II Austria-Hungary: from 1863 to 1914

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I MAJOR MONETARY EVENTS

I.1 FOUNDATIONS OF THE PRIVILEGIRTE OESTERREICHISCHE NATIONAL BANK

After the end of the Napoleonic Wars that had seen high inflation and sovereign default, Austria immediately began to put the monetary system back on a sound footing. The *Privilegirte Oesterreichische National-Bank* (OeNB, in the following also 'the Bank') was finally founded on 1 June 1816 as an independent and privately owned stock company with the exclusive right of issuing notes. The primary task of this new institution was to withdraw the devalued paper money, the florin 'Viennese currency' *(Gulden Wiener Währung, fl W.W.)*, from circulation and to issue banknotes that were convertible into silver on demand. The new currency was denominated in florin Convention coins *(Gulden Conventionsmünze, fl CM)*, defined by the 1753 convention between Austria and Bavaria that had formed the basis of the Austrian monetary system before the inflationary period. In the following decades, the newly created note-issuing bank succeeded reasonably well in stabilising the monetary system. While it contributed to financing the chronic budget deficit by discounting Treasury bills, it was able to keep a lid on the expansion of the money supply. By 1847, all remaining banknotes denominated in florin Viennese currency had been retired and replaced by new banknotes denominated in florin Convention coins (Pressburger 1976).

Until 1848, banknotes issued by the OeNB were not legal tender, yet they could be easily exchanged for metal currency at face value, so that they were widely accepted. However, the March revolution of 1848 shattered public trust in the banknotes and led to a rapid decrease of the bank's metal reserves as people rushed to convert banknotes into specie. In addition, military expenditures increased sharply. On 22 May 1848, the government declared the banknotes legal tender and soon started to issue paper money on its own, the so-called state notes *(Staatsnoten)*. As a consequence, bearers of silver florin demanded an agio – a premium – when exchanging them for state- or bank-issued paper money (Fellner 1911).

After the restoration of absolutist rule in 1849, stabilisation proved difficult, as a series of wars exacerbated the structural problems in public finances. The market price of full-bodied silver coins in terms of paper money fluctuated widely, with the agio on silver reaching 47% in 1854 during

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the Crimean War (Kamitz 1949, p. 129). Reforms under finance minister Bruck (1855–1859) were successful in rebuilding metallic reserves and in narrowing the agio. The paper money issued by the government following the revolution – a total amount of 150 million florin Convention coins – was converted into banknotes, and the remaining government debt at the OeNB was guaranteed by state-owned property (Maerz and Socher 1973, p. 326; Fellner 1911, p. 18, footnote 4).

In parallel to these stabilisation efforts, Austria aimed at a realignment of its monetary system with the other German states. In January 1857, the Vienna Coinage Treaty *(Wiener Münzvertrag)* with the German Customs Union *(Deutscher Zollverein)* was concluded. The treaty stipulated a harmonisation of coinage and the obligation to introduce full convertibility no later than 1 January 1859. Accordingly, the Convention currency was replaced by the new silver florin Austrian currency[3] *(Gulden österreichischer Währung, fl ö.W.)*, which was put in circulation in Austria on 6 September 1858 and in Hungary on 1 November 1858, respectively. Full convertibility seemed to have been achieved at last (Fellner 1911).

Stability was short-lived, however. A few months later, war broke out with France and Piedmont-Sardinia. The amount of banknotes in circulation increased again sharply. On 25 April 1859, the convertibility of banknotes into silver coins had to be suspended and was in fact never re-introduced until the break-up of the monarchy in 1918. The *agio* peaked at 53% in June 1859, the highest rate ever (Kamitz 1949, p. 129).

TABLE 1 Chronology of major monetary events

1816	Foundation of the privilegirte Oesterreichische National-Bank (OeNB).
1841	Re-chartering *(2nd Privilegium)*.
1857	Conclusion of the Vienna Coinage Treaty *(Wiener Münzvertrag)* with the German Customs Union *(Deutscher Zollverein)*.
1858	Florin Austrian currency replaces the florin Convention coin; the period of full convertibility of the new banknotes into silver coins lasts from 6 September 1858 until 29 April 1859 in Austria and from 1 November 1858 until 25 April 1859 in Hungary.
1862	The new bank act *(Plener Act)* extending the exclusive right to issue banknotes is passed. It comes into force in 1863 *(3rd Privilegium)*.
1866	Issuance of uncovered state notes to finance the Austrian-Prussian War; revocation of the Vienna Coinage Treaty of 1857.
1867	Austro-Hungarian Compromise *(Ausgleich)*, reorientation towards the Latin Monetary Union.
1878	Re-chartering *(4th Privilegium)* and reorganisation of the OeNB, which is renamed Austro-Hungarian Bank *(Oesterreichisch-ungarische Bank, OeUB)*.
1879	Suspension of the free coinage of silver.
1888	Re-chartering *(5th Privilegium)*.
1892	Gold standard legislation enacted.
1894	Redemption of uncovered state notes started (which lasted until 1907), state notes are replaced by the gold-backed crown currency *(Krone Währung)*.
1896	The OeUB assumes responsibility for managing the exchange rate.
1899	Re-chartering *(6th Privilegium)*.
1900	The OeUB and the imperial administration switch to accounting in crowns.
1911	Re-chartering *(7th Privilegium)*.
1914	Partial suspension of the bank charter after the outbreak of World War I in July.

Source: Authors' compilation.

[3] One florin Austrian currency was equivalent to 11 1/9 grams of fine silver. 100 florin Convention coins = 105 florin Austrian currency. Hereinafter in this chapter, the term florin (fl) always refers to the florin Austrian currency.

1.2 FROM THE BANK ACT OF 1862 TO THE REORGANISATION AS OESTERREICHISCH-UNGARISCHE BANK

The renewed severe currency disruption prompted the government to pass a new bank act[4] on 27 December 1862, the *Plener Act*, named after the then minister of finance. The third charter *(3rd Privilegium)* came into force in 1863; that year marks the starting point for most monetary time series presented here.

The new charter granted the OeNB more independence, while tying the issue of banknotes to the metallic reserves in a similar way as the 1844 Peel's Act had done for the Bank of England.[5] In addition, the government pledged to repay part of its debt to the OeNB, and full convertibility of banknotes into silver had to be re-introduced in 1866 at the latest.

The successful completion of the agenda was interrupted by Austria's defeat in the Austro-Prussian War of 1866. In a breach of the bank's charter, under which the OeNB had the exclusive right to issue paper money, the government decreed all 1 and 5 florin banknotes (in total fl 150 million) to be a liability of the government and forced the OeNB to provide the same sum in higher denomination banknotes. Through further direct issuance of state notes, the total amount of state notes in circulation soared to fl 300 million by the end of 1867, by which time the share of state notes had increased to 54% of the total paper money in circulation (Fellner 1911, p. 21).[6] The *agio* reappeared to peak at 30% in 1867 and only gradually declined over the next decade (see AH3F series).

Following the demise of the German Confederacy *(Deutscher Bund)*, Austria pulled out of the Vienna Coinage Treaty of 1857 and moved towards the Latin Monetary Union (LMU) in 1867. Although Austria started to mint gold coins[7] and envisaged joining the LMU in 1870, the Empire actually never did, as continuing financial difficulties made a swift return to specie convertibility illusory (Bachinger et al. 1987, pp. 33–35).

As a further consequence of the defeat in 1866, the Austro-Hungarian Compromise *(Ausgleich)* of 1867 turned the former unitary Austrian Empire into a dualist state, recognising the autonomy of the lands of the Hungarian crown. The institutional transformation was reflected in a reorganisation of the OeNB when its charter was renewed in 1878. The new charter *(4th Privilegium)* established a quota for Hungarian citizens in the decision-making bodies and provided for the establishment of head offices in both Vienna and Budapest. While the head offices became responsible for the daily management and, in particular, for the oversight of the numerous branch offices in the respective parts of the Empire, the central decision-making bodies retained jurisdiction over strategic decisions and the discount rate. In recognition of the organisational changes, the OeNB was renamed *Oesterreichisch-ungarische Bank* (Austro-Hungarian Bank, OeUB). The OeUB continued to enjoy the exclusive right of note issue with the ultimate aim of re-establishing specie convertibility. However, Article 111 of the statutes of the OeUB (1878) stipulated that full convertibility into specie should remain suspended as long as there were state notes in circulation. Thus the planned introduction of the gold standard required the withdrawal of fl 312 million of uncovered state notes, which in turn required an agreement between Austria and Hungary on how to deal with the floating debt incurred before the conclusion of the 1867 Compromise. Article XV

4 Imperial Law Gazette, No. 2 ex 1863.
5 For details on coverage rules, see subsection 2.1.1.
6 At the end of 1891, state notes still made up 44% of the monetary base.
7 Austria-Hungary minted gold coins of a value of 4 and 8 florins Austrian currency, which was the equivalent of 10 and 20 French francs. The coins traded at a premium to paper money.

of the Compromise decreed that Austria and Hungary were both liable for serving the floating debt but left open the question of burden sharing (Fellner 1911, p. 126).

1.3 THE DECLINE OF SILVER AND THE ADOPTION OF THE CROWN CURRENCY

In the meantime, the depreciation of silver relative to gold in international markets after 1873 had a significant impact on the development of Austrian coinage and the monetary system in the last third of the 19th century. Before the 1870s, the silver florin had always traded at a premium to paper currency, but by 1878 the international silver price had dropped enough so that importing silver and minting silver florin coins paid off again (see Figure 3). Within six months, the metallic reserves of the OeUB increased by 16% to fl 158.3 million in January 1879. As most other European countries before, the government suspended the free coinage of silver and article 87 of the Bank's charter, which obliged the OeUB to purchase unlimited amounts of silver bullion at a fixed price (Pressburger 1976 II, p. 122). The silver agio disappeared and instead the value of the florin started to rise above the market value of its silver content.

By the end of the 1870s, most Western European countries and the US had tied their currencies to gold. Similar plans existed in Austria-Hungary but were significantly delayed by three closely related issues: (1) acquiring the necessary gold, (2) retiring a large outstanding amount of uncovered notes issued by the state, and in particular (3) reaching a burden-sharing agreement between Austria and Hungary. In the meantime, with free minting of silver suspended and the national currency trading at a premium to silver, Austria-Hungary retained a pure fiat standard. As a consequence of relatively slow growth of the monetary base relative to real GDP and an improving fiscal situation in both Austria and Hungary – implying a lower likelihood for future debt monetisation and an increased likelihood of the eventual adoption of a gold standard – the *agio* on the gold florin declined from 25% to 16% between 1887 and 1891 (k.k. Finanzministerium 1892b, Table 154, p. 234).

With nominal GDP and the demand for money rising, the strict limit on banknotes in circulation established by the *Plener Act* in 1862 proved increasingly restrictive and was abolished when the charter was renewed in 1887. Instead, the OeUB now switched to a proportional system under which it had to pay taxes on any excess note issuance along the lines of the German Reichsbank.[8]

Monetary reform moved back centre stage in 1892 when Austria and Hungary finally agreed on how to redeem the floating debt and thereby paved the way for adopting the gold standard.[9] The crown currency was introduced and set equal to a half-florin.[10] The value of the new currency was thus set at about 19% below the value of the gold florin coin (minted according to the rules of the Latin Monetary Union), which reflected the average depreciation of the florin in the years preceding monetary reform.

Monetary reform included the withdrawal of state notes from circulation from July 1894 onward. In a first phase, fl 200 million were replaced by banknotes and gold coins deposited at the OeUB. The remaining fl 112 million of state notes were withdrawn after 1901. On 28 February 1903, state notes ceased to be legal tender (Fellner 1911, pp. 128–134).

[8] For details on coverage rules, see subsection 2.1.1.
[9] Article XVIII of the currency laws of 1892 decreed that the Kingdoms and Lands represented in the Imperial Council *(Die im Reichsrat vertretenen Königreiche und Länder)* shall amortise 70% of the floating debt and the Lands of the Holy Hungarian Crown of Saint Stephan the remaining 30%.
[10] One *Krone* (K) was subdivided into 100 *Heller* (h).

The passing of the gold standard legislation, however, did not immediately stabilise the exchange rates relative to the gold currencies. The gold agio increased to 6.5% in November 1893, declined to 3.8% at year-end and did not drop below 1% until late 1895 (Pressburger 1976). In 1896, the OeUB assumed the main responsibility for managing the exchange rate and succeeded in maintaining exchange rates close to mint par until the outbreak of World War I. As contemporaries noted, even though gold convertibility remained suspended over the first decade of the 20th century, the exchange rate of the crown versus the German mark, the pound sterling and the French franc fluctuated within bands as narrow as (or even narrower than) those of the currencies that were legally convertible into gold (Zuckerkandl 1911, pp. 112–114). What was crucial in this respect was that, in 1901, the OeUB also became responsible for carrying out the government's gold and foreign exchange transactions (Jobst 2009). While Austria-Hungary thus *de facto* operated a gold standard, legal convertibility of banknotes into specie was never established. In other words, Austria-Hungary shadowed the gold standard from 1896 to 1914.

2 DEFINITION AND DESCRIPTION OF VARIABLES

Most of the time series presented here start in 1863. This starting point was chosen as it marks at least three significant legal and institutional changes which constitute a structural break in economic time series: (i) the Bank charter of 1862, which introduced new metallic coverage rules and strengthened the independence of the OeNB; (ii) the enforcement of the gross accounting principle for the central government budget; and (iii) the establishment of the *k.k. Statistische Central-Commission*, which significantly improved official statistics. All series end with the outbreak of World War I, i.e. in June 1914 for monthly time series and 1913 for annual time series.

For monetary variables and most financial variables, the time series refer to the whole territory of the Austrian Empire or the Austro-Hungarian monarchy, respectively. After 1867, the time series for the real economy, government finances and long-term interest rates distinguish (wherever possible) between Austria, short-hand for the Kingdoms and Lands represented in the Imperial Council (*Die im Reichsrat vertretenen Königreiche und Länder*), and Hungary, short-hand for the Lands of the Holy Hungarian Crown of Saint Stephan (*A Magyar Szent Korona Országai Zemlje krune svetog Stjepana*, i.e. the Kingdom of Hungary, the Kingdom of Croatia-Slavonia, and Transylvania). Entries of value terms are denominated in florin Austrian currency for the period January 1863 to December 1899 and in crowns afterwards, since the OeUB and the imperial administration switched to accounting in crowns on 1 January 1900. The Vienna stock exchange started quoting exchange rates in crowns already at the end of December 1899. We replicate this pattern.

The following index table gives an overview of all series on Austria-Hungary published here.

INDEX TABLE - Country: AUSTRIA-HUNGARY *continue*

List of Variables	Time Span	Data Frequency	Unit of account	Series Code
1. MONETARY VARIABLES				
Total statutory reserves	1863−1913	annual	in national currency*	AH1A_A
	Jan. 1863−June 1914	monthly	(millions), end-of-period	AH1A_M
Gold	1863−1913	annual	in national currency	AH1B_A
	Jan. 1881−June 1914	monthly	(millions), end-of-period	AH1B_M
Silver	1863−1913	annual	in national currency	AH1C_A
	Jan. 1881−June 1914	monthly	(millions), end-of-period	AH1C_M

INDEX TABLE - Country: AUSTRIA-HUNGARY *continue*

List of Variables	Time Span	Data Frequency	Unit of account	Series Code
1. MONETARY VARIABLES				
Foreign bills included in statutory reserves	1863−1913	annual	in national currency (millions), end-of-period	AH1D_A
	Jan. 1863−June 1914	monthly		AH1D_M
Foreign bills not included in statutory reserves	1863−1913	annual	in national currency (millions), end-of-period	AH1E_A
	Jan. 1863−Dec. 1913	monthly		AH1E_M
Foreign deposits	1863−1913	annual	in national currency (millions), end-of-period	AH1F_A
	Jan. 1863−Dec. 1913	monthly		AH1F_M
Foreign liabilities	1893−1913	annual	in national currency (millions), end-of-period	AH1G_A
Monetary base	1863−1913	annual	in national currency (millions), end-of-period	AH1H_A
	Jan. 1863−June 1914	monthly		AH1H_M
Banknotes in circulation	1863−1913	annual	in national currency (millions), end-of-period	AH1I_A
	Jan. 1863−June 1914	monthly		AH1I_M
State notes in circulation	1866−1906	annual	in national currency (millions), end-of-period	AH1J_A
	May 1866−Aug. 1907	monthly		AH1J_M
Other central bank liabilities at sight	1863−1913	annual	in national currency (millions), end-of-period	AH1K_A
	Jan. 1863−June 1914	monthly		AH1K_M
of which: Giro deposits	1863−1913	annual	in national currency (millions), end-of-period	AH1L_A
	Jan. 1863−Dec. 1904	monthly		AH1L_M
Narrow money	1867−1913	annual	in national currency (millions), end-of-period	AH1M_A
Broad money	1867−1913	annual	in national currency (millions), end-of-period	AH1N_A
2. INTEREST RATES				
Official discount rate	1863−1913	annual	per cent, average	AH2A_A
	Jan. 1863−June 1914	monthly	per cent, end-of-period	AH2A_M
	1860−1914	date of change	per cent	AH2A_D
Official lombard rate	1863−1913	annual	per cent, average	AH2B_A
	Jan. 1863−June 1914	monthly	per cent, end-of-period	AH2B_M
	1860−1914	date of change	per cent	AH2B_D
Short-term market rate	1863−1913	annual	per cent, average	AH2C_A
	Jan. 1863−June 1914	monthly	per cent, end-of-period	AH2C_M
Austrian 4% gold bond	1876−1913	annual	average	AH2D_A
	Dec. 1876−June 1914	monthly	end-of-period	AH2D_M
Austrian yield in gold	1876−1913	annual	per cent, average	AH2E_A
	Dec. 1876−June 1914	monthly	per cent, end-of-period	AH2E_M
Hungarian 4% gold bond	1881−1913	annual	average	AH2F_A
	June 1881−June 1914	monthly	end-of-period	AH2F_M
Hungarian yield in gold	1881−1913	annual	per cent, average	AH2G_A
	June 1881−June 1914	monthly	per cent, end-of-period	AH2G_M
3. EXCHANGE RATES				
Pound sterling	1863−1913	annual	in national currency,* period average	AH3A_A
	Jan. 1863−June 1914	monthly	in national currency, end-of-period	AH3A_M
French franc	1863−1913	annual	in national currency, period average	AH3B_A
	Jan. 1863−June 1914	monthly	in national currency, end-of-period	AH3B_M
Florin Southern German currency	1863−1874	annual	in national currency, period average	AH3C_A
	Jan. 1863−Dec. 1874	monthly	in national currency, end-of-period	AH3C_M
Mark	1875−1913	annual	in national currency, period average	AH3D_A
	Jan. 1875−June 1914	monthly	in national currency, end-of-period	AH3D_M
20 French franc gold coin	1863−1913	annual	in national currency, period average	AH3E_A
	Jan. 1863−June 1914	monthly	in national currency, end-of-period	AH3E_M
Florin Austrian currency in silver coin	1863−1879	annual	in national currency, period average	AH3F_A
	Jan. 1863−Jan. 1879	monthly	in national currency, end-of-period	AH3F_M

INDEX TABLE - Country: AUSTRIA-HUNGARY

List of Variables	Time Span	Data Frequency	Unit of account	Series Code
4. GOVERNMENT FINANCES				
Austrian government ordinary expenditure	1863−1913	annual	in national currency* (thousands)	AH4A_A
Austrian government interest payments	1863−1913	annual	in national currency (thousands)	AH4B_A
Austrian government debt redemption	1863−1913	annual	in national currency (thousands)	AH4C_A
Adjusted Austrian government extraordinary expenditure	1865−1913	annual	in national currency (thousands)	AH4D_A
Austrian government ordinary revenue	1863−1913	annual	in national currency (thousands)	AH4E_A
Adjusted Austrian government extraordinary revenue	1865−1913	annual	in national currency (thousands)	AH4F_A
Hungarian government ordinary expenditure	1869−1913	annual	in national currency (thousands)	AH4G_A
Hungarian government extraordinary expenditure	1869−1913	annual	in national currency (thousands)	AH4H_A
Hungarian government ordinary revenue	1869−1913	annual	in national currency (thousands)	AH4I_A
Hungarian government extraordinary revenue	1869−1913	annual	in national currency (thousands)	AH4J_A
Common budget expenditure	1868−1913	annual	in national currency (thousands)	AH4K_A
Common budget revenue	1868−1913	annual	in national currency (thousands)	AH4K_L
Common budget customs duties	1868−1913	annual	in national currency (thousands)	AH4M_A
Common budget Austrian and Hungarian contributions	1868−1913	annual	in national currency (thousands)	AH4N_A
Pre-1867 government debt	1863−1913	annual	in national currency (thousands)	AH4O_A
Austrian government debt	1867−1913	annual	in national currency (thousands)	AH4P_A
Austrian emancipation bonds	1863−1913	annual	in national currency (thousands)	AH4Q_A
Hungarian government debt	1868−1913	annual	in national currency (thousands)	AH4R_A
Hungarian emancipation bonds	1868−1913	annual	in national currency (thousands)	AH4S_A
5. PRICES, PRODUCTION AND LABOUR				
Consumer price index for Austria (1914=100)	1863−1913	annual	index number	AH5A_A
Manufacturing production index for Austria (1913=100)	1870−1913	annual	index number	AH5B_A
Manufacturing production index for Hungary (1913=100)	1870−1913	annual	index number	AH5C_A
6. NATIONAL ACCOUNTS AND POPULATION				
GDP, nominal terms, Austria	1870−1913	annual	in national currency* (millions), at current prices	AH6A_A
GDP, nominal terms, Hungary	1870−1913	annual	in national currency (millions), at current prices	AH6B_A
GDP, real terms, Austria	1870−1913	annual	in national currency (millions), at 1913 prices	AH6C_A
GDP, real terms, Hungary	1870−1913	annual	in national currency (millions), at 1913 prices	AH6D_A
Real GDP per capita, Austria	1870−1913	annual	in national currency, at 1913 prices	AH6E_A
Real GDP per capita, Hungary	1870−1913	annual	in national currency, at 1913 prices	AH6F_A
Imports	1863−1913	annual	in national currency (millions)	AH6G_A
Exports	1863−1913	annual	in national currency (millions)	AH6H_A
Population, Austria	1863−1913	annual	in million inhabitants	AH6I_A
Population, Hungary	1869−1910	decennial	in million inhabitants	AH6J_A

Source: OeNB.
(*) Entries of value terms are denominated in florin Austrian currency for the period January 1863 to December 1899 and in crowns afterwards. Exchange rates refer to the crown currency already at the end of December 1899.

2.1 MONETARY VARIABLES

2.1.1 Reserves

Before presenting the series on reserve assets held by the OeNB, a few clarifying remarks are in order on the concept of reserves and on contemporary accounting practices.

Concepts

In the 19th century, reserves were typically held for *domestic* purposes: Sufficient reserves were meant to ensure that the notes issued by a bank of issue were convertible into legal tender on demand. Therefore, the concept of reserves was largely shaped by the laws governing what constituted legal tender. In other words, reserves were subject to a 'statutory definition' at the time.

Such an understanding of reserves is linked but not necessarily equivalent to, a modern concept of reserves as e.g. used by the IMF. The IMF definition focuses on the ability to settle *international* claims rather than national convertibility. Reserves – i.e. '(net) foreign assets' (NFA) in IMF terminology – are made up of foreign currency assets and gold that 'are readily available to and controlled by monetary authorities for direct financing of payments imbalances, for indirectly regulating the magnitudes of such imbalances through intervention in exchange markets to affect the currency exchange rate, and/or for other purposes.' As this definition builds on the economic functions of reserve assets, it can be labelled an economic concept of reserves.

To the extent that currency units in the 19th century were defined in terms of precious metals (silver, gold or both) that had an intrinsic value in international markets, reserves held for the purpose of domestic convertibility could equally serve to finance payments imbalances and support the value of the domestic currency abroad. However, while close, the legal concept and the economic concept are not necessarily congruent. Some assets defined as legal tender currency could not be used to settle international claims (or at least not at face value, a case in point being legal tender silver coins in the late 19th century). At the same time, other assets that could be used to settle foreign claims were not legal tender and therefore not always included in the legal definition of reserves. Examples are foreign bills or deposits of the note issuing bank held with foreign banks.

In some cases, researchers might prefer the concept of net reserves. Foreign liabilities reduce the availability of foreign assets to finance payment imbalances and affect exchange rates. Historically, statutory reserve definitions refer to assets and ignore possible liabilities. As it will turn out, this issue is of secondary importance in the case of Austria-Hungary.

Below, reserves are presented according to both the statutory definition and the economic concept of foreign assets and liabilities. Naturally, the presentation of reserves in published balance sheets and weekly reports was strongly influenced by the official or statutory definition. Thus, reconstructing the official reserves series is a fairly straightforward proposition. Coming up with the corresponding data based on an economic concept of reserves is much trickier, however. Sometimes figures can be gleaned from internal documents, yet the amounts reported and the definitions applied have changed over time and are much less well documented than the official figures. This has to be kept in mind when using the data presented below.

A further complication is that the statutory role of reserves (e.g. a minimum cover requirement) principally allowed observers to predict policy moves on the basis of reserve levels and changes

therein. A strong decline in reserves could e.g. signal an imminent tightening of monetary policy. As a result, banks of issue at times tried to present their balance sheet in a way that suited their policy. The less-than-complete overlap between statutory definition and economic concept allowed banks to operate covertly, e.g. by choosing not to report certain types of reserve assets and by performing some of their operations in these assets. The OeUB, for instance, did not report parts of its foreign bills holdings and none of its foreign deposits, while using primarily these assets in its foreign exchange operations.

Accounting practices

Valuation

The bank held different types of reserve assets (silver and gold in bars and minted, foreign bank notes, bills and deposits) whose relative prices in the market could change over time. This raises the question what prices were used when holdings were converted into the domestic monetary unit for reporting in the balance sheet. The reserve series data as presented here use conversion rates that were in place when the respective balance sheet was drawn up. Increases (decreases) in the reported numbers can thus reflect both increases (decreases) in real stocks as well as changes in the conversion rates used. To be able to interpret the series properly, these two factors have to be kept separate.

From 1858 to 1899, the bank kept its books in Austrian florin, which was defined in terms of its silver content. Foreign silver coins, silver bullion and bills payable in foreign silver currencies were converted into florin according to mint parity (1 florin = 10g pure silver).[11] Before 1878 the circulating (paper) florin was typically undervalued relative to mint parity (i.e. silver coins traded at a premium, the *agio*), which meant that foreign exchange and metal holdings were undervalued in the balance sheet relative to their market value expressed in paper florins. This situation changed following the decline of silver prices in international markets. After 1878, the market value of the silver contained in a one-florin silver coin declined below one paper florin, and silver assets in the balance sheet, in particular silver coins, were increasingly overvalued relative to the market value of un-coined silver. However, given the legal status of the silver florin, the bank always accounted for its silver florin coin holdings at face value.

In contrast, before 1892, the bank had more leeway in the treatment of gold and foreign exchange payable in gold. Gold holdings made up a significant share of the bank's reserves from the early 1870s onwards. In principle, the bank might have priced gold assets at market value. Yet, in anticipation of an eventual shift towards a gold-based or bimetallic currency and to avoid future revaluation losses, the bank adopted a conservative approach and used the lowest value of gold that was likely to be adopted in such a case.

Consequently, the valuation of gold assets tracked political developments and the debate on monetary reform. The 4 florin and 8 florin gold coins minted following the Paris monetary conference in 1867, whose value was equivalent to that of the French 10 and 20 franc gold coins, had a gold-silver ratio of 1:15 25/81 (Mecenseffý 1897, p. 7). Gold and gold bills were valued at this ratio until 1876.[12] In the balance sheet dated 31 December 1877, francs and gold florin were revalued at the parity of the Latin Monetary Union of 1:15.5; in 1880 sterling holdings were equally revalued, yielding book gains of fl 831,601.80 and fl 431,863.82, respectively.

[11] According to the Vienna coinage treaty, 45 florin Austrian currency were minted from one pound (=500g) silver 900/1000 fine.
[12] In view of an eventual reminting of English sovereigns that was also discussed at the Paris conference, sterling was converted at a slightly lower rate of fl 10 for one pound (Anonymous 1898, p. 14).

The gold standard legislation of 1892 established the gold crown, which replaced the florin at a rate of 2 K= 1 fl. To take account of the long-run depreciation of the circulating paper florin relative to the gold value as initially proposed at the 1867 conference, two new crowns were to contain less gold than the old gold florin. The gold content of the new coin implied a gold-silver ratio of 1:18 2/9 (instead of 1:15.5). As a consequence, the country's gold reserves were revalued, and the gains of fl 13,525,167 were temporarily included in retained earnings (surplus fund) and later transferred to metallic reserves.

Treatment of borrowing, lending and term contracts

In general, reserve requirements (and thus also the reported data) refer to physical stocks held by the OeNB/OeUB. Assets that are only temporarily in possession of the bank (e.g. borrowed assets) are therefore included in the reported data, whereas assets that are temporarily not in the possession of the bank (e.g. lent assets) are not included. If a considerable part of foreign assets is in fact borrowed, the series on gross assets can therefore become highly misleading.[13] Similar distortions can arise when assets are bought or sold forward, in the latter case with the result that assets which still appear in the balance sheet are in fact no longer freely available. The OeNB/OeUB was active in both lending and borrowing and term contracts.

In reality, the bank borrowed reserve items only infrequently. Most of these operations occurred at the beginning of the 1870s, when the bank converted part of its reserves from silver into gold, but volumes rarely exceeded fl 1 million on average (see appendices to the annual reports). In contrast, the lending of gold, bills, and deposits was far more important and constituted a key policy instrument in later years (Jobst 2009). For the years 1893–1913, details on lending and borrowing of reserve assets can be found in the balance sheet files. Series AH1G in the data file gives the volume of net lending at the end of the year. Information on lending volumes is only available on an annual basis. In the monthly series gross figures are reported, i.e. they include both the physical stocks held by the bank and amounts lent.

The importance of term contracts reflects the very early emergence of forward markets for foreign exchange in Vienna, which was likely driven by the need to hedge international securities arbitrage operations against the risks of the floating florin exchange rate (Einzig 1961, Flandreau and Komlos 2006). There is considerable evidence that the bank regularly operated in these markets (Jobst 2009). This has again critical ramifications for the information content of the reported reserve series. Forward sales and purchases entail cash transfers not at the moment of contracting but only on the settlement day, which might be any time in the future, typically at the end of the month. According to the accounting rules, reserve holdings appeared unchanged as long as the deal was not settled. As far as we know, the forward positions cannot be reconstructed from the bank's archives. Scattered evidence indicates that open positions could be relatively large.[14] However, there is no way to correct systematically for forward contracts. The series presented here have therefore to be interpreted with due caution, in particular when looking at short-term changes in reserve holdings, as these might be distorted by unaccounted forward transactions.

Statutory reserves

The bank's statutory reserves – labelled "*Metallschatz*" (metallic treasure), *"Barvorrat"* (cash reserves) or *"Metallvorrath"* (metallic reserves) – are a key indicator, as the amount of banknotes

[13] For an extreme example, see Reis (2002) on Portugal.

[14] At the end of 1905, for instance, the net open forward position was over K 17 million when holdings of foreign bills and deposits amounted to about K 93 million, i.e. the reported numbers misrepresent holdings actually available for policy purposes by 18%.

issued by the bank was tied to reserve levels.[15] As such, the publication of data on reserves was subject to specific requirements.

The eligibility criteria for reserve assets changed over time. Table AH3 lists the relevant clauses in the statutes and their modification over time.

TABLE 3 Assets eligible for inclusion in metallic reserves *continue*

Year	Eligible assets	Statutes	Verbatim
1863	Legal silver coins and silver bars. Up to ¼ of total in gold coins or gold bars.	No. 14 (§ 14)	[…] Es muß jedoch jedenfalls jener Betrag, um welchen die Summe der umlaufenden Noten zweihundert Millionen Gulden übersteigt, in gesetzlicher Silbermünze oder Silberbarren vorhanden sein. […] Bis zur Höhe des vierten Theils des Metallvorraths kann Gold in Münze oder in Barren anstatt des Silbers zur Bedeckung verwendet werden.
28 July 1870 – 11 March 1871	Temporary inclusion of bills on foreign places up to fl 33 million.		
1872	Silver, gold Minted or in bars	§ 14	[…] Es muß jedoch jedesfalls jener Betrag, um welchen die Summe der umlaufenden Banknoten zweihundert Millionen Gulden übersteigt, in Silber oder Gold, gemünzt oder in Barren vorhanden sein. […]
1878		Article 84	Identical to § 14
1888	Silver, gold Minted or in bars	Article 84	[…] Es muß jedoch jedenfalls der Gesammtbetrag der umlaufenden Banknoten mindestens zu zwei Fünfteln durch den Barvorrath in Silber oder Gold, gemünzt oder in Barren […] bedeckt sein. […]
	Bills on foreign places payable in effective coin up to fl 30 million as long as state notes retain legal tender status.	Article 111	Insolange der Zwangskurs der Staatsnoten nicht in beiden Theilen des Reiches aufgehoben ist, wird der Bank gestattet, ihren Besitz an Wechseln auf auswärtige Plätze, soweit dieselben in einer effektiven Metallwährung zahlbar sind, bis zum Höchstbetrage von dreißig Millionen Gulden in den Bestand ihres Barvorrathes (Artikel 84) einzurechnen.
1899	Legal Austrian or Hungarian metallic coin, domestic trading coins in gold Foreign gold coin and gold bars converted by weight, with minting expenses deducted.	Article 84	[…] Es muß jedoch jedenfalls der Gesamtbetrag der umlaufenden Banknoten mindestens zu zwei Fünfteln durch gesetzliches Metallgeld österreichischer oder ungarischer Prägung oder durch inländische Handelsgoldmünzen oder ausländischen Goldmünzen oder Gold in Barren nach dem Gewicht zum gesetzlichen Münzfuß der Kronenwährung unter Abzug der Prägegebühr berechnet […] bedeckt sein. […]
	Bills on foreign places payable in gold or in metallic currency equivalent to gold up to fl 30 million as long as state notes retain legal tender status. Definition of eligible foreign currencies in accord with Austrian and Hungarian ministries of finance. Bills with maximum maturity of three months, two good signatures.	Article 111	[…] Der Bank wird während dieser Zwischenzeit [insolange der Zwangskurs der Staatsnoten nicht aufgehoben ist] gestattet, ihren Besitz an Wechseln auf auswärtige Plätze und an ausländischen Noten, soweit dieselben in Gold oder in mit Gold gleichwertige, effektiver Metallwährung zahlbar sind, bis zum Höchstbetrag von sechzig Millionen Kronen in den Bestand ihres Barvorrates (Artikel 84) einzurechnen. Welche effektiven Metallwährungen in diesem Sinne als mit Gold gleichwertig anzusehen sind, wird vom Generalrat der Bank im Einvernehmen mit dem k. k. österreichischen und dem königl. ung. Finanzministerium zeitweise festgesetzt. Wechsel auf auswärtige Plätze sind nur dann in den Barvorrat einrechenbar, wenn sie längstens binnen drei Monaten zahlbar und mit der Unterschrift von mindestens zwei als zahlungsfähig bekannten Verpflichteten versehen sind. […]

[15] Note that cover requirements evolve over the 19th century and become specific only relatively late. § 14 of the 1816 statute stipulates simply that 'the bank should never issue more notes than the funds assigned to their conversion would allow.' §15 of the 1841 statutes states, 'It is incumbent upon the directors of the bank to set from time to times such a ratio between note issue and specie reserves that complete fulfilment of this duty [to pay the face value of bank notes in legal silver coin on demand] is assured.' The first explicit quantified link between banknotes in circulation and bank assets was established only in 1858 (Zuckerkandl 1911, p. 81). Quantified reserve requirements were an integral part of the statutes from 1863 onwards.

TABLE 3 Assets eligible for inclusion in metallic reserves

Year	Eligible assets	Statutes	Verbatim
1911	Foreign bills up to K 60 million (= fl 30 million) can be included even after legal tender status of state notes has been abolished.	now included in Article 84	

Source: Authors' compilation.

The following series are included in the data set: Series AH1A gives total reserves according to the definition at the time of reporting. Series AH1B includes gold bars and gold coin (*Gold*). Series AH1C gives silver (*Silber*, both bars and coin, from 1892 onwards silver divisionary coin). Series AH1D gives bills on foreign countries included in metallic reserves (*In Metall zahlbare Wechsel*).

Foreign assets and liabilities not included in statutory reserves

Foreign bills not reported under metallic reserves (AH1E)
Leaving aside their temporary inclusion between July 1870 and March 1871[16] (see Table AH3 above), foreign bills were not counted as part of official reserves before 1888. Nevertheless, holdings were reported regularly in weekly reports.

Following the inclusion of certain foreign bills in reserves after 1888, the foreign bill portfolio was separated into three categories: bills included in reserves (series AH1D), bills that qualified for inclusion but were not included (*Im Metallschatz nicht verrechnete Goldwechsel auf auswärtige Plätze*), e.g. because the statutory maximum of foreign bills in metallic reserves had already been reached, and bills that did not yet satisfy the requirement of a maximum maturity of three months (*Goldwechsel auf auswärtige Plätze über 3 Monate laufend*). The last two categories are reported here together as series AH1E. A temporarily separate category of foreign exchange holdings was created, after the revaluation of gold holdings in 1892 had given rise to an accounting profit (see above). Pending on the appropriation of the revaluation gains, bills worth fl 13,525,167 were transferred to retained earnings (surplus fund). The amount was further increased to fl 15,000,000 in 1897. The issue was settled together with the re-chartering in 1899: the foreign bills were transferred to metallic reserves, and the bank's capital increased by fl 15 million (Wittelshöfer 1895, Mecenseffý 1897, Anonymous 1898). For the years 1892 to 1899, the sum is included in category AH1E.

Full information on all categories is available in the end-of-year balance sheets. In the weekly reports, however, bills in category AH1E are not separated out but subsumed under the category 'other assets'. From 1901 onwards, data on AH1E are available from internal sources. Monthly values between August 1888 (when foreign bills became eligible for inclusion in metallic reserves) and December 1900 are coded as 'not available'.

Foreign deposits (AH1F)
Deposits held by the OeNB/OeUB at foreign banks (*Guthaben bei auswärtigen Firmen*) were never included in the official reserves. While relatively small initially, such deposits became sizable from

[16] In the aftermath of the 'speculation crisis' of 1869, cash in the bank's vaults was depleted to such an extent that the OeNB was temporarily allowed to count foreign bills of exchange convertible to specie as part of its reserves, which allowed it to issue more notes (Komlos 1983b, p. 140).

the mid-1890s onwards. Annual data can be obtained from the balance sheets; weekly values are only available from 1901 onwards.

Foreign liabilities (AH1G)
While foreign assets can be reconstructed fairly well also at an intra-year frequency (with the exceptions listed above), less information is available on foreign liabilities, which took three forms:

(i) Private customers' gold deposits: In the balance sheet, private deposits are not classified by currency. There are indications that there were some private deposits in gold florin, but the associated sums appear to be small (Anonymous 1898).

(ii) Gold and foreign exchange deposits by the Austrian and Hungarian governments and public agencies were much more sizable. For these accounts, end-of-year values are theoretically available in the balance sheet files from 1901 onwards. From an economic viewpoint, however, it can be argued that the entire gold and foreign exchange stock of the public sector (including both the central bank and the governments) should be considered foreign assets available to the OeNB/OeUB. Liabilities to the public sector are therefore not reported.

(iii) Overdrafts on foreign accounts of the bank. As explained above, the bank held accounts in foreign currency at correspondent banks abroad. In principle, these accounts could be used to run overdrafts. End-of-year values are available throughout and give no indication that overdrafts were sizeable (of course, this might be due to window dressing). When figures on deposits become available with weekly frequency from 1901 onwards, aggregate numbers are always significantly above zero (see AH1F).[17]

2.1.2 Monetary base

The monetary base is defined here as (i) currency in circulation (excluding coins) and (ii) deposits at the central bank and liabilities of the central bank payable on demand. In the 19th century, we can distinguish three types of currency in Austria-Hungary: coins (full-bodied and divisional), banknotes, and state notes. Currency in circulation is defined here as banknotes in circulation plus state notes in circulation outside the central bank, including paper money held by commercial banks. Full-bodied silver and gold coins (metallic currency in circulation) as well as divisional coins are excluded from the definition. The main reason for the exclusion of silver and gold coins is a lack of data, as discussed below. Banknotes and state notes are both included as they were considered perfect substitutes.

Data table AH1.2 gives the time series for banknotes in circulation (*Banknotenumlauf,* AH1I), state notes in circulation (*Staatsnoten im Umlauf,* AH1J), other central bank liabilities at sight (*Andere sofort fällige Verbindlichkeiten,* AH1K), of which giro deposits (*Giroguthaben,* AH1L), and the monetary base (AH1H) for the period 1863–1913/14. Until 1899, monthly and annual entries refer to millions of florin Austrian currency. As of 1900, the monthly and annual entries are quoted in millions of crowns (Kronen). Figure 1 shows the monetary base and its components from 1863 to 1913.

[17] Another liability might be bills drawn in foreign currency. In the correspondence between the Vienna and the London houses of Rothschild, we find instances of bills drawn on London by the bank (letter by Samuel Mayer Rothschild to Nathan Mayer Rothschild dated 11 July 1898). It is not clear how these liabilities were accounted for. In the case of the cited letter, the bill was a sight bill, so we might expect that the bank had to cover the sum immediately by a transfer to its account with the Vienna house. If the bank, however, occasionally drew long bills on its foreign correspondents and kept them in its portfolio, the liability would not show up until maturity, and foreign exchange holdings would appear temporarily bloated. There are no indications that such transactions were of any significance, though.

In the following, we will discuss the components of the monetary base in greater detail.

Coins

In the Austrian Empire, a variety of full-bodied coins were circulating in the 19th century. Following the signing of the coinage treaty with the German customs union in 1857, the Austrian silver florin started to be issued in late 1858, replacing the Convention florin of 1753 as legal tender.

Between 1857 and 1892, nineteen different types of gold, silver and copper coins were minted. Trade coins were minted in both silver and gold. For reasons of facilitating foreign trade, the *'Convention thaler'* (mainly *'Levantiner'* as well as *'Maria Theresien thaler'*) remained legal tender until the end of 1870 but were not used in domestic transactions. Furthermore, gold coins (Convention gold coins, Austrian Gold Dukaten, franc gold coins) were in circulation over the entire period. They were not legal tender but served as a means of payment in international trade.

Divisional coins (*Scheidemünzen, Teilmünzen*) had only limited legal tender value. They were minted in the form of silver and above all copper coins to meet the need for small change for domestic transactions. Article XII of the 1867 constitution commanded Austria-Hungary to maintain a uniform currency area and explicitly required the two ministries of finance to reach consensus on minting divisional coins with denominations of 10 *Kreuzer* and smaller (Fellner 1911, p. 9).

The gold standard legislation of 1892 put the monetary system on a new footing. The crown contained 0.304878 grams fine gold and the coins were minted with a fineness of 900/1000. This means that one kilogram of mint gold could be minted into 2,952 crowns, one kilogram of fine gold into 3,280 crowns. Gold coins were minted in denominations of 10, 20 and 100 crowns. Divisional coins were minted in silver (1 and 5 crown coins), nickel (10 and 20 heller coins) and bronze (1 and 2 heller coins). The intrinsic value of divisional coins being lower than their nominal value, the quantity of these coins was set by law, and minting occurred only on account of the governments. The new crown silver coins enjoyed legal tender status only up to a certain maximum amount. At the same time, the old 1 florin silver coin (=2 K) retained its full legal tender status and was therefore legally equivalent to gold coins. The reason for this was pragmatic: exchanging the monetary silver stock that was not needed for divisionary coins into gold in the international market would have incurred very high fiscal costs. Similar rules applied also in Germany, France and other gold standard countries (Fellner 1911, pp. 85–119).

Unfortunately, we lack good statistics on coins in circulation. While data on coinage is readily available, we do not know to what extent coins entered and remained in circulation.[18] In addition, gold and silver coins, which served as a means of payment for international transactions, also circulated abroad and, *vice versa*, foreign coins were circulating in Austria-Hungary. Full-bodied coins mainly served as a store of value and did not circulate at all. Lastly, coins were sometimes melted down for industrial uses (Fellner 1911, p. 33). All this is in particular relevant for the period before 1878, when full-bodied silver coins traded at a premium to paper currency.

The exclusion of silver coins and gold coins in circulation may lead to a systematic underestimation of the total value of currency in circulation. Several contemporary estimates of coins in

[18] According to Fellner (1911, p. 32), the total production of all types of coins in Austria-Hungary during the period 1857–1891 amounted to 2,436 million coins representing a value of fl 831 million Austrian currency. Of course, the latter number does not represent the true value of circulating coins within the currency area.

circulation indicate, however, that the bias is likely to be small. Menger (1892, p. 653) calculated the amount of currency in circulation at up to fl 936 million for 1891; of this, fl 834 million were banknotes and state notes in circulation, fl 50 million silver and gold coins, and fl 52 million divisional coins.[19] This implies that paper money in circulation made up 89% of the total currency in circulation. The exclusion of metal currency in circulation will hence lead to a rather small underestimation of the total value of currency in circulation for the period 1863–1914.

Notes issued by the OeNB (banknotes)

From 1858, the issuance of banknotes by the OeNB was limited by a quantified rule.[20] Note that even though convertibility was suspended for almost the entire period 1863–1914, the bank was always subject to statutory limits on note issue, with a brief exception in the wake of the 1873 stock market crash (13 May 1873 until 11 October 1874). Following the English example, the charter of 1862 established a maximum fiduciary issue of fl 200 million to be covered by specified domestic income-generating assets, while the amount of banknotes surpassing the fl 200 million threshold had to be completely covered by the bank's silver and gold reserves (cf. Table AH3). The limit on the fiduciary issue proved overly binding and was replaced by a more flexible limit in 1887, which emulated the rules of the German Reichsbank. According to Article 84 of the statutes of the Austro-Hungarian Bank of 1887 and 1899 (in force from 1888 and 1900, respectively), metallic reserves had to cover at least 40% of banknotes in circulation. This limit was strictly binding. The remaining amount of banknotes in circulation (i.e. banknotes not covered by precious metal), together with overnight liabilities, had to be covered by other domestic income-generating assets (e.g. Escompte and Lombard credit), foreign-currency-denominated bills of exchange and foreign banknotes, and was again subject to a limit of fl 200 million (later K 400 million). This limit was, however, no longer strictly binding; instead, any excess amount issued was subject to a tax of 5%. The new rules allowed for a more flexible management of note issue, as temporary spikes in demand could be accommodated by paying a tax, while the tax limited the incentives for the bank to overly increase its issue. In 1911, the limit was raised to K 600 million (= fl 300 million).

Notes issued by the government (state notes)

In principle, the OeNB had been granted the sole privilege to issue banknotes. Nevertheless, in times of war, financing needs repeatedly pushed the government to violate the bank's note issue monopoly and issue state notes at a forced exchange rate. While the issue of banknotes was constrained by the bank's charter, there was no legal obligation to cover state notes by any reserve assets.

Following the reforms of 1854 and until May 1866, no state notes were in circulation. In order to finance the war with Prussia and Italy in 1866, the government resorted to the issuance of state notes again, which remained in circulation until 1903. Series AH1J reports the amount of state notes in circulation, i.e. the total amount of state notes issued by the ministry of finance excluding state notes held by the OeNB. Although issuance of state notes was initially fixed at fl 300 million, this volume was actually the lower bound of the total amount issued by the ministry of finance. From 17 November 1863 onwards, the government was allowed (Imperial Law Gazette No. 98) to issue Treasury bills based on the security of the government salt works (*Partial-Hypothekar-Anweisungen* or popularly known as *Salinenscheine*) up to a maximum amount of fl 100 million. According to the law dated 25 August 1866 (Imperial Law Gazette No. 101), the

[19] Fellner (1911, p. 34) comes to a lower estimate for currency in circulation of fl 911.6 million at the end of 1891.
[20] See footnote 14 above. In 1858, a precious metal cover quota of one third was introduced.

total amount of outstanding state notes and these Treasury bills was limited to fl 400 million. Whenever the amount of outstanding short-term debt fell below this threshold, the ministry of finance was authorised to temporarily issue additional state notes. The issuance of new Treasury bills by the ministry of finance required that the equivalent amount of state notes had to be withdrawn from circulation.

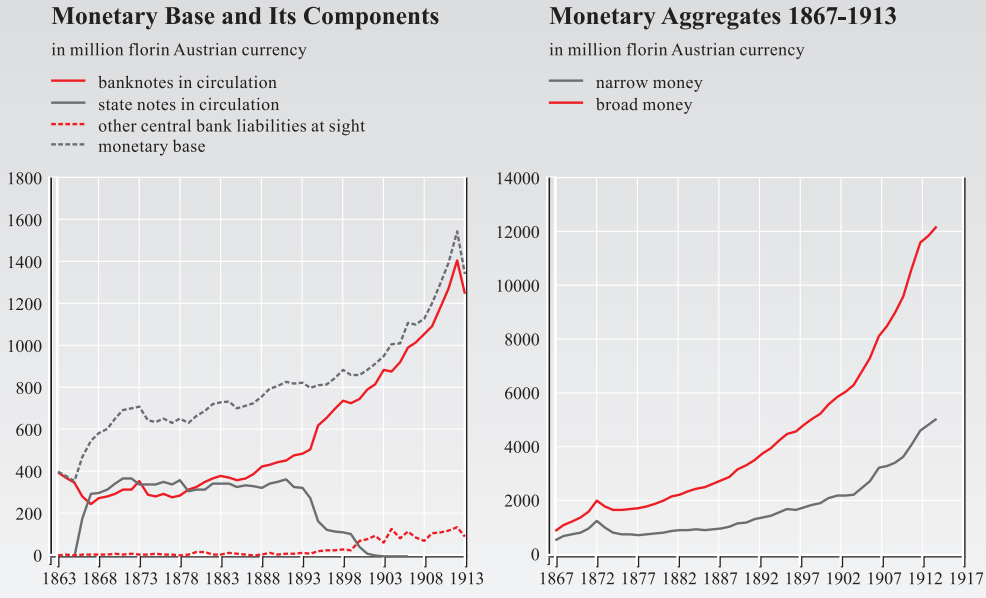
Furthermore, a law passed in 1868 (Fellner 1911, p. 24) decreed that all notes equivalent to 10 Kreuzer coins (*Scheidemünzenscheine zu 10 Kreuzern*) had to be replaced by state notes no later than 30 September 1870, expanding the limit of outstanding debt to fl 412 million. Hence, the amount of state notes issued fluctuated within a band of 312 to 412 million florins.[21]

The retirement of the state notes was a necessary part of the introduction of the gold standard in 1892. Redemption of state notes started on 14 July 1894. While 1 florin state notes ceased to be legal tender on 31 December 1895, state notes with a denomination of 5 and 50 florins expired on 18 February 1903.[22] The redeemed state notes were destroyed and the floating debt was amortised (Fellner 1911, pp. 128–136).

Other central bank liabilities considered part of the monetary base

The new regulations of the OeUB charter of 1888 increased the attractiveness of keeping a giro account at the OeUB. Giro accounts could be opened not only by financial institutions but were

FIGURE 1 Monetary Aggregates for Austria-Hungary, 1863–1913



Source: Left hand figure - Compass, k.k Finanzministerium (1892a, 1896-1899), Leonhart (1886), Lucam (1876), Österreichisches Statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, Wiener Zeitung, Compass; right hand figure - Komlos (1983b). For details see section 3.1.

[21] According to our definition, the amount of fl 12 million of *Scheidemünzenscheine zu 10 Kreuzern* is excluded from currency in circulation. Furthermore, state notes held by the OeNB are not considered to be in circulation and are thus excluded from the series AH1J, which explains why some entries turn out to be below fl 312 million.

[22] 1 florin notes could be exchanged at the OeUB until 31 December 1899, 5 and 50 florin notes until 31 August 1907.

available to the general public. Within ten years, the number of giro accounts at the OeUB rose from 639 to 4,945 (k.k. Finanzministerium 1896–99, Table 124, p. 496). Deposit liabilities of the bank which had been negligible until 1887 increased, and fifteen years later the share of central bank liabilities payable on demand had expanded to 10% of the monetary base. Also, the government encouraged the adoption of cashless payments (then a modern technology) by allowing taxes to be paid through the checking accounts of the postal savings system, which had started to offer checking services in 1883. Unlike banknotes in circulation, deposit liabilities were not subject to reserve requirements. As a result, central bank money could increase without a concomitant increase in the central bank's reserves. This somewhat loosened the strict limit on the money supply imposed by the 1862 charter (Komlos 1983b, pp. 141–143).

Series AH1K reports other central bank liabilities at sight that were considered part of the monetary base, i.e. other central bank liabilities payable on demand. It consists of giro deposits at the OeNB/OeUB, redeemable bank money-orders and cheques as well as dividends of the OeNB/OeUB not yet collected. Series AH1L reports the amount of the subcomponent giro deposits at the bank.

2.1.3 Broader monetary aggregates

The 19th century saw a sharp rise in cash substitutes. A milestone in banking history was the foundation of the *'k.k. privilegirte Österreichische Credit-Anstalt für Handel und Gewerbe'* in 1855, which became the leading bank in financing the industrialisation and the construction of the railway network of the Austro-Hungarian Empire. In the second half of the 19th century, a second sector of credit institutes evolved in parallel to the private commercial banking sector. It consisted of savings banks[23], mortgage banks, and co-operative savings and credit associations, which collected the savings of the broader public and financed mainly farming and housing (Maerz and Socher 1973). Financial reforms and institutional innovations in the late 1880s drove an increase in the broad supply of money.[24] The government's support of the postal savings system (in Austria in 1882 and in Hungary two years later) further encouraged the use of demand deposits and checking accounts and initiated an accelerated substitution of deposits for cash. Especially small savers in the countryside were freed from the constraint to hold their wealth in currency. Due to the increased propensity of the broader public to hold deposits, Austria-Hungary witnessed a surge in branch banking after 1887. Furthermore, the growth of the financial system and the spread of the money economy throughout the empire implied that more economic agents gained access to bank loans, which in turn increased effective demand and spurred structural change (Komlos 1983b, pp. 143–147).

Komlos (1983b) published a narrow (M1) and a broad monetary aggregate (M3) for the years 1867–1913, which are presented in series AH1M and AH1N. The computation of the time series relies on data from the statistical yearbooks of Austria and Hungary. Due to a lack of data, entries for Hungarian demand deposits for the period 1867–1872 were linearly extrapolated. Komlos defines M1 for Austria-Hungary as the sum of currency in hands of the public and demand deposits, the latter are net of interbank deposits. M3 for Austria-Hungary is defined as M1 plus time and sav-

[23] The first savings bank was founded in 1819. Within the non-profit sector, in particular savings banks gained a dominant role. In 1900, savings deposits at savings banks accounted for 71% of total deposits of the economy. Since then, their importance has decline somehow, especially after they lost their tax privilege. The more competitive environment enforced mergers and the foundation of savings banks associations, e.g. *'Reichsverband deutscher Sparkassen in Österreich.'*

[24] The increase in the money supply was driven by changes in the OeUB's reserve requirements, the stabilisation of the currency in the run-up to the adoption of the gold standard, as well as the promotion of demand deposits and cashless payments.

ings deposits.[25] Note that the currency in circulation tabulated in Komlos (1983b) is smaller than the sum of banknotes and state notes given in AH1I and AH1J. A possible explanation is that Komlos deducted the estimated cash holdings of government agencies and/or commercial banks.

2.2 INTEREST RATES

2.2.1 Short-term interest rates

Official interest rates

The OeNB and the OeUB lent to the public either against collateral (lombard) or by buying commercial bills (discounting, variously called *Diskont* or *Escompte* in our sources). The respective interest rates were called lombard rates and discount rates. Typically, different rates were applied depending on the characteristics of the underlying asset. The time series on the official interest rates are available in three different formats: (i) listed by date of change, (ii) as monthly time series of end-of-month values, and (iii) as annual averages of end-of-month interest rates.

Discount rate
The discount rate (*Diskontsatz, Eskomptesatz*) is the interest deducted from the nominal amount of a bill if the bill is sold before maturity. Bills (*Wechsel*) to be discounted by the OeNB/OeUB had to fulfil a number of minimum requirements: They had to be denominated in florin Austrian currency, later Austrian crown, and had to run for no longer than 92 days. In addition, bills had to carry at least two (and in some cases three) authorised signatures. Over time, formal requirements concerning the signatures were relaxed.

In the early years, the bank distinguished between bills payable in the town where they were discounted (*Platzwechsel*) and bills the bank had to cash elsewhere (*Domizile*). Between 1860 and 1879, the discount rate on *Domizile* was set 50 basis points higher than for *Platzwechsel*. The difference was abolished in March 1879 (annual report pro 1879, Pressburger 1976, II, p. 133). From then on, a single discount rate was applied throughout the entire monarchy.[26] Series AH2A gives the lowest applicable discount rate up until 1879 and the uniform rate from 1880 onwards.

Lombard rate
The lombard rate (*Lombardsatz*) is the interest paid on collateralised loans (*Vorschuss auf Handpfand*). Assets that could be used as collateral included gold, silver, bills and securities, as determined by the Directorate/Governing Council of the bank (together with the applicable haircut). Loans had a maximum maturity of three months. The interest rate on loans, given in series AH2B, was typically set 1 percentage point above the discount rate. From 7 January 1881, the bank employed a reduced lombard rate on a subset of eligible securities, which was initially only applied to mortgage bonds issued by the OeUB and later also to government bonds.[27]

[25] In addition, in the series AH1N, we corrected the entry for the year 1872. The original entry was K 3,013 million (Komlos 1983b, Table 8). Yet adding up the subcomponents, one actually arrives at K 4,013 million (i.e. fl 2,006.5 million), which fits well with the historically documented fact that deposits grew at an accelerated pace just before the Vienna stock market crash in 1873, which triggered a series of bankruptcies (Maerz and Socher 1973, pp. 339−340).

[26] Furthermore, the OeNB demanded a surcharge if the bill was discounted in a more remote branch. As of 10 December 1866, a 4% discount rate was applicable for Vienna, Brno, Budapest, L'viv, Prague, Liberec and Trieste. In all other OeNB branches, the discount rate was 5% until 31 March 1867 and 4.5% from 1 April 1867 to 26 August 1869. After that, the discount rate was uniform for all branches, except for Brasov (Lucam 1876).

[27] An easily accessible source for eligible securities is the financial yearbook Compass. The reduced lombard rate was set 50 basis points below the regular lombard rate for the entire period from 1881 to 1914, with the exception of the period from 20 October 1882 until 23 February 1883 where the spread temporarily expanded to 100 basis points.

Short-term market rates

The short-term market rate reported in series AH2C is the lowest discount rate for 3-month bills in the Vienna market. The rate refers to bills of highest quality, i.e. prime bills accepted by a leading banking house. Over time, these bills (rates) were labelled *Erste Platzbriefe, Privatdisconto für erstes Papier, Privatdisconto für Bankwechsel* or *Privatdisconto für Platzbriefe*. If a range of interest rates is given, we chose the lowest rate posted.[28]

2.2.2 Long-term interest rates

At the moment of the *Ausgleich* between Austria and Hungary in 1867, the debt of the Empire consisted of paper- and silver-denominated securities. Beginning in the late 1870s, the perpetual 4% gold bonds issued by both Austria and later Hungary served as a benchmark for long-term interest rates in the Austro-Hungarian monarchy. Note that the Empire as a whole never issued any gold-denominated bonds. The Austrian *Goldrente*, first issued in 1876, constituted a liability of the Austrian part of the Empire only (*Im Reichsrate vertretenen Königreiche und Länder*).[29] The same is true for the Hungarian gold-denominated bonds (*aranyjáradék kölcsön*), which were issued from 1881.[30]

The price of bonds on the Vienna stock exchange (AH2D, AH2F) were quoted in Austrian florin per fl 100 nominal amount until November 1899. From December to March 1900, quotes were given in per cent of the nominal amount. From April 1900 onwards, prices were again quoted in crowns per K 100 nominal. The coupon is not included in the quoted price, which simplifies the calculation of the yield (Kathrein 1900).

As a result of being quoted in Austrian florin, changes in bond prices on the secondary market reflect both changes in the yield and in the price of gold as expressed in Austrian florin. The yields given in columns AH2E and AH2G are adjusted for the gold price, i.e. they show the return in gold florin of an investment of 100 gold florin according to the following formula and using the price of the 20 French franc piece (identical to the 8 fl gold piece) from column AH3E.[31]

$$price_{gold} = price_{paper} \times \frac{8\,fl}{price_{20FF}}$$

$$yield_{gold} = 4 \times \frac{100}{price_{gold}}$$

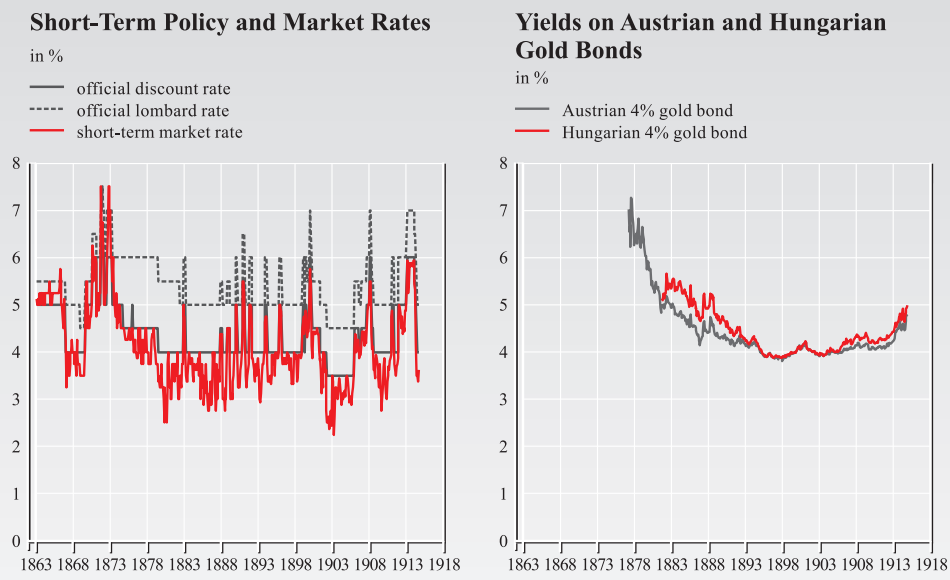
[28] For some days, the rates reported vary marginally between sources.

[29] The 4% gold bond was issued on the basis of a law dated 18 March 1876 (Imperial Law Gazette, No. 35). Further issues followed between 1877 and 1880 and again in 1892 (Compass 1881 and 1914). Interest was payable on 1 April and 1 October without deductions in Vienna in 8 and 4 florin gold pieces or, if the bearer wished so, in mark or francs, in Germany in mark (20.25 mark=10 florin gold), in France, Belgium and the Netherlands in francs (25 French francs=10 florin gold).

[30] The 4% gold bond was first issued in 1881 on the basis of article XXXIII for the conversion of the older 6% gold bond. Further issues followed. Interest was payable on 1 January and 1 July without deductions at public offices in Hungary as well as in Vienna, Paris, London, Frankfurt, Berlin and Amsterdam.

[31] In the calculation of the yield, the price of the 20 French franc piece is divided by 2 to adjust for the changeover to the crown from December 1899 onwards.

FIGURE 2 Interest Rates



Source: Compass, Coursblatt des Gremiums der k.k. Börse-Sensale, k.k. Finanzministerium (1892a, 1903-1906), Lucam (1876), Leonhardt (1886), Neue Freie Presse, Wiener Zeitung. For details see section 3.2.

2.3 EXCHANGE RATES

Exchange rates are taken from the price list of the Vienna stock exchange as reproduced in the Vienna dailies *Wiener Zeitung* and *Neue Freie Presse*. Prices (spot market) are quoted in florin Austrian currency (from 31 December 1899 in crowns) per 100 units of foreign currency (10 units of foreign currency in the case of the pound sterling). Monthly time series refer to end-of-month exchange rates, while annual entries are averages of these end-of-month exchange rates. Prices refer to 3-month bills until 1880 and to sight bills from January 1881 onwards.

Prices of bills denominated in pound sterling and French francs are given in series AH3A and AH3B, respectively.[32] Due to the Franco-Prussian war, bills on France payable at Paris were not quoted from September 1870 to May 1871.[33] For Germany, before 1875, exchange rates refer to bills in southern German florin payable in Frankfurt[34] (AH3C). Among the other legacy currencies that merged into the mark, the thaler (Berlin) was listed but rarely quoted. From January 1875 onwards, German bills payable in Frankfurt were denominated in mark (AH3D). 1 southern German florin was exchanged for 1.71 mark. Note that, from November 1877 onwards, exchange rates refer to bills in mark payable on German banking places.

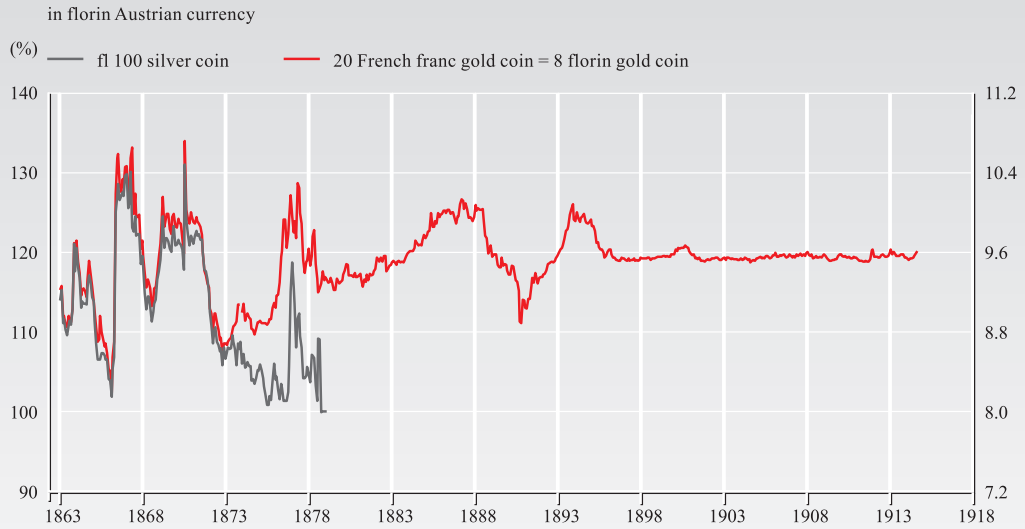
[32] Unlike for the interwar period, prices for Swiss francs and US dollar are not reported. For the Swiss franc, regular quotes are available from the early 1890s onwards. US dollar (New York) is listed in the bulletin of the Vienna stock exchange from 1893 onwards but no prices are given. For background concerning foreign exchange quotations in the late 19th century, see Flandreau and Jobst (2005).

[33] For the same reason, bills denominated in southern German florin were not quoted from 29 July to 31 July 1870. The entry for 31 July 1870 actually refers to the quotation from 1 August 1870.

[34] Except for July 1867, where the entry refers to bills in southern German florin payable in Augsburg.

Finally, the data table AH3 on exchange rates comprises time series on the notations of the 20 French franc gold coin[35] (AH3E) and of fl 100 in silver coins (AH3F) that can be used to calculate the gold and silver agio. Following the decline in the international silver price, silver coins were no longer quoted from February 1879.

FIGURE 3 Price of Silver and Gold at the Vienna Stock Exchange, 1863–1914



Source: Vienna Stock Exchange.
Note: The right-hand and left-hand axis are aligned according to the gold-silver ratio of the Latin Monetary Union (LMU). Until 1874 the two lines representing the price of gold and silver coins more or less overlap, afterwards the gap between the two lines tracks the deviation of the gold-silver ratio in international markets from the LMU ratio.

2.4 GOVERNMENT FINANCES

Until 1867, the Austrian Empire had a single budget for the entire empire. The compromise of 1867 granted the lands of the Hungarian crown significant autonomy also in the fiscal domain. Only a few areas of policy, notably defence and foreign policy, continued to be run by the central government with its own budget, the so-called Common Ministry. Otherwise, Austria and Hungary were independent in their revenue and spending decisions (Pammer 2010). This means that, after 1867, there were three relevant budgets on the central level.

2.4.1 Revenue and expenditure

Over the 19th century, the reporting of revenues and expenditures underwent several significant changes (Wysocki 1975). 1848 saw the beginning of comprehensive budgets that covered all areas of government revenues and spending. Until 1863, however, budgets were drawn up on a net basis, i.e. in many areas receipts and expenditures were netted out, with only the net amounts entering the budget. 1863 marked the shift to gross budgeting, which date was therefore chosen as the starting point for

[35] The 20 French franc gold coin was not quoted at the Vienna stock exchange from 12 November to 31 December 1873. The entry for the latter date actually refers to the quotation from 2 January 1874.

the time series reported here. Budgets initially covered the period from 1 November until 31 October. The fiscal year was aligned with the calendar year from January 1865. As a result, the 1864 budget refers to the 14-month period from 1 November 1863 to 31 December 1864. For Hungary, the first budget is available for 1867, but it did not cover a full year. The 1868 budget was drawn up on a net basis, and 1869 is the first year for which a comparable gross budget is available and is also the first year reported here (Magyary 1924, pp. 4–5). All series are in florin until 1899 and in crown from 1900.

Expenditure and revenue figures reported in the secondary literature typically refer only to the ordinary budget, a subset of the total budget. For reasons of consistency, these numbers are also reported here. In addition, we included data that help to calculate expenditure and revenue series that better fit modern concepts. In some cases however, the information given in the statistical yearbooks is not sufficient to allow full reconstruction according to modern criteria.[36]

The following two conventions in the reporting of expenditures and revenues have to be taken into account when using the series.

(1) At the time, a distinction was made between ordinary (*ordentlich, rendes*) and extraordinary (*außerordentlich, rendkivűli*) budgets.[37] In principle, the idea was to distinguish expenditures that would result from the normal course of government from expenditures that either occurred only once or at least exceeded normal requirements. A similar distinction applied to revenues (Wagner 1863).[38] In practice, however, the distinction was less than straightforward and lent itself to manipulation, so that in fact, extraordinary expenditures came to include all expenditures that could not be temporarily fitted into the ordinary budget or that the government wanted to keep outside, in particular (but not only) investment in railroads and telegraphs. From an economic perspective, therefore, these expenditures (and revenues) should be added to the ordinary budget when looking for total expenditures and revenues.

(2) Related to the definition of ordinary and extraordinary transactions is the treatment of financial transactions. Given its one-off nature, the raising of debt typically qualified as extraordinary revenue. In the same manner, a one-off repayment of debt was classified as extraordinary expenditure. Given their regularity, debt repayments scheduled over a longer period, as e.g. in the case of debt annuities, were subsumed under ordinary expenditures, though. According to modern national accounting, all such financial transactions should be excluded from both expenditures and revenues; only interest payments should be included.

Austrian budget

Ordinary expenditures as reported in series AH4A correspond to the numbers most often reported in studies on the Austrian budget (e.g. Püregger 1912, Wysocki 1973). Ordinary expenditures include both interest payments (*Zinsaufwand*, AH4B) and debt redemptions (*Tilgungen*, AH4C). Adjusted extraordinary expenditures exclude financial transactions and are reported in series AH4D. The series was constructed by looking, item by item, whether a transaction was financial or not. Details on the transactions and decisions taken can be found in Jobst and Scheiber (2014). Extraordinary expenditures from non-financial transactions are particularly high in 1866 and 1867 due to the Austro-Prussian War. Some modest extraordinary expenditures reappear between 1874 and

[36] Reconstruction would require a detailed item-by-item study of government account statements *(Rechnungsabschlüsse)*, which is outside the scope of this chapter.

[37] Ordinary revenues include both tax and non-tax revenues. The distinction between them and extraordinary revenues stems from the regularity of flows.

[38] The balance of the ordinary budget such defined could be considered a predecessor of the modern structural budget balance.

1879, and again from the late 1890s until 1913, when significant infrastructure investment programmes were booked in the extraordinary budget. Series AH4E gives ordinary revenues, while adjusted extraordinary revenues (again excluding financial transactions) are reported under AH4F. Adjusted extraordinary revenues from non-financial transactions are very low throughout the period and consist only of excess returns from school funds that were siphoned off. To calculate a budget balance according to modern standards, revenues should therefore be defined as the sum of AH4E and AH4F, while expenditures should be defined as the sum of ordinary and adjusted extraordinary expenditures minus debt repayments (AH4A + AH4D – AH4C).

Hungarian budget

Ordinary expenditures are reported in series AH4G. Unlike for Austria, the Hungarian statistical yearbook does not allow singling out debt repayments and interest service.[39] Extraordinary expenditures are given in series AH4H.[40] From 1879 onwards, these figures are net of extraordinary expenditures on debt; unfortunately, for the years before 1879, a similar adjustment cannot be made on the basis of the statistical yearbook. Correspondingly, series AH4I reports ordinary revenues and AH4J shows extraordinary revenues, where again an adjustment for revenues from the issuance of debt is only possible from 1879 onwards.

Common budget (Gemeinsamer Haushalt)

The central Austro-Hungarian government comprised the three common ministries of foreign affairs, war and finance. The total of ordinary and extraordinary expenditures is given in series AH4K. Extraordinary expenditures typically include the purchase of new military equipment and other military expenditures considered extraordinary.[41] Some small revenues of the different departments aside (series AH4L, covering about 2% of expenditures), the main source of revenues were customs duties (*Zolleinnahmen*), given in series AH4M. Since deductions were made for some indirect taxes, net customs revenues can be negative in some years. As the common ministry would not issue any debt, all expenditures not paid out of central revenues had to be covered by contributions from the Austrian and the Hungarian budget.[42] Contributions were paid according to a quota (*Quote*) that was renegotiated every ten years and was supposed to reflect the relative economic size of the two states as measured by tax receipts. In 1868, the Austrian share was set at 70%; it declined to 63.6% before World War I (Mischler and Ulbrich 1895–97, pp. 867–870).[43] The total of the Austrian and the Hungarian contributions (*Nettoerfordernis*) is given in series AH4N. Note that these contributions are already included in the expenditure figures for Austria and Hungary above.

2.4.2 Government debt

Before 1867, the debt of the central government consisted of the debt of the Austrian Empire and the much smaller debts of the Lombardo-Venetian Kingdom. With the loss of Lombardy in 1859

[39] Additional information is available from other sources. The *Tabellen zur Währungsstatistik* (1893, p. 291) contain interest expenditures for the years 1868 to 1892, but the data on expenditures and revenues on p. 286 do not match fully with the statistical yearbook. The same is true for the series in Matlekovits (1900). All series are reproduced in Jobst and Scheiber (2014).

[40] Including extraordinary contributions to the common budget. On the common budget, see below.

[41] The common expenditures remained pretty stable until 1900 except for the occupation of Bosnia and Herzegovina in 1878/79 and the 1887/88 crisis. On average, 95% of the common expenditures were related to the department of war. Yet, these common military expenditures were only part of Austria-Hungary's total military expenditure, since both countries had additional autonomous military budgets.

[42] In order to ensure a balanced common budget, first, delegates of the two parliaments passed the common budget bill, and then Austria and Hungary independently concluded their own budget acknowledging their contributions.

[43] After the annexation of the Military Frontier by Hungary, the quota declined to 69.7:30.3 (Austria: Hungary) in 1872 and to 68.6:31.4 in 1873. The compromises of 1878 and 1887 confirmed this quota. In addition, the 1887 compromise abolished the deduction of some indirect taxes from customs revenues, which partly explains the significant increase of customs revenues starting in 1888. The quota was 65.6:34.4 from 1900 and declined further to 63.6:36.4 in 1908 (Paulinyi 1973, pp. 573–581).

and Venetia in 1866, the debts of these regions were transferred to the Kingdom of Sardinia, later Italy (Pammer 2010, p. 151).[44] The sum of the Lombardo-Venetian debt and the debt of the Austrian Empire is given in series AH4O. When Austria and Hungary agreed on a budgetary separation in 1867, Hungary refused to acknowledge responsibility for the earlier debts of the Austrian Empire, but agreed to contribute to amortisation and interest service. Until the demise of the monarchy, no new debts were contracted by Austria and Hungary together. Instead, both the Austrian and the Hungarian governments created and issued new debt securities under their own responsibility.

The following debt series are reported here:

First, the debts contracted before 1867 continued to exist as the so-called 'general debt' (*Allgemeine Staatsschuld*). The economic burden with respect to amortisation and interest service was mainly borne by Austria. Consequently, the general debt was reported in the Austrian budget. Series AH4O contains all categories of the general debt, including consolidated, floating and a (small) category of other debts.[45]

Second, excluded from AH4O are the liabilities that arose as a consequence of the abolition of feudal rights and dues (*Grundentlastung*) in 1848. In partial compensation of claims lost, the feudal lords received negotiable emancipation bonds. Interest and amortisation were covered from direct payments by peasants and from a surcharge on the land tax. In addition, the government guaranteed payment. Therefore, in contemporary statistics the emancipation bonds often figure as part of government debt. Here they are reported separately under AH4Q. From 1868 onwards, the series for the *Austrian emancipation bonds* AH4Q (*Grundentlastungsschuld*) only includes Austrian liabilities, while the *Hungarian emancipation bonds* are reported separately in series AH4S (*Földtehermentesitési adósság*).

Third, the debts contracted by the Austrian government after 1867 are given in series AH4P, those by the Hungarian government in series AH4R. These series include again consolidated as well as floating and other debts. Since the available sources give different values for the Hungarian debt[46], we used the Hungarian statistical yearbook, as it is available throughout the entire period (with the exception of 1868–1873, which we currently take from the *Compass*) and gives most details on the composition of debt, which is not true for the other sources.

2.5 PRICES AND PRODUCTION

2.5.1 Consumer price index

Public monitoring of price developments in the Austrian monarchy dates back to the 18th century, but price data have been compiled systematically only since the second half of the 19th century, in light of the introduction of the gold standard. An aggregated index of consumer prices for the period 1800 to 1914 was derived by Mühlpeck, Sandgruber and Woitek (1979). The computation of the consumer price index applies the Laspeyers method (1914=100). Starting point for the weighting of the basket of consumer goods was a 1912 survey of working class households in

[44] In 1866, Venetian debt amounted to fl. 65.9 million.
[45] Hungary bore 23.8% of the economic burden of the debt service related with the general consolidated debt, which was significantly less than its share in the common budget. Common floating debt represented the value of state notes issued by the government in 1866. For details, see subsection 2.1.2.
[46] Numbers in k.k. Finanzministerium (1893, Table 173, p. 290) and Matlekovits (1900) vary by up to 10% compared to the Hungarian statistical yearbook, but differences do not appear to be systematic.

Vienna. The derived weights were kept constant over the entire period from 1800 to 1914, which is consistent with the Laspeyres method. Mühlpeck et al. present plausible evidence that the composition of the consumption basket may not have changed substantially during that period, at least for the dominant food component. The basket consists of 37 items of 7 different components, i.e. food and beverages including alcohol and tobacco (weight of the component: 59.4%), accommodation (15%), clothing (9.2%), lighting and heating (4.6%), culture and newspapers (3.9%), dues and fees (3.8%), personal hygiene and sanitation (2.8%). The CPI series AH5A is representative for the territory of today's Republic of Austria.[47] No consumer price index is available for the monarchy as a whole.

2.5.2 Industrial production

Comprehensive indices of manufacturing production for both Imperial Austria (AH5B) and Imperial Hungary (AH5C) from 1870 to 1913 have been published by Schulze (2000). The indices of total manufacturing production comprise weighted sub-indices on the production of food (beer, sugar, tobacco, spirits, flour, and other food-processing), iron (smelting and refining), engineering (mechanical and electrical engineering, transport and instruments), metalworking, energy (petroleum, electricity, fuel and light), textiles (cotton, woollen and linen textiles), construction materials as well as a residual 'other manufacturing'.[48] The index is based on constant 1913 prices (1913=100). Schulze resorts to product-specific prices from Mühlpeck et al. (1979).

2.6 NATIONAL ACCOUNTS AND POPULATION

2.6.1 Gross domestic product

Nominal GDP

We applied a hybrid GDP deflator to derive nominal GDP for Imperial Austria and Imperial Hungary from the real GDP estimates in Schulze (2000). The GDP deflator is based on the one published by Kausel (1979). Since Kausel's index of the GDP deflator (1913=100) only comprises entries for the years 1870, 1880, 1890, 1900, 1910 and 1913, we interpolated annual figures using information on the development of prices expressed in the consumer price index from Mühlpeck et al. (1979), which was rebased to 1913. Nominal GDP series have been calculated backward starting with 1913. The series AH6A (Austria) and AH6B (Hungary) comprise annual entries for nominal GDP from 1870 to 1913.

Real GDP

Several attempts have been made to estimate the real GDP of Austria-Hungary and its two halves, Imperial Austria and Imperial Hungary, starting from contemporary Fellner (1916) and including Komlos (1983a) and Good (1984). The most recent estimate was made by Schulze (2000) and is reproduced here. Schulze estimated GDP in constant 1913 prices for the primary (agriculture, forestry), secondary (manufacturing, mining, handicraft, construction), and tertiary sector (trade, transport, communications, public and private services, housing), exploiting various data sources and earlier research in this field. The aggregation procedure applies constant 1913 value-added shares as weights. All figures were converted into 1913 prices, relying on product-specific price indices from Mühlpeck et al. (1979). The series AH6C (Austria) and AH6D (Hungary) comprise

[47] Mühlpeck et al. recommend chain-linking their consumer price index with subsequent indices using July 1914=1 and an exchange rate of 1 gold crown=1.44 *Altschilling* (see Mühlpeck et al. 1979, pp. 680f). A chain-linked consumer price index from 1800 to 1998 has been published by Butschek (1999), who also used the data provided by Mühlpeck *et al.*

[48] The sub-indices have been published in Schulze (2000), too.

annual entries for real GDP from 1870 to 1913; series AH6E (Austria) and AH6F (Hungary) show real GDP per capita as computed by Schulze (2000) for the same period.[49]

2.6.2 Foreign trade

The collection of foreign trade data is intimately linked to fiscal considerations. In 1863, the *'k.k. Statistische Central-Commission'* was founded with the task of collecting comprehensive statistics on trade, among other things. Annual publications of trade statistics reported trade volumes and the values of 1,300 items for 48 countries of origin or destination and by mode of transport. In 1862, experts at the central statistics commission started to use average market prices for the evaluation of traded goods. In the following years, the methodology was improved repeatedly. Starting in 1877, each unit of a good imported was evaluated at its average market price in silver florin at the border or seaport, excluding tariffs and the cost of transportation from the border to the final destination within Austria-Hungary. *Vice versa*, each unit of a good exported was evaluated at its average market price in silver florin including domestic transport costs up to the border or seaport. These principles correspond more or less to the modern Incoterms CIF and FOB (Grossendorfer 1979, p. 629).[50]

Data table AH6 reports annual values of exports (AH6G) and imports (AH6H) at current prices of the general customs area of the Austro-Hungarian Empire for the entire period 1863–1914.

2.6.3 Population

In the Habsburg Monarchy, population counting was dominated by military considerations. General conscription was introduced in 1769 but, due to opposition from the Hungarian aristocracy, the regular census ultimately often excluded Hungary. Hence data on population developments in Hungary relied mainly on extrapolation using church records. The census of 1857 was conducted in the whole empire, yet a modern methodology of population census was first applied in 1869 only. The Compromise of the Austro-Hungarian Empire established the legal basis for the decennial population census. Until the outbreak of World War I, four further censuses were conducted in 1880, 1890, 1900 and 1910, each on 31 December.[51]

The entries of the AH6I series for the years 1863 to 1866 comprise the entire population of the Austrian Empire. The drop in total population in 1866 is due to the loss of the Kingdom of Lombardy-Venetia. From 1867 on, the populations of Imperial Austria and Imperial Hungary (AH6J) are presented separately. Although Bosnia and Herzegovina had been annexed in 1908, they were not included in the total population at the time (and are not included in our data).[52]

Official yearly entries in the annual reports of the *k.k. Statistische Central-Commission* exist only for Imperial Austria. The yearly entries between two censuses were computed by the *k.k. Statis-*

[49] The population series used by Schulze for the calculation of per capita figures deviates marginally from the population numbers reported below. Furthermore, Schulze (2000) published real GDP time series for Imperial Austria and Imperial Hungary for the primary, secondary and tertiary sectors.

[50] In 1877, commodities made up 54% of total imports in value terms and 50% of exports. The main trading partner was Germany, with an import share of 62% and an export share of 65%. By the turn of the century, Germany was still the main trading partner thanks to intensified trade, but its relative share in total imports had declined to 25% and the export share had declined to 33%. The share of commodities had increased to 58% of imports and decreased to 40% of total exports (Grossendorfer 1979, pp. 629−630).

[51] A comprehensive overview of the Austro-Hungarian Empire's demography was published by Helczmanovszki (1979).

[52] According to the censuses of 1879 and 1885, Bosnia and Herzegovina had a civil population of 1.158 million inhabitants and 1.336 million inhabitants, respectively. The total population (including military) of Bosnia and Herzegovina was 1.591 million inhabitants in 1900 and 1.932 million in 1910.

tische Central-Commission on the basis of yearly cases of live birth and death and adjusted for migration. The figures comprise both civil and military population. For Imperial Hungary, no such numbers could be found. We refrained from interpolating annual entries for Hungary.

3 DATA SOURCES

Our main source for the reserves is the annual reports of the OeNB and OeUB, respectively. The balance sheet files in the historical archives of the OeNB contain preparatory material and additional detail necessary for series AH1A, B, C, E, F and G. Monthly series AH1A to AH1D for 1863–1876 were retrieved from Lucam (1876), Tables 34–46; data for 1877–1913: *Compass*,[53] volumes 9–48 (1876 to 1915), and complemented using the weekly statements as published in the Vienna daily *Wiener Zeitung*.[54] Monthly series AH1E and AH1F are also available from the preparatory material in the balance sheet files.

Banknotes in circulation (AH1I, 1863–1875) are from Lucam (1876), Tables 34–46; and for 1876–1914 are from *Compass*, issues 9–48 (1876 to 1915). State notes in circulation (AH1J) for 1866–1891 are from k.k. Finanzministerium (1892a), *Denkschrift zum Gang der Währungsfrage*, Table 103, p.154–155; data 1892–1895: k.k. Finanzministerium (1896–1899), *Tabellen zur Währungsstatistik*, Table 70, pp. 176–77; and for 1896–1907 from Österreichisches Statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 1896 to vol. 1907.

The data on the amount of state notes held by the OeNB or OeUB, respectively, were retrieved from the following sources: data 1866–1875: Lucam (1876), Table 37–46; data 1876–1888 (June): *Wiener Zeitung*, and complemented using *Compass* as well as Leonhardt (1886), Table 2; data 1888 (July)–1893: *Compass*, issues 20–25 (1888 to 1893); data 1894–1907: Österreichisches Statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 1894 to vol.1907.

Other central bank liabilities considered part of monetary base (AH1K): data 1863–1875: Lucam (1876), Tables 34–46; and data 1876–1914: weekly statements as published in the *Wiener Zeitung*, complemented using *Compass*. Giro deposits (AH1L): data 1863–1875: weekly statements as published in the *Wiener Zeitung*, complemented using *Compass*.

The monetary aggregates M1 (AH1M) and M3 (AH1N) for the years 1867–1913 were published by Komlos (1983b, Table 8).

The data on official interest rates are from Lucam (1876), Tables 9 and 15 for 1863–1875; for 1876–1885 are from Leonhardt (1886), Table 42; and for 1886–1914 from *Compass*, issues 19–48 (1886 to 1915).

The data on short-term market rates are from Coursblatt des Gremiums der k. k. Börse-Sensale for 1863–1870; for 1871–1891 from k.k. Finanzministerium (1892a), *Denkschrift zum Gang der Währungsfrage*, Table 131, p. 205; for 1892–1904 from k.k. Finanzministerium (1903–1906), *Tabellen zur Währungsstatistik*, Table 95, p. 499; and for 1905–1914 from *Neue Freie Presse*, complemented using *Wiener Zeitung*.

[53] The *Compass*, which had been published since 1868, was the most important financial yearbook in the dual monarchy.
[54] The bank charter of 1862 required the bank to publish weekly statements on its balance sheet. These statements had earlier been printed in the newspaper *Wiener Zeitung*.

For the long-term interest rates, prices are taken from the bulletin of the Vienna stock exchange as reproduced in the Vienna daily *Neue Freie Presse*.

Exchange rates are taken from the bulletin of the Vienna stock exchange as reproduced in the Vienna daily *Wiener Zeitung* (data from January 1863 to August 1868) and *Neue Freie Presse* (data from September 1868 onwards).

The series on the Austrian budget are mainly taken from Püregger (1912) and Jobst and Scheiber (2014). We were able to exactly reproduce the series from Püregger for the period 1867 to 1913 using the Austrian statistical yearbooks. Yet, for the entries before 1867, some minor discrepancies remain unresolved. The figures on the Hungarian budgets and debt are taken from the Hungarian statistical yearbooks, while the figures on the common budget, central government debt and Austrian debt originate from the Austrian statistical yearbook.

Analytically, Austrian government ordinary expenditure (AH4A), ordinary revenue (AH4E), interest payment (AH4B) and debt redemption (AH4C): Data 1863–1911: Püregger (1912), Table VII, pp. 574–575; data 1912/13: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 35 (1916), XXII. Finanzwesen, Table A.12, pp. 443–448.

Austrian government adjusted extraordinary expenditures (AH4D) and extraordinary revenues (AH4F): for details on the computation of the adjusted series see Jobst and Scheiber (2014). The authors quote the following sources for their computations: data 1865–1869: Statistisches Jahrbuch der Österreichischen Monarchie, vol. 1866 to vol. 1870, Finanzwesen – Hauptübersicht der gesamten Staatsgebahrung; data 1870–1913: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 3 (1884) to vol. 35 (1916), Finanzwesen – Hauptübersicht der gesamten Staatsgebahrung.

Hungarian government ordinary and extraordinary expenditures (AH4G, AH4H) as well as ordinary and extraordinary revenues (AH4I, AH4J): Due to occasional data revisions, the data table includes only numbers of the most recent publication of the statistical yearbooks. Data 1869–1880: Ungarisches Statistisches Jahrbuch, vol. 1875 to vol. 1880, Staatshaushalt. Data 1881–1913: Ungarisches Statistisches Jahrbuch, vol. 1884, 1895, 1900, 1905, 1909, 1913 and 1914, Staatshaushalt.

Common budget expenditure (AH4K), revenue (AH4L), customs duties (AH4M) and contributions (AH4N): Due to occasional data revisions, the data table includes only numbers of the most recent publication of the statistical yearbooks. Data 1868–74: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 2 (1883), XIX. Anhang, p. 249; data 1875–1880: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 7 (1888), XXII. Anhang, p. 267; data 1881–1892: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 14 (1895), XXV. Anhang, p. 316; data 1893–1899: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 26 (1907), XXXII. Anhang, p. 477; data 1900–1913: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 35 (1916/17), Anhang, p. 352.

Pre-1867 government debt (AH4O), Austrian government debt (AH4P) and Austrian emancipation bonds (AH4Q): Data 1863–1878: Statistisches Jahrbuch der Österreichischen Monarchie, vol. 1866 to vol. 1880, Finanzwesen – Hauptübersicht der Staatsschuld; complemented using *Com-*

pass, vol. 17 (1884) for Austrian government debt 1868–1878; data 1879–1913: Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 2 (1883) to vol. 33 (1914), Finanzwesen – Staatsschuld.

Hungarian government debt (AH4R), Hungarian emancipation bonds (AH4S): Data 1868–1873: *Compass*, issue 16 (1884); data 1874–1895: Ungarisches Statistisches Jahrbuch, vol. 1874 to vol. 1896, Staatsschuld (*Állami tartozások*); data 1896–1910: *Compass*, issues 35–46 (1903–1914); data 1911–1913: Ungarisches Statistisches Jahrbuch, vol. 1914, Staatsschuld (*Állami tartozások*).

The data entries on the consumer price index for Austria (AH5A) are taken from Mühlpeck, Sandgruber and Woitek (1979), pp. 676–679.

The data on the manufacturing production index for Imperial Austria (AH5B, Cisleithania) and Imperial Hungary (AH5C, Transleithania) are from Schulze (2000), Tables A3 and A4.

The data on nominal GDP (AH6A, AH6B) are authors' own calculations based on Schulze (2000) and Kausel (1979). Real GDP data (AH6C, AH6D) are from Schulze (2000), Tables A1 and A2. The data on real GDP per capita (AH6E, AH6F) are from Schulze (2000), Tables A1 und A2.

Imports (AH6G) and exports (AH6H) data are from Statistisches Jahrbuch der Österreichischen Monarchie, vol. 1864 to vol. 1881 for the period 1863–1881; and for 1882–1914 from Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 1 (1882) to vol. 35 (1916).

The data on the population for Austria (AH6I) are taken from Statistisches Jahrbuch der Österreichischen Monarchie, vol. 1865 to vol. 1869 for 1863–1866; for 1867–1871 from Bolognese-Leuchtenmüller (1978), Teil II, Table 1; and for 1872–1913 from Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder, vol. 33 (1914). The data on the population for Hungary (AH6J) are from Matlekovits (1900), p. 67 for the censuses of 1869, 1880 and 1890 and for the censuses of 1890, 1900 and 1910 are from Kovacsics (1963), Annex table 6.

4 REFERENCES

Archival sources
Bankhistorisches Archiv der OeNB, Beilagen zu Bilanzen.

Published sources – Statistical publications
k.k. Finanzministerium (1892b), *Statistische Tabellen zur Währungsfrage der Österreichisch-ungarischen Monarchie (Statistical tables on currency issues in the Austro-Hungarian monarchy)*, Hof- und Staatsdruckerei, Vienna.

k.k. Finanzministerium (1893), *Tabellen zur Währungsstatistik (Currency statistics)*, 1st ed., k.k. Hof- und Staatsdruckerei, Vienna.

k.k. Finanzministerium (1896–1899), *Tabellen zur Währungsstatistik (Currency statistics)*, 2nd ed., part 1, k.k. Hof- und Staatsdruckerei, Vienna.

k.k. Finanzministerium (1903–1906), *Tabellen zur Währungsstatistik (Currency statistics)*, 3rd ed., k.k. Hof- und Staatsdruckerei, Vienna.

Österreichisches statistisches Handbuch für die im Reichsrate vertretenen Königreiche und Länder (Austrian statistical handbook of the Kingdoms and Lands represented in the Imperial Council), k.k. Statistische Zentralkommission (ed.), vol. 1 (1882) to vol. 35 (1916), Vienna.

Statistisches Jahrbuch der Österreichischen Monarchie (Statistical yearbook of the Austrian monarchy), k.k. Statistische Zentralkommission (ed.), vol. 1864 to vol. 1881, Vienna.

Ungarisches Statistisches Jahrbuch (Magyar statistikai evkönyv) (Hungarian statistical yearbook), Königlich Ungarisches Statistisches Zentralamt (ed.), vol. 1875 to vol. 1918, Budapest.

Published sources – Other publications

Annual reports of the privilegirte Oesterreichische National-Bank and the Oesterreichisch-ungarische Bank including preparatory material and supplementary documents of the balance sheet files, vol. 1 (1878) to vol. 36 (1914).

Compass, Finanzielles Jahrbuch (*Financial yearbook*), issues 14–48 and 54 (1881–1915 and 1921), vol. 1, respectively, Vienna.

Coursblatt des Gremiums der k. k. Börse-Sensale (Stock prices published by the official brokers of the Vienna stock exchange), vol. 1 (1861) to vol. 8 (1868), Vienna.

Neue Freie Presse (Viennese newspaper, published between 1864 and 1938), Vienna.

Verhandlungen der Special-Commission zur Berathung der Münzfrage vom 10. bis zum 14. April 1867 (Deliberations of the special commission on monetary reform, 10 to 14 April 1867), 3–5, in: k.k. Finanzministerium (1892a), *Denkschrift über den Gang der Währungsfrage seit dem Jahre 1867*, k.k. Hof- und Staatsdruckerei, Vienna.

Wiener Zeitung (Viennese newspaper, founded in 1703, official publication used for government announcements from 1810), Vienna.

Secondary literature

(Anonymous) (1898), *Die Agioreserve der Oesterreichisch-ungarischen Bank (The Austro-Hungarian Bank's capital gains on its gold reserves)*, Alfred Hölder, Vienna.

Bachinger, Karl, Hildegard Hemetsberger-Koller and Herbert Matis (1987), *Grundriss der österreichischen Sozial- und Wirtschaftsgeschichte von 1848 bis zur Gegenwart (Outline of Austria's social and economic history from 1848 to the present)*, OeBV Klett-Cotta, Vienna.

Bachinger, Karl and Dieter Stiefel (eds.) *Auf Heller und Cent. Beiträge zur Finanz- und Währungsgeschichte (Contributions to financial and monetary history)*, Frankfurt a. M., Vienna, 2001.

Bolognese-Leuchtenmüller, Birgit (1978), *Bevölkerungsentwicklung und Berufsstruktur, Gesundheits- und Fürsorgewesen in Österreich 1750–1918. Wirtschafts- und Sozialstatistik Österreich-Ungarns (Demographic development and occupational structure, health and welfare system in*

Austria, 1750–1918. Economic and social statistics of Austria-Hungary), vol. 1, Verlag für Geschichte und Politik, Vienna.

Brusatti, Alois (ed.), *Die Habsburgermonarchie 1848–1918. Die wirtschaftliche Entwicklung (Economic development in the Habsburg monarchy, 1848–1918)*, Österreichische Akademie der Wissenschaften, vol. 1, Vienna, 1973.

Butschek, Felix (1999), *Statistische Reihen zur Österreichischen Wirtschaftsgeschichte. Die Österreichische Wirtschaft seit der industriellen Revolution (Statistical series on Austria's economic history. The Austrian economy since the Industrial Revolution)*, WIFO, Vienna.

Einzig, Paul (1961), *A dynamic theory of forward exchange*, Macmillan, London.

Fellner, Frigyes (1911), *Die Währungsreform in Ungarn (Monetary reform in Hungary)*, Manz Verlag, Vienna.

Fellner, Frigyes (1916), Das Volkseinkommen Österreichs und Ungarns (National income in Austria and Hungary), *Statistische Monatsschrift*, vol. 42, 485–625, Vienna.

Flandreau, Marc and Clemens Jobst (2005), 'The ties that divide. A network analysis of the international monetary system, 1890–1910', *Journal of Economic History* 65(4), 977–1007.

Flandreau, Marc and John Komlos (2006), 'Target zones in history and theory: efficiency, credibility, and policy autonomy', *Journal of Monetary Economics* 53(8), 1979–1995.

Grossendorfer, Enno (1979), Österreichs Außenhandel 1831–1978 (Austria's foreign trade, 1831–1978), in: Österreichisches Statistisches Zentralamt, Geschichte und Ergebnisse der zentralen amtlichen Statistik in Österreich 1829–1979', *Beiträge zur österreichischen Statistik*, Heft 550, Vienna.

Helczmanovszki, Heimold (1979), 'Die Bevölkerung Österreich-Ungarns (The population of Austria-Hungary) ', in: Österreichisches Statistisches Zentralamt, Geschichte und Ergebnisse der zentralen amtlichen Statistik in Österreich 1829–1979, *Beiträge zur österreichischen Statistik*, Heft 550, Vienna.

Hemetsberger-Koller, Hildegard (2001), 'Die suspendierte Goldkonvertibilität. Barzahlungskrise in Österreich-Ungarn zu Beginn des 20. Jahrhunderts (Gold convertibility suspended: The cash payment crisis in Austria-Hungary in the early 20th century)', in: Bachinger, Karl and Dieter Stiefel (eds.), *'Auf Heller und Cent. Beiträge zur Finanz- und Währungsgeschichte*, 185–219, Frankfurt a.M., Vienna.

Jobst, Clemens (2009), 'Market leader: The Austro-Hungarian Bank and the making of foreign exchange intervention, 1896–1913', *European Review of Economic History* 13(3), 287–318.

Jobst, Clemens and Thomas Scheiber (2014), 'Extraordinary ordinary: Reconstructing central government expenditures and revenues for Austria-Hungary and Austria 1863–1938', *OeNB Working Paper*.

Kamitz, Reinhard (1949), 'Die österreichische Geld- und Währungspolitik von 1848 bis 1948 (Austria's monetary and currency policy from 1848 to 1948)', in: Hans Mayer (ed.), *Hundert Jahre österreichische Wirtschaftsentwicklung 1848–1948*, Vienna.

Kathrein, Rudolph (1900), *Das neue Coursblatt der Wiener Effektenbörse (The new stock price list of the Vienna stock exchange)*, 2nd completely revised edition, Alfred Hölder, Vienna.

Kausel, Anton (1979), Österreichs Volkseinkommen 1830–1913 (Austria's national income 1830–1913), in: Österreichisches Statistisches Zentralamt, Geschichte und Ergebnisse der zentralen amtlichen Statistik in Österreich 1829–1979, *Beiträge zur österreichischen Statistik*, Heft 550, Vienna.

k.k. Finanzministerium (1892a), *Denkschrift über den Gang der Währungsfrage seit dem Jahre 1867 (Memorandum on monetary developments since 1867)*, k.k. Hof- und Staatsdruckerei, Vienna.

Komlos, John H. (1983a), *The Austro-Hungarian Empire as a Customs Union: Economic Development in Austria-Hungary in the Nineteenth Century*, Princeton NJ: Princeton University Press. German translation from 1986: *Die Habsburgermonarchie als Zollunion. Die Wirtschaftsentwicklung Österreich-Ungarns im 19. Jahrhundert*, Österreichischer Bundesverlag, Vienna.

Komlos, John H. (1983b), 'The diffusion of financial technology into the Austro-Hungarian Monarchy toward the end of the nineteenth century', pp. 137–163, in: Komlos, John H. (ed.), *Economic development in the Habsburg Monarchy in the nineteenth century: essays*, East European Monographs, Boulder/Columbia University Press, New York.

Kovacsics, József (1963), *Magyarország történeti demográfiája (Demographic history of Hungary)*, Budapest.

Leonhardt, Gustav (1886), *Die Verwaltung der Oesterreichisch-ungarischen Bank 1878–1885 (The management of the Austro-Hungarian Bank, 1878–1885)*, Vienna.

Liese, Joachim and Max-Stephan Schulze (1993), Geldpolitik und Konjunktur in Österreich: Die 'Plener'sche Stagnation' 1862 bis 1866 (Monetary policy and economic activity in Austria: Economic stagnation under finance minister Plener between 1862 and 1866), *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte* 80, 510–511.

Lucam, Wilhelm Ritter von (1876), *Die Oesterreichische Nationalbank während der Dauer des dritten Privilegiums (The Oesterreichische Nationalbank during the 3rd Privilegium)*, Manz Verlag, Vienna.

Maerz, Eduard and Karl Socher (1973), 'Währung und Banken in Cisleithanien (Money and banks in Imperial Austria)', in: Brusatti, Alois (ed.), *Die Habsburgermonarchie 1848–1918*, vol. 1, Österr. Akademie der Wissenschaften, Vienna.

Magyary, Zoltán (1924), *Das ungarische Budgetrecht (The Hungarian budgetary law)*, W. de Gruyter & Co., Berlin.

Matlekovits, Alexander von (1900), *Das Königreich Ungarn (The Kingdom of Hungary)*, Duncker & Humblot, Leipzig.

Mecenseffý, Emil (1897), *Bericht über den Goldbesitz der Oesterreichisch-ungarischen Bank erstattet an den Generalrath der Oesterreichisch-ungarischen Bank (Report on the Austro-Hungarian Bank's gold holdings, submitted to the General Council of the Austro-Hungarian Bank)*, Im Selbstverlage der Oesterreichisch-ungarischen Bank, Vienna.

Menger, Carl (1892), 'Die Valuta-Regulierung in Österreich-Ungarn (Monetary reform in Austria-Hungary)', in: Conrad, Johannes (ed.), *Jahrbücher für Nationalökonomie und Statistik*, Vienna.

Mischler, Ernst and Josef Ulbrich (1895–1897), *Österreichisches Staatswörterbuch (The Austrian state dictionary)*, Hölder, Vienna.

Morys, Matthias (2006), *The Classical Gold Standard in the European Periphery: A case study of Austria-Hungary and Italy*, 1870–1913, PhD thesis at the London School of Economics, London.

Mühlpeck, Vera, Roman Sandgruber and Hannelore Woitek (1979), 'Index der Verbraucherpreise 1800–1914 (Index of consumer prices, 1800–1914)', in: Österreichisches Statistisches Zentralamt, Geschichte und Ergebnisse der zentralen amtlichen Statistik in Österreich 1829–1979, *Beiträge zur österreichischen Statistik*, Heft 550, Vienna.

Österreichisches Statistisches Zentralamt (1979a), Geschichte und Ergebnisse der zentralen amtlichen Statistik in Österreich 1829–1979 (History and results of Austria's official statistics, 1829–1979), *Beiträge zur österreichischen Statistik*, Heft 550, Vienna.

Österreichisches Statistisches Zentralamt (1979b), Geschichte und Ergebnisse der zentralen amtlichen Statistik in Österreich 1829–1979. Tabellenanhang (History and results of Austria's official statistics, 1829–1979. Annex of tables), *Beiträge zur österreichischen Statistik*, Heft 550A, Vienna.

Pammer, Michael (2010), 'Public finance in Austria-Hungary, 1820–1913', in: Cardoso, José Luis and Pedro Lains (eds.), *Paying for the Liberal State. The Rise of Public Finance in Nineteenth Century Europe*, Cambridge, Cambridge University Press, 132–161.

Paulinyi, Ákos (1973), 'Die sogenannte gemeinsame Wirtschaftspolitik in Österreich-Ungarn (Austria-Hungary's so called common economic policy) ', in: Brusatti, Alois (ed.) *Die Habsburgermonarchie 1848–1918. Die wirtschaftliche Entwicklung*, Österreichische Akademie der Wissenschaften, vol. 1, Vienna, 567–604.

Pressburger, Siegfried (1976), *Das Österreichische Noteninstitut 1816 – 1966. (Austria's note-issuing authority, 1816–1966)*, Part I: *Die privilegierte Oesterreichsiche Nationalbank 1816–1878*, vol. 1–3, Part II: *Die Oesterreichisch-ungarische Bank 1878–1923*, vol. 1–3, Vienna.

Püregger, Josef (1912), *Fünfzig Jahre Staatschuld 1862–1912 (Fifty years of public debt, 1862–1912)*, k.k. Hof- und Staatsdruckerei, Vienna.

Schulze, Max-Stephan (2000), 'Patterns of growth and stagnation in the late nineteenth century Habsburg economy', *European Review of Economic History* 4, 331–340.

Spitzmüller, Alexander (1902), Die österreichisch-ungarische Währungsreform (The Austro-Hungarian monetary reform), in: *Zeitschrift für Volkswirtschaft, Socialpolitik und Verwaltung*, vol. 11, 337–393; vol. 12, 496–559.

Wagner, Adolph (1863), *Die Ordnung des österreichischen Staatshaushaltes mit besonderer Rücksicht auf den Ausgabe-Etat und die Staatsschuld (The consolidation of Austrian public finances with a focus on public spending and public debt)*, Vienna.

Wittelshöfer, Otto (1895), Der Kursgewinn der Oesterreichisch-ungarischen Bank an ihrem Goldschatze (The Austro-Hungarian Bank's capital gains on its gold reserves), *Zeitschrift für Volkswirtschaft, Socialpolitik und Verwaltung,* vol. IV, 603–617.

Wysocki, Josef (1973), 'Die österreichische Finanzpolitik (Financial policy in Austria)', in: Brusatti, Alois (ed.), *Die Habsburgermonarchie 1848–1918*, vol. 1, Österr. Akademie der Wissenschaften, Vienna.

Wysocki, Josef (1975), *Infrastruktur und wachsende Staatsausgaben: Das Fallbeispiel Österreich 1868–1913 (Infrastructure and rising public expenditure: Case study Austria, 1868–1913)*, Forschungen zur Sozial- und Wirtschaftsgeschichte Band 20, Gustav Fischer Verlag, Stuttgart.

Zuckerkandl, Robert (1911), The Austro-Hungarian Bank, in: National Monetary Commission, *Banking in Russia, Austro-Hungary, The Netherlands and Japan*, Government Printing Office, Washington (Translated from Conrad's Handwörterbuch der Staatswissenschaften, 3rd edition).

Note: *In the following tables ".." indicates that the item did not exist; in case of reconstructed data, that the entry was not calculated for that point in time. "." indicates missing value. An absolute zero is coded as "-", while "0.0" codes a rounded zero. For details on the unit of the series, see index table in section 2.*

TABLE AH 1.1_A Total reserves, 1863–1913

Year	Total statutory reserve AH1A_A	Gold AH1B_A	Silver AH1C_A	Foreign bills included in statutory reserves AH1D_A	Foreign bills not included in statutory reserves AH1E_A	Foreign deposits AH1F_A	Foreign liabilities AH1G_A
1863	110.7	1.8	108.9	-	0.6	.	.
1864	112.2	1.6	110.6	-	5.2	.	.
1865	121.5	1.5	120.0	-	8.2	.	.
1866	104.0	3.3	100.7	-	43.5	.	.
1867	108.3	2.0	106.4	-	40.6	.	.
1868	108.6	0.2	108.4	-	38.7	.	.
1869	116.9	0.2	116.6	-	30.5	.	.
1870	147.3	1.4	112.9	33.0	0.1	.	.
1871	143.5	44.4	99.1	-	7.8	.	.
1872	142.9	69.4	73.5	-	4.7	.	.
1873	143.8	70.5	73.3	-	4.4	0.0	.
1874	139.4	72.7	66.6	-	4.5	.	.
1875	134.4	67.9	66.6	-	11.3	.	.
1876	136.6	66.5	70.1	-	11.1	.	.
1877	137.5	67.4	70.1	-	11.3	.	.
1878	153.9	67.4	86.5	-	11.5	.	.
1879	164.2	58.6	105.6	-	20.3	-0.1	.
1880	173.3	65.0	108.3	-	14.2	.	.
1881	190.9	68.7	122.1	-	10.5	0.1	.
1882	193.7	79.2	114.6	-	0.1	.	.
1883	199.4	77.7	121.7	-	1.6	0.1	.
1884	205.4	78.8	126.6	-	0.3	.	.
1885	198.8	69.1	129.7	-	10.2	.	.
1886	205.6	66.7	138.8	-	12.5	.	.
1887	216.1	71.0	145.1	-	8.2	0.3	.
1888	233.0	59.0	154.0	20.0	0.0	.	.
1889	241.4	54.3	162.2	25.0	0.0	.	.
1890	244.5	54.0	165.5	25.0	0.0	0.8	.
1891	245.9	54.5	166.6	24.9	0.0	0.2	.
1892	289.2	103.2	169.0	17.0	13.5	0.5	.
1893	278.2	101.8	162.0	14.4	13.5	0.4	4.0
1894	307.0	155.3	139.2	12.5	13.5	1.2	1.2
1895	377.5	244.1	126.6	6.8	13.5	4.5	2.1
1896	448.3	302.1	125.7	20.4	13.5	5.2	3.7
1897	506.0	363.8	123.3	18.9	15.0	15.5	10.7
1898	490.1	359.4	123.9	6.7	15.0	8.6	3.5
1899	509.2	393.0	106.1	10.1	15.0	3.7	7.0
1900	1218.1	919.6	238.5	60.0	6.1	61.5	6.8
1901	1448.1	1116.1	271.9	60.0	23.7	34.2	6.3
1902	1465.2	1107.4	297.8	60.0	103.3	20.8	21.1
1903	1462.4	1109.6	292.8	60.0	121.9	36.7	57.2
1904	1507.6	1153.0	294.5	60.0	88.8	16.0	59.6
1905	1425.1	1074.1	290.9	60.0	45.8	23.2	69.0
1906	1454.3	1112.3	282.1	60.0	38.0	20.9	68.8
1907	1440.9	1099.4	281.5	60.0	28.9	26.2	60.8
1908	1535.8	1182.4	293.4	60.0	79.6	37.0	64.6
1909	1713.0	1354.0	299.0	60.0	37.0	21.8	88.1
1910	1669.2	1320.5	288.6	60.0	19.4	44.5	58.3
1911	1635.7	1291.9	283.8	60.0	19.9	28.4	47.9
1912	1507.6	1209.8	237.7	60.0	22.8	53.1	7.5
1913	1562.5	1241.0	261.5	60.0	26.2	41.2	0.9

TABLE AH 1.2_A Monetary base and broader monetary aggregates, 1863–1913

Year	Monetary base AH1H_A	Banknotes in circulation AH1I_A	State notes in circulation AH1J_A	Other central bank liabilities at sight AH1K_A	of which: Giro deposits AH1L_A	Narrow money AH1M_A	Broad money AH1N_A
1863	402.2	396.7	..	5.5	0.0	..	..
1864	381.9	375.8	..	6.1	0.0	..	..
1865	356.6	351.1	..	5.5	0.0	..	..
1866	470.6	284.0	179.7	7.0	0.0	..	..
1867	550.1	247.0	296.8	6.3	0.3	548.5	892.5
1868	584.7	276.2	301.3	7.2	0.2	705.0	1100.5
1869	605.6	283.7	315.0	6.9	0.1	759.5	1231.5
1870	652.6	296.9	345.5	10.2	0.1	823.0	1367.0
1871	696.4	317.3	370.8	8.3	0.0	962.0	1605.5
1872	702.6	318.4	371.2	13.0	2.5	1260.5	2006.5
1873	710.0	358.9	341.8	9.2	1.2	1017.0	1797.5
1874	645.7	293.8	342.0	10.0	2.6	814.0	1678.0
1875	638.5	286.2	342.1	10.2	4.7	745.0	1662.0
1876	655.5	295.9	352.0	7.5	0.1	748.0	1696.5
1877	632.2	282.2	340.9	9.1	0.1	733.0	1725.5
1878	653.1	288.8	360.8	3.5	1.2	751.0	1779.0
1879	634.4	316.7	309.4	8.3	2.8	771.0	1892.0
1880	667.9	328.6	317.9	21.4	5.3	801.0	2004.0
1881	691.8	354.2	316.7	20.9	2.0	880.5	2181.5
1882	721.6	368.6	343.3	9.6	4.1	913.0	2230.0
1883	732.6	380.4	346.1	6.1	4.1	920.0	2368.0
1884	733.7	375.7	343.7	14.3	11.3	944.0	2447.5
1885	704.9	363.6	329.3	12.1	4.8	907.5	2504.0
1886	715.6	371.7	336.8	7.1	1.7	934.5	2638.0
1887	726.1	391.1	331.8	3.2	2.7	982.5	2753.5
1888	758.8	425.7	326.0	7.1	4.7	1027.5	2902.0
1889	797.8	434.7	346.8	16.3	13.7	1151.0	3169.5
1890	808.1	445.9	352.4	9.8	6.5	1207.0	3328.0
1891	830.8	455.2	364.2	11.4	8.4	1304.0	3504.0
1892	820.3	478.0	329.0	13.3	9.9	1385.5	3778.5
1893	826.5	486.6	323.5	16.4	12.9	1441.5	3960.5
1894	798.5	507.8	276.8	13.8	9.6	1558.0	4222.5
1895	811.9	619.9	166.0	25.9	12.6	1679.5	4493.5
1896	816.4	659.7	126.9	29.8	10.4	1648.0	4579.0
1897	845.8	699.9	118.0	27.9	10.7	1746.5	4833.5
1898	883.9	737.5	113.4	33.0	10.8	1855.0	5059.5
1899	863.0	729.0	104.9	29.1	21.6	1924.0	5232.5
1900	1724.9	1494.0	85.8	145.1	48.7	4180.0	11204.0
1901	1768.9	1584.9	23.3	160.6	135.5	4369.0	11710.0
1902	1832.0	1635.2	4.2	192.7	171.1	4368.0	12131.0
1903	1903.1	1770.8	2.9	129.4	102.0	4482.0	12644.0
1904	2014.7	1751.3	2.7	260.7	232.8	4952.0	13629.0
1905	2022.5	1847.0	2.6	172.9	.	5439.0	14619.0
1906	2216.6	1982.0	2.5	232.0	.	6478.0	16238.0
1907	2205.3	2028.0	..	177.3	.	6616.0	17013.0
1908	2256.5	2112.9	..	143.6	.	6836.0	18004.0
1909	2403.4	2188.0	..	215.4	.	7282.0	19229.0
1910	2601.1	2375.9	..	225.2	.	8161.0	21205.0
1911	2786.6	2541.0	..	245.6	.	9215.0	23222.0
1912	3090.8	2815.8	..	275.0	.	9642.0	23712.0
1913	2681.2	2493.6	..	187.6	.	10089.0	24407.0

TABLE AH 2_D Official interest rates, 1860–1914

Year	Month	Day	Official discount rate AH2A_D	Official lombard rate AH2B_D
1860	9	28	5.5	5.5
1862	2	17	5.0	unchanged
1866	12	10	4.0	5.0
1868	11	9	unchanged	4.5
1869	7	29	unchanged	5.0
1869	8	27	5.0	5.5
1870	7	22	6.0	6.5
1871	2	18	5.0	6.0
1871	9	9	6.0	7.0
1871	11	10	6.5	7.5
1871	12	15	6.0	7.0
1872	3	1	5.0	6.0
1872	7	5	6.0	7.0
1873	3	21	5.0	6.0
1874	9	26	4.5	unchanged
1875	11	5	5.0	unchanged
1876	1	28	4.5	unchanged
1879	5	9	4.0	5.5
1882	4	14	4.0	5.0
1882	10	20	5.0	6.0
1883	2	3	4.5	5.5
1883	2	23	4.0	5.0
1887	10	7	4.5	5.5
1888	1	11	4.0	5.0
1888	9	11	4.5	5.5
1889	1	25	4.0	5.0
1889	11	6	5.0	6.0
1890	1	24	4.5	5.5
1890	2	14	4.0	5.0
1890	9	5	4.5	5.5
1890	10	3	5.0	6.0
1890	10	17	5.5	6.5
1891	1	9	4.5	5.5
1891	2	5	4.0	5.0
1891	9	4	5.0	6.0
1892	1	9	4.0	5.0
1893	10	6	5.0	6.0
1894	1	23	4.5	5.5
1894	2	9	4.0	5.0
1895	9	13	5.0	6.0
1896	1	24	4.5	5.5
1896	2	14	4.0	5.0
1898	10	14	4.5	5.5
1898	11	25	5.0	6.0
1899	5	19	4.5	5.5
1899	9	19	5.0	6.0
1899	10	6	6.0	7.0
1899	12	7	5.5	6.5
1900	1	22	5.0	6.0
1900	2	6	4.5	5.5
1901	3	1	4.0	5.0
1902	2	5	3.5	4.5
1905	10	20	4.5	5.5
1906	5	28	4.0	5.0
1906	9	28	4.5	5.5
1907	6	28	5.0	6.0
1907	11	11	6.0	7.0
1908	1	11	5.0	6.0
1908	2	4	4.5	5.5
1908	5	8	4.0	5.0
1910	10	24	5.0	6.0
1911	2	4	4.5	5.5
1911	2	23	4.0	5.0
1911	9	22	5.0	6.0
1912	10	26	5.5	6.5
1912	11	16	6.0	7.0
1913	11	28	5.5	6.5
1914	1	21	5.0	6.0
1914	2	4	4.5	5.5
1914	3	13	4.0	5.0
1914	7	27	5.0	6.0
1914	8	1	6.0	7.0
1914	8	3	8.0	9.0
1914	8	21	6.0	7.0
1914	10	30	5.5	6.5

TABLE AH 2_A Interest rates, 1863–1913

Year	Official discount rate AH2A_A	Official lombard rate AH2B_A	Short term market rate AH2C_A	Austrian 4% gold bond AH2D_A	Austrian yield in gold AH2E_A	Hungarian 4% gold bond AH2F_A	Hungarian yield in gold AH2G_A
1863	5.00	5.50	5.13	..	..	..	..
1864	5.00	5.50	5.21	..	..	..	..
1865	5.00	5.50	5.21	..	..	..	..
1866	4.92	5.46	5.00	..	..	..	..
1867	4.00	5.00	3.83	..	..	..	..
1868	4.00	4.92	3.79	..	..	..	..
1869	4.42	4.96	4.21	..	..	..	..
1870	5.50	6.00	5.33	..	..	..	..
1871	5.46	6.42	5.69	..	..	..	..
1872	5.67	6.67	6.08	..	..	..	..
1873	5.17	6.17	5.25	..	..	..	..
1874	4.83	6.00	4.59	..	..	..	..
1875	4.58	6.00	4.35	..	..	..	..
1876	4.50	6.00	4.13	70.80	7.03	..	..
1877	4.50	6.00	4.13	73.90	6.63	..	..
1878	4.50	6.00	4.08	73.10	6.45	..	..
1879	4.17	5.67	3.54	78.68	5.91	..	..
1880	4.00	5.50	3.19	87.34	5.37	..	..
1881	4.00	5.50	3.55	93.40	5.01	90.35	5.19
1882	4.25	5.38	3.76	94.41	5.03	87.09	5.45
1883	4.08	5.08	3.73	98.70	4.82	88.15	5.40
1884	4.00	5.00	3.67	102.83	4.70	92.43	5.23
1885	4.00	5.00	3.31	108.33	4.57	98.19	5.04
1886	4.00	5.00	3.29	115.58	4.32	104.78	4.76
1887	4.13	5.13	3.58	111.38	4.50	99.85	5.02
1888	4.17	5.17	3.56	110.01	4.47	99.61	4.94
1889	4.17	5.17	3.73	109.98	4.31	101.25	4.68
1890	4.46	5.46	4.09	108.50	4.25	102.38	4.50
1891	4.38	5.38	4.07	109.93	4.22	104.57	4.43
1892	4.00	5.00	3.68	113.28	4.19	110.80	4.28
1893	4.25	5.25	3.81	118.09	4.17	115.88	4.24
1894	4.04	5.04	3.59	122.08	4.06	120.73	4.11
1895	4.33	5.33	4.20	122.91	3.93	122.78	3.93
1896	4.04	5.04	3.86	122.73	3.89	122.28	3.90
1897	4.00	5.00	3.71	123.13	3.87	122.23	3.90
1898	4.21	5.21	3.97	121.30	3.93	120.76	3.95
1899	4.96	5.96	4.83	118.63	4.03	118.39	4.04
1900	4.54	5.54	4.34	116.89	4.12	116.27	4.14
1901	4.08	5.08	3.69	118.28	4.03	118.09	4.03
1902	3.54	4.54	2.74	120.76	3.95	120.28	3.96
1903	3.50	4.50	3.10	120.73	3.95	119.98	3.97
1904	3.50	4.50	3.20	119.15	4.00	118.30	4.03
1905	3.75	4.75	3.40	119.22	4.01	116.59	4.10
1906	4.33	5.33	4.15	117.53	4.07	113.46	4.21
1907	4.96	5.96	4.73	115.81	4.13	111.40	4.29
1908	4.21	5.21	3.85	115.74	4.13	110.94	4.31
1909	4.00	5.00	3.34	116.56	4.09	112.72	4.23
1910	4.17	5.17	3.83	116.63	4.09	112.75	4.23
1911	4.42	5.42	4.13	115.73	4.12	111.22	4.29
1912	5.21	6.21	4.89	112.16	4.27	107.52	4.45
1913	5.92	6.92	5.70	105.35	4.54	100.97	4.73

TABLE AH 3_A Exchange rates, 1863–1913

Year	10 Pound sterling (London) AH3A_A	100 French franc (Paris) AH3B_A	fl 100 Southern German currency (Frankfurt) AH3C_A	100 Mark (Frankfurt, later German places) AH3D_A	20 FF gold coin AH3E_A	fl 100 Austrian currency in silver coin AH3F_A
1863	113.479	44.921	96.142	..	9.088	113.046
1864	115.975	45.988	98.292	..	9.333	115.446
1865	108.946	43.321	91.338	..	8.764	107.633
1866	120.529	48.142	102.008	..	9.720	119.633
1867	126.016	50.058	105.429	..	10.128	123.854
1868	116.388	46.211	97.179	..	9.300	114.379
1869	123.758	49.212	103.125	..	9.898	121.283
1870	124.013	49.219	104.038	..	9.946	122.008
1871	121.271	46.357	102.088	..	9.669	119.933
1872	110.404	43.175	93.000	..	8.823	108.775
1873	110.896	43.513	93.788	..	8.853	107.825
1874	110.908	43.979	93.133	..	8.901	105.088
1875	111.788	44.271	..	54.383	8.933	103.229
1876	121.327	48.042	..	59.063	9.674	105.025
1877	122.171	48.654	..	59.596	9.783	108.425
1878	117.858	46.954	..	57.587	9.430	103.908
1879	116.613	46.158	..	57.038	9.293	100.000
1880	117.792	46.554	..	57.367	9.384	.
1881	117.842	46.598	..	57.492	9.349	.
1882	119.600	47.412	..	58.504	9.498	.
1883	119.908	47.496	..	58.671	9.517	.
1884	121.988	48.172	..	59.683	9.673	.
1885	124.921	49.463	..	61.233	9.896	.
1886	125.963	49.889	..	61.731	9.981	.
1887	126.542	50.007	..	62.076	10.019	.
1888	124.225	49.094	..	60.879	9.829	.
1889	119.550	47.378	..	58.480	9.483	.
1890	116.058	46.002	..	56.938	9.213	.
1891	116.800	46.264	..	57.333	9.268	.
1892	119.317	47.401	..	58.496	9.483	.
1893	123.817	49.163	..	60.680	9.838	.
1894	124.738	49.562	..	61.138	9.923	.
1895	121.729	48.192	..	59.515	9.655	.
1896	120.083	47.658	..	58.822	9.538	.
1897	119.667	47.554	..	58.696	9.521	.
1898	120.271	47.596	..	58.828	9.535	.
1899	120.475	47.812	..	58.963	9.563	.
1900	241.775	96.209	..	118.017	19.248	.
1901	239.604	95.228	..	117.245	19.051	.
1902	239.639	95.231	..	117.099	19.058	.
1903	239.329	95.216	..	117.146	19.055	.
1904	239.417	95.203	..	117.188	19.048	.
1905	240.054	95.467	..	117.325	19.103	.
1906	240.396	95.509	..	117.378	19.113	.
1907	240.962	95.660	..	117.555	19.133	.
1908	239.836	95.425	..	117.503	19.106	.
1909	240.015	95.306	..	117.322	19.069	.
1910	240.413	95.281	..	117.503	19.080	.
1911	240.398	95.023	..	117.485	19.063	.
1912	241.243	95.616	..	117.826	19.130	.
1913	241.300	95.541	..	117.888	19.113	.

TABLE AH 4.1_A Government finances - Austrian budget, 1863–1913

Year	Austrian government ordinary expenditure AH4A_A	Austrian government interest payment AH4B_A	Austrian government debt redemption AH4C_A	Adjusted Austrian government extraordinary expenditure AH4D_A	Austrian government ordinary revenue AH4E_A	Adjusted Austrian government extraordinary revenue AH4F_A
1863	401958.0	121719.0	45824.0	..	328666.5	..
1864	672129.0	112308.0	34039.5	..	531042.5	..
1865	496546.0	118021.5	51670.0	69977.3	444448.0	-
1866	761363.0	126123.0	82040.5	150839.3	501272.0	-
1867	489300.0	126433.5	18486.5	334363.7	462559.5	-
1868	324968.0	83625.0	21866.0	1412.6	325251.5	-
1869	300479.5	72582.5	12326.0	12645.6	323192.5	-
1870	332332.5	83209.5	14723.5	200.0	355570.5	-
1871	345645.5	84065.0	14348.5	407.0	356297.0	-
1872	353038.0	80069.5	7620.0	-	367206.0	-
1873	398851.5	80334.5	12359.5	211.0	398851.5	-
1874	400248.0	82879.0	12802.0	17872.0	400248.0	-
1875	391764.0	81373.5	9628.0	26827.0	391764.0	-
1876	415904.5	85177.5	17283.5	17006.0	381418.0	-
1877	415478.5	91818.0	17673.0	51830.0	388130.5	-
1878	503512.0	92403.0	35937.0	12077.0	410597.0	-
1879	454920.5	98361.5	18439.5	35176.0	394766.0	-
1880	432075.0	103000.0	11048.0	-	422197.0	-
1881	479643.5	103880.5	32716.0	10.0	442333.0	-
1882	507288.5	105583.0	21825.0	-	486078.5	45.0
1883	514867.0	107042.0	11947.5	13.0	489032.0	-
1884	542955.5	108386.5	12588.5	13.0	510405.0	-
1885	529458.5	110506.0	9298.5	-	524576.0	3.0
1886	521930.5	112083.0	9519.0	-	524704.0	24.0
1887	566864.0	119973.5	10548.0	39.0	528773.0	-
1888	567302.0	127715.0	11566.5	8.0	513692.5	-
1889	551203.5	135671.5	11982.5	1.0	562393.5	-
1890	559597.5	133958.0	13003.0	-	581814.5	1396.0
1891	587091.5	132736.0	12479.0	-	600708.5	100.0
1892	610666.0	133876.0	13143.5	-	617697.5	8.0
1893	629812.5	140305.0	13684.5	-	659162.5	-
1894	640242.5	141820.5	13681.0	-	660304.5	52.0
1895	664763.0	146806.0	15933.5	1206.0	698353.0	-
1896	689015.5	151694.0	14908.0	-	707847.5	3540.0
1897	708652.0	151053.5	15051.5	60052.0	741101.5	-
1898	760166.5	153539.0	16109.0	45218.0	781824.0	-
1899	769049.5	153418.5	16502.5	80286.0	799063.0	2.0
1900	1605195.0	306371.0	34484.0	60582.0	1654232.0	296.0
1901	1666811.0	305846.0	35487.0	39587.0	1686785.0	-
1902	1715318.0	315072.0	37959.0	82229.0	1727585.0	7.0
1903	1759686.0	317587.0	37791.0	118806.0	1757792.0	2.0
1904	1794673.0	314541.0	42432.0	222050.0	1797794.0	-
1905	1829864.0	316987.0	38157.0	168842.0	1882001.0	-
1906	1862292.0	328769.0	38772.0	151547.0	2008495.0	112.0
1907	2209093.0	339671.0	44301.0	134995.0	2253052.0	-
1908	2373894.0	340552.0	56738.0	187782.0	2388384.0	19.0
1909	2883648.0	383360.0	57363.0	3727.0	2795703.0	19.0
1910	2901364.0	417722.0	66905.0	231251.0	2895492.0	-
1911	3004036.0	421123.0	76972.0	201657.0	3082732.0	36.0
1912	3184361.0	427421.0	60710.0	190526.0	3173309.0	-
1913	3461133.0	435032.0	54246.0	468458.0	3486078.0	135.0

TABLE AH 4.2_A Government finances - Hungarian budget, 1869–1913

Year	Hungarian government ordinary expenditure AH4G_A	Hungarian government extraordinary expenditure AH4H_A	Hungarian government ordinary revenue AH4I_A	Hungarian government extraordinary revenue AH4J_A
1863	..	..	..	..
1864	..	..	..	..
1865	..	..	..	..
1866	..	..	..	..
1867	..	..	..	..
1868	.	.	.	.
1869	161892.0	32297.0	167211.0	66506.0
1870	172642.0	34170.0	175959.0	7376.0
1871	145073.0	40791.0	147818.0	25874.0
1872	155677.0	45935.0	155951.0	2041.0
1873	195085.0	49337.0	175011.0	64891.0
1874	202801.0	38262.0	182963.0	5617.0
1875	207323.0	23650.0	187967.0	3780.0
1876	212511.0	28668.0	203304.0	2850.0
1877	237149.0	1612.0	213722.0	4463.0
1878	240075.0	.	217518.0	7899.0
1879	264664.0	30035.0	247139.0	3396.0
1880	272981.0	16667.0	244822.0	17613.0
1881	309730.0	21818.0	275235.0	30728.0
1882	286271.0	50870.0	265363.0	33844.0
1883	300018.0	40303.0	279809.0	29421.0
1884	305639.0	66642.0	286009.0	13051.0
1885	327027.0	33092.0	306007.0	8537.0
1886	320264.0	27725.0	295970.0	5040.0
1887	324465.0	43613.0	306148.0	13086.0
1888	321776.0	40104.0	321082.0	40480.0
1889	319031.0	28964.0	334576.0	6297.0
1890	323796.0	32432.0	367814.0	10840.0
1891	364322.0	41058.0	410231.0	15738.0
1892	378667.0	38110.0	420821.0	12149.0
1893	381030.0	113872.0	924964.0	85659.0
1894	435867.0	82367.0	944252.0	40734.0
1895	429092.0	66402.0	948048.0	34647.0
1896	445967.0	66073.0	992412.0	17937.0
1897	455491.0	89730.0	1014408.0	18432.0
1898	452370.0	69738.5	1014158.0	17223.0
1899	454886.0	57702.5	1002783.0	11307.0
1900	957471.0	125444.0	1039263.0	48498.0
1901	982918.0	118910.0	1036096.0	12799.0
1902	981409.0	121617.0	1060643.0	19944.0
1903	1034027.0	108843.0	1023979.0	10307.0
1904	1040325.0	165907.0	1174288.0	19327.0
1905	1049263.0	133157.0	1012467.0	17451.0
1906	1112173.0	130418.0	1332057.0	21456.0
1907	1209731.0	186008.0	1367215.0	22852.0
1908	1319539.0	294098.0	1406267.0	114434.0
1909	1392557.0	325614.0	1448919.0	284303.0
1910	1418777.0	236883.0	1539902.0	183679.0
1911	1531709.0	232755.0	1699948.0	15769.0
1912	1667544.0	342757.0	1800652.0	56708.0
1913	1780180.0	535094.0	1835913.0	473361.0

TABLE AH 4.3_A Government finances – common budget, 1868–1913

Year	Common budget expenditure AH4K_A	Common budget revenue AH4L_A	Common budget custom duties AH4M_A	Common budget Austrian and Hungarian contributions AH4N_A
1863	..	..	..	..
1864	..	..	..	..
1865	..	..	..	..
1866	..	..	..	..
1867	..	..	..	..
1868	111714.0	3916.0	12250.0	95548.0
1869	95664.0	4431.0	16204.0	75029.0
1870	113576.0	4458.0	12550.0	96568.0
1871	126468.0	7321.0	15257.0	103890.0
1872	113613.0	6636.0	19842.0	87135.0
1873	116407.0	5887.0	17536.0	92984.0
1874	117891.0	5672.0	11111.0	101108.0
1875	114794.0	5186.0	11969.0	97639.0
1876	127031.0	4971.0	6459.0	115601.0
1877	125225.0	5560.0	4719.0	114946.0
1878	220734.0	4897.0	3856.0	211981.0
1879	142130.0	5096.0	2570.0	134464.0
1880	119133.0	3373.0	4908.0	110852.0
1881	123208.0	3285.0	-1730.0	121653.0
1882	149701.0	3134.0	15614.0	130953.0
1883	128611.0	3087.0	16069.0	109455.0
1884	133072.0	2984.0	20933.0	109155.0
1885	127579.0	3099.0	4826.0	119654.0
1886	127484.0	2979.0	18489.0	106016.0
1887	160469.0	2964.0	8755.0	148750.0
1888	169516.0	2808.0	39357.0	127351.0
1889	151937.0	4594.0	39782.0	107562.0
1890	143807.0	2897.0	41527.0	99383.0
1891	145464.0	2935.0	44866.0	97663.0
1892	148711.0	2825.0	47283.0	98603.0
1893	152218.0	2786.0	54956.0	94476.0
1894	156446.0	2898.0	54695.0	98853.0
1895	156637.0	3128.0	53711.0	99798.0
1896	158998.0	2898.0	53537.0	102563.0
1897	174188.0	2953.0	62267.0	109018.0
1898	186969.0	3064.0	71148.0	112757.0
1899	183495.0	3408.0	58494.0	121593.0
1900	361194.0	13030.0	131048.0	217116.0
1901	382906.0	8383.0	118113.0	256410.0
1902	395357.0	8249.0	122295.0	264813.0
1903	408375.0	12476.0	129682.0	266217.0
1904	417975.0	9933.0	141185.0	266857.0
1905	449983.0	11913.0	148630.0	289440.0
1906	432399.0	12805.0	154578.0	265016.0
1907	442903.0	9374.0	162032.0	271497.0
1908	525129.0	10753.0	169931.0	344445.0
1909	656723.0	13145.0	197980.0	445598.0
1910	585798.0	12048.0	228452.0	345298.0
1911	564347.0	10775.0	222717.0	330855.0
1912	693890.0	10618.0	238645.0	444627.0
1913	927006.0	14610.0	227669.0	684727.0

TABLE AH 4.4_A Government debt, 1863–1913

Year	Pre-1867 government debt AH4O_A	Austrian government debt AH4P_A	Austrian emancipation bonds AH4Q_A	Hungarian government debt AH4R_A	Hungarian emancipation bonds AH4S_A
1863	2526368.0	..	522670.0	..	..
1864	2547835.6	..	520913.0	..	..
1865	2600994.3	..	522220.0	..	..
1866	2598013.5	..	525856.0	..	..
1867	3025315.9	2500.0	519460.0	..	..
1868	2692067.0	1938.0	253306.0	22296.0	244054.0
1869	2680898.7	1411.0	247155.0	43904.0	241740.0
1870	2653156.0	796.0	241107.0	100568.0	250419.0
1871	2628742.0	7.0	233619.0	237006.0	251712.0
1872	2644875.0	18928.3	225246.0	153638.0	249943.0
1873	2675565.6	19346.2	218706.0	295624.0	251303.0
1874	2735708.0	22788.2	212091.0	300336.0	248079.0
1875	2789690.8	47731.1	205513.0	378275.0	245215.0
1876	2837925.0	79671.1	198625.0	467021.0	241342.0
1877	2949952.0	153319.1	191894.0	497385.0	238030.0
1878	3001589.0	226315.1	184285.0	591354.0	233850.0
1879	2763471.0	392373.0	177550.0	771834.0	229496.0
1880	2755828.0	408616.0	170155.0	869398.0	224436.0
1881	2769945.0	442285.0	162775.0	1005535.0	219887.0
1882	2744827.0	482846.0	154831.0	957121.0	214358.0
1883	2750927.0	499946.0	146842.0	991901.0	208392.0
1884	2752331.0	539477.0	137864.0	1317536.0	202063.0
1885	2772589.0	551224.0	129875.0	1147120.0	195261.0
1886	2770700.0	646593.0	120592.0	1190082.0	188120.0
1887	2782499.0	884572.0	103990.0	1246910.0	180632.0
1888	2787793.0	1058637.0	92820.0	1289982.0	172616.0
1889	2771778.0	1056704.0	71779.0	1378680.0	199243.0
1890	2761667.0	1058813.0	56595.0	1594789.0	198695.0
1891	2752333.0	1055491.0	49266.0	1866337.0	198124.0
1892	2788405.0	1075500.0	41159.0	1863861.0	197531.0
1893	2759930.0	1226784.0	10271.0	1880373.0	196914.0
1894	2757673.0	1274074.0	1036.0	1948514.0	196271.0
1895	2756100.0	1435217.0	182.0	1971895.0	195603.0
1896	2751026.0	1434137.0	7.0	1982777.0	194908.0
1897	2763120.0	1472747.0	-	2018803.0	194184.0
1898	2735243.0	1479398.0	-	2019579.0	193432.0
1899	2719495.0	1581758.0	-	2069591.0	192648.5
1900	5443543.0	3376419.0	-	4238486.0	383668.0
1901	5447346.0	3619129.0	-	4232468.0	381973.0
1902	5450204.0	3640593.0	-	4231284.0	380210.0
1903	5424366.0	3761393.0	-	4289602.0	378375.0
1904	5403177.0	3872568.0	-	4391727.0	376468.0
1905	5383561.0	4030030.0	-	4378340.0	374480.0
1906	5366352.0	4243248.0	-	4380978.0	372414.0
1907	5258934.0	4584865.0	-	4382410.0	370264.0
1908	5240025.0	4733979.0	-	4435277.0	368027.0
1909	5220443.0	5524657.0	-	4709676.0	365700.0
1910	5199884.0	6911566.0	-	4954048.0	363280.0
1911	5179043.0	7061628.0	-	5046198.0	360760.0
1912	5158396.0	7312753.0	-	5162429.0	358140.0
1913	5141255.0	7467346.0	-	5840562.0	355413.0

TABLE AH 5_A Prices and production, 1863–1913

Year	Consumer price index for Austria (1914=100) AH5A_A	Manufacturing production index for Austria (1914=100) AH5B_A	Manufacturing production index for Hungary (1913=100) AH5C_A
1863	92.4	..	..
1864	92.6	..	..
1865	85.2	..	..
1866	84.8	..	..
1867	84.4	..	..
1868	82.7	..	..
1869	84.3	..	..
1870	87.0	33.3	18.7
1871	89.7	38.5	20.3
1872	96.2	38.2	19.1
1873	98.3	35.0	19.2
1874	97.1	35.6	19.7
1875	94.1	35.4	17.9
1876	92.7	35.2	17.2
1877	93.0	36.5	19.1
1878	89.4	36.9	24.2
1879	89.3	37.1	22.4
1880	89.8	36.9	21.9
1881	88.0	40.1	26.4
1882	87.3	41.6	32.4
1883	87.0	43.6	36.6
1884	86.0	43.7	36.6
1885	82.8	41.3	37.0
1886	80.0	41.0	35.5
1887	82.0	44.7	36.4
1888	80.8	43.8	41.0
1889	82.1	45.6	38.4
1890	82.2	48.8	40.4
1891	82.6	52.0	46.3
1892	78.6	52.8	46.7
1893	79.1	55.0	55.4
1894	78.6	57.9	55.9
1895	80.5	60.3	58.7
1896	77.2	60.0	59.8
1897	77.8	62.4	56.2
1898	78.4	65.5	56.5
1899	80.0	66.7	61.0
1900	80.4	66.7	60.8
1901	78.0	68.3	55.6
1902	78.6	71.6	59.9
1903	79.9	72.4	63.3
1904	81.4	74.7	61.7
1905	85.6	77.8	66.3
1906	86.8	83.0	75.9
1907	90.3	90.9	77.9
1908	90.8	93.1	79.1
1909	91.8	93.8	84.1
1910	95.4	92.7	88.9
1911	99.5	98.8	95.6
1912	100.8	106.2	104.9
1913	101.2	100.0	100.0

TABLE AH 6.1_A National accounts, 1863–1913

Year	Nominal GDP, Austria AH6A_A	Nominal GDP, Hungary AH6B_A	Real GDP, Austria AH6C_A	Real GDP, Hungary AH6D_A	Real GDP per capita, Austria AH6E_A	Real GDP per capita, Hungary AH6F_A
1863	..	..	..	..	..	..
1864	..	..	..	..	..	..
1865	..	..	..	..	..	..
1866	..	..	..	..	..	..
1867	..	..	..	..	..	..
1868	..	..	..	..	..	..
1869	..	..	..	..	..	..
1870	3530.7	1835.1	4348.7	2260.3	211.5	145.6
1871	3862.4	1870.5	4599.8	2227.6	222.8	143.3
1872	4158.2	2010.7	4594.5	2221.7	221.7	142.7
1873	4121.2	2052.8	4446.3	2214.7	214.4	142.1
1874	4239.1	2024.9	4627.1	2210.3	221.4	141.6
1875	4092.3	1991.6	4610.4	2243.7	218.4	143.6
1876	4042.2	1913.2	4620.3	2186.8	216.7	139.8
1877	4196.7	2119.0	4774.5	2410.8	222.4	153.9
1878	4135.7	2081.8	4897.2	2465.1	226.6	157.1
1879	3991.1	2103.8	4725.3	2490.8	216.7	158.6
1880	4079.8	2228.7	4795.9	2619.9	218.2	166.6
1881	4150.4	2360.9	4976.5	2830.8	225.1	178.5
1882	4155.0	2602.1	5016.9	3141.8	225.2	196.8
1883	4254.3	2565.3	5148.3	3104.4	229.5	192.1
1884	4313.8	2613.9	5276.4	3197.2	233.2	195.3
1885	4105.8	2535.2	5216.5	3221.1	229.0	194.4
1886	3997.6	2402.6	5256.5	3159.2	229.1	188.3
1887	4286.0	2575.2	5485.2	3295.7	237.0	194.6
1888	4224.4	2626.2	5481.7	3407.8	235.0	199.1
1889	4308.7	2546.3	5491.7	3245.3	233.1	187.2
1890	4539.1	2684.4	5769.9	3412.3	243.4	195.2
1891	4657.3	2812.5	5882.2	3552.3	246.2	201.7
1892	4564.2	2634.2	6058.6	3496.7	251.6	197.7
1893	4594.5	2842.2	6050.2	3742.8	249.4	209.5
1894	4822.9	2765.9	6383.2	3660.7	261.2	202.8
1895	5026.2	3112.0	6481.6	4013.1	263.0	219.8
1896	4839.6	2968.8	6505.2	3990.5	261.3	216.3
1897	4973.3	2795.8	6622.3	3722.8	263.3	199.5
1898	5280.6	3010.8	6966.2	3971.9	274.3	211.1
1899	5525.0	3201.2	7129.5	4130.9	277.9	217.1
1900	11049.8	6545.2	14166.0	8391.1	546.5	435.9
1901	11042.5	6174.8	14579.1	8152.4	556.9	420.0
1902	11408.2	6577.5	14923.2	8604.2	564.6	439.7
1903	11684.0	6989.7	15010.0	8979.4	562.8	455.1
1904	12117.9	6333.4	15255.1	7973.1	566.7	400.9
1905	13514.2	7472.4	16146.7	8928.0	596.3	445.3
1906	14287.8	8370.8	16810.6	9848.8	614.4	487.3
1907	15559.2	8326.4	17568.6	9401.7	636.5	461.3
1908	15987.2	8514.3	17929.4	9548.6	644.0	464.7
1909	16357.1	8916.0	18120.8	9877.4	645.6	476.7
1910	16934.1	9848.2	18027.4	10484.0	636.6	501.9
1911	18120.3	10178.5	18471.6	10375.9	647.7	493.4
1912	19394.7	10993.3	19493.4	11049.3	678.0	520.2
1913	19140.8	10971.6	19140.8	10971.6	661.2	512.4

TABLE AH 6.2_A Trade and population, 1863–1913

Year	Imports AH6G_A	Exports AH6H_A	Population, Austria AH6I_A	Population, Hungary AH6J_A
1863	262.3	303.0	37.710	.
1864	272.5	351.3	37.884	.
1865	278.9	365.1	38.137	.
1866	245.2	380.4	35.600	.
1867	294.3	407.4	20.015	.
1868	387.4	428.9	20.193	.
1869	420.6	438.1	20.395	15.509
1870	436.0	395.4	20.598	.
1871	540.8	467.6	20.777	.
1872	613.7	388.0	20.908	.
1873	583.1	423.6	20.920	.
1874	627.5	502.8	21.082	.
1875	549.3	550.9	21.285	.
1876	534.3	595.2	21.499	.
1877	555.3	666.6	21.648	.
1878	552.1	654.7	21.792	.
1879	556.6	684.0	21.990	.
1880	613.5	676.0	22.144	15.739
1881	641.8	731.5	22.279	.
1882	654.2	781.6	22.443	.
1883	624.9	749.9	22.602	.
1884	612.6	691.5	22.791	.
1885	557.9	672.1	22.940	.
1886	539.2	698.6	23.115	.
1887	568.6	672.9	23.310	.
1888	533.1	728.8	23.491	.
1889	589.2	766.2	23.720	.
1890	610.7	771.4	23.895	17.464
1891	613.3	786.7	24.097	.
1892	646.9	765.5	24.231	.
1893	697.3	860.7	24.450	.
1894	720.5	837.5	24.624	.
1895	743.5	784.1	24.838	.
1896	727.0	816.2	25.086	.
1897	783.0	809.8	25.341	.
1898	852.6	855.0	25.585	.
1899	836.8	983.8	25.843	.
1900	1749.0	2061.7	26.151	19.255
1901	1694.3	1981.0	26.408	.
1902	1770.3	1999.4	26.663	.
1903	1936.4	2236.5	26.897	.
1904	2111.0	2182.0	27.145	.
1905	2213.1	2390.7	27.312	.
1906	2411.3	2598.0	27.584	.
1907	2587.1	2658.1	27.828	.
1908	2467.2	2389.6	28.073	.
1909	2821.3	2475.1	28.300	.
1910	2929.7	2587.6	28.572	20.886
1911	3275.2	2582.6	28.763	.
1912	3669.9	2926.7	28.996	.
1913	3508.7	2987.5	29.193	.