumption 1 implies $nw_{h,t} = 0$, so the home real balance sheet equation (6) reduces

[30] We hold the real allocation (c, c^*) fixed throughout, abstracting from the seigniorage channel through which θ, $\bar{m}_h^{g^*}$, and Λ affect consumption via equation (17a).

to $m^{g^*}_{h,t} = d_{h,t} - m_{h,t}$. Given continuity of $D_{h,t}$ and P_t, we get

$$\Delta = m^{g^*}_{h,T^+} - m^{g^*}_{h,T^-} = (d_{h,T^+} - m_{h,T^+}) - (d_{h,T^-} - m_{h,T^-}) = m_{h,T^-} - m_{h,T^+}.$$

Positivity of Δ follows from Lemma 1(b): $\pi_{T^-} < \pi_{T^+}$ combined with money demand strictly decreasing in inflation. Let $u \equiv m_{h,T^+}$ and $v \equiv m^*_{f,T^+}$. Under the peg both countries face the common nominal interest rate $\rho + \pi_{T^-}$, so CES money demand gives

$$\frac{m_{h,T^-}}{m^*_{f,T^-}} = \frac{c\,\alpha^{1/\sigma}}{c^*(\alpha^*)^{1/\sigma}} = \frac{w}{1-w},$$

where $w \equiv c\alpha^{1/\sigma}/\kappa \in (0,1)$ and $\kappa \equiv c\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma}$ are as in Lemma 1. From post-switch money-market conditions :

$$P_T u + E\,P^*_T v = (D_{h,0}e^{\theta T} - P_T \bar{m}^{g^*}_h) + (E\,D^*_{f,0}e^{\theta^* T} + E\,P^*_T \bar{m}^{g^*}_h) = D_{h,0}e^{\theta T} + E\,D^*_{f,0}e^{\theta^* T} = P_T(m_{h,T^-} + m^*_{f,T^-}),$$

where the last equality uses the peg money market clearing. We can now see that $m_{h,T^-} = w(u+v)$ and then:

$$\Delta = w(u+v) - u = w\,v - (1-w)\,u. \tag{A43}$$

From the home money-market condition at T^+, $P_T\,u = D_{h,0}e^{\theta T} - P_T\bar{m}^{g^*}_h$, so $\widetilde{P} = D_{h,0}/(u+\bar{m}^{g^*}_h)$, where $\widetilde{P} = e^{-\theta T}P_T$ as defined in the proof of Proposition 1. Substituting into the fixed-point equation:

$$\widetilde{P}^{-\sigma} = \sigma\alpha\,c^\sigma \int_0^\infty \left(D_{h,0}e^{\theta s} - \widetilde{P}\,\bar{m}^{g^*}_h\right)^{-\sigma} e^{-\rho\sigma s} ds,$$

both sides scale homogeneously in $D^{-\sigma}_{h,0}(u + \bar{m}^{g^*}_h)^\sigma$, so we get:

$$G(u,\theta,\bar{m}^{g^*}_h) \equiv 1 - \sigma\alpha\,c^\sigma \int_0^\infty \left[(u+\bar{m}^{g^*}_h)e^{\theta s} - \bar{m}^{g^*}_h\right]^{-\sigma} e^{-\rho\sigma s} ds = 0. \tag{A44}$$

Analogously, $\widetilde{P^*} = D^*_{f,0}/(v - \bar{m}^{g^*}_h)$ and the foreign rescaled equation:

$$H(v,\theta^*,\bar{m}^{g^*}_h) \equiv 1 - \sigma\alpha^* c^{*\sigma} \int_0^\infty \left[(v-\bar{m}^{g^*}_h)e^{\theta^* s} + \bar{m}^{g^*}_h\right]^{-\sigma} e^{-\rho\sigma s} ds = 0. \tag{A45}$$

We differentiate:

$$\begin{aligned}
G_u &= \sigma^2\alpha\,c^\sigma \int_0^\infty \left[(u+\bar{m}^{g^*}_h)e^{\theta s} - \bar{m}^{g^*}_h\right]^{-\sigma-1} e^{\theta s} e^{-\rho\sigma s} ds > 0,\\
G_\theta &= \sigma^2\alpha\,c^\sigma \int_0^\infty \left[(u+\bar{m}^{g^*}_h)e^{\theta s} - \bar{m}^{g^*}_h\right]^{-\sigma-1} (u+\bar{m}^{g^*}_h)\,s\,e^{\theta s} e^{-\rho\sigma s} ds > 0,\\
G_{\bar{m}^{g^*}_h} &= \sigma^2\alpha\,c^\sigma \int_0^\infty \left[(u+\bar{m}^{g^*}_h)e^{\theta s} - \bar{m}^{g^*}_h\right]^{-\sigma-1} (e^{\theta s}-1)\,e^{-\rho\sigma s} ds > 0,
\end{aligned}$$

where the sign of $G_{\bar{m}^{g^*}_h}$ follows from $\theta > 0$, which makes $e^{\theta s} - 1 > 0$ for $s > 0$. Then by IFT we get:

$$u_\theta = -G_\theta/G_u < 0, \qquad u_{\bar{m}^{g^*}_h} = -G_{\bar{m}^{g^*}_h}/G_u < 0.$$

We also have $u_\Lambda = 0$. Then for H:

$$H_v = \sigma^2\alpha^* c^{*\sigma} \int_0^\infty \left[(v-\bar{m}^{g^*}_h)e^{\theta^* s} + \bar{m}^{g^*}_h\right]^{-\sigma-1} e^{\theta^* s} e^{-\rho\sigma s} ds > 0,$$

$$
\begin{aligned}
H_\theta &= 0, \\
H_{\bar{m}_h^{g^*}} &= \sigma^2 \alpha^* c^{*\sigma} \int_0^\infty \left[(v - \bar{m}_h^{g^*}) e^{\theta^* s} + \bar{m}_h^{g^*} \right]^{-\sigma-1} (1 - e^{\theta^* s})\, e^{-\rho\sigma s} ds.
\end{aligned}
$$

The sign of $H_{\bar{m}_h^{g^*}}$ is strictly negative when $\theta^* > 0$ (since $1 - e^{\theta^* s} < 0$ for $s > 0$), identically zero when $\theta^* = 0$, and strictly positive when $\theta^* < 0$. Hence

$$
v_\theta = v_\Lambda = 0, \qquad v_{\bar{m}_h^{g^*}} \begin{cases} > 0 & \text{if } \theta^* > 0, \\ = 0 & \text{if } \theta^* = 0, \\ < 0 & \text{if } \theta^* < 0. \end{cases}
$$

From equation (A43) with $w \in (0, 1)$ constant (since $(c, c^*, \alpha, \alpha^*, \sigma)$ are held fixed):

$$
\begin{aligned}
\Delta_\Lambda &= -(1 - w)\, u_\Lambda + w\, v_\Lambda = 0 \\
\Delta_\theta &= -(1 - w)\, u_\theta + w\, v_\theta = -(1 - w)\, u_\theta > 0, \\
\Delta_{\bar{m}_h^{g^*}} &= -(1 - w)\, u_{\bar{m}_h^{g^*}} + w\, v_{\bar{m}_h^{g^*}}.
\end{aligned}
$$

From equation (A43) with $w \in (0, 1)$ constant: $\Delta_\Lambda = 0$, since u and v are independent of Λ (they solve the rescaled fixed-point equations G and H, which contain no Λ). Then $\Delta_\theta = -(1 - w)\, u_\theta + w\, v_\theta = -(1 - w) u_\theta > 0$ (since $u_\theta < 0$ and $v_\theta = 0$ when θ^* is held fixed). For $\Delta_{\bar{m}_h^{g^*}}$: when $\theta^* \geq 0$ the foreign channel $v_{\bar{m}_h^{g^*}} \geq 0$, so both terms in $\Delta_{\bar{m}_h^{g^*}} = -(1 - w) u_{\bar{m}_h^{g^*}} + w\, v_{\bar{m}_h^{g^*}}$ are nonnegative and the home channel is strictly positive; hence $\Delta_{\bar{m}_h^{g^*}} > 0$. When $\theta^* < 0$ the two channels have opposite signs, and $\Delta_{\bar{m}_h^{g^*}} > 0$ holds whenever the home channel dominates.

A.4 Calibration Algorithm

The following algorithm recovers the five parameters (α, α^*, $D_{h,0}$, $D^*_{f,0}$, $\bar{m}_h^{g^*}$) from the four data moments (δ_h, δ_f, μ_f, T_{obs}) defined below.

A.4.1 Inputs

The following objects are treated as known: endowments and consumption y, y^*, with $c = y$ and $c^* = y^*$; domestic credit growth rates: θ (home) and θ^* (foreign), satisfying $\theta > \theta^*$; preference parameters ρ and σ. The four observed data moments are:

$\delta_h \equiv d_{h,0}/y$	initial real NDA to GDP, home
$\delta_f \equiv d^*_{f,0}/y^*$	initial real NDA to GDP, foreign
$\mu_f \equiv m^*_{f,0}/y^*$	initial real monetary base net of non-FX reserves to GDP, foreign
$T \equiv T_{\text{obs}}$	observed collapse date (years from initial condition)

We normalize $P_0 = E = 1$.

A.4.2 Nominal Credit, Initial Reserves and Home Money Share

Under $P_0 = 1$, the nominal credit stocks are:

$$D_{h,0} = \delta_h \cdot y, \qquad D^*_{f,0} = \delta_f \cdot y^* \tag{A46}$$

The foreign balance sheet identity reduces to $m^{g^*}_{h,0} + d^*_{f,0} = m^*_{f,0}$ which implies the initial stock of home-currency reserves held by the foreign central bank is observable:

$$m^{g^*}_{h,0,\text{data}} = m^*_{f,0} - d^*_{f,0} = (\mu_f - \delta_f) \cdot y^* \tag{A47}$$

The home balance sheet identity then implies:

$$m_{h,0,\text{data}} = d_{h,0} - m^{g^*}_{h,0,\text{data}} = \delta_h \cdot y - (\mu_f - \delta_f) \cdot y^* \tag{A48}$$

From equation (15) at $t = 0$, the individual money demands are $m_{h,0} = c(\alpha/(\rho + \pi_0))^{1/\sigma}$ and $m^*_{f,0} = c^*(\alpha^*/(\rho + \pi_0))^{1/\sigma}$, so $c\alpha^{1/\sigma} = (\rho + \pi_0)^{1/\sigma} m_{h,0}$ and $\kappa \equiv c\alpha^{1/\sigma} + c^*(\alpha^*)^{1/\sigma} = (\rho + \pi_0)^{1/\sigma}(m_{h,0} + m^*_{f,0})$. Hence $c\alpha^{1/\sigma} = \kappa w$ and $c^*(\alpha^*)^{1/\sigma} = \kappa(1 - w)$, where

$$w \equiv \frac{c\alpha^{1/\sigma}}{\kappa} = \frac{(\rho + \pi_0)^{1/\sigma}\, m_{h,0}}{(\rho + \pi_0)^{1/\sigma}(m_{h,0} + m^*_{f,0})} = \frac{m_{h,0}}{m_{h,0} + m^*_{f,0}} \tag{A49}$$

Substituting, we get:

$$w = \frac{\delta_h \cdot y - (\mu_f - \delta_f) \cdot y^*}{\delta_h \cdot y + \delta_f \cdot y^*} \tag{A50}$$

A.4.3 Finding P_T

Define the rescaled home price $\tilde{P} \equiv e^{-\theta T} P_T$ following the proof of Proposition 1. Every remaining unknown is a function of $\tilde{P}$ alone.

The world money supply under the peg is $M^W_t \equiv D_{h,0}e^{\theta t} + D^*_{f,0}e^{\theta^* t}$. We define:

$$I_1(T) \;\equiv\; \int_0^T \left(D_{h,0}\, e^{\theta s} + D^*_{f,0}\, e^{\theta^* s}\right)^{-\sigma} e^{-\rho\sigma s}\, ds \tag{A51}$$

We evaluate the pre-collapse price formula equation (A18) at $t = 0$, substituting $P_0 = 1$ and $P_T = \tilde{P}e^{\theta T}$:

$$1 = \sigma\kappa^{\sigma} I_1(T) \; + \; e^{-\rho\sigma T}\left(\tilde{P}\, e^{\theta T}\right)^{-\sigma} \tag{A52}$$

Setting $P_0 = 1$ and rearranging:[31]

$$\kappa(\tilde{P}) = \left[\frac{1 \; - \; e^{-(\rho+\theta)\sigma T}\, \tilde{P}^{-\sigma}}{\sigma\, I_1(T)}\right]^{1/\sigma} \tag{A53}$$

From the CES money demand equation (15) at $t = 0$, together with the decomposition $c\alpha^{1/\sigma} = \kappa w$ and $c^*(\alpha^*)^{1/\sigma} = \kappa(1 - w)$, we get:

$$\alpha(\tilde{P}) = \left(\frac{\kappa(\tilde{P})\, w}{c}\right)^{\sigma}, \qquad \alpha^*(\tilde{P}) = \left(\frac{\kappa(\tilde{P})\,(1 - w)}{c^*}\right)^{\sigma} \tag{A54}$$

Given $\tilde{P}^* \equiv e^{-\theta^* T} P_T^*$ following the proof of Proposition 1. Equation (A40) in that proof states:

$$\frac{P_T}{P_T^*} = \frac{\tilde{P}}{\tilde{P}^*}\, e^{(\theta-\theta^*)T} \tag{A55}$$

The regime switch occurs when the parity condition of Assumption 3 is satisfied, i.e. $P_T = E \cdot P_T^* = P_T^*$. Substituting:

$$\tilde{P}^*(\tilde{P}) = \tilde{P} \cdot e^{(\theta-\theta^*)T} \tag{A56}$$

With $\tilde{P}^*$ in hand, $\bar{m}_h^{g^*}$ is recovered from the rescaled foreign post-collapse fixed-point equation stated in the proof of Proposition 1:

$$\left(\tilde{P}^*\right)^{-\sigma} = \sigma\, \alpha^*(\tilde{P})\, (c^*)^{\sigma} \int_0^{\infty} \left(D_{f,0}^*\, e^{\theta^* u} + \tilde{P}^*(\tilde{P}) \cdot \bar{m}_h^{g^*}\right)^{-\sigma} e^{-\rho\sigma u}\, du \tag{A57}$$

The integrand is strictly decreasing in $\bar{m}_h^{g^*}$, so equation (A57) has at most one solution and is solved by scalar root-finding for any given $\tilde{P}$.

A.4.4 Finding $\tilde{P}$

With all parameters expressed as functions of $\tilde{P}$, the home post-collapse fixed-point equation from the proof of Proposition 1 becomes a single equation in $\tilde{P}$:

$$\tilde{P}^{-\sigma} = \sigma\, \alpha(\tilde{P})\, c^{\sigma} \int_0^{\infty} \left(D_{h,0}\, e^{\theta u} - \tilde{P} \cdot \bar{m}_h^{g^*}(\tilde{P})\right)^{-\sigma} e^{-\rho\sigma u}\, du \tag{A58}$$

Define the residual:

$$R(\tilde{P}) \;\equiv\; \tilde{P}^{-\sigma} \;-\; \sigma\, \alpha(\tilde{P})\, c^{\sigma} \int_0^{\infty} \left(D_{h,0}\, e^{\theta u} - \tilde{P} \cdot \bar{m}_h^{g^*}(\tilde{P})\right)^{-\sigma} e^{-\rho\sigma u}\, du \tag{A59}$$

Find numerically $\tilde{P}^\star$ such that $R(\tilde{P}^\star) = 0$.

[31] Feasibility requires the bracket in equation (A53) to be positive, which imposes the lower bound $\tilde{P} > e^{-(\rho+\theta)T}$ on the root search.

A.5 Primary Source Archive

The following passages are drawn from IMF Executive Board and staff documents, Swiss National Bank *Direktoriumsprotokolle*, and Deutsche Bundesbank *Zentralbankrat* minutes. Sources are cited in full above each extract.

Passages Cited in the Introduction

Otmar Emminger, *D-Mark, Dollar, Währungskrisen* (Stuttgart: Deutsche Verlags-Anstalt, 1986), p. 175:

> "Nicht mehr die deutschen Währungsbehörden, sondern die von der amerikanischen Kreditpolitik ausgehenden liquiditätspolitischen Wechselbäder sowie das spekulative Hin und Her der vagabundierenden Dollar-Massen entschieden in diesem Zeitraum weitgehend über die Geldversorgung der deutschen Volkswirtschaft und damit auch über Erfolg oder Mißerfolg der deutschen Stabilitätspolitik."
>
> ("It was no longer the German monetary authorities, but rather the liquidity-policy oscillations originating in American credit policy, as well as the speculative back-and-forth of the wandering dollar masses, that during this period largely determined the money supply of the German economy and thereby also the success or failure of German stabilization policy.")

Peter Jäggi, memorandum in *Direktoriumsprotokoll Nr. 120*, Schweizerische Nationalbank, 8 February 1973:

> "Rechtlich befinden wir uns daher seit August 1971 in einem 'Niemandsland', was bedeutet, dass wir schon damals wider Willen von einem rechtlich fundierten System fester Wechselkurse in ein ungeregeltes System gedrängt wurden, das nichts anderes als ein grundsätzliches Regime des Floatens sein kann."
>
> ("Legally, therefore, we find ourselves since August 1971 in a 'no man's land,' which means that we were already then pushed against our will from a legally founded system of fixed exchange rates into an unregulated system, which can be nothing other than a fundamental regime of floating.")
>
> "Kommt aber ein massiver Rutsch in Gang—was wegen des riesigen 'Lawinenhangs' der Eurodollarmasse leicht möglich ist—, so lässt sich die unbeschränkte Übernahme von Dollars meines Erachtens nicht verantworten; auch dann nicht, wenn sie von Sekundärmassnahmen flankiert wird (wie Blockierungen), da diese die Grundsituation doch nicht zu ändern vermögen."
>
> ("But if a massive slide gets underway—which is easily possible because of the huge 'avalanche slope' (*Lawinenhang*) of the Eurodollar mass—then the unrestricted takeover of dollars cannot be justified; not even when flanked by secondary measures such as blockages, since these cannot change the fundamental situation.")

Jelle Zijlstra, *Dr. Jelle Zijlstra: Gesprekken en Geschriften* (Strengholt, 1978), p. 191:

> "Wij hielden dollars slechts aan tot een bedrag dat wij als een werkvoorraad beschouwden. Wat daar bovenuit ging wensten wij om te wisselen in goud of iets wat daarmee op één lijn kon worden gesteld."
>
> ("We held dollars only up to an amount that we considered a working stock. What exceeded that, we wished to exchange for gold or something that could be put on a par with it.")

Trilemma in Practice

International Monetary Fund, Staff Report SM/71/140, § IV, 1971 (IMF Archives, doc. 169161):

> ". . . as interest rates abroad continued to decline, it became increasingly difficult to maintain the high level of domestic rates considered necessary to reduce the rate of domestic growth, and continuing inflows of funds prevented the monetary authorities from maintaining effective control over the monetary aggregates."

International Monetary Fund, Staff Report for the 1972 Article VIII Consultation, 1972 (IMF Archives, doc. 212137):

> "The independence of the authorities was, however, seriously compromised by the continuing inflows of funds from abroad initially induced from early 1970 onward by the persistence of interest rate differentials in favor of Germany. . . . Thus, since, for domestic reasons, further cuts in interest rates could not be tolerated, the role of the Bundesbank in the main was reduced to that of seeking to neutralize the impact of the foreign inflow on bank liquidity."

International Monetary Fund, Minutes of Executive Board Meeting 70/49, 8 June 1970 (IMF Archives, doc. 176656)—Mr. Lieftinck (Netherlands) on Germany:

> ". . . monetary policy seemed to have reached the ceiling of its effectiveness; if monetary restrictions were applied more vigorously, by increasing interest rates, the German rate would rise above the international rate and capital would be attracted to Germany. Of course, lowering the rediscount ceiling would be a step in the right direction, but it was doubtful whether the monetary policy of the authorities could be made any more effective."

Günther Schleiminger, *Statement on the Federal Republic of Germany*, Executive Board Meeting 71/60, § 7, July 1971 (BUFF/71/79; IMF Archives, doc. 298134):

> "The German authorities themselves characterized their efforts to absorb the liquidity created by the net inflows of foreign exchange during the past 16 months as a case of '*Sisyphus labours*'. Indeed, out of a liquidity creation of DEM 46 billion during that period, an amount of DEM 12 billion was absorbed by fiscal policy and DEM 17 billion by the contractive effects of credit policy . . . Thus, in spite of an offsetting effect . . . the banks, in early May, held roughly DEM 15 billion more of highly liquid assets . . . almost twice as much as they did in early 1970."

Deutsche Bundesbank, Protokoll der 335. Sitzung des Zentralbankrats, 31 March 1971 (Historisches Archiv der Deutschen Bundesbank, B330/6157-1)—Vice President Emminger:

> "Die im Augenblick recht hohen zinsinduzierten Bewegungen kurzfristigen Kapitals seien mitverantwortlich für die sich zuspitzende Vertrauenskrise um den Dollar, die ihrerseits wiederum die spekulative Bewegung kurzfristiger Gelder aus dem Dollar in europäische Währungen, vorzugsweise in die D-Mark, verstärke und die Autonomie der Bundesbankpolitik immer mehr in Frage stelle. Eine Fortsetzung der gegenwärtigen Hochzinspolitik der Bundesbank könne sich also in zweierlei Hinsicht als 'self-defeating' erweisen: einmal könnte der dadurch verursachte Devisenzustrom die Liquiditätsbasis der Wirtschaft und der Banken immer mehr aufweichen . . . ; zum anderen könnte . . . das schon angeschlagene Vertrauen in die gegenwärtige Wechselkursstruktur so schwer gestört werden, dass unsere Kreditpolitik durch spekulative, also nicht-zinsinduzierte Auslandsgelder völlig überrollt würde."
>
> ("The currently quite high interest-induced movements of short-term capital are partly responsible for the intensifying crisis of confidence around the dollar, which in turn reinforces the speculative movement of short-term funds out of the dollar into European currencies, preferably the D-Mark, and increasingly calls into question the autonomy of Bundesbank policy. A continuation of the Bundesbank's present high-interest-rate policy could thus prove 'self-defeating' in two respects: first, the resulting inflow of foreign exchange could increasingly soften the liquidity base of the economy and the banks . . . ; second . . . the already shaken confidence in the present exchange-rate structure could be so severely disturbed that our credit policy would be completely overrun by speculative—that is, non-interest-induced—foreign funds.")

Deutsche Bundesbank, Protokoll der 337. Sitzung des Zentralbankrats, 5 May 1971 (Historisches Archiv der Deutschen Bundesbank, B330/6158-1)—Mr. Irmler, on the day of the float:

> "[Das vordringliche ökonomische Problem bestehe darin], ob und unter welchen Bedingungen eine autonome restriktive Kreditpolitik der Bundesbank möglich sein wird, eine Politik also, die nicht die amerikanische Politik niedriger Zinsen nachvollzieht. Im Interesse der Brechung der sich rasch verbreitenden Inflationsmentalität müsse die Bundesbank die Kontrolle über die Zentralbankgeldschöpfung und damit über die Liquidität des Bankenapparates zurückgewinnen."

("[The pressing economic problem is] whether, and under what conditions, an autonomous restrictive credit policy by the Bundesbank will be possible—a policy, that is, that does not merely replicate the American policy of low interest rates. In the interest of breaking the rapidly spreading inflation mentality, the Bundesbank must regain control over central-bank money creation and thereby over the liquidity of the banking system.")

Schweizerische Nationalbank, Direktoriumsprotokoll Nr. 460, 13 May 1971:

> "In diesem Geschehen spielte der amerikanische Dollar eine besonders wichtige Rolle. Seit der zweiten Hälfte 1970 haben die amerikanischen Behörden begonnen, ihre bisherige restriktive Geldpolitik zu lockern. Die dadurch bedingten Aenderungen in den Zinsrelationen . . . führten dazu, dass immer mehr Mittel insbesondere in die Bundesrepublik Deutschland, aber auch in die Schweiz flössen."
>
> ("In this episode the American dollar played a particularly important role. Since the second half of 1970 the American authorities have begun to loosen their previously restrictive monetary policy. The resulting changes in interest-rate relations between major money markets caused ever-greater funds to flow above all into the Federal Republic of Germany, but also into Switzerland.")

Speculative Attack: Upper Limit on Reserves

International Monetary Fund, Staff Report SM/71/140, 1971 (IMF Archives, doc. 169161):

> "During April, when the inflows reached massive proportions, very large support operations were again undertaken in the forward dollar market, but on April 28 the Bundesbank concluded that it could no longer continue to add indefinitely to this commitment."

International Monetary Fund, Staff Memorandum: Germany—Exchange Action of May 1971 (IMF Archives, doc. 228046)—Karl Klasen letter, transmitted by IMF staff:

> "In view of the size of the recent movements of foreign exchange, they have decided that in present conditions they will not ensure that rates for exchange transactions involving the D-Mark will be maintained . . . this step will prevent the disturbances in the exchange markets and the strains on the international monetary system which have been caused by the recent excessive flows of short-term capital."

Deutsche Bundesbank, Protokoll der 337. Sitzung des Zentralbankrats, 5 May 1971 (Historisches Archiv der Deutschen Bundesbank, B330/6158-1)—Mr. von Schelling:

> "Da die Bundesbank mit der Anhäufung von Dollar bis an die Grenze des Erträglichen gegangen sei, dürfte Verständnis für eine derartige Massnahme zu erwarten sein."
>
> ("Since the Bundesbank had gone, in its accumulation of dollars, to the limit of what is bearable, understanding for such a measure [the suspension of intervention] could be expected.")

Schweizerische Nationalbank, Direktoriumsprotokoll Nr. 460, 13 May 1971:

> "In den letzten Tagen kam es zu einer akuten Währungskrise. Enorme Dollarbeträge wurden der Deutschen Bundesbank verkauft, die sich gezwungen sah, die Annahme von Dollars vergangenen Mittwochvormittag einzustellen. Die Spekulation übertrug sich auf den Schweizerfranken. Die Nationalbank musste, um die Stabilität des Frankens zu sichern, innert kurzer Zeit gegen 1,5 Milliarden Dollar übernehmen, wovon allein am letzten Mittwochmorgen 600 Millionen."
>
> ("In recent days an acute currency crisis broke out. Enormous dollar amounts were sold to the Bundesbank, which was forced to suspend dollar purchases last Wednesday morning. The speculation spilled over onto the Swiss franc. The National Bank had to take in close to 1.5 billion dollars in a very short time to safeguard the franc—600 million on Wednesday morning alone.")

May 1971 DEM and CHF Float

International Monetary Fund, Staff Memorandum: Germany—Exchange Action of May 1971 (IMF Archives, doc. 228046):

> "In view of the problems posed to stabilization policies caused by the rapid pace at which additions were being made to the foreign exchange reserves, the German authorities have decided for the time being not to maintain the exchange rate of the deutsche mark within the present margins."

International Monetary Fund, Staff Report for the 1972 Article VIII Consultation, 1972 (IMF Archives, doc. 212137):

> "The decision to float was taken primarily for reasons of domestic monetary policy. In the months immediately after the May decision, the German authorities were in fact able to enjoy a considerably greater degree of autonomy than in the past in implementing a restrictive monetary policy."

International Monetary Fund, Staff Report SM/71/140, 1971 (IMF Archives, doc. 169161):

> ". . . the German authorities were faced with the urgent need in May 1971 to take effective action. Given the recent experience of incomes policy and given the Government's intense reluctance on all grounds to envisage a system of internal controls, the possibility of prices and incomes controls was dismissed . . . There were two avenues open, namely, either a system of controls over capital, or action on the exchange rate."

Deutsche Bundesbank, Protokoll der 337. Sitzung des Zentralbankrats, 5 May 1971 (Historisches Archiv der Deutschen Bundesbank, B330/6158-1)—Vice President Emminger:

> "Die progressiv anschwellenden Dollarzuflüsse in die Bundesrepublik, für die es betragsmässig kaum Grenzen gebe, hätten nunmehr zu einer akuten Notlage geführt, die dazu zwinge, die Bundesbank vorübergehend von der Ankaufspflicht für den Dollar zu befreien."
>
> ("The progressively swelling dollar inflows into the Federal Republic, for which there are virtually no quantitative limits, have now led to an acute emergency that compels the temporary release of the Bundesbank from the obligation to purchase dollars.")

Schweizerische Nationalbank, Direktoriumsprotokoll Nr. 460, 13 May 1971—Federal Council statement:

> "Dieser Entscheid ist dem Bundesrat nicht leichtgefallen. Unsere traditionelle Politik stabiler Wechselkurse hat zweifellos viel zur starken wirtschaftlichen Stellung unseres Landes beigetragen . . . Sie zwang uns, die Aufwertungsfrage auch im Interesse der langfristigen Teuerungsbekämpfung zu prüfen."
>
> ("This decision did not come easy to the Federal Council. Our traditional policy of stable exchange rates has undoubtedly contributed much to the strong economic position of our country . . . [the situation] forced us to examine the question of revaluation in the interest of long-term inflation-fighting.")

The Smithsonian Agreement

Schweizerische Nationalbank, Direktoriumsprotokoll Nr. 120, 8 February 1973 (Jäggi memorandum):

> "Die jüngsten Vorkommnisse haben einmal mehr bestätigt, wie labil die währungspolitische Grundsituation ist. Das Smithsonian Abkommen vom Dezember 1971 war nichts mehr als eine Art 'gentlemens agreement' der massgebenden Währungsbehörden. Es konnte nur eine vorübergehende Beruhigung schaffen. Die mit der Aufhebung der Konvertibilität des Dollars in Gold geschaffene Rechtslage blieb bestehen, desgleichen die Ursache, die zu dieser Aufhebung geführt hatte, der durch das USA-Zahlungsbilanzdefizit angereicherte Dollarüberfluss" . . .
>
> ("Recent events have once more confirmed how unstable the basic monetary-policy situation is. The Smithsonian Agreement of December 1971 was nothing more than a kind of 'gentlemen's agreement' between the leading monetary authorities. It could only produce a temporary calm.

The legal situation created by the suspension of the dollar's gold convertibility remained, as did the cause that had led to that suspension—the dollar overhang in the other industrial countries, swollen by the US balance-of-payments deficit . . . .")

A.6 Contemporary Press Coverage

The following passages are drawn from contemporaneous newspapers, accessed via ProQuest Historical Newspapers.

May 5–6, 1971 — The DEM float.

Wall Street Journal, May 5, 1971 ("Bonn Is Forced to Absorb $1.2 Billion In Frantic Speculative Bidding for Marks"):

> "West Germany's central bank was forced to sop up a massive $1.2 billion of US currency yesterday as international speculators bid frantically for marks in the hope that they would soon be allowed to float upward in value. [...] In the first 10 minutes of trading, dealers said, the Bundesbank was compelled to absorb fully $100 million to keep the dollar from sinking below the floor level set by IMF rules."

New York Times, May 6, 1971 ("Bonn Says It Will Decide By Tomorrow on Action," Lawrence Fellows):

> "Within 40 minutes of trading on the foreign-exchange markets today, a billion dollars came into the country, according to Dr. Karl Klasen, the Bundesbank's president. This was not an accurate count, but an estimate based on the raucous sound and ominous appearance of the descending avalanche. The Government moved swiftly to relieve the Bundesbank of its burden of buying dollars."

Wall Street Journal, May 6, 1971 ("Bundesbank Triggers Wide Abandonment Of Dollar Prop"):

> "From the opening of trading yesterday on the Frankfurt currency exchange, the dimensions of the monetary crisis could be read in the frenzied bidding of speculators rushing to dump US dollars for West German marks. In the first hour, West Germany's central bank, the Bundesbank, was compelled to sop up $1 billion of US currency to keep the dollar from collapsing below the floor level set by International Monetary Fund rules. This only a day after it had absorbed $1.2 billion. Then the Bundesbank called it quits."

Wall Street Journal, May 11, 1971 ("Currency Traders Largely Sit Out Day After Storm"):

> "Alfred Schaefer, president of the Union Bank of Switzerland, complained that 'once again the good boy is being punished.' He bemoaned that Switzerland, which had kept its monetary house in order, was forced to raise the value of its currency because of US monetary policy. 'European disunity capitulated to the US which subjugates its international currency obligations to domestic and electoral considerations,' he declared."