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**The German Undervaluation Regime under Bretton Woods**  
How Germany Became the Nightmare of the World Economy

Martin Höpner



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## Abstract

Germany is an undervaluation regime, a regime that steers economic behavior towards deterioration of the real exchange rate and thereby towards export surpluses. This regime has brought the eurozone to the brink of collapse. But it is much older than the euro. It was established during the Bretton Woods years and has survived all subsequent European currency orders. The regime operates in two steps: competitive disinflation against trading partners; and resistance against correcting revaluations. The Bretton Woods order provided perfect conditions for the establishment and perpetuation of the regime: it was flexible enough for sufficient macroeconomic policy autonomy to bring about differential inflation rates, and sticky enough to delay and minimize revaluations.

**Keywords:** current account surpluses, exchange rate policy, inflation, political economy, undervaluation, varieties of capitalism

## Zusammenfassung

Deutschland ist ein Unterbewertungsregime: ein Regime, das wirtschaftliches Verhalten in Richtung eines sinkenden realen Wechselkurses und damit der Generierung von Exportüberschüssen lenkt. Das hat die Eurozone an den Rand des Zusammenbruchs geführt. Aber das Regime ist viel älter als der Euro. Es wurde in den Bretton-Woods-Jahren errichtet und überlebte alle nachfolgenden europäischen Währungsordnungen. Das Regime operiert in zwei Schritten: kompetitive Disinflationierung gegenüber den Handelspartnern und Widerstand gegen die Korrektur der entstandenen Wechselkursverzerrungen. Bretton Woods stellte perfekte Bedingungen für die Errichtung und Aufrechterhaltung des Regimes bereit. Denn es war flexibel genug für jene Autonomie der makroökonomischen Politik, mit der sich die Inflation der Handelspartner unterbieten ließ, und gleichzeitig schwerfällig genug für die Verzögerung und Minimierung von Aufwertungen.

**Schlagwörter:** Inflation, Leistungsbilanzüberschüsse, Politische Ökonomie, Spielarten des Kapitalismus, Unterbewertung, Wechselkurspolitik

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# The German Undervaluation Regime under Bretton Woods: How Germany Became the Nightmare of the World Economy

## 1 Introduction

This paper contributes to the growing field of research on the institutional foundations of different growth regimes. I therefore start with a brief reminder of what this field is about.<sup>1</sup>

In order to grow, any accumulation regime has to find solutions to the demand shortage problem. Such solutions differ from country to country and from time to time. Historically, according to Baccaro and Pontusson (2016; 2018; 2019), most developed economies were wage-led. The wage-led growth regime, however, came under stress due to a number of interrelated reasons such as the institutionalization of strict monetary policies, a secular decline in trade union strength, globalization, and capital market liberalization. The resulting decline in nominal wage pressure lowered inflation as well as aggregate demand, with the implication that countries had to find alternative solutions to the demand shortage problem.

Of interest to this paper is the German solution: the adoption of an *export-driven demand regime* since the mid-1990s, a regime in which foreign demand acts as the decisive growth driver. This regime can operate only when demand is sufficiently price elastic and the export sector is sufficiently large to drive the whole economy. Germany, according to Baccaro and Pontusson, meets these preconditions. In particular, its export sector is sufficiently large – much larger indeed than we would expect from a country as big as Germany.

Obviously, Baccaro and Pontusson theorize on the *late phase* of a longer sequence. Something must have happened before Germany's growth could become export driven. What pushed the size of the export sector in the first place? The framework presented

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1 I take Baccaro and Pontusson (2016; 2018; 2019) as my reference point here. A selection of further contributions to the growth regimes literature, mostly with reference to the euro crisis, is: Baccaro and Benassi (2017); Blyth (2018); Boyer (2018); Hall (2018); Hassel (2017); Iversen et al. (2016); Johnston and Regan (2016); Kohl and Spielau (2018); Regan (2017); Scharpf (2016); Stockhammer (2016). See also the discussion on Baccaro and Pontusson (2016) in the respective issue of *Politics & Society*.

in this paper sheds light on these questions. I argue that Germany is an *undervaluation regime*, a regime with features that steer behavior towards the deterioration of the real exchange rate and thereby towards the accumulation of export surpluses.

The creation and perpetuation of an undervaluation regime does not require a particular growth strategy. Those who perpetuate the regime – the members of the “social bloc” behind it – may pursue aims that have nothing to do with growth, for example, central banks accumulating gold and foreign currency reserves, trade unions seeking job security in the export sector, or banks preventing credit defaults. The overall implications for growth may be positive or negative. For reasons that have nothing to do with growth, regimes may operate *as if* their growth was export driven. This was the case in Germany before it became an export-driven growth regime.

The German undervaluation regime is much older than German reunification, the euro, and its crisis. German policy-makers discovered Germany’s distinct ability to generate export surpluses after the payments account crisis in 1950/51. The Bretton Woods regime turned out to provide perfect conditions for the institutionalization and further consolidation of a regime that survived all subsequent European exchange rate orders until it became, under the euro, the nightmare of the eurozone and, even more, the world economy.

## 2 Analyzing undervaluation

One starting point of institutionalist comparative political economy is that we sometimes observe remarkably stable patterns when it comes to collective actors’ behavior within an economic conflict of aims. Such a conflict is between export surplus generation on the one hand, and internal stabilization on the other. Undervaluation regimes consist of institutions, organizations, and ideologies<sup>2</sup> that promote export surplus generation. They thus deliver systematic incentives to shift economic activity from the sheltered to the exposed sectors. Therefore the outcomes of such regimes are not only a perpetual accumulation of export and current account surpluses but also export sectors growing beyond what is expected from the country’s size and of the standards of the time under analysis. I will show that Germany became such a regime in the Bretton Woods years.

How do such regimes orient behavior towards export surplus generation? The undervaluation regime is a special example of a mercantilist regime. But it must nevertheless be distinguished from classical mercantilism, which relied on the direct promotion of exports and, inversely, on import discrimination. While such practices were clearly

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2 Following Pierson (2001), Streeck and Mertens (2010), and Haffert (2015), I adopt a wide notion of regime that also encompasses persistent ideologies.

present in Germany, especially in the early 1950s,<sup>3</sup> they lost relevance as the liberalization of trade and capital markets progressed. Neo-mercantilism, in contrast to discriminatory (or “selective”) mercantilism, relies on undervaluation. Undervaluation, in turn, comes about in two steps: first, competitive disinflation vis-à-vis trading partners; and second, resistance against correction of the resulting real exchange rate distortions by means of revaluation. Consequently, such regimes have institutional, organizational, and ideological preconditions in two respects: policies that shape inflation (mainly wage, monetary, and fiscal policies; see Scharpf 1991; Hall and Franzese 1998; Busch 2003); and the stickiness (both organizational and practical) of the currency order.

The theoretical framework presented here considers undervaluation as an institutionally, organizationally, and ideologically shaped pattern of behavior. The regime encourages maximization of *relative* undervaluation compared to the status quo. The amount of *absolute* undervaluation is, by contrast, difficult to assess because it can only be calculated relative to a situation in which valuation is undistorted and fair, i.e., when the current account is balanced while the demand conditions of all participating economies are equal, direct discriminatory mercantilism is fully absent, and all traded goods are price sensitive. Because these conditions are never fully given, the “neutral,” fair valuation – and, therefore, the precise extent of *absolute* undervaluation – is always uncertain. We should therefore treat undervaluation as a dynamic rather than a state.

What is attractive about undervaluation? Every increase in undervaluation relative to the status quo boosts the competitiveness of the export sector.<sup>4</sup> It makes the export sector grow relative to the exposed sectors of trading partners and, as a consequence, leads to the export of industrial unemployment. In undervaluation constellations, export firms find advantageous environments for market niche capture, market power growth, and the accumulation of large amounts of technological knowledge (Körner 2014, 42) – in other words, for the kind of economies of scale which the “new trade theory” emphasizes. Given that the trade account is the most important determinant of the current account, undervaluation regimes are also likely to accumulate foreign currency (and gold) reserves. This increases the reputation of their central banks and puts them in a strong position regarding currency market interventions. Countries with enduring cur-

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3 Among such measures were several quantitative import limits and customs duties, special export promotion credits supplied by the *Kreditanstalt für Wiederaufbau* (Reconstruction Loan Corporation), tax reliefs for exporting firms, and preferential raw material assignments for them. See the details in Abelshauser (2016, 511); Hölscher (1994, 47, 88); Holtfrerich (1998, fn. 384); Kreile (1977, 778).

4 For this to be true, it is not necessary to assume a maximum price elasticity of the demand for all internationally traded goods produced inside the respective nation(s). It is sufficient to assume a significant amount of the price elasticity of demand, which is usually true for large, diversified countries. On the trade impact of real exchange rate changes (for different world regions), see Bussière et al. (2015); Huh (1999); Kappler et al. (2012); Kohler et al. (2014); and numerous others. Specifically on Germany under the euro, see Baccaro and Pontusson (2016, 189–90; 2019, Section 4).

rent account surpluses then become donor countries in the international arena, a surely more attractive position than the opposite, becoming debtor countries.

Given all that, should we not expect *every* country to try to become an undervaluation regime, to design its institutions, organizations and, if possible, its publicly shared beliefs in a way that makes the generation of export surpluses likely? Is undervaluation not a superior, rational, perhaps even “natural” objective? To understand why this is *not* the case, let us consider the undervaluation constellation in more detail. Undervaluation implies the deterioration of your own terms of trade. Letting this happen is a weird economic strategy because it implies you get back less than you offer in international trade. This is the perversion of everything we would usually describe as the “rational” goal of commodity exchange: getting back (at least) as much as you have given.<sup>5</sup> In the undervaluation constellation, by contrast, giving away is not a means of receiving more, but becomes an aim in itself.

Put differently, undervaluation implies the imposition of consumption abstinence upon citizens and makes them partly work to give away their products too cheaply. And so far we have considered only the loss of wealth which results from distorted prices in actual trade. The usual outcome of undervaluation, however, is a trade and current account *imbalance*. In such a constellation, a certain proportion of goods is not being traded against other goods, but to a significant degree against increasing numbers of uncertain *financial claims* against foreign countries.

Skeptics may object that current account surpluses are not necessarily a bad thing, because they basically transfer consumption opportunities into the future. Sooner or later, one may argue, currency relations will turn around, terms of trade will change in favor of the former undervaluation country, and the claims against foreign countries will result in the re-transfer of real resources. In fact, many German revaluation opponents within our period of observation claimed that the seemingly persistent trade surpluses were in fact a volatile phenomenon, and that surpluses and deficits would level out sooner or later (see Willeke et al. 1971, 300; and as an empirical example, Hankel 1968, 540). But precisely this never happened, and is generally unlikely to happen when undervaluation is caused not by random fluctuations but by the operation of a *regime* with long-term stability. In this regime constellation, the intertemporal wealth transfer idea is a fiction and the loss of consumption opportunities persists over time (Körner 2014, 42).

Undervaluation never changed into overvaluation within our observation period and also failed to fade out by asymptotically approaching zero. What could make us think that this should happen? Let us assume a purely monetarist inflation theory and consider that undervaluation provokes the inflow of foreign currency for two reasons: first,

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5 This is precisely why Mitchell and Fazi (2018, 204) prefer current account deficits over surpluses. They emphasize that deficits raise the material welfare of nations and express the willingness of other nations to finance the respective welfare surplus.

as the logical downside of any trade surplus, through the current account channel; and second, through the capital account channel, because undervaluation – as it had happened since the second half of the 1950s<sup>6</sup> – fuels revaluation expectations (inflow of “hot money”). If the respective money inflow causes inflation, undervaluation would indeed be self-defeating. But, as we will see in the next section, this never materialized. Money inflow did not prevent Germany from continuous competitive disinflation. We can only conclude that the expectation of a money-induced self-correction suffers from a wrong underlying inflation theory. Obviously, money supply is a necessary, but not a sufficient, condition for inflation.

Let us turn back to the functional pros and cons of undervaluation. We have already seen that the terms of trade suffer. One may argue that undervaluation may nevertheless make the export sector and, as a consequence, the entire economy grow. Giving away more than one receives is good if it stimulates growth. But the effects on overall growth, in contrast to export sector growth, are complex and uncertain. In a positive-sum scenario, the exposed sector grows enough to also stimulate the sheltered sector, even if the accumulation regime has not yet reached a fully export-driven state. This may or may not happen in the medium to long run. In the short run, however, the positive-sum model is much too optimistic.

Why? Because what is good for exports is not necessarily good for the domestic economy. Consider wage policy. Holding down wages relative to others boosts competitiveness but also holds down internal demand. Consider fiscal policy. From the point of view of the export sector, the best budgetary policy is the one that minimizes firms’ cost pressures and, in general, any kind of inflation impulse. The domestic sector, by contrast, relies on high internal demand and its most important part, the public sector, on high taxes. Consider monetary policy. Strict monetary policy is a necessary condition for competitive disinflation but, at the same time, problematic for internal growth. It is therefore an open question whether undervaluation is functional for overall growth.

The overall impact on productivity is unclear, too. Yes, undervaluation creates protection for export firms that should allow them to generate network effects and therefore economies of scale. However, relaxing competitive pressure also frees firms from the pressure to raise efficiency and keeps marginal firms in the market.<sup>7</sup> Empirically, while Germany is peculiar with respect to its real effective undervaluation and the size of its export sector, and particularly to the size of its current account surpluses, it is completely non-peculiar with respect to productivity growth.<sup>8</sup>

Undervaluation has yet another downside. It provokes beggar-your-neighbor accusations on the part of trading partners and thereby fuels transnational conflict. 1968 is a

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6 For the details, see Hölscher (1994, 60, 102, 110–11) and Holtfrerich (1988, 394).

7 I thank Peter A. Hall for drawing my attention to this.

8 As Alecke (1999, 2–3) shows, the same holds true for real growth.

good example. In the context of an international conference in which all foreign participants asked Germany to finally revalue (see the details in the section on political parties), Great Britain threatened to dismantle its security guarantees for Germany, including a withdrawal of British troops. As Chancellor Kiesinger (time in office: 1966–1969) complained, some of Germany’s partners asked during the conference, “Wer hat denn den Krieg verloren?”<sup>9</sup> (Soell 2004, 785; Spiegel 48/1968, 28). Conflicts over the fair valuation of currencies can, as we see, not only be intense, but can also spill over to areas such as international security.

Let us now place the pros and cons of undervaluation in the 1950–1973 timeline. In 1950/51, the newly founded German central bank (the *Bank deutscher Länder*) had virtually no foreign currency reserves and Germany faced a balance of payments crisis. Germany became the first country that needed to request a foreign currency credit in the newly created European Payments Union. In this situation, there was little alternative to attempting to move the economy into an undervaluation constellation (and to also adopt various kinds of selective, discriminatory protectionisms) in order to generate export surpluses and thereby foreign currency reserves. But the balance of payments crisis vanished soon after and the German central bank cumulated unique amounts of gold and foreign currency reserves (yearly data are shown in Deutsche Bundesbank 1988, 26–27). The undervaluation regime nevertheless continued to operate as if the balance of payments crisis remained an ongoing threat.

Why? We might speculate that it was due to international pressure. As Abelshauser (1982; 2016, 492–98) shows, the American allies perceived German economic policy as too consumption-friendly in 1950/51. The Korea crisis had brought about a situation of raw material scarcity. The USA therefore pressed Germany to redirect resources towards armament production. Among the means to get this done was the suppression of internal demand in order to steer firms towards exports. But this impulse, just like the balance of payments crisis, vanished soon after. Germany’s export orientation remained in place although all international impulses soon reversed to asking Germany to either reflate or revalue. “Später sollten die Westalliierten die Geister, die sie riefen, nicht mehr loswerden,”<sup>10</sup> as economic historian Holtfrerich summarized (1998, 385).

Again, why continue with a solution to a problem that had already vanished? In order to fight unemployment by means of unemployment export, we may argue. This has some plausibility for the early to mid-1950s. But again, this possible explanation does not take us very far. Note that the period under observation was a time span with mostly full employment. Already in 1956, German unemployment had dipped below 5 percent and even went down and remained below 2 percent for the whole 1960–1973 period, except for one year only, 1967 (see column 4 of Table A1 in the Appendix). Not only was

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9 “Who has [after all] lost the war?” (my translation).

10 “The Western Allies would later not be able to rid themselves of the demons they had summoned” (my translation).

there no unemployment to export, but Germany had even been *importing* significant amounts of labor supply from countries such as Italy since 1955, Spain since 1960, Turkey since 1961, and from other countries, all in order to fight labor scarcity. But again, the undervaluation regime remained unchanged as if nothing had happened, and had become even more radicalized.

For most of the time span under review here, the perpetuation of the regime was at least as much an *oddity* as it was a “rational” answer to given problem constellations. It is extremely difficult and perhaps even misleading to see overall functionality as the reason for its construction and persistence.

If we want to understand how Germany was able to become what it is today, I argue, we have to proceed differently. We must lay open the intentions and strategies of the members of the social bloc that built and stabilized it. Here I follow Amable (2017) and Baccaro and Pontusson (2018, 21), who argue that economic regimes are always backed by a social bloc composed of collective actors with overlapping interests and the ability to impose a hegemonic discourse upon broader society. But note that my adoption of the bloc notion does not imply that I assume that the perceptions, interests, and strategies of the bloc members were fully congruent. As we will see below, the debates that led to the German revaluations of 1961 and 1969 offer excellent opportunities for analyzing the composition of the bloc.

But before we turn to the members of the bloc, let us remind ourselves of the architecture of the Bretton Woods regime and consider the extent of Germany’s undervaluation within it.

### 3 German undervaluation within Bretton Woods

The Bretton Woods order was negotiated among forty-four nations in July 1944 and came into being, with twenty-nine participating nations remaining, in December 1945. The aims of its architects were to guarantee free trade based on the convertibility of participating currencies, to limit financial and, in particular, monetary fluctuations, to regulate the relationships between debtor and creditor nations, and to establish a framework for post-war recovery. For these purposes and under US and British leadership, Bretton Woods established a system of fixed, but adjustable (i.e., pegged) exchange rates, using the US dollar and its fixed exchange rate to gold as an anchor.

Members had to require their central banks to buy and sell currency in order to keep their exchange rates within a 1 percent band to the dollar. De- and revaluations remained possible. Changes of more than 10 percent required approval by the newly created International Monetary Fund (IMF), smaller changes could be decided unilaterally.

In reality all exchange rate changes (as well as their absences) were conflict-ridden and parts of long series of international negotiations. Part of the framework was also the US government's commitment to convert central bank (not private) dollars into gold.

The end of the Bretton Woods regime is not easy to specify. If we treat the dollar–gold conversion commitment as Bretton Wood's decisive feature, the regime ended in August 1971 with US president Nixon's declaration to convert no further. A little less than two years later, the exchange rate commitments also ended. In March 1973, the Bundesbank and other central banks stopped buying dollars in order to defend the exchange rate parities. This was the ultimate end of the currency order (Zimmermann 2008).

Of course, much more could be said about the complex architecture of the Bretton Woods system.<sup>11</sup> What is decisive for our purpose is that the Bretton Woods order was *flexible* enough to provide significant macroeconomic policy autonomy, including the possibility of persistent inflation differentials (Holtfrerich 1998, 331). This allowed Germany to move itself into undervaluation constellations. At the same time, however, the regime aimed at mid-term nominal exchange rate stabilization and was therefore *sticky* enough to allow Germany – or other nations – to remain in such constellations over longer periods of time. Consider also the complete lack of surplus clearance mechanisms of the kind that John Maynard Keynes had proposed during the Bretton Woods negotiations (Scharpf 2018, 6). This made Bretton Woods (like the euro regime today) a surplus-country friendly international currency order.

With this background in mind, let us turn to the actual undervaluation performance of Germany within the Bretton Woods order and start by looking at the inflation data of seven Bretton Woods participants between 1950 and 1973 (Table 1). The data are remarkable in several respects. Remember that Germany was a full-employment country in most of the years under analysis and suffered from labor scarcity. In such a “fundamental economic” background, we would usually expect inflation to occur. But the respective inflation is hardly visible. In most of the full-employment years, Germany's inflation rate even remained lower than 2 percent, a situation which the European Central Bank would today define as too close to the zero percent line.

Even more remarkable is Germany's relative disinflation. With an average inflation rate of only 1.4 percent, Germany was able to undercut the inflation performance of its partners significantly. In virtually every year shown in Table 1, Germany's inflation was lower than the average inflation of its partners (1961 is the only exception). Obviously, no “hot money” inflows (see the theoretical section of this paper) prevented Germany from continuous competitive disinflation. Even in the “wild strike” years 1969 and 1971–1973, which went into the German collective memory as years of wage militancy, Germany outperformed the other countries with respect to its relative price stability. Compare, for example, the UK and Germany. On average, the German inflation rate

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11 See Alecke (1999, 40–56); Bordo (1993); Burhop et al. (2013, 198–200).

Table 1 Inflation rates (percent) in seven Bretton Woods countries, 1950–1973

	Belgium	France	Germany	Italy	Netherlands	UK	USA
1950	-1.0	8.0	-9.6	-0.7	9.0	3.1	-1.4
1951	9.5	17.6	9.2	14.3	11.9	9.1	8.0
1952	0.9	12.0	-0.3	1.9	0.0	9.2	2.2
1953	-0.3	-1.9	-1.3	1.4	0.0	3.1	0.8
1954	1.3	0.4	-3.9	3.1	4.0	1.8	0.4
1955	-0.5	1.0	1.1	3.0	1.9	4.5	-0.3
1956	2.8	4.3	1.6	2.9	1.9	4.9	1.5
1957	3.2	-0.8	2.6	1.4	6.1	3.7	3.4
1958	1.3	15.3	2.3	2.8	2.2	3.0	2.7
1959	1.2	5.8	0.5	0.0	1.1	0.6	0.9
1960	0.3	4.1	0.5	1.4	2.3	1.0	1.5
1961	1.0	2.4	2.2	2.7	1.3	3.4	1.1
1962	1.4	5.2	2.7	3.9	2.3	4.3	1.1
1963	2.2	4.9	1.4	7.6	3.3	2.0	1.2
1964	4.2	3.2	1.2	5.9	5.8	3.3	1.3
1965	4.1	2.7	2.1	4.4	5.8	4.8	1.7
1966	4.2	2.6	2.0	3.2	5.8	3.9	3.0
1967	2.9	2.8	0.4	3.1	3.5	2.5	2.8
1968	2.7	4.6	-0.2	2.0	3.7	4.7	4.2
1969	3.7	6.0	1.1	2.0	7.4	5.4	5.4
1970	3.9	5.8	3.1	4.8	3.7	6.4	5.9
1971	4.3	5.4	4.7	5.5	7.5	9.4	4.3
1972	5.4	6.1	4.6	5.2	7.8	7.1	3.3
1973	7.0	7.4	6.6	10.7	8.0	9.2	6.2
Mean	2.7	5.2	1.4	3.9	4.4	4.6	2.6

Data sources: IMF International Financial Statistics; Statistisches Bundesamt Deutschland, Lange Reihen; U.S. Bureau of Labor Statistics, Division of International Labor Comparisons.

was around 3.2 percentage points lower than the respective UK rate. If no exchange rate corrections had occurred, UK producers would – on average – have lost around 3 percent yearly of their price competitiveness vis-à-vis German producers.

Let us move on by turning to the number and extent of exchange rate adjustments within our country sample and our period under observation (Table 2). Because the US served as the system's anchor, every entry in the table is a de- or revaluation against the US dollar (the US is therefore not shown as an independent entry in the table). Given that the ability to adjust exchange rates was a decisive part of the Bretton Woods order, the small number of adjustments may come as a surprise. As Giersch (1971, 32) puts it, its participants may have had a more “rigid” interpretation of the system than one could read from the rules, with exchange rate adjustments serving as the “ultima ratio” under exceptional circumstances only. Note also, however, that the low number of exchange rate adjustments does not necessarily imply that the Bretton Woods participants were against the system offering more flexibility. They may also, against their preferences, have been stuck in coordination dilemmas – they may have continuously delayed the necessary adjustments due to struggles over the fair distribution of the adjustment burdens. Whatever the reason was in detail, the table clearly indicates that the Bretton Woods system provided exactly the kind of stickiness that allowed the German undervaluation regime to operate.

Table 2 Devaluations and revaluations against the US dollar (percent) in six Bretton Woods countries, 1950–1973

	Belgium	France	Germany	Italy <sup>1</sup>	Netherlands	UK
1950	–	–	–	–0.3	–	–
1951	–	–	–	–	–	–
1952	–	–	–	–	–	–
1953	–	–	–	–	–	–
1954	–	–	–	–	–	–
1955	–	–	–	–	–	–
1956	–	–	–	–	–	–
1957	–	–16.7	–	–	–	–
1958	–	–14.9	–	–	–	–
1959	–	–	–	–0.1	–	–
1960	–	–	–	–	–	–
1961	–	–	+5.0	–	+5.0	–
1962	–	–	–	–	–	–
1963	–	–	–	–	–	–
1964	–	–	–	–	–	–
1965	–	–	–	–	–	–
1966	–	–	–	–	–	–
1967	–	–	–	–	–	–14.3
1968	–	–	–	–	–	–
1969	–	–11.1	+9.3	–	–	–
1970	–	–	–	–	–	–
1971	+11.6	+8.6	+13.6	+7.5	+11.6	+8.6
1972	–	–	–	–	–	–
1973 <sup>2</sup>	+11.1	+11.1	+11.1	+11.1	+11.1	(free float) <sup>3</sup>

Data source: Deutsche Bundesbank (2000, 50–52).

Positive signs indicate revaluations, negative signs devaluations.

1 The Italian entries until 1960 are own calculations based on the lira–mark exchange rate (until March 1960, no official single lira–dollar exchange rate existed). The entries for 1950 and 1959 are adjustments within the 1 percent band.

2 Until March 1973.

3 Free float since June 1972.

The 1950–1970 period was marked by much exchange rate stability. Within that period, the two German revaluations, +5.0 percent in 1961 and +9.3 percent in 1969, stand out. During its final years, the system gave way to more flexibility. The realignment of 1971 was the outcome of the Smithsonian agreement, negotiated at a multilateral conference in Washington in December of that year.<sup>12</sup> The agreement was an attempt to rescue the exchange rate coordination part of the Bretton Woods system after the US had already withdrawn the dollar–gold conversion promise and after several countries, among them Germany, had let their currencies float for around four months (see the data in Deutsche Bundesbank 2000, 52). The 11.1 percent devaluation of the dollar in February 1973 did not rescue the system and was directly followed by the end of Bretton Woods in March of the same year. In essence, therefore, the exchange rate relations in our period of observation consisted of a very rare number of de- and revaluations distributed over the years 1950–1970 and a major realignment in 1971.<sup>13</sup>

12 See the details in Emminger (1986, 195–205).

13 Many readers will find it hard to believe that the entries for Italy in Table 2 are correct. Table 1 shows that Italy undercut the French and Dutch inflation rates in the Bretton Woods era, but its

We are now able to calculate the actual extent of German undervaluation during the Bretton Woods years, relative to the other countries in our sample and relative to the first year under observation (remember that we have no proof for the assumption that the initial observation point was a fully “fair” valuation of the mark). Figure 1 shows country-based cumulated inflation differentials to Germany and adjusts them for all de- and revaluations (these can be read as bilateral real exchange rates).<sup>14</sup> All curves are in the positive for almost all of the time, the only exception being the dollar at the very end of the time span. This implies that all countries suffered from overvaluation relative to Germany for almost all the time shown (again, relative to the starting point). The figure also illustrates how tiny the German 1961 revaluation was compared to the inflation differentials that had cumulated since 1950.

In line with our expectations, the German undervaluation translated into export surpluses. As Table A1 in the Appendix shows, the German trade balance shifted from negative into positive in 1952 and remained there during the entire period. After 1966, every German trade surplus was larger than 2 percent. The current account was almost always positive too, with a very few exceptions (1950, 1962, and 1965). While the current account surpluses tended to exceed the trade surpluses during the first half of the observed time period, they remained below the trade surpluses in every year from 1961, which mainly indicates that, from this year, Germans (including migrant workers) transferred more money into foreign countries than vice versa.

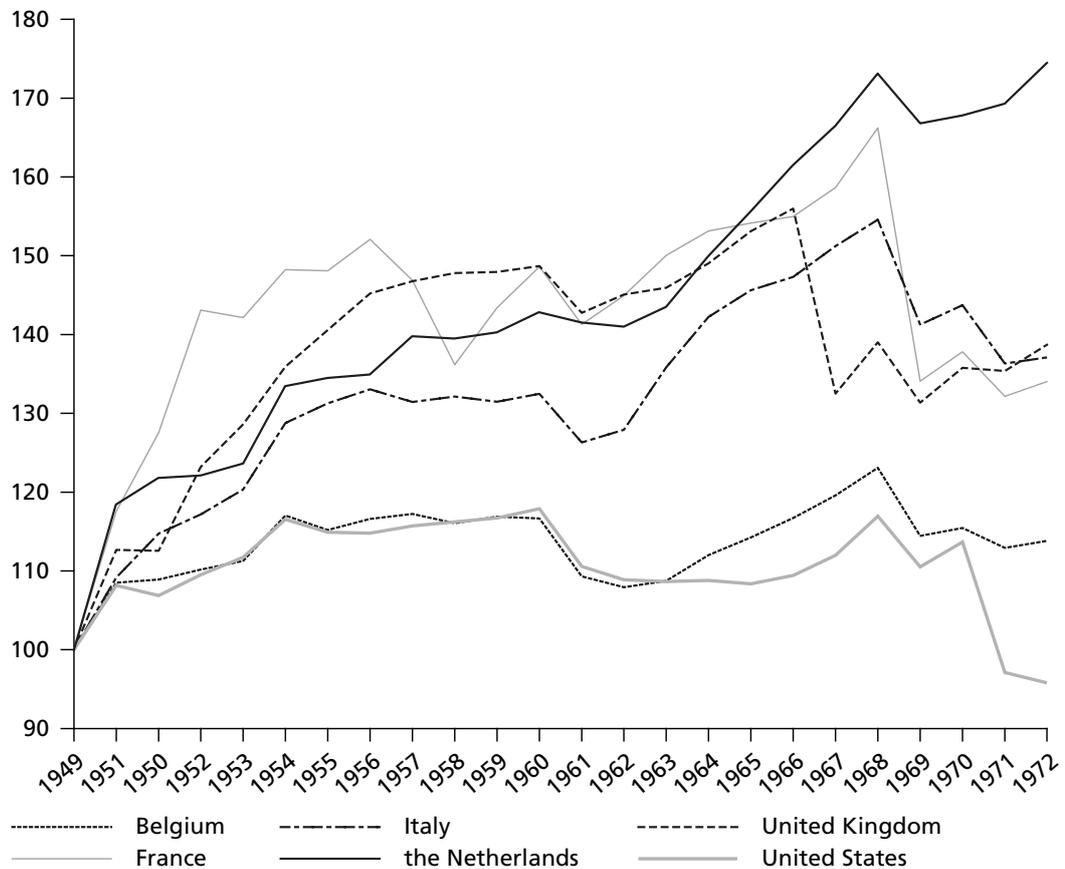
One may argue that the resulting trade (and current account) imbalances were moderate compared to those under the euro and that the actual trade distortions could therefore not have been very large, either. But this is not true. Consider that the trade balance is the trade surplus divided by GDP. The nominal export surplus, in turn, is not only driven by the trade distortion but also by the size of the export sector (exports divided by GDP). In our years under observation, the German trade sector was much smaller

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yearly average inflation rate was nevertheless 2.5 percentage points higher than the German inflation rate. Therefore – and also given that Italy repeatedly devalued after 1973 (see the data in Höpner and Spielau 2015, 7) – we should expect Italy to have frequently devalued in the Bretton Woods years, too. But the data are indeed correct. Leaving aside the insignificant adjustments in 1950 and 1959, all corrections against Germany stemmed not from Italian devaluations, but from not having followed the German revaluations in 1961 and 1969, and from having revalued less than its trading partners in 1971. In other words, the nominal lira–mark exchange rate remained surprisingly stable under Bretton Woods. Italian decisions to abstain from devaluations deserve separate research. I hypothesize that this strategy could only be sustained due to the availability of some *de facto* protectionist measures that are today, under the Common Market, no longer available. To rule out remaining doubts on the reliability of the Italian entries in Table 2, I also show the lira–mark exchange rate in Figure A1 in the Appendix (see the structural break in 1973). I thank Donato Di Carlo and Alexander Spielau for helpful advice on Italian adjustment policies during the 1950s and 1960s.

14 I ended this figure at 1972 because it makes little sense to calculate the real exchange rate for 1973 based on the final exchange rates before the ultimate end of the Bretton Woods order (March 1973) on the one hand, and the inflation rate for the whole year on the other.

Figure 1 Bilateral real exchange rates against Germany, six Bretton Woods countries, 1949–1972; Index 1949=100



Sources: see tables 1 and 2.

than today. It started at around 10 percent of GDP in the early 1950s and roughly doubled until the end of the Bretton Woods years (just like it roughly doubled under the euro; see Table A1 in the Appendix). In order to learn about the magnitude of the trade distortions, it is therefore much more instructive to calculate the yearly exports–imports ratio (again, see Table A1 in the Appendix) and to compare the results with today's standards. In virtually every year from 1956, exports amounted to more than 110 percent of the imports. The index peaks in 1967 and 1968, in which exports amounted to even more than 120 percent of imports.<sup>15</sup> This is not far away from the trade distortions under the euro. The German exports–imports ratios for selected euro years are: 117.5 percent in 2001, 125.2 percent in 2005, 120.8 percent in 2009, 122.2 percent in 2013, 126.4 percent in 2016.<sup>16</sup>

15 The same holds true for 1973, but note again that the Bretton Woods order had already collapsed in March 1973.

16 Own calculations. Data source: Statistisches Bundesamt.

We can conclude that Germany's relative disinflation and its resistance against exchange rate corrections resulted in significant real exchange rate distortions and these resulted in significant trade distortions. The resulting trade distortions were only slightly lower than those under the euro today. The undervaluation regime was, in other words, very effective.

#### 4 The undervaluation bloc (I): The Bundesbank

The Bundesbank – until 1958 the *Bank deutscher Länder* – shaped the German undervaluation regime in two ways: its monetary policy was, directly and indirectly through wage and fiscal policy channels, among the contributors to Germany's low inflation; and the Bundesbank was also an important voice in the revaluation debates. We will therefore briefly review both of these channels of influence.

Central bank independence alone does not enforce a rigid price stability policy. But once such a strategy is chosen, independence shields it. During the 1950s and 1960s, in contrast to today, the degree of independence of the German central bank was clearly exceptional (see the comparative data in Cukierman 1992, 396–411, who distinguishes several dimensions of central bank autonomy). Most of Germany's neighbors introduced central bank independence much later, during the preparation phase for the euro: for example, Italy in 1992, Belgium in 1993, France in 1993, the Netherlands in 1998, and the UK – without adopting the euro – in 1998 (Hassel 2006, 105; McNamara 2002, 49).

The Bundesbank was exceptional not only with respect to its legal autonomy, but also with respect to its inflation aversion. It was often described as suspecting inflation “under every stone.” Typical for its monetary policy were significant raises of the rediscount rate when inflation was feared, but only modest reversals in several small steps when inflationary impulses had vanished. Between 1949 and 1973, the median rediscount rate increase was 1 percentage point (eighteen incidents), while the median decrease was only a 0.5 percentage point (twenty-seven incidents) (see the details in Table A2 in the Appendix).<sup>17</sup> Finance minister Schiller's (time in office: 1966–1972) famous expression “Politik der halbprozentigen Trippelschritte”<sup>18</sup> became winged words. The Bundesbank, however, steered not only by using actual monetary policy decisions but also by frequent threats, which it particularly used to discipline wage and fiscal policy.

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17 Own calculation. On average, increases were 0.56 percentage points and decreases 0.85 percentage points (arithmetic means).

18 “The politics of small half-percentage steps” (my translation). Karl Schiller (SPD) said this in a parliamentary debate in April 1967: Deutscher Bundestag minutes, 5th election period, 106th parliamentary meeting on 27 April 1967, p. 4977.

Economic historians such as Abelshauser (1983, 109) and Alecke (1999, 68–84) identify several instances in which the Bundesbank’s monetary policy slowed or ended economic upswings in the context of, at best, modest inflation prospects:

- In 1952, for example, German price dynamics already had a deflationary tendency (Table 1). But the Bundesbank decreased the rediscount rate only very slowly by its typical half-percentage-point steps (Table A2 in the Appendix). Interestingly, Alecke (1999, 68) demonstrates that the Bundesbank was aware that production was below capacity at that time, and that its decisions directed firms towards foreign markets – a strategy inconsistent with usual internal stabilization approaches, but consistent with the aims of export surplus and foreign currency accumulation.
- In 1956, in the context of an inflation rate below 2 percent, the Bundesbank’s one percentage point rediscount rate increase was widely perceived as unnecessary and led to a sharp conflict with Chancellor Adenauer (time in office: 1949–1963), the so-called “Gürzenich affair.”<sup>19</sup> This Bundesbank decision led to a government crisis because finance minister Schäffer (time in office: 1949–1957) and economic minister Erhard (time in office: 1949–1963 and later Chancellor) had attended the respective central bank council meeting without having made use of their potentially available (but, to my knowledge, never used) instrument of a delaying – not preventing – veto.
- The most prominent example, however, is the year 1966. The one percentage point rediscount rate increase, again in a context that we would usually describe as price stability, was widely perceived as a “power demonstration” on the part of the Bundesbank, and the resulting economic downturn as a “wanted recession” (with the first negative growth rate in the history of the Bundesrepublik, see Tables A1 and A2 in the Appendix). Again, this interest rate decision had distinct political consequences because the downturn contributed to the fall of the Erhard government (Erhard was Chancellor between 1963 and 1966).

Monetary policy not only contributes to competitive disinflation by smoothing down economic upswings at an early stage but, due to its defective power against wage and fiscal policy, also disciplines fiscal and wage policy (Hall and Franzese 1998). Interesting in this respect is the 1966 incident (our third example above), because its addressee was clearly fiscal rather than wage policy (Scharpf 2018, 9). While we will turn to the trade unions in the next but one section, let us briefly look at fiscal policy here.

Table A1 in the Appendix provides information about the yearly fiscal budget balances (in percent) between 1950 and 1973. In ten of these twenty-four years, the public authorities (all levels, including social security systems) generated budget surpluses. And in only one of these twenty-four years, the outcome was a budget deficit larger than 2

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19 Named after the “Gürzenich” in Cologne, the place where Adenauer delivered a harsh speech soon after the rediscount rate increase. See the details in Emminger (1986, 77–78).

percent. This indicates that in Germany before the 1970s, the Keynesian “phase” was rather a Keynesian moment: the year 1967. Virtually throughout our entire period of observation, the outcomes with respect to the budget balance resemble a strictly rule-based rather than discretionary fiscal policy. In functional terms, such a fiscal policy brings about the same effects as a strict monetary policy and therefore contributes to competitive disinflation (Emminger 1986, 32; Hölscher 1994, 97–103). This especially holds true for fiscal surpluses because they shut down money and suppress internal demand.<sup>20</sup>

Competitive disinflation, however, leads to undervaluation only if correcting exchange rate adjustments are absent. Until the late 1960s, the Bundesbank clearly contributed to the prevention, delay, and minimization of revaluations.<sup>21</sup> During the term of the *Bank deutscher Länder*’s first president, Wilhelm Vocke (time in office: 1949–1957), undervaluation was the actual strategic aim of the central bank and not only an unintended side effect, as this quote from 1951 (taken from Holtfrerich 1998, 383) illustrates:

Wir leben von der Steigerung unseres Exports, und dieser wieder von der relativen Niedrighaltung unseres Lohn- und Preisniveaus ... Wie gesagt, unser hinter dem Ausland zurückbleibendes Preisniveau ist der zentrale Punkt unserer Bemühungen bei der Notenbank, und es ist ein Erfolg unserer Bemühungen. Das mögen die bedenken, die uns zurufen: Eure Restriktionen sind zu scharf, sind nicht mehr nötig.<sup>22</sup>

Note that Vocke said this in the context of a just recently resolved balance of payments crisis, which makes his mercantilist approach comprehensible. But the stance of the Bundesbank remained the same for at least the fifteen following years, even though Germany accumulated massive export surpluses, current account surpluses, as well as foreign currency and gold<sup>23</sup> reserves. When the first German revaluation was debated,

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20 Another remarkable aspect of the fiscal policy of the time is the tax-induced encouragement of private household savings (see Holtfrerich 1988, fn. 115), a feature often described as “typically German” (an encompassing analysis of this is Mertens 2015). If we accept that banks do not need savings in order to lend, we may wonder about the actual functionality of the obsession with household savings. The perspective proposed here offers a plausible answer: encouraging private savings contributes to undervaluation.

21 Detailed descriptions of the revaluation debates inside the *Bank deutscher Länder* and the Bundesbank, encompassing the whole Bretton Woods period, can be found in Otmar Emminger’s memoirs (Emminger 1964, Chapters 2–7).

22 “We rely on exports going up and this relies on keeping our wage and price levels relatively low ... As I said, keeping our prices lower than those abroad is the central point of the central bank’s efforts, and it has been an achievement of these efforts. Those claiming our restrictions are too harsh and beyond what is necessary should bear this in mind” (my translation).

23 The share of gold reserves (as a share of all currency and gold reserves held by the *Bank deutscher Länder*, later the Bundesbank) was 60 percent at the end of the Vocke era; later, under Bundesbank president Blessing, it fell to a still very high 50 percent. In this way, the Bundesbank contributed to the thinning out of the gold backing of the US dollar on which the Bretton Woods system relied. In a famous letter from March 1967, Blessing had to promise the US government to no longer request conversion of dollar reserves into gold (Holtfrerich 1998, 401, 421; Kreile 1977, 780). Economic historian Holtfrerich (1998, 429) concludes with respect to the Vocke era:

the Bundesbank was clearly among the revaluation opponents (Burhop et al. 2013, 210; Emminger 1986, Ch. 4; Gall 2004, 247). Bundesbank president Blessing (time in office: 1958–1969) even threatened to resign if the government decided to revalue.<sup>24</sup>

The constellation changed, however, in the late phase of the second revaluation debate. From 1968, at a time when Karl Schiller still opposed the revaluation, the Bundesbank supported the revaluation proponents (see the details in the section on political parties; Spiegel 48/1968, 32; Neumann 1998, 221). In the context of large inflows of foreign currency, the Bundesbank worried about inflation import. But this change of preference was not stable. Blessing's successor Karl Klasen (time in office: 1970–1977), in contrast to Blessing in his later phase as a central banker, was a pronounced revaluation skeptic and therefore, like Vocke, an ally of Deutsche Bank chief Hermann Josef Abs, to whom we will turn in the next section.

We can conclude that the German central bank decisively contributed to the evolution of the German undervaluation regime, always due to its exceptionally strict price stability convictions and mostly by also opposing and delaying revaluations.

## 5 The undervaluation bloc (II): Industry

Large firms and industrial associations were the most dedicated supporters of Germany's low inflation path and the most pronounced (and loud) opponents of revaluations, without any visible change of preference over time. They were the center of the German undervaluation bloc.

I pick the first revaluation debate for illustration. A revaluation of the mark became a manifest option in 1960 because economic minister Erhard perceived such a step as increasingly unavoidable. The *Bundesverband der Deutschen Industrie* (BDI, Federation of German Industries) strictly opposed Erhard's assessment (Spiegel 34/1960, 25; see also the evidence provided in Kinderman 2008, 856–61). BDI president Fritz Berg (time in office: 1949–1971) expressed his conviction that Chancellor Adenauer would never decide for an exchange rate adjustment against the interests of German industry: "Ich brauche nur zum Kanzler gehen, um Erhards Pläne vom Tisch zu bringen"<sup>25</sup> (quoted from Spiegel 12/1961, 17). In the end, Berg was wrong and the decision went in favor of revaluation and against the BDI's preferences.

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"Vockes Stolz auf die gehorteten Goldvorräte der Bank deutscher Länder war ... so naiv wie der der klassischen Merkantilisten." ("Vocke's pride in hoarding gold reserves in the *Bank deutscher Länder* was ... as naive as that of the classical mercantilists," my translation).

24 In his memoirs, Vocke (1973, 163) remembers Blessing saying: "Aufwertung? Nur über meine Leiche!" ("Revaluation? Over my dead body!" my translation).

25 "I just need to go to the Chancellor to get Erhard's plans off the table" (my translation).

But note the discrepancy between the tiny amount of the revaluation and the loudness of the protests afterwards. Given that more than ten years of relative disinflation had already cumulated, German industry could be more than happy to have gotten away with only a 5 percent revaluation (Figure 1). Berg, however, publicly accused the government of a breach of trust (Spiegel 12/1961, 15). Economic minister Erhard received 130 protest notes from industrialists. Erich Wolf Mommsen from Phoenix-Eisenrohr, for example, argued that the mark had now become, due to the 5 percent revaluation, a “Spekulationswährung”<sup>26</sup> (Spiegel 15/1961, 12). Berg stopped the BDI’s party donations to the Christian Democratic Union (Kaufmann 1969, 208). The intention behind these clearly exaggerated reactions was, of course, to prevent revaluations from becoming a regularly used economic policy tool.

A powerful ally of the export industry was agriculture, a protectionist sector *par excellence* (Kreile 1977, 787) and a highly organized interest group. During both revaluation debates, the farmers’ associations expressed strict opposition and asked for compensation in the event of revaluations happening anyway. It is remarkable how much of the debate at the special meeting of the cabinet on May 9, 1969, fully dedicated to the revaluation discussion, was about the likely impact on agriculture and on the options for compensation.<sup>27</sup> The CDU and its Bavarian sister party, the CSU, especially feared that a revaluation would damage the farmers’ strong ties to the conservative parties and lead to protest votes going to the right-wing National Democrats (NPD) in the upcoming 1969 elections (Spiegel 19/1969, 27; Soell 2004, 785).<sup>28</sup>

The undervaluation preference from industry as well as farming is certainly not very surprising.<sup>29</sup> Much more remarkable is how closely banks and industry acted together. In the late 1950s and early 1960s, the inner circle of Adenauer’s advisors in economic, financial, and monetary matters consisted, besides BDI president Berg and Bundesbank president Blessing, of Deutsche Bank chief Hermann Josef Abs (Deutsche Bank chief from 1957 to 1967 and head of the supervisory board from 1967 to 1976) and private banker Robert Pferdemenges, who also served as head of the Federal Association of German Banks until 1960 (time in office: 1951–1960) (Gall 2004, 247). Abs’ numerous statements in the revaluation debates were at least as pronounced as those of Berg and can be followed over the entire observed period. In the context of the first revalu-

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26 A “speculation currency” (my translation).

27 I thank Timur Ergen for drawing my attention to this and to the protocol of that cabinet meeting. The protocol can be accessed here: [http://www.bundesarchiv.de/cocoon/barch/0/k/k1969k/kap1\\_2/kap2\\_18/index.html](http://www.bundesarchiv.de/cocoon/barch/0/k/k1969k/kap1_2/kap2_18/index.html).

28 In the *Land* elections of Baden-Württemberg in 1968, the NPD had received a remarkable 9.8 percent of the vote. In the federal elections in September 1969, the NPD fell below the 5 percent threshold, receiving only 4.3 percent.

29 One may argue that purely domestically or import oriented firms should have opposed the BDI’s anti-revaluation campaigns (see also Kreile 1977, 785), but I could find no evidence for such an inner-industry division.

ation debate, he proclaimed “Der Wechselkurs, kein Feld für Experimente”<sup>30</sup> (Spiegel 34/1960, 25); in 1969, in the context of the second revaluation debate, he expressed in obvious contradiction to the facts: “Ich bestreite in der Tat, dass wir mit unserer Außenwirtschaft gegenüber anderen Ländern ein Ungleichgewicht haben”<sup>31</sup> (Spiegel 1+2/1969, 37; see also Poullain 1979, 108).

These observations confirm a point which Kreile (1977, 796), Henning (1994, 29), and Walsh (2000) have made: the currency policy preferences of the financial sector depend upon the strengths of its ties towards domestic industry. Banks usually have a fundamental preference for low inflation (in order to prevent spreads between assets and liabilities), but not necessarily a preference for a particular currency regime or policy unless it shapes inflation. Given that undervaluation may fuel inflation (at least more than overvaluation), banks ought to support correcting revaluations. However, strong ties between banks and industrial firms, in terms of large amounts of domestic credits as well as shareholdings, make industrial and financial preferences converge. Consider now that Germany is not only a special case with respect to its undervaluation regime, but that it was also, in the formative days of the regime, the paradigmatic case of an *organized capitalism* with a dense company network and banks at its center, as Shonfield (1965, Chs. 11–12) already demonstrated (on the German company network, see also Windolf and Beyer 1996; Höpner and Krempel 2004).

Assuming that the monolithic character of the lobbying of the bank–industry complex was decisive for the undervaluation regime’s success, we can conclude that such regimes benefit from also being organized “varieties of capitalism” (Hall and Soskice 2001; Streeck 2009) – not only with respect to wage bargaining, to which we will turn in the next section, but also with respect to corporate governance and bank–industry ties.<sup>32</sup>

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30 “The exchange rate [is] no field for experimentation” (my translation).

31 “Indeed, I deny that we have an imbalance in our foreign trade with other countries” (my translation).

32 In fact, this is a good example of functional complementarity between corporate governance and industrial relations spheres of production/growth/accumulation regimes. Initially, “Varieties of Capitalism” had treated corporate governance as one of the decisive spheres of such regimes (Streeck 1995; Hall and Soskice 2001, 60–62; Streeck 2009, 77–89). In recent years, however, this research strand has increasingly focused on the interaction of skill formation, industrial relations, and the welfare state, while the corporate governance sphere, as far as I can see, has become largely forgotten.

## 6 The undervaluation bloc (III): Trade unions

Labor's contribution to the German undervaluation regime is more difficult to specify than that of the banks–industry complex. We need to distinguish between trade unions as providers of low nominal wage pressure and as potential voices in the revaluation debates. With respect to wage bargaining, the trade unions were clearly contributors to the regime. Their demands with respect to exchange rate adjustments were, by contrast, more nuanced than those of the industrial associations and the banks.

As already indicated above, the absence of wage and price inflation during the labor scarcity years after 1956 is remarkable. Alecke (1999, 100) labels the German wage policy in the respective period as “exceptionally moderate” (see also Scharpf 2018, 2–5).<sup>33</sup> The only year with relatively intense strike activity, 1971, is at the end of our observation period (see the data in Müller-Jentsch and Ittermann 2000, 192). This outcome was possible only under the condition of the *Einheitsgewerkschaft*, the representation monopoly of sectorally organized trade unions in the *Deutscher Gewerkschaftsbund* (DGB, Confederation of German Trade Unions).<sup>34</sup> If there is one period in German history in which the trade unions were not only unitarily organized but also relatively encompassing, then it is the early Bretton Woods period (with an organization rate of 41.7 percent in 1951, see data in *ibid.*, 85; today, the organization rate is down to around 15 percent).

A deeper understanding of anti-inflationary German wage bargaining, however, has to consider its interaction with monetary policy. We have already seen that the Bundesbank was both willing and able to exercise a remarkably strict monetary policy. Precisely as Hall and Franzese (1998) have theorized, the co-presence of central bank independence and coordinated wage bargaining gave way to a low inflation path with no high costs in terms of dysfunctional deflection spirals. The Bundesbank often sent precise signals on the wage increase margins that it perceived as in line with its price stability mandate and against which it would therefore not defect (see, for example, *Spiegel* 34/1960, 21). Only non-competing monopoly trade unions could cooperatively respond to such signals.

The 1967 founded tri-partite *Konzertierte Aktion*, a discussion forum among the heads of the government, employers, and trade unions, had a similar signaling function. Officially, its participants never pre-negotiated wages. In practice, however, much of the time in the *Konzertierte Aktion* was spent on the development of a commonly shared view on the economic fundamental data of the time. Although the trade unions never accepted any wage policy guidelines (in the *Konzertierte Aktion* or elsewhere), they nevertheless accepted finance ministry data as “gesamtwirtschaftliche Orientierungsdaten” (macroeconomic orientation data; see Fels 1969; Lütjen 2007, 228–29). The shared view

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33 Similarly Kreile (1977, 777). As far as I can see, no comparative data on nominal unit labor cost increases – the main push determinant of inflation – is available for the period observed in this paper. Data for Germany are shown in Holtfrerich (1998, 350).

34 See also Höpner and Lutter (2018) on the euro years.

on the macroeconomic background was a precondition for successful signaling (and actually, in my view, already part of the signaling process). In this sense, the way the trade unions became organized after 1949 and their interactions with the government and the central bank were decisive for Germany's low inflation path and, therefore, for the undervaluation of the mark – as long as no currency adjustments occurred.

The trade unions were also among those who expressed their preferences in the revaluation debates. But a trade unionist was never part of the inner circle that negotiated exchange rate policy before the revaluations in 1961, 1969, or later, and even the SPD seemed to have no expectation of trade unions having any particular voice here. The corporatist attempts that started in 1967 did not change the situation. Throughout our period, “capture” by industry, agriculture, and banks fits the currency policy constellation much better than “corporatism.”

In order to understand their attitude towards exchange rate corrections, we have to consider the trade unions' macroeconomic mind map of the time (see Ehrenberg 1964, 334–37; Kaufmann 1969, 199). Whenever inflation pressure occurred, employers blamed the trade unions for having brought it about. The trade unions responded with an inflation theory that focused not on the relationship between wage and price inflation but on imported inflation. Consequently, they were averse to price increases that might eat up their wage increases. The decisive gateway for inflation import was, according to this view (and in line with the view of the time), the inflow of foreign currency. This inflow was, in turn, a by-product of the current account surpluses. Note that, under conditions of full employment in most of the years under observation, the trade unions also had no reason to give excessive weight to the export of unemployment. Therefore, they were less dedicated opponents of revaluations than the industry–banks complex.

Regarding the revaluation debates, the data empirically reveal an ongoing back and forth. In 1964, trade union expert Ehrenberg (who later became labor minister) argued against revaluing but also pointed out that the 1961 revaluation was too small and too late (Ehrenberg 1964, 334). One year later, he asked for more general exchange rate flexibility (Ehrenberg 1965). Trade union expert Pehl (1964, 427), during the same years, supported the government's resistance against further revaluations. In 1968, he made clear: “Der DGB lehnt eine DM-Aufwertung ab”<sup>35</sup> (Pehl 1968, 751). One year later, however, the trade unions sided with Karl Schiller and his revaluation plan (Pehl 1969, 710; Willeke et al. 1971, 311). Again, after the revaluation had occurred, Pehl (1970, 4, 9) criticized that the measure came too late.

If we consider the trade unions as agents of employees *as employees*, their – though reluctant and sometimes inconsistent – support for the German undervaluation strategy makes sense. But should the trade unions not have taken more into account the fact that employees are at the same time *consumers*? Remember what we saw in the theory

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35 “The DGB rejects a revaluation of the DM” (my translation).

section of this paper: undervaluation implies shipping more out of the country than shipping in; in other words, it implies the imposition of consumption abstinence upon citizens. This is hardly in line with employees' interests, especially in times of full unemployment. Why was there no resistance among trade unionists?

The following two considerations may not resolve this puzzle, but they at least minimize it a little. First, note that no powerful consumer organizations existed that could exert external pressure on the trade unions. Consumers are the paradigmatic case of diffused interests with low organization capacity. Second, consider the context of growth and overall increases in welfare. That a fair valuation of the mark would have led to even more consumption opportunities was, in that context, a purely theoretical matter. Relative consumption abstinence, in contrast to absolute abstinence, does not lead to the kind of deprivation likely to fuel protest.

We can conclude that the trade unions were part of the German undervaluation regime as far as its low inflation performance was concerned. Regarding German resistance to revaluations, the trade unions tended to contribute to delaying decisions, but their opposition was always less radical than most other parts of the undervaluation bloc; and once the revaluations had occurred, the trade unions tended to accept and to defend them against critics. By also considering their absence in the inner circle in which currency issues were discussed, we should consider them as peripheral parts of the undervaluation bloc.

## **7 The undervaluation bloc (IV): Lack of contestation among political parties**

Parts of the data seem to indicate that party-political dynamics mattered in the revaluation debates. The CDU (and its Bavarian sister, the CSU) were largely captured by export interests, including agriculture, with a few exceptions who almost always remained in minority positions. In 1969, the Social Democrats, after four election periods in opposition and one period in a grand coalition, ran a pro-revaluation election campaign. The CDU and CSU responded with “So lange ich Kanzler dieser Regierung bin, wird die Mark nicht aufgewertet”<sup>36</sup> (Kiesinger) and “Hände weg von unserer Mark”<sup>37</sup> (Strauß, finance minister 1966–1969) (both quotes from Spiegel 41/1969) – and lost. The election on 28 September 1969 brought about the first SPD-led government in the history of the Federal Republic of Germany. The 1969 revaluation was an outcome of this election result.

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36 “There will be no revaluation as long as I am Chancellor” (my translation).

37 “Hands off our mark” (my translation).

We may therefore hypothesize that perpetuation of the undervaluation regime was mainly caused by the twenty-year dominance of the CDU/CSU and that the operation of the regime could have been stopped, or at least significantly curbed, if the SPD had won federal elections earlier than it did. If that were true, we would have to question the regime notion because a regime, in contrast to a policy, should be robust against changes in the party composition of governments. The SPD stance towards revaluations therefore deserves special attention.

The Social Democrats did not press for an exchange rate adjustment during the first revaluation debate. To the contrary, they criticized the 1961 revaluation as a “Kurzschlußreaktion”<sup>38</sup> (Spiegel 12/1961). This skepticism towards exchange rate adjustments went on almost throughout the 60s (Kaufmann 1969, 200). The behavior of the SPD during the grand coalition years, which coincided with the height of the second revaluation debate, is particularly interesting. In November 1968, and because of the large amounts of foreign currency inflows and ongoing international demands to finally revalue, Germany invited the finance ministers and central bank presidents of the then-existing “club of the ten” (consisting of ten large Bretton Woods nations) to discuss possible solutions.

This conference, in which SPD economic minister Schiller and CSU finance minister Strauß (time in office: 1966–1969) fought side by side against the unanimous foreign revaluation demands, is legendary (see Emminger 1986, 142–47; Lütjen 2007, 251–54; Möller 2015, 417; Spiegel 48/1968, 36ff.). Former economics professor Schiller held endless anti-revaluation lectures in which he annoyed not only his foreign guests but also the domestic delegation. British treasury minister Roy Jenkins (time in office: 1967–1970) later reported that at least twelve of his fifty-hour stay consisted of Schiller’s monologues. Bundesbank president Blessing left the conference early because he could no longer stand the protests against Schiller’s attitude (Lütjen 2007, 252).

Schiller remained in the camp of revaluation opponents at least until February 1969, that is, until seven months before the Bundestag elections. He changed his mind late, and in a context in which most experts perceived a correction of the nominal exchange rate as unavoidable anyway. The SPD, however, hesitated to follow Schiller. In particular, the SPD leader Willy Brandt (head of the SPD between 1964 and 1987 and Chancellor between 1969 and 1974) and the then minister for inner-German relations<sup>39</sup> Herbert Wehner (time in office: 1966–1969) were not convinced. But the SPD had to run a campaign against the very party with which it ran the government and urgently needed a topic on which it could differentiate itself from the CDU and the CSU (Möller 2015, 417–20).

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38 A knee-jerk reaction, a panic reaction.

39 A ministry that specifically dealt with the relations between the Federal Republic of Germany (BRD) and the German Democratic Republic (DDR).

The decision to back Schiller and to actually pick the issue as one of the election campaign topics fell reluctantly and only after Schiller threatened to withdraw as minister. Some observers perceived the CDU/CSU decision to remain in opposition against the popular minister Schiller, and in opposition against a measure that was widely perceived as unavoidable anyway, as a significant strategic mistake (Stoltenberg 1997, 179). Note also that Schiller did not fully stick to his preference for exchange rate corrections in the subsequent years. In 1971, Schiller was quoted arguing that the short period of “dirty floating”<sup>40</sup> had brought about too much DM revaluation (Spiegel 41/1971, 33) – a remarkable statement given that further revaluations turned out to be necessary soon after.

If we test the parties-do-matter hypothesis against other time periods or against international comparisons, the results turn out to be equally disappointing. When the EMS was planned in the late 1970s, the CDU – not the SPD – opposed the idea of more stable inner-European nominal exchange rates, notwithstanding the fact that more of such stabilization would make it easier for Germany to remain in undervaluation constellations (Soell 2008, 704; Abelshauser 2009, 396). The findings from international comparisons are inconsistent. Although Broz and Frieden (2006, 592) hypothesize that conservative parties may have a stronger preference for exchange rate stabilization than leftist parties, Frieden (2015, 169) finds – for the 1973–1994 period – more exchange rate stability when left parties were in government. Höpner and Spielau (2015, fn. 27) find that conservative parties revalued more often than leftist parties in the EMS period 1979–1998, while Freitag (2003, 214) rejects the party hypothesis altogether for the same period and twenty-one OECD countries.

We can conclude that systematic party-political dynamics are largely absent in currency politics, in Germany under Bretton Woods and – most probably – in general, too.<sup>41</sup> Capture by export (and agricultural) interests may have indeed been largest among the Christian Democrats, but the SPD followed suit most of the time. And whenever the stances of the parties differed, the differences lacked stable patterns. In the Bretton Woods period, the German undervaluation regime was perpetuated not only by its dominant sister parties, the CDU and the CSU, but also by the other large party, the SPD – which also implies that we must, not very different from today, consider the German political elite as a part of the undervaluation bloc *in toto*.

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40 Remember that the 1971 realignment was preceded by a four-month period of floating among some of the Bretton Woods participants (see the section on the extent of German undervaluation under Bretton Woods).

41 Note also that the parties-do-matter hypothesis fails with respect to inflation (Busch 2003, 183–84).

## 8 Circumventing ordo-liberalism

A frequently used research strategy is to lay open affinities between German economic policy and the German variety of economic liberalism, ordo-liberalism – and the resulting arguments are almost always convincing (for example, Hillenbrand 2015; Hageman 2017; an excellent introduction to ordo-liberalism is Manow 2001). Such arguments, however, do not work with respect to the undervaluation regime. To the contrary, the perpetuation of the regime required insulation from the mainstream economic thinking of the time and an active search for alternative sources of normative rationalization and justification.

It goes without saying that the ordo-liberals were dedicated proponents of price stability. But their inflation aversion aimed at preventing price signals from becoming distorted, not at intentionally distorting the most important price (besides wages) in a market economy, the exchange rate (Röpke 1959, 194–220). Consequently, no matter whether they preferred fixed, but adjustable or entirely flexible currency orders,<sup>42</sup> the ordo-liberals – to my knowledge without exception – advocated the correction of undervaluation by means of exchange rate adjustments. Not only was there no harmonic relationship between ordo-liberalism and undervaluation in theory, but the economic mainstream of the time was, throughout our period of observation, also a diligent provider of critique against which the undervaluation proponents had to defend themselves.

Wilhelm Röpke, for example, repeatedly asked the German government to revalue the mark (Burhop et al. 2013, 210). Among the few proponents of an adjustment during the first revaluation debate was also the scientific board of advisors of the economics ministry, a group of mainstream economists (Spiegel 29/1956, 16; an encompassing analysis of the positioning of the ordo-liberals during the first revaluation debate is Bank 2013, 344–405). The situation during the second revaluation debate was not very different. Again, we can easily identify economists, typically ordo-liberals, as the most dedicated revaluation proponents. Herbert Giersch repeatedly gave interviews in support of such a measure (for example, Spiegel 49/1968, 118–223; Spiegel 21/1969, 52–57). The 1963 founded *Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung* (German Council of Economic Experts), a group of macroeconomic advisors that was asked to provide yearly opinions on the state of the economy, was another provider of pro-revaluation arguments (Sachverständigenrat 1968; Willeke et al. 1971, 312f.). In the same year, a group of ninety-nine economists published an appeal for more exchange rate flexibility (Giersch 1971, 34).

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42 Some ordo-liberals such as Meyer (1972) supported the Bretton Woods system in principle but became increasingly disappointed by its stickiness and therefore, in the 1960s and 1970s, converted into proponents of entirely flexible currency orders.

In short, all available sources make clear that the German undervaluation regime could not profit from normative support from the economic mainstream. We may argue that such support was not required anyway. But remember, the regime caused ongoing – in particular, transnational – conflict. Sticking to such constellations requires normative justification. I suggest that this is the reason for the large amount of “moralization” that we find in the statements of the undervaluation proponents. Such moral rationalization was a strategy to circumvent the lack of support from the ordo-liberal economic experts and to impose the interests of the undervaluation bloc upon the broader society.

In particular, the proponents made frequent use of the following categories:

- Sin, guilt, and penitence: clearly religious categories and often used in the debate. Schiller, for example, said that a revaluation of the mark could be prevented if “the other countries which have sinned and are sinning now” can be enforced to adopt stabilization measures (quoted from Willeke et al. 1971, 300).<sup>43</sup> We also find such categories in the press. In 1964, the Spiegel argued: “Den Währungssündern unter den Bonner Handelspartnern war es indes sehr bequem, für ihre Sünden die Bundesrepublik büßen zu lassen” (Spiegel 27/1964, 28).<sup>44</sup>
- Illness vs healthiness: a distorted exchange rate due to the weakness and illness of others. “Eine Aufwertung der D-Mark heißt den Gesunden kurieren,”<sup>45</sup> said central bank president Vocke (Spiegel 27/1957, 14). The following quote from a Spiegel report is an extreme example:
 

Durch den Wertverlust beim Umtausch von gesunder Mark in schwindsüchtige Lire und Franc finanziert Westdeutschland deshalb unfreiwillig sowohl Italiens Aufbauprogramme für den Mezzogiorno und Sizilien als auch den teuren Traum de Gaulles mit, der Welt vierter Atompilzkopf zu werden. ... Inflationbazillen wehen keineswegs nur mit dem Südwind in die Bundesrepublik. Aber Italiens fiebernder Wirtschaftskörper scheidet zur Zeit die meisten Krankheitskeime aus. (Spiegel 27/1964, 28)<sup>46</sup>
- Strategic manipulation: the third moralization<sup>47</sup> strategy which I found in the historical material is the accusation of a hidden and non-legitimate manipulation of

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43 Original wording: “... die anderen Länder, die gesündigt haben und jetzt sündigen.”

44 “The currency sinners found it very easy to let the Federal Republic atone for their sins” (my translation).

45 “A revaluation means curing the already healthy” (my translation).

46 “Due to the loss in value which happens when the healthy mark is exchanged against the consumptive lira and franc, Germany is involuntarily co-financing both the Italian developmental programs for the Mezzogiorno and Sicily as well as de Gaulle’s expensive dream to become the world’s fourth nuclear power ... Inflation bacilli are by no means blowing only from the south into the Federal Republic. But most of the germs are coming from Italy’s feverish economic body” (my translation).

47 See also Vocke (1973, 183) on devaluations: “Derartige Maßnahmen ... untergraben die Moral” (“Such measures ... undermine morality,” my translation).

economic matters in order to hurt Germany. Let us stick to the following example,<sup>48</sup> taken from an interview with Deutsche Bank chief Hermann Josef Abs:

Glauben Sie wirklich, dass englische Zeitungen, die eine Aufwertung der Mark empfehlen, nicht auch von dem Gedanken getragen sind, die Deutschen – die Bauern im Schach des internationalen Kapitalgeschäftes – lahmzulegen, es ihnen zu erschweren? (Spiegel 1+2/1969, 41)<sup>49</sup>

We can conclude that neo-mercantilism by means of undervaluation is a strategy that requires normative justification. The economic mainstream of the time, ordo-liberalism, did not deliver such justification, a problem that had to be addressed by the supporters of the regime. They provided the public with a “moral economy of undervaluation,” a set of moral justifications that relied, among others, on religious categories. Of course, many readers will be reminded of the current set of moralizations with which Germans claim their innocence regarding the macroeconomic imbalances in today’s eurozone (for *Schuldensünder* or debt sinners, see Matthijs 2016, 376<sup>50</sup>). As we see here, this strategy is much older than the euro crisis. It has accompanied and normatively justified the German undervaluation regime since its early development under Bretton Woods.

## 9 Conclusion

Germany’s competitive undervaluation has brought the eurozone to the brink of collapse (Flassbeck and Lapavitsas 2015). This undervaluation did and does not just rely on “wrong” policy choices. It must be understood as a path prescribed by a set of institutions, organizations, and ideologies – in short, a *regime* – that is much older than the euro. It was established in the 1950s, long before Germany became an export-driven growth model in the sense of Baccaro and Pontusson (2016; 2018; 2019), and has survived all subsequent European currency orders. The regime relies on the minimization of inflation drivers and on the stickiness of the currency regime. The stickier the currency regime, the more likely it is that competitive disinflation succeeds. The euro is the first European currency regime that rules out de- and revaluations entirely. The radicalization of the German undervaluation regime under the euro should therefore not come as a surprise.

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48 In general, a frequently used term to discredit exchange rate adjustments was “Währungsmanipulation” (currency manipulation). See, for example, Willeke et al. (1971, 314).

49 “Do you really believe that English newspapers recommending revaluation are not also driven by ideas of paralyzing and impeding the Germans, the pawns in the chess game of international capital business?” (my translation).

50 But note that Matthijs (2016) interprets such moralization as an expression of “wrong” ideas that are *opposed* to Germany’s real, long-term economic interests.

Admittedly, the fact that the German undervaluation regime already existed in the 1950s is not proof that Bretton Woods was its starting point. It may have been established much earlier and revived after World War II. Let us therefore briefly sound out the earlier phases of German capitalism. To put the main finding upfront, trade balance data for Imperial Germany, for the Weimar Republic, and for Nazi Germany indicate that Germany was not a surplus country before World War II (see the data shown in Lampe and Wolf 2015, 282; Metz 2015, 197; Wolf 2015, 296; Tooze 2008, 688). We have good reasons to believe that the regime was actually established under Bretton Woods.

Imperial Germany's trade balance was consistently in the negative. The Weimar years are particularly interesting. Under the gold standard, after the great inflation in 1923, Germany continuously lost competitive strength and accumulated trade deficits (James 2012). Weimar Germany was definitely not an undervaluation regime – although it would have needed to become one to be able to pay the World War I reparations (Holtfrerich 2016, 358).<sup>51</sup> The first years in which Weimar Germany's current account deficits changed into surpluses were the years of Reich Chancellor Brüning (in office: 1930–1932) and the surpluses were a result of the huge contraction of the economy rather than of undervaluation. These incidents resemble not Germany's undervaluation regime but, to the contrary, the situation which the Southern European economies face today (Ritschl 2012). The data for the Third Reich are difficult to read. The main characteristic of Nazi economic policy was surely not to boost exports but to implement a strict dominance of domestic over foreign economic policy goals, and to use available resources for war preparation and, later, war. In general, the Nazi's economic vision was economic autarky rather than reviving the external trade that had broken down during the 1929 crisis (James 1998, 71; Kopper 2016, 94).

Today, the world economy, and the eurozone in particular, experience Germany's export surplus orientation as a nightmare. We have seen that this orientation has a history of almost seventy years and that it is deeply rooted in Germany's political–economic institutions, organizations, and economic ideologies. Should this rather theoretic insight change our thinking about the euro crisis? Does it qualify, justify or excuse the damage done? Does it challenge the fundamental truth that currency unions can, always and everywhere, work smoothly only if they are at the same time inflation unions?<sup>52</sup> Or, more practically, does it speak against a progressive political program that aims at breaking with Germany's export surplus regime and at re-directing its orientations more towards the domestic economy?<sup>53</sup>

Not at all; the political and practical implication is a different one. The insight into the historicity of the German undervaluation regime should shift our attention from the

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51 See Krüger (1981, 40–47) for a detailed discussion of the relationship between reparations and foreign trade.

52 A point on which Flassbeck and Lapavitsas (2015) correctly insist.

53 On this as a progressive vision: Flassbeck and Steinhardt (2018, Ch. V), Nölke (2018, Ch. 5).

dysfunctional policies within the eurozone *to the euro itself*. Undervaluation regimes are beasts which must not be used to found currency unions unless hard, transformative instruments capable of breaking the regimes' self-logics are available. As things stand, such instruments do not even exist in theory.<sup>54</sup> *This* is the problem of the eurozone, not the absence of a eurozone parliament, of a European finance minister, or of sufficient risk pools among investors or banks. All this does not imply that regimes cannot be transformed. But it opens our eyes to the fact that the common currency may be easier to break than the dysfunctional heterogeneity within it.

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54 Of course, even if such instruments were available, their use would still be difficult to legitimate (for an extensive discussion, see Scharpf 2016).

## Appendix

Table A1 Background data on Germany, 1950–1973

	Inflation (in %)	Growth (in %)	Unem- ployment (in %)	Budget balance (in %)	Exports– imports ratio (in %)	Trade balance (in %)	Current account balance (in %)	Export sector size (in %)
1950	−9.6	9.70	11.0	−0.6	73.7	−2.9	−0.3	8.0
1951	9.2	9.30	10.4	+1.2	99.3	−0.1	+2.0	11.4
1952	−0.3	8.90	9.5	+0.8	104.3	+0.5	+1.8	11.6
1953	−1.3	7.80	8.4	+1.9	115.6	+1.6	+2.6	11.8
1954	−3.9	12.10	7.6	+1.1	114.0	+1.6	+2.4	13.1
1955	1.1	7.70	5.6	+1.5	104.9	+0.6	+1.4	13.4
1956	1.6	6.10	4.4	+1.5	110.4	+1.4	+2.4	14.6
1957	2.6	4.50	3.7	−0.3	112.9	+1.8	+2.8	15.6
1958	2.3	7.90	3.7	−0.9	115.6	+2.0	+2.7	15.0
1959	0.5	8.60	2.6	−0.6	115.1	+2.0	+1.8	15.3
1960	0.5	4.60	1.3	+1.0	112.2	+1.7	+1.8	15.8
1961	2.2	4.70	0.8	+0.6	114.9	+2.0	+1.2	15.4
1962	2.7	2.80	0.7	+0.1	107.1	+1.0	−0.2	14.7
1963	1.4	6.70	0.8	−1.0	111.5	+1.6	+0.5	15.3
1964	1.2	5.40	0.8	−1.2	110.4	+1.5	+0.4	15.5
1965	2.1	2.80	0.7	−1.9	101.8	+0.3	−1.1	15.6
1966	2.0	−0.30	0.7	−1.5	110.9	+1.6	+0.3	16.5
1967	0.4	5.50	2.1	−3.2	123.9	+3.4	+2.3	17.6
1968	−0.2	7.50	1.5	−1.7	122.7	+3.4	+2.5	18.7
1969	1.1	5.00	0.9	+0.2	115.9	+2.6	+1.5	19.0
1970	3.1	3.10	0.7	−0.6	114.3	+2.3	+0.7	18.5
1971	4.7	4.30	0.8	−1.4	113.2	+2.1	+0.4	18.1
1972	4.6	4.80	1.1	−0.9	115.8	+2.5	+0.5	18.1
1973	6.6	9.70	1.2	−0.1	122.7	+3.6	+1.5	19.4

Column 1: Year.

Column 2: Consumer price index, change (percent) from previous year. Data source: Statistisches Bundesamt, Lange Reihen (online source).

Column 3: Gross domestic product (real), change (percent) from previous year. Data source: Statistisches Bundesamt, Jahrbuch 2017 (online source).

Column 4: Unemployment rate (in percent). Data source: Deutsche Bundesbank (1988, 4).

Column 5: Budget balance (in percent) of all territorial authorities including social security systems. Data source: Deutsche Bundesbank (1988, 236).

Column 6: Ratio of exports over imports (in percent). For example, the entry for 1950 indicates that the amount of the exports equaled 73.7 percent of the imports. Own calculation on the basis of nominal export and import data (source: Deutsche Bundesbank 1988, 5).

Column 7: Nominal trade surplus as percent of nominal GDP. Own calculation based on the data in Deutsche Bundesbank (1988, 5).

Column 8: Nominal current account surplus as percent of nominal GDP. Own calculation based on the data in Deutsche Bundesbank (1988, 5).

Column 9: Nominal exports as percent of nominal GDP. Own calculation based on the data in Deutsche Bundesbank (1988, 5).

Table A2 Rediscount rate (percent) of the Bundesbank<sup>1</sup>, 1948–1973<sup>2</sup>


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1 July 1948: 5.0	20 January 1961: 3.5
	5 May 1961: 3.0
27 May 1949: 4.5	
14 July 1949: 4.0	22 January 1965: 3.5
	13 August 1965: 4.0
27 October 1950: 6.0	
	27 May 1966: 5.0
29 May 1952: 5.0	
21 August 1952: 4.5	6 January 1967: 4.5
	17 February 1967: 4.0
8 January 1953: 4.0	14 April 1967: 3.5
11 June 1953: 3.5	12 May 1967: 3.0
20 May 1954: 3.0	18 April 1969: 4.0
	20 June 1969: 5.0
4 August 1955: 3.5	11 September 1969: 6.0
8 March 1956: 4.5	9 March 1970: 7.5
19 May 1956: 5.5	16 July 1970: 7.0
6 September 1956: 6.0	18 November 1970: 6.5
	3 December 1970: 6.0
11 January 1957: 4.5	
19 September 1957: 4.0	1 April 1971: 5.0
	14 October 1971: 4.5
17 January 1958: 3.5	23 December 1971: 4.0
27 June 1958: 3.0	
	25 February 1972: 3.0
10 January 1959: 2.75	9 October 1972: 3.5
4 September 1959: 3.0	3 November 1972: 4.0
23 October 1959: 4.0	1 December 1972: 4.5
3 June 1960: 5.0	12 January 1973: 5.0
11 November 1960: 4.0	

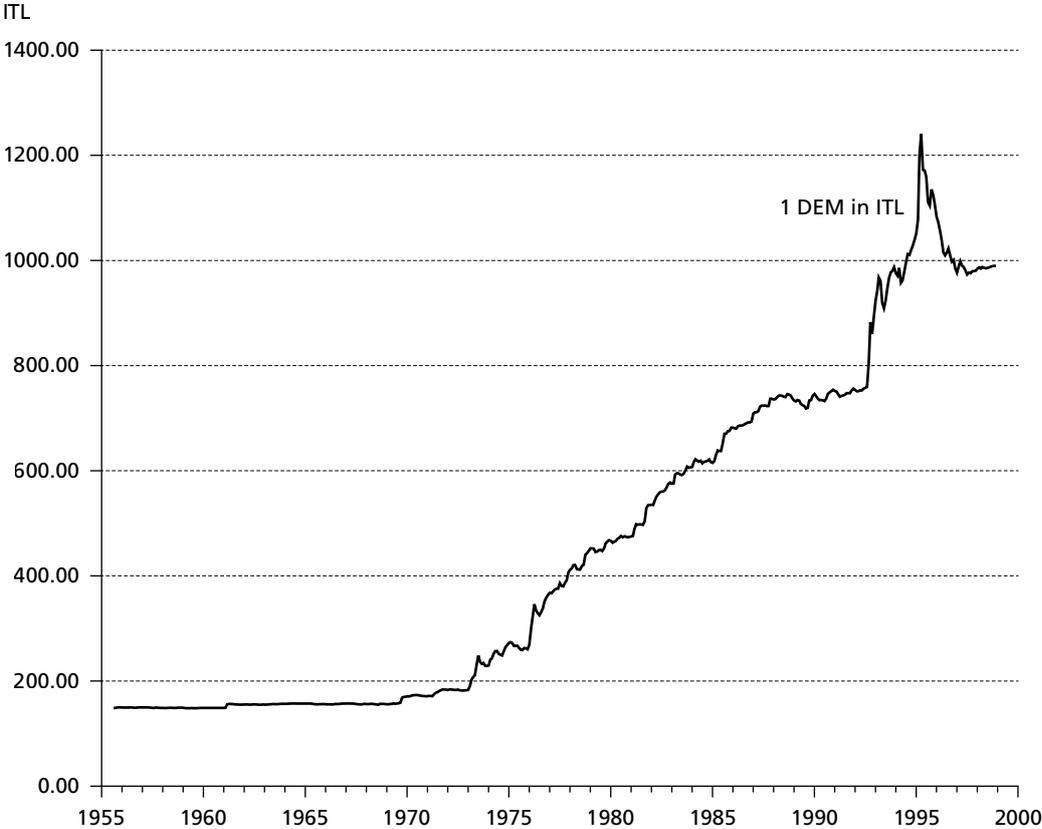
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Data source: Deutsche Bundesbank (1988, 200).

1 until 1958: Bank deutscher Länder.

2 until March 1973.

Figure A1 Lira-mark exchange rate, 1955-1999



Source: Wikipedia.

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