

Two centuries of currency policy in Austria

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This paper is devoted to currency policies in Austria over the last 200 years, attempting to sketch historical developments and uncover regularities and interconnections with macroeconomic variables. While during the 19th century the exchange rate resembled a kind of technical relation, since World War I (WW I) it has evolved as a policy instrument with the main objectives of controlling inflation and fostering productivity. During most of the 200-year period, Austrian currencies were subject to fixed exchange rates, in the form of silver and gold standards in the 19th century, as a gold-exchange standard and hard currency policy in much of the 20th century, and with the euro as the single currency in the early 21st century. Given Austria's euro area membership, national exchange rate policy has been relinquished in favor of a common currency which itself is floating vis-à-vis third currencies. Austria's predilection for keeping exchange rates stable is due not least to the country's transformation from one of Europe's few great powers (up to WW I) to a small open economy closely tied to the large German economy.

JEL classification: E58, F31, N13, N14, N23, N24

Keywords: currency history, exchange rate policy, central bank, Austria

When the *privilegierte oesterreichische National-Bank* (now Oesterreichische Nationalbank – OeNB)² was chartered in 1816, the currency systems of major nations were not standardized by any formal agreement, although in practice a sort of specie standard prevailed. Functioning bullion markets and the absence of capital restrictions produced roughly constant bilateral exchange rates of participating gold or silver currencies. With the introduction of paper money and the practice of coinage debasement, financial breakdowns often mirrored the abuse of the currency system for government financing purposes. Measurable changes in currency prices were overwhelmingly the result of wars and revolutions and their impact on government finance and inflation.

Repeated crises, which were already occurring during the gold standard period of the late 19th and early 20th century and which were aggravated by the experience of the unstable interwar period, sparked the discussion on fixed

versus flexible exchange rates. During most of the period considered here, Austrian currencies were subject to fixed exchange rates, in the form of silver and gold standards in the 19th century, as a gold-exchange standard in much of the 20th century and with the euro as the single currency in the early 21st century. In between, brief phases of exchange rate flexibility prevailed (e.g. following the end of the Bretton Woods system), but before long they would give way to another peg system, including Austria's renowned hard currency policy and, later, euro area membership.

Section 1 briefly reviews the possible role of the exchange rate as an economic policy instrument. The subsequent two sections, which rely heavily on Jobst and Kernbauer (2016) and Butschek (1985), are devoted to the development of currency relations in Austria and their linkages to the rest of the economy: Section 2 deals with the era before World War I (WW I) and section 3 with exchange rate policies

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² In this contribution, "OeNB" will be used as an abbreviation for the various names the OeNB had in the course of its 200-year history, including the Austro-Hungarian Bank.

Refereed by:
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and their effects after WW I and up to the present day. Section 4 examines the interaction of exchange rates and other economic policy variables such as inflation, fiscal balances and external accounts. Section 5 summarizes. Why choose WW I as the dividing line between sections 2 and 3? This is because in the earlier period, exchange rate policy was confined to managing currency relations around essentially fixed parities, whereas thereafter it has been utilized as an active element in steering the macroeconomy. Also, before WW I the dominating policy goal was to balance the external accounts, while thereafter internal targets such as economic growth and full employment came to the forefront.

1 The exchange rate as a policy tool

Exchange rate policy in the modern sense gained importance only after the decline of the classical gold standard during WW I. In previous times, various precious metals had been used as currencies, often regardless of national borders. The prices of silver and gold were formed on the world market and, together with the gold and silver content of a regional coin, they defined the price of that coin in terms of another region's coin. Such relative prices were independent of considerations concerning the economic position of the respective region. In fact, the metal standard acted as an external anchor for the currency. Currency prices represented technical relations; they were not (yet) utilized as policy instruments. Public authorities were involved, though, when a currency's parity was determined, i.e. the number of face-value coins to be minted from, say, a pound of silver, or later on the number of silver ounces to be exchanged for a unit of paper currency.

An early form of currency policy occurred when paper money and coinage debasement eroded the value of a currency, with the effect that the intrinsic value of a coin or banknote sagged below its face value. When a currency's link to specie gets lost, the currency's credibility must be furnished by the economic fundamentals and credible economic policies of the issuing country, or at least by binding legal restrictions on its asset holdings. Currencies then become national entities, and the exchange rate a measure of the relative economic strength of two nations. With the varying importance of specie coins, paper money and foreign exchange, various monetary regimes have evolved:

- bimetallism in the early 19th century;
- the classical gold standard in the late 19th and early 20th centuries;
- a variety of fixed and floating exchange rate regimes in the turbulent interwar period;
- the Bretton Woods system of gold-based fixed but adjustable exchange rates; and
- generalized floating thereafter, which also comprises the era of regional monetary integration in Europe.

These periods may also be differentiated by their regime of capital restrictions: Free capital movements had a limited, though growing, influence during bimetallism and the gold standard and have been a typical characteristic of the post-Bretton Woods managed floating system, while capital controls prevailed during the interwar period and in the early years of the Bretton Woods system.

Under the heading "exchange rate policy," two theoretical strands may be investigated: (1) determinants of exchange rate changes (the flexible exchange rate as endogenous variable); (2) expected consequences of steering the

exchange rate for the rest of the economy (the exchange rate as exogenous variable).

When investigating exchange rate determination in the long run (short-run variations are not the focus of the current paper), major textbook explanations, which are not mutually exclusive, are:

- The purchasing power parity (PPP) theory, which asserts that, in the absence of market distortions, the (floating) nominal exchange rate between two currencies reflects the relative price levels (of traded goods) in the two countries in question; for changes over time it means that a country with comparatively high inflation would experience a depreciating currency.
- Relative prices are often just mirroring the underlying monetary conditions, with the implication that under a floating regime excessive money supply will fuel inflation and generate a currency depreciation. If long-term capital transactions are also considered (portfolio balance approach to exchange rate determination), a relative decrease in domestic long-term interest rates will entail capital outflows and currency depreciation.
- With regard to the real sector of the economy, structural differences between two countries may complement the price effects and determine the development of real exchange rates. Relative increases in home productivity or shifts in consumer preferences from foreign to domestic goods would thus tend to appreciate the real exchange rate.

Turning the relation on its head, what are major long-run channels of exchange rate changes to the rest of the economy?

- A change in the exchange rate immediately alters the terms of trade, the

dynamics and the eventual impact on domestic inflation depending on the pass-through effect. A dominant objective of pegging the exchange rate to a stable anchor – be it a precious metal or a foreign currency – is thus to control price developments. During the silver and gold standard periods, the aim was to preserve credibility and the value of the currency. In the case of Austria's hard currency policy, the goal was to suppress cost increases and thereby also induce advances in productivity.

- Via the terms-of-trade effect, a currency depreciation is perceived to contain or reduce a deficit in the current account, with price elasticities of import and export demand determining the dynamics (J-curve effect) and final result (Marshall-Lerner condition). Textbook theory also considers the effects of this result on domestic spending behavior and capacity constraints (absorption approach) as well as monetary conditions.

In practice, exchange rates have at different times been used as a policy tool for different purposes. Dominant goals of steering nominal exchange rates have been to dampen exchange rate variability and to diminish price increases, as was the case during Austria's hard currency policy period. Real exchange rates can only be targeted indirectly through nominal exchange rates and price developments. Real depreciation would contribute to improving competitiveness and thereby reduce a deficit in the current account. In the short run, changes in exchange rates have often been used as shock absorbers to mitigate the impact of external shocks on the real sector of the economy. This function requires that changes in nominal exchange rates eventually show up as changes in the real exchange rates.

With respect to empirical realizations, the theoretical hypotheses suggest that in the long run one-way relationships are rare, and one will rather observe a co-movement of exchange rates and other economic variables. However, the relationships mentioned here are setting the stage for the following historical overview and for the empirical investigation in section 4.

2 Currency relations prior to WW I

The transition to the 19th century is characterized by a gradual formation of national currencies, linked together by international prices of precious metals and liberal financial markets. Still mirroring to some extent mercantilist ideas, economic policy at this time was largely oriented toward keeping the balance of payments in order. The prevailing specie standards secured constant bilateral exchange rates, as price fluctuations in the bullion markets did not alter the relative currency values. Exchange rates did thus not play a significant role as a policy tool. It was only the erratic, though gradually increasing, emission of paper money as an easy means of war and budget financing that provided a link to politics via inflation. Exchange rate policy was confined to keeping fluctuations in currency prices low.

2.1 Early 19th century: War financing, paper money and national bankruptcy

During the Napoleonic wars and the subsequent war reparations, the original redeemability of Austrian paper money (*Bancozettel*) in silver coins (florin *Conventionsmünzen*) was revoked. Between 1804 and 1808, the circulation of paper money multiplied and massive inflation occurred. The small silver premium against *Bancozettel* widened rapidly after 1806 and

had climbed to some 500% by 1811. Eventually, national bankruptcy was declared in 1811 and a currency reform initiated. *Bancozettel* were devalued by 80% and had to be converted into *Wiener Währung*, a new government paper money. Although the amount of *Wiener Währung* in circulation was restricted, the reform was jeopardized by another new paper currency, the “*Antizipationsscheine*,” which were issued from 1813 to anticipate the expected revenues from a new land tax. In effect, too many *Antizipationsscheine* were put in circulation without prior communication to the general public, thereby eroding confidence in the expected results of the currency reform. To restore convertibility of *Wiener Währung* into *Conventionsmünze*, in 1816 the newly-founded OeNB was endowed with a monopoly for printing banknotes and with a certain degree of independence from the state administration, although state financing was not explicitly prohibited. As stated by Jobst and Kernbauer (2016: 52), “retiring government paper money and replacing it with banknotes convertible into silver was the primary objective of the authors of the decree of 1816.”

The currency reform took many years and was barely completed when the revolution of 1848 swept over to Austria. The banking system collapsed, and the OeNB covertly stepped in to finance the government by printing new money. When this was made public, a run on silver coins again ended convertibility, initiating a law which declared paper money as legal tender. The printing press was repeatedly activated, as the Habsburg empire aspired to be counted among the big European players. However, neither the Austrian economy nor the military machinery would support such ambitions. As a result, the silver premium of the florin

fluctuated widely, peaking at some 50% in the course of the year 1860.

2.2 From silver to gold

The florin *Conventionsmünze* (fl. CM) remained in circulation until 1857, when the Habsburg monarchy joined forces with the “Deutscher Zollverein” (German Customs Union) to reduce currency diversity by adopting the “Vereinstaler,” a standard silver coin to be used as a common currency based on the rules of a full silver standard. The changeover to the new “österreichische Währung” (ö.W.) resulted in a minor devaluation (fl.1 CM = fl.1.05 ö.W.). The florin ö.W. remained legal tender until 1901.

To underpin the currency reform, a transition from fiscal dominance (financing the state) to monetary dominance (monitoring the interest rate) was initiated by the “Plenersche Bankakte” or Bank Act (Jobst and Kernbauer, 2016). The Bank Act, effective from the beginning of 1863, strengthened the OeNB’s independence, redefined the coverage of banknotes by either discount operations (for up to fl. 200 million) or silver (for the rest of the banknotes in circulation), and set a tight timetable for the reduction of government debt.

Following the war defeat of 1866 against Prussia, Austria again slipped into huge budget deficits, an increasing tax ratio and an expansion of the money supply. Speculative financial market activities around the world fair in Vienna eventually led to the collapse of the stock market in 1873. The rapid dissemination of the classical gold standard caused the market price of silver to tumble so much that by 1879 a discount situation emerged, i.e. paper money became more expensive than

silver coins. As a consequence, the central bank was swamped with silver ingots for coining, which induced the decision to terminate the specie coverage of currency altogether. In the years to follow, until the first half of the 1890s, the florin was maintained as a paper currency, which is considered an early appearance of a flexible exchange rate (Flandreau and Komlos, 2001; Chaloupek, 2003).

When the Austro-Hungarian dual monarchy was established in 1867, a switchover from silver to the gold standard was discussed. Crown gold coins had already been minted since 1857 and used mostly in cross-country payments, and in 1862 the OeNB had been authorized to invest in gold as a basis for money in circulation. However, it was not until 1892 that the dual monarchy changed from a silver parity to a gold parity: 1 florin (100 kreuzer) of the old silver currency was set equal to 2 crowns (à 100 heller) of the new gold-based currency. Although gold convertibility was never fully implemented, the Austro-Hungarian Bank intervened in the foreign exchange market to stabilize the crown’s exchange rate against gold standard currencies. As of 1896, this moved Austria-Hungary de facto to a gold-exchange standard (Yeager, 1998). Flandreau and Komlos (2001) consider the period from 1896 to 1914 a successful early experiment in creating an exchange rate target zone with a credible parity and narrow, though not prespecified, margins. From 1910 onward, the OeNB was obliged, as an anti-inflation device, to maintain a stable exchange rate of the crown vis-à-vis other major currencies. With hindsight, this period resembles Austria’s hard currency policy of the late 20th century.

3 Exchange rate policies after WW I

At the *end of WW I*, the monetary regime of the Austro-Hungarian monarchy collapsed, and economic policy had to be oriented toward new objectives. External equilibrium considerations retreated into the background, while stabilizing the internal economy by reducing public debt and inflation and restoring production capacities became top priorities. With the end of the classical gold standard, the exchange rate was also discovered as an economic policy instrument, and countries began to experiment with a return to some form of gold standard on the one hand, and with flexible exchange rates on the other. The value of a currency would no longer necessarily be linked to the amount of specie in the vaults of the central banks, but more and more to the economic fundamentals of an economy, such as internal and external stability and total factor productivity.

3.1 Interwar consolidation period: from soft to hard currency

During WW I, financing for the exploding government expenditures of the Austro-Hungarian monarchy was largely acquired through war bonds. The resulting massive increase in the money supply pushed up inflation and caused the exchange rate of the crown to depreciate. At the end of the war, the Austro-Hungarian Bank attempted to maintain a common currency with the other successor states of the former monarchy, but failed when Yugoslavia and Czechoslovakia started to stamp their own banknotes. To avoid an uncontrolled influx of unstamped paper crowns, Austria, in now starkly reduced territorial confines, had to follow suit. The war-ridden economy continued to face enormous budget deficits and inflation which in 1921 turned into

hyperinflation. The value of the paper crown collapsed. A turnaround was brought about in October 1922 when, under the auspices of the League of Nations, the “Geneva Protocol” was signed, committing Austria to remain an independent state, to prepare for the issuance of international bonds (the “Völkerbundanleihe”) on the basis of the old gold crown of 1914, and to commence a major institutional reform including a stop on government financing via the central bank. The reform program immediately stabilized the inflation rate as well as the exchange rate. It included the emergence in 1923 of the OeNB out of the former Austro-Hungarian Bank, and a changeover, as of March 1925, from the crown to the Austrian schilling (10,000 crowns = 1 Austrian schilling), which remained pegged to gold (at 0.21172086 grams of fine gold to 1 schilling). However, Austria did not formally join other countries (e.g. the U.S.A., the United Kingdom, France and Italy) in reviving the prewar gold standard, but instead pursued an independent peg to gold, backed by foreign exchange controls. A major task for the OeNB was to secure a stable value for the currency compared with other enduring currencies with the eventual aim of returning to some variety of the gold standard (Jobst and Kernbauer, 2016).

The international turbulence on stock exchanges did not become manifest in Austria until May 1931, when *Creditanstalt* went bankrupt. The disclosure by *Creditanstalt* of heavy losses in 1930 triggered a bank run which could only be managed by massive liquidity assistance from the OeNB and a government guarantee for all *Creditanstalt* deposits. Inflation expectations increased, capital flight began, and the OeNB lost almost all of its foreign exchange. While the OeNB maintained

the gold parity of the schilling, the re-introduction of foreign exchange controls³ in October 1931 sparked a gold premium which had surged to some 28% at the end of 1931 and 33% by June 1932. The OeNB raised the discount rate step by step to 10% in early 1932. A full return to gold parity would have required massive price and cost reductions, which seemed out of reach (Kernbauer, 1991). Eventually, as major countries abandoned the gold standard (starting with the United Kingdom in September 1931), the schilling was devalued against gold by 22% in July 1932 (März, 1990).

Irrespective of this rather short phase of a weak exchange rate, the longer-term performance of the schilling was quite remarkable and yielded it the nickname “Alpendollar” (Alpine dollar). This was underpinned by continuing foreign exchange controls (in effect until 1935) and by rather moderate budget deficits. The shrinking money supply (M1 contracted from 4.0 billion schillings in 1928 to 2.2 billion schillings in 1934) was largely due to the reluctance of commercial banks to extend credit to the private sector. The OeNB perceived its monetary policy as not restrictive, as the monetary base increased slightly and the discount rate could be lowered again. When in 1936 a number of countries (among them members of the ailing “gold bloc,” France, Italy and Switzerland) devalued their currencies, Austria, in an attempt to counter inflation expectations, abstained from a comparable measure and focused instead on accompanying deflationary measures. Thanks to the perceived stability of the schilling, financial supervision by the League of Nations

was terminated in 1936 (Kernbauer, 1991, Klausinger, 2006).

In March 1938 Austria was occupied and integrated into the Third Reich. In a first step the German reichsmark was introduced as the new currency, and the schilling was exchanged at the rate of 1.5 schillings per reichsmark (revalued from previously 2.17 schillings per reichsmark). The functions of the OeNB as a central bank were suspended and its gold reserves transferred to the German Reichsbank. The schilling/reichsmark relation has later been gauged appropriate with respect to relative wages (Butschek, 1985) and relative prices (Kernbauer, 1991).

3.2 From a war-ridden economy to the Bretton Woods system

During World War II (WW II), when the Bretton Woods system was negotiated, there was an overwhelming feeling among participants that economic stability could only be restored via some sort of gold-exchange standard. In effect, participants designed a system with fixed but adjustable exchange rates and capital controls, though with a commitment to gradually render currencies convertible for current account transactions, while “corner solutions” (rigid fixing or freely floating rates) were rejected.

Austria needed almost a decade to overcome postwar inflation and fiscal imbalances, and to restore trade links and convertibility of the schilling as preconditions for joining the gold-based Bretton Woods system. Immediately after WW II, the exchange rate of the schilling was arbitrarily set by the occupation forces to an overvalued 10 schillings per U.S. dollar, and for-

³ *The spreading banking crisis had led to the introduction of foreign exchange controls in Germany as early as in July 1931.*

eign exchange transactions for exports and imports had to be authorized. In parallel, “grey” market notations resulted de facto in an undervaluation of the schilling which, however, was gradually eaten up by swelling inflation. Exporters switched to compensation contracts and premium contracts, thereby engendering a system of multiple exchange rates.

Among the immediate efforts to stabilize the war-ridden economy were a series of currency-related laws restoring the functions of the OeNB as of 1922, reducing money in circulation by 60% and limiting the usage of the other 40% to purchases of vital goods only – thereby also preparing for the change-over from the reichsmark to the schilling. In spite of these measures, inflation surged from 26% in 1946 to 96% in 1947. To achieve stabilization, a first wage and price agreement was negotiated between the social partners in July 1947 (four more were to follow by 1951). In November 1947, as a precondition for access to the European Recovery Program, a further reduction of money in circulation was accomplished (exchanging 3 “old” schillings for 1 “new” schilling), which caused the market premium over the “official” schilling exchange rate to dwindle rapidly.

In August 1948, Austria became a member of the Bretton Woods institutions by pledging to ease foreign exchange restrictions and abandon the dual exchange rate system. In November 1949, the foreign exchange system was simplified with the effect that, in addition to the devaluation of the “official” exchange rate (now at the “basic rate” of 14.40 schillings per U.S. dollar), a “premium rate” of 26 schillings per U.S. dollar (close to the market rate) was established. For many transactions this was tantamount to a loss of

subsidies and an increase in prices. The reform was not completed until May 1953, when the schilling was effectively devalued by establishing a unitary exchange rate at the level of the premium rate. In a parallel development, Austria gradually relinquished the restrictive postwar foreign trade regime by gradually following the liberalization efforts of the General Agreement on Tariffs and Trade (GATT) and the Organization for European Economic Co-operation (OEEC). In 1953 trade in goods and services was liberalized, and this move was trailed by a stepwise liberalization of cross-country financial flows. The schilling only became convertible for foreigners in 1959, with full convertibility being achieved in 1962.

When in 1955 the Federal Act on the Oesterreichische Nationalbank (Nationalbankgesetz) was amended, the main objective of the OeNB’s schilling policy was changed from introducing a gold standard to preserving internal purchasing power and maintaining external value in terms of stable foreign currencies. At the same time, the OeNB’s independence was strengthened and its operational spectrum enlarged to include open market operations and minimum reserve requirements.

Inflation in the late 1950s and early 1960s was moderate and not as high as in other partner countries. As the real economy flourished and the current account developed favorably, the parity of 26 schillings per U.S. dollar was never endangered until the gold convertibility of the U.S. dollar ended in August 1971.

3.3 Stepwise approach to a hard currency policy

The collapse of the Bretton Woods system turned out to be an extended and painful experience, lasting from the

end of U.S. dollar convertibility (August 1971) to the approval of generalized floating (March 1973). Although flexible exchange rates relieved many countries from balance of payments strains, this period is also characterized by high exchange rate variability. To make up for the loss of gold as an anchor, central bank independence was emphasized and inflation targeting adopted as a new state of the art for a stability-oriented monetary policy strategy. In the European Union (EU) this revived the dormant project to create, at least for a large number of Member States, the euro area as a regional fixed exchange rate bloc. The international financial crisis of 2008, and in its wake the euro area sovereign debt crisis, have once again called into question the meaningfulness of fixed exchange rates for countries with strongly diverging economic fundamentals.

To contain the drawbacks of floating exchange rates in general, and to alleviate price increases in particular, Austria was among the first countries to adopt a “hard currency policy” (Handler, 1989, 2007). Already in May 1971, the monetary authorities had swung from balancing the current account to dampening inflationary pressures through revaluing the schilling by some 5%. Anti-inflationary arguments were also advanced when (1) the OeNB invented a composite currency Indicator to define the benchmark for the schilling exchange rate in August 1971; (2) the schilling was leaning toward the European “snake” currencies in an attempt to reduce exchange rate volatility within the “tunnel” of the Smithsonian Agreement from April 1972; and (3) the Deutsche mark replaced the snake currencies as the guideline for the schilling exchange rate from July 1976 (Schmitz, 2016).

The first oil price crisis and the international recession of 1975 showed up in the large current account deficits of 1976/77. As a remedy, fiscal policy turned restrictive and the OeNB changed its focus to stabilizing the depreciation of the real effective exchange rate (REER), an endeavor in which it was aided in any case by the deteriorating exchange rate of the U.S. dollar. In nominal terms, the OeNB attempted to secure the credibility of the schilling by reducing the variability of the schilling/Deutsche mark relationship which, from mid-1981, was practically nil. Afterward, when divergences in the economic development of Austria and Germany surfaced, exchange rate stability was bought via an interest rate premium in Austria over Germany.

In the EU, the 1990s were largely devoted to achieving the preconditions for taking part in the stepwise process of Economic and Monetary Union (EMU), among other things by completing the liberalization of international capital transactions (Nauschnigg, 2003). The credibility of a stable exchange rate was thereby upheld and was tested only once, when in August 1993 a speculative attack on the schilling was countered by the OeNB without major strain. Overall, the hard currency policy helped Austria to achieve and maintain price stability without obvious negative side effects on economic growth and employment.

3.4 Smooth transition to the single European currency

At the beginning of 1995 Austria joined the EU, aspiring to participate in all steps toward completing EMU. Adopting the euro from its start in 1999 meant that Austria would relinquish the schilling in favor of becoming a member of a large currency union comprising its most important trading part-

ners. The single currency is equivalent to an irrevocably fixed exchange rate and implies that balance of payments strains now have to be borne via adjustments in the internal economy.

The euro has become one of the dominating currencies in international financial markets with flexible exchange rates vis-à-vis other currencies. The euro's exchange rate developments have been a function of the international relations between major economic areas, most importantly between Europe and the U.S.A. Since 1999, large exchange rate swings have occurred, with the euro appreciating by some 85% from June 2001 to July 2008, and thereafter depreciating by some 32% up to November 2015.

Exchange rate policy in the euro area is a shared competency of the Eurosystem and the EU Council. The former handles the daily interventions on foreign exchange markets while the latter is responsible for the general orientation of the exchange rate system after consulting the European Central Bank (ECB). The OeNB is a member of the Eurosystem and has a seat on the Governing Council of the ECB.

4 Interactions between exchange rates and other policy variables

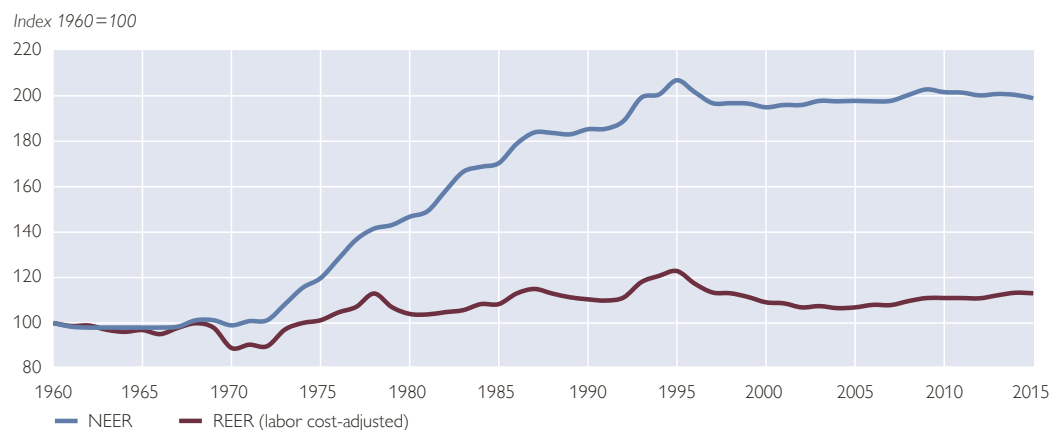
Subject to the availability of reliable historical data, this section provides an overview of 200 years of exchange rate development in Austria in relation to the development of prices, fiscal balances and public debt as well as monetary and real sector variables.

4.1 Long-term effective appreciation in nominal and real terms

To capture the whole exchange rate spectrum of a country's trade relations, *effective* (trade-weighted) *nominal* and *real exchange rates* (NEER and REER) would have to be considered. An appreciation of the REER (i.e. a loss in relative competitiveness) results from either an appreciation of the NEER or a relative increase in domestic prices. As chart 1 reveals, since the end of the Bretton Woods system and up to the mid-1990s the schilling significantly appreciated in nominal terms (more than 100%) as well as in real terms (some 30%), reflecting predominantly Austria's hard currency policy with its explicit aim of wage and price moderation and productivity gains. In the mid-

Chart 1

Nominal and real effective exchange rates for Austria from 1960 to 2015



Source: AMECO.

1990s this general trend came to an end when, in the run-up to the common currency, budget deficits were reduced and the relative labor cost position improved. Overall, the much faster nominal appreciation indicates that deteriorating price competitiveness stemming from the increase in the NEER was partly compensated by a decrease in relative costs and prices. Since the turn of the century, NEER and REER movements have been closely correlated, which means that internal and international prices have developed virtually in tandem.

4.2 Inflation and exchange rates

According to the monetary approach to exchange rate determination, excessive relative money supply will cause a currency to depreciate. It also raises inflation expectations and over time in-

flation per se. Over the long period considered here, nonwar periods have been characterized by broadly parallel developments of moderate inflation and reasonably stable exchange rates, while marked interruptions occurred during wars (Napoleonic wars, 1866 Prussian War, WW I, WW II) and in the context of currency reforms. While until the end of WW II inflationary periods were often succeeded by deflation, in the era since no protracted deflation has occurred in Austria (table 1).

For the old silver-based florin *Conventionsmünze*, fluctuations in the market price of silver resulted in deviations of the market value of a silver coin from its face value. When paper currency began to play a role in money supply, a silver premium expressed the relative credibility of silver coins against banknotes and state notes. This was the

Table 1

History of inflation and exchange rates in Austria

Period	Inflation history	Inflation rate		Exchange rate history
		Average annual change in %	Standard deviation	
1812–24	Deflation	–4.8	6.5	Currency reforms, stable silver premium after 1818
1825–44	Price stability	0.3	3.6	Stable silver premium
1845–63	Moderate inflation	3.0	5.6	Fluctuating silver premium
1864–73	Deflation compensated by subsequent inflation	0.7	4.1	Widely fluctuating silver premium
1874–1904	Moderate deflation until mid-1890s	–0.6	2.1	Silver discount, gold parity from 1892
1905–14	Moderate inflation	2.1	2.1	Gold parity maintained
1915–24	WW I and hyperinflation	381.5	878.2	Massive crown depreciation
1925–45	Virtual price stability	1.0	2.9	Currency reform, gold parity of schilling upheld, from 1938 reichsmark as new currency
1946–52	Post-WW II inflation	31.3	29.1	Currency reform, multiple exchange rates
1953–70	Moderate inflation	2.8	1.5	Fixed exchange rate vis-à-vis the U.S. dollar
1971–81	Austro-Keynesianism, inflation, oil price crises	6.3	1.9	Post-Bretton Woods uncertainty, Austria turning to “hard” Deutsche mark as anchor
1982–98	Moderate inflation	2.9	1.3	Hard currency policy
1999 to present	Inflation at ECB target	1.9	1.1	Single European currency

Source: Author's specifications.

case in Austria during the Napoleonic wars, when the original credibility of paper money was lost due to an excessive use of the printing press. Thereafter, the silver premium was closely linked to external and internal political turbulences and related developments in government finances. In 1818, the premium peaked at 12 times its prewar level, and it was only stabilized, in parallel to a significant deflation, when the currency reform of the newly-founded OeNB was implemented.

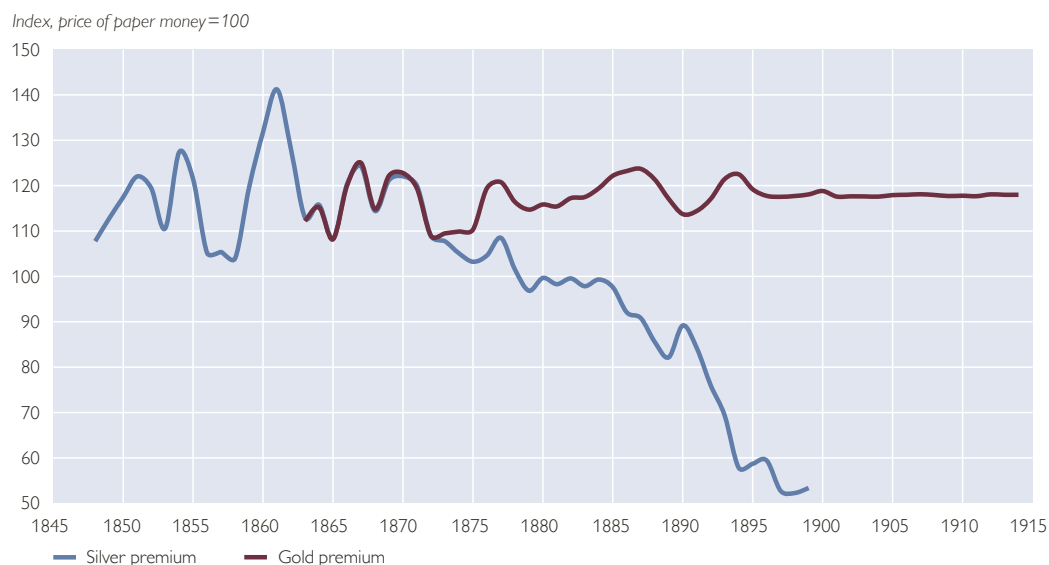
Repeated government interventions to increase the money supply were mirrored in the erratic movement of the silver premium. After the paper florin had been debased from silver in 1848, the premium fluctuated widely from a low value of just 5% in 1856–58 to some 40% in 1861. The low premium episodes are explained in Pressburger (1966) by a number of special factors including (1) the reduction of banknotes in circulation (1865 and 1874–1876); and (2) the preparation of the Vienna Currency Convention of 1857 and the

following currency reform which brought silver convertibility to the new Austrian florin (for the years 1856–1858). The premium turned to a discount in 1879 and remained close to zero until 1886. Because of a dwindling silver price in terms of gold, the silver discount widened substantially to some 50% toward the end of the 19th century. Following the change in 1892 from the silver florin to the gold crown as a new currency, the gold parity was maintained until WW I (chart 2).

Attempts to find simple associations over the period from 1970 to 2015 between the current account (as a percentage of GDP) and effective exchange rate developments have not delivered meaningful results. Taking three-year averages, there is just a very weak negative correlation ($R^2=0.04$) between the current account as defined above and percentage changes in the REER, and only for the subperiod from 1970 to 1993. Interestingly, for the subperiod from 1994 to 2014, the correlation turns positive ($R^2=0.20$). It is quite

Chart 2

Silver premium (1848–1899) and gold premium (1863–1914)



Source: AMECO.

possible that the signing of the Maastricht Treaty in 1992 and the reforms following the European currency crisis of 1993 produced sustainable current account surpluses which were not thwarted by real exchange rate appreciations. However, a more convincing interpretation would require additional analytical work.

There is also a possible interconnection between current account developments and developments in relative interest rates: Whenever the current account posts an increasing deficit, a rise in the domestic interest rate could, *ceteris paribus*, counter an incipient depreciation. Actual data for the period from the early 1970s to the late 1990s reveal rather weak negative correlations between relative bond yields (the difference of secondary market yield data of ten-year Austrian government bonds and, alternatively, German and U.S. rates) and current account balances. Only in the following period after euro adoption are the substantial current account surpluses unequivocally accompanied by comparatively low interest rates in Austria.

In the post-WW II era, the inflationary phases of the 1970s and early 1980s also produced comparatively high NEER growth rates, while since the mid-1990s moderate inflation has moved hand in hand with just small changes in the NEER.

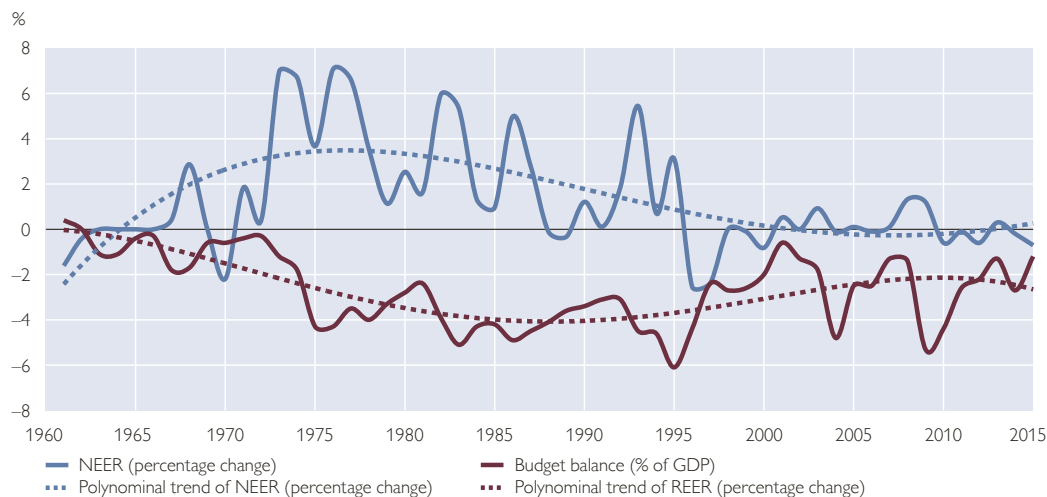
4.3 Public finances, external accounts and the real sector

Whenever the printing press is involved, there is also an obvious connection between the financing of government budgets and inflation. In Austria this is particularly true for the early 19th century. In recent decades, cover-

ing the hard currency policy and the period following euro adoption, budget deficits have often been anticyclical, which means that earlier war financing has been replaced by fights against economic slack and unemployment. Since the late 1960s, as a rough trend, increasing budget deficits as a percentage of GDP have been associated with appreciations of the NEER and vice versa (chart 3). Theory is ambiguous about a positive or negative association between the two variables, but it is widely accepted that growing budget deficits may lead to higher domestic interest rates, which entail capital inflows and cause the domestic currency to appreciate.⁴ In the case of Austria's hard currency era with its virtually predetermined monetary policy, the contractionary impact from NEER appreciation was compensated by moving in an expansionary fiscal direction, which was in part corrected after joining the euro area. Another interpretation may run via third variables such as the state of the economy: In an ailing domestic economy automatic stabilizers rise and tax income suffers, thereby increasing the budget deficit, but this situation is also associated with dampened import demand, which improves the current account and entails a currency appreciation. However, there is also the well-known "twin deficits" hypothesis, according to which rising budget deficits will go hand in hand with rising current account deficits and thus lead to currency depreciation (Feldstein, 1986).

As mentioned earlier, for a long time real sector objectives, such as more GDP growth and lower unemployment rates, played at best an indirect role in monetary and exchange rate policies. This certainly holds for the

⁴ For an overview of theoretical arguments and empirical findings on the relationship between budget deficits and exchange rates, see Hakkio (1996) and Saleh (2003).

Nominal effective exchange rate and budget balance from 1961 to 2015(with polynomial trends of the 4th order)

Source: OeNB, AMECO and author's calculations.

19th century and for the early 20th century up to and including WW I. Interdependencies between exchange rates and the real sector became relevant in the interwar period with the outbreak of the Great Depression. In the post-WW II era the dominant policy intention was to adjust real sector variables, in particular productivity, in such a way as to steer the targeted average market exchange rate close to a perceived equilibrium exchange rate.

5 Summary

This paper investigates Austria's currency policies over the last 200 years, attempting to sketch historical developments and uncover regularities and interconnections with other economic variables. During much of the first 100 years under observation, Austria's exchange rate policy was targeted at establishing and maintaining the credibility of technical currency parities, in spite of activities like coinage debasement and excessive printing of paper money. Dramatic changes in the market values of currencies mostly resulted

from wars and war-related debt financing. During the 19th century the financing needs of belligerent countries were met primarily by printing money, literally by banknotes and state notes and by extending central bank credit to governments. In the aftermath of wars, currency reforms often became necessary to allow for a new start (as in 1811, 1859, 1866, 1925 and 1947).

In the years following WW I, exchange rate policy proper evolved as an active instrument of steering the macroeconomy with the main objectives of controlling inflation and fostering productivity advances. An early appearance of an anti-inflationary exchange rate policy came a few years before WW I when the OeNB was mandated to keep the exchange rate of the crown stable against other major currencies.

During most of the period considered here, Austrian currencies were subject to fixed exchange rates, in the form of silver and gold standards in the 19th century, as a gold-exchange standard in much of the 20th century, and with the euro as the single currency in

the early 21st century. In between, brief phases of exchange rate flexibility prevailed, such as for the paper florin in the 1880s and early 1890s and the post-Bretton Woods era of the early 1970s. Before long, however, they would give way to another peg system. A prominent form of linking the exchange rate to a stability anchor was the “hard currency policy” of the 1980s and 1990s, which served Austria well, allowing it to achieve the goals mentioned above without apparent negative

side effects. Given Austria’s adoption of the euro, national exchange rate policy has been relinquished in favor of a common currency which itself is floating vis-à-vis third currencies. Austria’s transformation from one of Europe’s few great powers before WW I to a small open economy closely tied to neighboring Germany thereafter largely explains the change from the early specie standards to a preference for stable rather than flexible exchange rate regimes.

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