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Early Public Banks

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Abstract

Publicly owned or commissioned banks were common in Europe from the fifteenth century. This survey argues that while the early public banks were characterized by great experimentation in their design, a common goal was to create a liquid and reliable monetary asset in environments where such assets were rare or unavailable. The success of these banks was however never guaranteed, and even well-run banks could become unstable over time as their success made them susceptible to fiscal exploitation. The popularization of bearer notes in the eighteenth century broadened the user base for the public banks' money but was also accompanied by increased fiscal abuse. Wartime demands of the Napoleonic Era resulted in the reorganization or dissolution of many early public banks. A prominent exception was the Bank of England, whose adept management of a fiscally backed money provided a foundation for the development of central banks as they exist today.

Keywords: central banks, exchange banks, public banks (JEL E58, N13).

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Introduction

The structure of modern central banks follows a well-established model. The asset side of a central bank is dominated by debt of its sponsoring government, augmented in some cases by the debt of other sovereign states. The liability side consists of debt in more liquid form, either bearer notes or balances in low-yielding accounts used by commercial banks. Central bank debt, a.k. a. "money," enjoys a privileged status as a transactions medium (e.g., in terms of legal tender and payment finality), that renders it the most liquid asset in most contemporary economies. This extreme liquidity allows central banks to operate profitably with high levels of leverage. If all goes according to plan, high leverage does not generate solvency concerns, because the central bank's assets are backed by the taxing power of the state. The state benefits from this arrangement as well, both from the central bank's profits, and from the policy activities of the central bank, which help ensure a steady market price for government debt. In short, money is trusted because it is basically repackaged government debt, and government debt is liquid because it can be reliably transformed into money.

Our purpose in these two chapters is not to question this curiously circular arrangement, but to explore its origins. In the Anglophone world, central banking is sometimes represented as a spontaneous, late seventeenth-century invention of the Bank of England. It should come as a no surprise that the true origin of central banking is more complicated and less Anglocentric. By one author's count, there were already twenty-five publicly owned or sponsored banks operating in Europe at the time of the Bank of England's founding.[1] Our survey will consider the history of many of these pre-Napoleonic era public banks.[2] With few exceptions, we rely on the descriptions of these institutions in the secondary literature. This literature is extensive but is spread across a spectrum of languages, and as a result has been relatively inaccessible.[3]

[1]Theodore Janssen in his 1697 *Discourse concerning banks*, cited in Clapham (1945, 3).

[2]Some of the banks we do not cover are the the Bank of San Ambrogio founded in 1593 in Milan (Cova 1991), the Danish Kurantbanken founded in 1736 (Märcher 2010), the Spanish Banco de San Carlos founded in 1782, an ancestor of the Bank of Spain (Tedde de Lorca 1988), and the First Bank of the United States founded in 1791 (Cowen 2000). Nor do we survey the municipal exchange offices present in the Southern Low Countries in the late Middle Ages (Aerts 2011). We have not tracked down other banks rumored to have been founded in the sixteenth century in Palermo, Turin, Messina, and Rome.

[3]See Van Dillen (1934b) for an early survey and Ugolini (2011) for a recent one.

Common themes

Origins

Early public banks were the predecessors of modern central banks, but were often set up in a quite different fashion from their modern counterparts. Some were not owned by governments–the Bank of England, for example, originated as a private entity. Many of them did not function as "central banks" in the sense of having a monopoly of control over a nation's monetary base. Many of them held little government debt. These banks did, however, share a common characteristic: the ability to create a privileged set of claims (ledger money or circulating notes) of a form that could not easily be replicated by purely private institutions. Against these liabilities the public banks held a range of assets, including coin, bullion, debts of individuals, dedicated tax revenues, and to varying extents, obligations of the sponsoring government. The banks' alchemical quest was to aggregate these inherently risky assets—even coin was often of uncertain quality—into a set of stable and liquid claims. As with other branches of alchemy, many recipes were tried, with varying degrees of success.

In keeping with the theme of the conference, our focus is on a key ingredient of the banks' recipes for transmuting shaky assets into money-like liabilities, that is, the legal features of the claims they issued. In all the cases studied, these offer a variety of inducements for the public to hold the banks' liabilities, in the form of both "carrots" (freedom from attachment by creditors, for example) and "sticks" (requirements for use of the bank's claims to settle certain obligations).

Viability

A noteworthy lesson that emerges from the history is that statutory mandates, by themselves, cannot guarantee the success of a public bank. Legal inducements aside, many early public banks failed or languished because they lacked the support of the local merchant community. Merchants (generally operating as proprietorships) were reluctant to risk their accumulated wealth in interactions with a newly founded public bank, unless the bank offered some obvious advantage over existing monetary arrangements. This was not without some justification, as early public banks were subject to runs, lengthy suspensions, and occasional outright liquidation. Examples of such events discussed below include disruptions in Genoa (1444), Barcelona (1468), Nuremberg (1635), Venice (1638), Stockholm (1664), Hamburg (1672), and of course the 1720 collapse of John Law's Bank in France.

The merchants' practically based skepticism is in keeping with the teachings of modern economic theory. A useful perspective on the public banks' experience is provided by the well-known Modigliani and Miller (1958) theorem. This celebrated result states that a firm's value does not depend on its capital structure, for example on its debt-to-equity ratio. Modern corporate finance, in essence, consists of a study of exceptions to this general rule.

The alchemical nature of the early public banks becomes apparent if we now apply the Modigliani-Miller theorem at the economy-wide level. The early public banks were all engaged in the business of reshuffling the set of claims on their host economies, attempting to take relatively risky assets out of the hands of the public and to replace them with putatively more reliable obligations. Consistent with historical experience, Modigliani-Miller predicts that this kind of "leveraging" operation should accomplish nothing in of itself. Indeed, modern corporate finance suggests that in order to increase the wealth of an economy, a public bank would for example have to improve the quality of information on its backing assets, or improve the incentives of underlying obligors (the banks' sponsoring governments especially) to repay. Our review will show that public banks thrived precisely in circumstances where they could offer such improvements (for example by committing to hold a restricted range of assets), and fell into disuse when they could not.[4]

Tensions

In today's economies, much of the intermediation performed by the early public banks is carried out by commercial banks. Why should not the same have been true in the economies of Medieval and Early Modern Europe? A complete answer to this question goes beyond the scope of this survey, but a superficial answer is that commercial banks were underdeveloped during the time period we consider. Deposit banking in the modern sense was well under way in England, but on the Continent, distrust of depository institutions ran deep.

[4]The founders of the early public banks did not contemplate the creation of a fiat or "outside" money as exists with modern central banks. Nonetheless the liabilities of some of the early banks (Amsterdam, Law??) eventually came to resemble fiat money in some respects.

Merchants and other wealthy individuals often preferred to keep deposits in public banks.

The successful introduction of a public bank opened up new opportunities and created new tradeoffs. As the banks' claims became more and more accepted as money, the management of the banks' balance sheets became a vehicle for the practice of what is now understood as beneficial policy: deliberate smoothing of money market fluctuations through open market operations and through changes in the banks' lending terms. A downside was that the increased trust in the public banks made them more tempting targets for fiscal exploitation.

Taxonomy

Although the early public banks shared a common underlying theme—creation of a new, liquid type of asset—they differed in many details of their organization. To impose some order on the diverse array of banks, our survey is split into two chapters. The first chapter focuses on banks that issued claims in the form of ledger money. The "money" in question might be a demandable bank deposit (as in Venice's Banco di Rialto), a bond or time deposit (as in Vienna's Stadtbank), or an equity-like claim (as in Genoa's Casa di San Giorgio). These various instruments were money-like in theory at least, as they could generally be used for giro (book-entry) payment (the actual prevalence of giro payment differed from bank to bank). The second chapter considers banks that issued circulating notes in some form, the predecessors of today's banknotes. This classification is not always clear cut. Vienna's Stadtbank, for example, began life as a ledger-money bank but later evolved into a prolific note issuer.

Issuance of bearer notes did not become widespread until the eighteenth century. The seventeenth century saw some sporadic issuance in Sweden (Section 10) and more successful issue in Naples (Section 3). At this time the idea of public banks was virtually synonymous with the idea of a giro bank operating in a republic (Genoa, Venice, Amsterdam, and Hamburg). The model of note issue against (principally) government debt was popularized by the example of the Bank of England, an institution (Section 11) that was initially greeted with derision by Continental observers (Niebuhr 1854, 14–15). With the Bank of England's continued success, however, derision turned to envy, and eventually to conscious imitation by public banks in Austria (Section 13), France (Section 12), and Prussia (Section 14). Sweden (Section 10) also resumed note issue, perhaps inspired by England's example.

The introduction of bearer notes was an important innovation. The convenience and anonymity of banknotes expanded public banks' customer base beyond the wealthy merchants who might keep bank accounts, this despite the notes' lack of legal tender status in many countries. The value of the notes was guaranteed, in principle, at least by promises of convertibility to coin on demand. Unfortunately this popularization of the banks' money increased the scope for their fiscal exploitation. For both ledger-money and especially note-issuing public banks, pressures to inflate became acute with the wartime fiscal demands of the Napoleonic Era, and promises of convertibility were abandoned. These same pressures led to the dissolution or extensive reorganization of many of the institutions considered in this survey.

Early Public Banks I: Ledger-Money Banks

1 Genoa

The Casa di San Giorgio (1404–1815)

The institution that figures as a public bank in the history of Genoa is the Banco di San Giorgio (Sieveking 1906), which was a subsidiary activity of the Casa di San Giorgio; the latter was constituted in 1404 to consolidate the administration of Genoa's public debt (Fratianni 2006).

Since the 12th century, Genoa had been issuing debt backed by specific tax revenues. Over time, the lenders were allowed to form syndicates to manage the debt collection from the tax farmers who had contracted to collect the debt. In 1404, most public debt was consolidated, on a voluntary basis, into a single consolidated claim or title, and the Casa di San Giorgio was created to represent the creditors and administer the debt on their behalf. The Casa became a formidable institution, a State within a State, to protect the interests of the creditors.

The First Banco di San Giorgio (1408)

In 1408, the City authorized the Casa to open a banking business, motivated in large part by instability in exchange rates between coins; the government, after fruitless attempts at fixing the rates by law, decided that it was all due to greedy bankers, and a non-profit banker under government supervision would better enforce the mint ordinances.

The Genoese monetary system, like other medieval systems, consisted of a gold coin (the *genovino* or *ducato*, roughly interchangeable with the florin of Florence and the zecchino of Venice), a coin of fine silver (the *grosso* introduced in 1365) worth 2s, and the denaro of low fineness, worth 1d.[5] The gold coin had remained at a stable value of 25s since the 1340s, but, as shown in Figure 1, in the early years of the 15th century it began to rise, reaching 28s in 1404 (Pesce and Felloni 1975, 331). Genoa responded that year by debasing the denaro, introducing a 6d coin called the *petacchina*. Reports of an influx of bad foreign coins appear. The government also tries to fix the price of the florin at 25s, which only resulted in the emergence of a fictitious unit of account,

[5]Nominal values were expressed in denari (d), soldi (s) of 12d, and lire (L) of 20s. The same conventions prevailed in Venice.

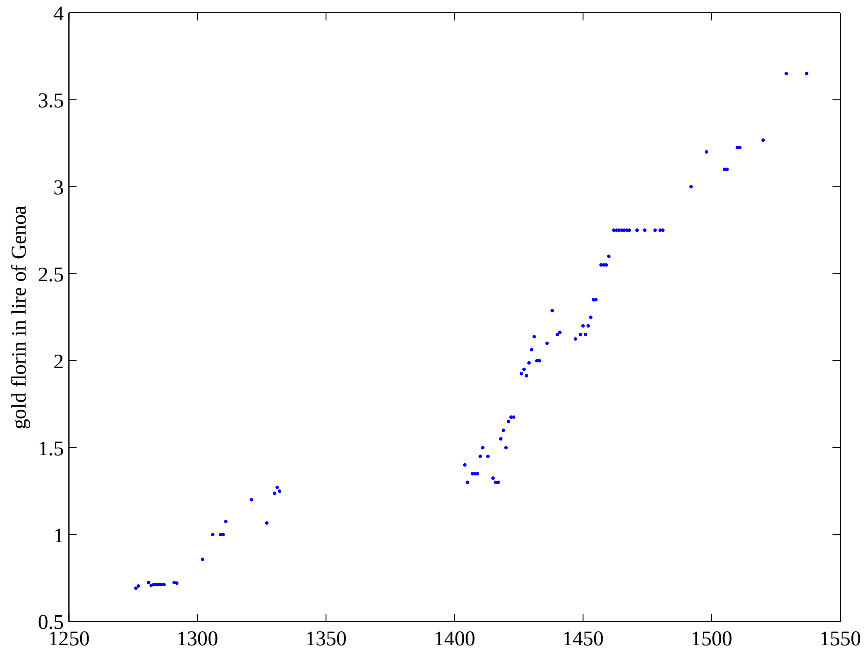

Figure 1: Price of the gold genovino or ducato in lire of Genoa, 1276–1535. Source: Pesce and Felloni (1975, 331–4).

the *fiorino d'oro* at 25s, while the real coin (*fiorino in oro*) continued to rise in price. Suspecting that the this rise was due to unscrupulous bankers, the city instituted regulators to monitor the rates paid by bankers on florins. By 1413, the concern was now over an excess of small coins, and legal tender was limited for small coins in 1413 (payments up to 50L: up to $\frac{1}{4}$ in small coins, above: 1/5).

The intent guiding the creation of the bank is clear in the initial statement on the very first ledger, declaring (after expressing confidence in the help of God and Saint George) that the bank opened on 2 Mar 1408 "in order to extinguish the public debt and to eradicate certain bad practices of bankers, who are so devoted to their own interest that they barely blush as they ruin the public good, and have become accustomed to spend out and hold money not at the required price, but at an unusual and irrational price" (Marengo et al. 1911, 251).

The goal of extinguishing the public debt is a reminder that the banking operation was not owned by the City, but by the Casa di San Giorgio, and for the benefit of its shareholders (creditors of the State); indeed, the managers (*gubernatores banci*) were chosen among the highest officials of San Giorgio. With respect to the public it was only a bank of deposit and transfer, but it could make loans to the tax farmers (who provided San Giorgio's income) and the State, a fact that may have contributed to its early demise. The State already used private bankers for its transactions, in particular to pay interest on the debt. All these operations were now concentrated in the Bank, although private bankers continued to operate and even held accounts at San Giorgio (Aerts 2006, 57). There was a rapid increase in business, as a second bank (or ledger) was opened in 1439 and a third one soon after. The Bank dealt with bills of exchange to the extent that it needed to collect revenue from overseas Genoese establishments in Chio, Constantinople, and Crimea.

Of course San Giorgio could not maintain the price of the florin and in 1427, when the florin had reached 39s, San Giorgio was authorized to take the florin at the market rate (the price at which they "were paid and received by other bankers") for a specific transaction with the government. In 1437 a major reform of coinage took place, debasing the silver currencies by about 8%; at the same time, supervision of the mint was taken from the city officials and given to San Giorgio. At the same time, the Casa was enjoined to keep the florin at the new legal rate 40s, and its balances were made legal tender ("scripta banci San Georgii refutari sive renui non possint"). Nevertheless the florin rose to 47s by 1444.

Interlude (1444–1530)

The bank was running into difficulties; it had to pay interest on its creditors punctually, but the tax farmers delayed payment and it was forced to buy cash at high prices. It was also weakened by the loans to the government, which the latter was not in a hurry to repay. The coin tariff it had to apply increased difficulties. When the government raised the florin to 42s, it gave San Giorgio the choice to maintain the new rate or relinquish its banking business: the Casa decided on the latter (4 Sep 1444).

Heers (1961, 165–9) makes an important point: the closure of the bank in 1444 has been overplayed, because one of its functions, that of payments system, was taken up by another part of San Giorgio. The shares in the public debt managed by San Giorgio (the *luoghi*) were transferable and actively traded (although annual turnover amounted to only 5% of the stock). Interest on the debt was originally payable every three months in cash, but with accumulated delays in payments a different method had evolved. When the interest payment (*paga*) was due, the owner of luoghi was credited on a register with the interest corresponding to his holdings. The credit would eventually be settled in cash, but in the meantime the owner could transfer his credit to others. By the 1460s, the actual cash settlement took place at face value but four to seven years late, and only involved very small amounts. The reason is that in the interval the credits, called *lire de paghe*, had been bought and sold extensively, and ultimately purchased by the debtors of San Giorgio (mostly the tax farmers) to settle their debts. The secondary market for *lire de paghe* distinguished between vintages, and prices behaved like discounted values, with an upward trend over time and implicit discount rates of 4 to 7%. These cash prices presumably represent the discounted expected value of the cash payments to be made by tax farmers purchasing *lire de paghe* to settle their obligations. As Heers showed, the market price of *luoghi* in turn reflected the variations in the *lire de paghe* markets.

The *lire de paghe*, being small in size, were used extensively for small transactions, to purchase small quantities of food, spices, wax, and fabrics. In the silk industry almost all payments, including wages, were made with them.

The second Banco di San Giorgio (1530)

After an interval of nearly a century, San Giorgio accepted again deposits, but gingerly. A first register was apparently opened to deposits in 1530, although we do not know on what authority or under what conditions. Later, from 1586 to 1625 San Giorgio opened a sequence of coin-specific banks, before opening in 1675 a general bank.

San Giorgio reopened a bank in 1530, the *cartulario di numerato*.[6]

[6] Sieveking (1906) dates the new bank to 1586; No founding document is known, but the evidence is in ledgers preserved in the archive of San Giorgio, which shows that the bank not only handled operations in cash or payable in cash that were related to the shares and their interest, but also from the start accepted sight deposits from individuals and made transfers between clients at their request. This suggests that the payment system based on the *lire de paghe* described by Heers (1961) may have been opened to deposits, if only informally and selectively. We do know that overdrafts were not allowed, except with the authorization of the Protectors of San Giorgio, and even then only under specific circumstances: only for the Republic, its magistrates or charitable institutions; for short-duration loans with pledged collateral and when the cash reserve was sufficiently large.

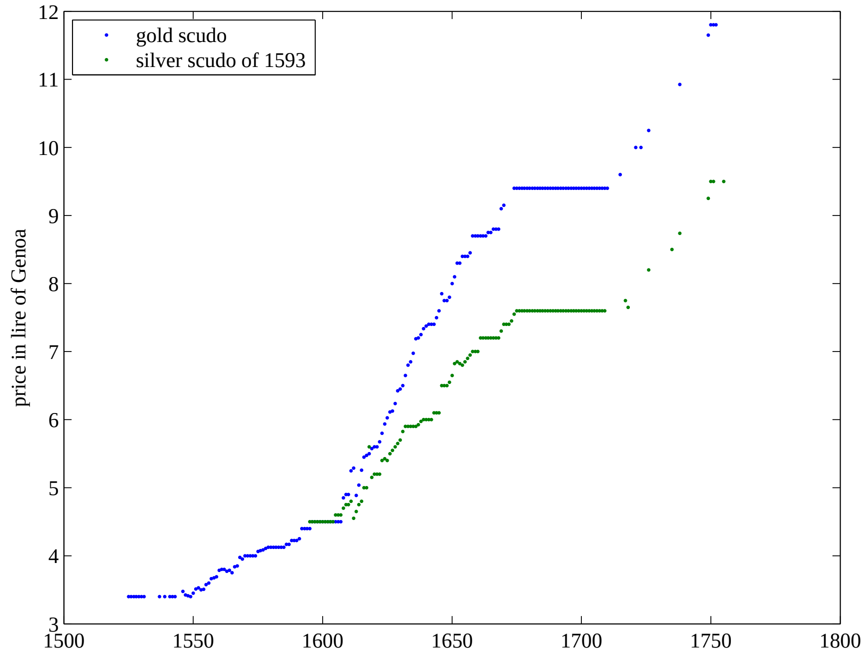

Figure 2: Price of gold and large silver coins in lire of Genoa, 1504–1755. Source: Source: Pesce and Felloni (1975, 331–4).

Accounts were kept in lire, but we have no documentation on the rules governing the exchange of cash for bank balances. Privileges attached to the balances included protection from seizure except on court order and only in limited cases (Sieveking 1906, 203). From the registers it appears that small coins (soldini and below) were rarely accepted, but in the 16th century many other coins of billon, silver, and gold, preferably but not exclusively of Genoese coinage. In 1600, however, the bank was restricted to Genoese gold and silver coins and gold scudi "of the five stamps" (Genoa, Spain, Venice, Florence, Naples) at prices set by the Protectors. The discretion was exercised on foreign coins, accepting them at times at prices below their legal value; but until 1630 Genoese coins were taken at their legal value.

This bank was progressively replaced by other offices created successively, and publicly. The first three were designed to accept and pay out specific coins, and operate alongside each other:

- in 1586 the *cartulario de oro* was opened, initially for one year only, renewed several times and then indefinitely in 1591, to accept deposits

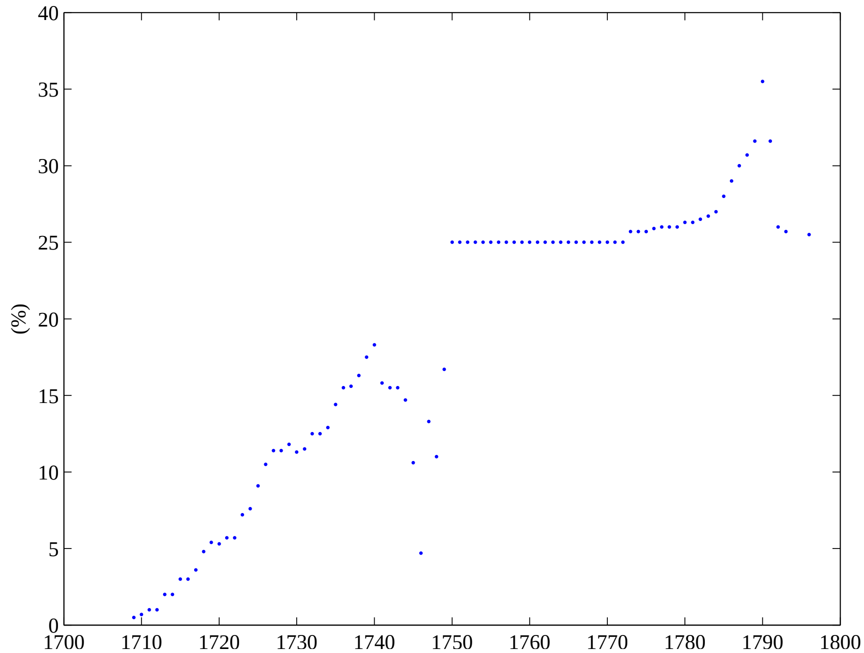

Figure 3: Agio on bank money in Genoa, 1705–97. Source: Pesce and Felloni (1975, 331–4).

of gold *scudi delle cinque stampe*.[7] Depositors acquired a credit which they could use at any time, either by withdrawing it or transferring it to another party. Accounts were kept until 1643 in lire, with the gold *scudo* rated at 3L 8s, and afterwards in scudi.

- In 1606 the *cartulario di argento* or *di scudi di cambio* was opened for the Genoese silver *scudi* minted since 1593, initially for three years and later permanent. Its unit of account was the *scudo*.

- in 1625 the *cartulario de numerato* or *di moneta de reali* for Spanish pieces of eight reals, again initially for one year but eventually made permanent. Accounts were kept in *reali*.

The new offices proved popular, in in 1606 the Genoese state required its its cashiers to make all payments above 100L through giros in San Giorgio's offices, in part because the resulting paper trail made auditing easier. Eventually,

[7]These gold *scudi* were minted in Spain, Naples, Florence, Genoa, and Venice at the same standard and were the sole legal tender of the Genoese fairs (Felloni 1984).

continuing exchange variability between coins (Figure 2) resulted in greater demands for a general bank accepting various sorts of coins. The State tried to regulate the value of coins to no avail. Several proposals for a bank were made: in one, depositors could withdraw the specific coins they had deposited or into some other coin but the latter chosen by the bank; in another, depositors could choose the coin to withdraw but would then pay an agio (Sieveking 1906, 248–50). By mid-century there was widespread belief that some public bank was needed, and the only question was whether the State or San Giorgio should run it. Finally, in 1675 the decision was made in favor of the latter.

The context was once again a monetary crisis associated with shortages of small change (Gianelli 2006). The silver and gold currencies had been appreciating sharply in the 1660s in terms of *moneta corrente*, that is, small denominations. The latter's poor quality, that is, overvaluation, was alleged as a cause, and the Genoese government had actually withdrawn large quantities of small coins between 1644 and 1656. By 1670, however, the was a shortage of small coins. In 1671 the government issued a series of copper coins valued at intrinsic value (gross of production costs) but soon reversed itself and proceeded instead to issue a new large silver coin or scudo, of slightly lower fineness than the existing scudo, along with slightly overvalued fractions from $\frac{1}{2}$ to $\frac{1}{32}$ to serve as small change. The legal value of the old scudo was set at its then-current market rate of 7L 8s, while the new scudo was set at 4L, or 54% of the old scudo, while its fine silver content was 53%. Four years later, the old scudo had risen by another 4s, and its legal value was adjusted accordingly while the new scudo was debased in proportion to keep the same nominal value of 4L.

The new bank was to keep its accounts in *moneta corrente*, and accept all legally rated coins at the official rate (except small coins). Underweight coins, which had until then been allowed to circulate by weight, were demonetized but the new bank accepted them (as well as counterfeits!). Bills of exchange but also all other payments above 100L had to be made through the bank, the first time such an obligation was imposed in Genoa. The management of the bank had the choice of the coin in which to repay, at the official rate; only those who had used their credit for payments in the exchange fairs and could prove it, had the right, like the creditors of the coin-specific *cartularii*, to request payment in a specific coin. The bank also had the option to pay the govt in *piccola moneta* or small coin, a particularly interesting feature in the context of 17th-century copper inflations. As always, the initial concession was limited to renewable three year terms, later extended to ten years.

One innovation, imitated from the Neapolitan *fede di credito*, was the *biglietto di cartulario*, a certificate issued by the bank to a depositor attesting his balance. The depositor could use the certificate to withdraw cash or he could transfer it by endorsement: the assignee could then withdraw the cash from the bank without further intervention of the original depositor.

Two other features, requested by San Giorgio, were denied by the State. One was the possibility of opening a Lombard facility, offering short-term loans against collateral in coin and bullion; the other was a monopoly on foreign exchange. The only loans it made were short-term, to the City, and only with the approval of the San Giorgio's Grand Council.

The bank's foundation, combined with the monetary reform of 1671–75, was successful in checking the rise of gold and silver coins for one generation; in 1709 the rise resumed. Since the bank's unit of account remained tied to the 1675 valuation of the silver scudo, an agio developed on bank money over current money, which rose from 0.5% in 1710 to 18.5% in 1741, exactly in line with the scudo's price increase (Pesce and Felloni 1975, see Figure 3). In the mid-1740s the government attempted to fix the agio at 15%, but soon the catastrophe of 1746 hit. Genoa, a reluctant participant in the War of Austrian Succession on the French side, was occupied by the Austrians in September 1746 and subjected to a large war indemnity. The State begged the Casa di San Giorgio to make a loan, resulting in a suspension of payments, at first for large sums and then on Sep 15 for all sums for 15 days, then on Oct 10 indefinitely. The agio collapsed, turning negative in 1748 and reaching -16.7% in 1750. The existing accounts (in the amount of 13.3m L) were converted into redeemable bonds in 1751, while in 1748 San Giorgio opened a new bank, the *banco corrente* (a gold-only bank was also briefly in existence in 1751). The State progressively repaid its debt to San Giorgio, and San Giorgio redeemed the bonds by 1777.

The revolutionary government imposed by France in 1797 took away the foundation of San Giorgio, namely, the assignment of taxes. The creditors of San Giorgio became creditors of the State. The Bank continued to operate briefly, and for a short while repaid depositors partly in bearer notes, but its growing debt to the State soon sank their value, and liquidation of the bank began, financed in part by selling the assets of San Giorgio (such as the port it had built in the 18th century). After the fall of Napoleon the new but ephemeral Republic of Genoa recreated a Bank, but Genoa's annexion to Sardinia put an end to it. The Casa was abolished in 1815 and the creditors were absorbed into the Sardinian debt.

2 Venice

The creation of *Banco della Piazza di Rialto* or *Banco di Rialto* in Venice in 1587 was essentially a government intervention to correct a market failure: the institution created was intended to supply a payment service hitherto provided by the private sector, but in a manner found to be wanting.

Private banking

Medieval banking arose out of money-changing (De Roover 1946): money-changers over time came to accept deposits and let their depositors settle debts by transferring deposits between each other. The transfer was made by oral order, in presence of both parties, and the written record of the transfer on the banker's books was sufficient evidence for the discharge of the debt. Over the course of the 14th century Venetian bankers ceased to be called *campsores* (changers) and became known as *banchieri* (bankers), and by 1374 their businesses were called *banca de scripta*, or *banchi di scritta*, clearly indicating their primary purpose (Lattes 1869, 34). Although Venetian banks were not numerous (eight to ten in the 14th century, three or four around 1500, all located in the Rialto), their economic role was widely considered as crucial (Mueller 1997, 5–7,82). Their total balances were around 1 million ducats, and they may have as many as 4,000 depositors, or one in thirty of the population of Venice (Lane 1937, 190). By 1400 bank money was used in payment for a variety of transactions, from purchases of bullion to payment of rents and settlement of foreign exchange, and in the 15th century some duties (Mueller 1979).

The basic problem with the Venetian payment system based on private banks was the possibility of failure, since the banks were not "narrow" and, by the 14th century at the latest, allowed their depositors to overdraw (Mueller 1979). Deposit banking and commercial banking were not separate, and bankers extended loans or invested directly. Mueller (1997) documents at length the bank failures of the 14th and 15th centuries, concurring with Lane (1937) that they were due not so much to excessive lending to the State, but rather to business cycles. When advocating the creation of a public bank in 1584, Tommaso Contarini (see below) emphasized the inherent fragility of the banking business (Lattes 1869, 124):

> A suspicion born, a voice heard, that there is no cash or that the banker has suffered some loss, a person seen at that time withdrawing money, is enough to incite everyone to take his money and the bank, unable to meet the demand, is condemned to fail. The failure of a debtor, a disaster in some venture, the fear of war is enough to destroy this enterprise, because all creditors, fearing the loss of their money, will want to insure themselves by withdrawing it and will bring about its complete destruction. It is too difficult, indeed impossible that in the space of a few years one of these events fails to occur that bring about the ruin of the bank.

That banks did not maintain 100% reserves is apparent from a law of 1322; indeed, it appears that by then the main elements of the payments system were in place: payment in bank money (that is, by transfer on the books of a bank) was considered final payment, that bankers kept fractional reserves, and that they kept accounts with each other. The law also indicates that legislators felt the need to intervene, since it required bankers to redeem deposits on demand within three days, and in cash rather than with claims on other bankers (Mueller 1997, 16). This was but one of many legislative attempts to remedy the fragility of banks, which more often relied either on some primitive form of capital requirements or else restricted allowable activities. Early on, in 1270, bankers were required to post bonds; the requirement seems to have fallen into abeyance, and was legislated again, this time conclusively, in 1455 (Mueller 1997, 52–62). Venice did not have limited liability as Siena and Florence did, so a banker's patrimony provided security in addition to the bond, but this was not always deemed sufficient: in 1404, bankers' investments were limited to 150% of their assessed patrimony, a law that seems to have had little effect. At other times bankers were forbidden from dealing in commodities, or to lend for purchases of silver (Dunbar 1892, 315–316), but these prohibitions were difficult to enforce: a complete prohibition on bankers' involvement in silver in 1378 was soon repealed as unenforceable under current circumstances, and prohibition on bank lending for silver purchases were continually renewed and ignored from 1378 to 1429 (Mueller 1979, 63–65).

Comprehensive banking regulation did not emerge until 1524, when bank supervisors were established in the wake of a dangerous expansion of banks and renewed depreciation of bank money relative to cash (Lane 1937). A law of 1526 increased the number of supervisors to one per bank, requiring them to inspect the banks every day, and to enforce parity between bank money and current money. Bankers were required to pay depositors on demand and in cash without delay; and bank money was made legal tender except when specific clauses for payment "out of bank" would be made (Lattes 1869, 88–94). The preamble of the law stated that bank money then stood at a 20% discount, and at least for a while it was brought to par.

Early proposals

Besides this legislative activity, there were repeated proposals to have the payment function of the banking sector performed by a public entity.

The first proposal for a public bank was made in 1356, following the failure of a major bank and a resulting liquidity crunch marked by high interest rates (Mueller 1997, 112,142). The Senator Giovanni Delfin proposed that a bank be set up alongside existing private banks, headed by three noblemen appointed by the city. It would be prohibited from lending or investing money and paying interest: its sole function was to receive deposits for the purpose of making payments by transfer. Salaries of officials would be covered by the flat fee charged for each transfer.

The proposal reappeared, almost word for word, nearly twenty years later. The context was again a troubled one: fluctuating commodity prices and variations in gold and silver had resulted in two bank failures (Mueller 1997, 113,151–53). The Senate, stating that the situation of the banks of the Rialto "could not be worse than they are at present" (Cessi 1937, 146) appointed a commission to submit proposals. That of Michele Morosini was simply to outlaw banking but, perhaps as a practical concession, it allowed foreigners to deposit coin and bullion in a government office, and also reprised Delfin's proposal for a public bank, with fees depending on the size of the transfer. The proposal was turned down, as was another to avoid large banks by limiting transaction and loan sizes, while other proposals to prevent bankers from financing speculation in commodities were adopted (Cessi 1937, 146–155).

A final early proposal was actually enacted, in 1421. The context this time was a blockade against Venice that deprived it of its silver imports, with a resulting agio between current money and bank money. The period also saw the development of a practice, whereby bankers offered unredeemable balances, euphemistically called *bona scritta*, at a better rate to cash than redeemable ones (Mueller 1979, 87–91). The approach, curiously, was to restrict the use of bank money, requiring for example that bills of exchange be settled in cash only. At the same time, the city's Silver Office was ordered to accept deposits and make transfers (Mueller 1997, 117), although it seems the law was never implemented.[8]

The Banco di Rialto (1587–1638)

Two aspects to the proposals: narrow banking and institutional continuity. "The banker, not the bank, was thus the object of careful scrutiny; unless it was known that a succession was planned and organized, the impending death of the principal could awaken fears of a difficult execution of the testament. Not providing specifically for the continuity of management and responsibility was a serious weakness of Venetian practice and commercial law in this sector" (Mueller 1997, 127).

The law of 1526 was clearly not effective in the long run, and in 1569 private banking was abolished (Tucci 1981). The situation became dire after the failure of the last private bank of Pisani and Tiepolo in 1584. Coincidentally or not, the market value of the gold scudo, which had been set at 8.6L in 1573, began to rise that year and reached 9L. At the same time the value of the silver ducato, issued at 6.2L in 1561 rose as well, by about 15% (Padovan 1882, 277).

The Senator Tommaso Contarini made a long speech arguing for the establishment of a public bank (Lattes 1869, 118–140). He explained that trade needed a system of payments; he described the fairs of Lyon and the settlement mechanism of Antwerp, but argued that those systems, relying on private trust (*fede privata*) was unsuitable in Venice with its multitude of merchants of

[8]The text of the law (Lattes 1869, 49) is rather obscure; see also Luzzatto (1934, 44n2).

different nationalities and creed. Yet Venice needed the revenues and stocks of metal that came with trade, and if it failed to maintain an attractive trading center it could lose out to nearby competitors such as Ferrara. Bank transfers had proven indispensable, but experience showed that private banks could not be relied upon in the long run, and he cited the figure of 96 failed banks in the history of Venice. The incentives for over-issue of credit were too strong, and Contarini also blamed bankers for the variability in exchange rates between coins. Only a state-sponsored entity could provide the service, and Venice had the advantage of an infinitely-lived and trustworthy government. To his colleagues, he said: "you, are a prince who by God's grace has always kept his word and above all his immaculate and inviolable faith; a prince not subject to the variations and failures that arise from death, but a constant and immortal senate; a prince who rules himself by laws and caution rather than violence and desires; all conditions desired in a government that lacks them, loved and revered in one that doesn't."

Opponents argued that this innovation was dangerous, that fraud was inevitable (so ingrained in Venetian mentality was the willingness to provide favors to family and friends), and that banking was not a proper activity for the "prince," i.e., the State, whose functions were to govern the people and wage war while business belonged to private individuals.[9]

The Senate voted to abolish private banks and establish a public bank (28 Dec 1584), but the law was rescinded a few months later because of "opposition, disadvantages, and misdeeds." Meanwhile the monetary situation worsened, with the gold coin rising from 9L to 9.6L. Debasements followed, to match the appreciation of the large coins (Sargent and Velde 2002): first were issued coins of 5s in 1585, then pure copper coins of 1d (bagatini) in 1586, and coins of 2s (gazzette) in 1587: the first and the last overvalued by 15% relative to the official price of the silver scudo (that is, 7 lire's worth of gazzette contained less silver than a scudo). Finally the silver scudo itself was debased in 1588, replaced by a lighter coin that came to be known as the *ducatone*. Eventually a modified plan for a public bank was adopted (11 Apr 1587 and subsequent amendments), and private banking was again allowed.

The preamble of the law of 1587, as that of 1584, bluntly stated that "the city needs a bank" and restated the lesson of the past that private banks could

[9]The speech against the Bank reported in Lattes (1869, 140–160) is attributed by some to Contarini despite the difficulty in reconciling such opposite positions.

not provide the service. The public bank was to be run by a governor, chosen by the Senate on the basis of submitted proposals (including the governor's requested salary), and required to post a bond like private bankers. The law specified the salaries, duties, salaries, and penalties for the employees of the bank. The governor was not to carry out any business (*trafico*) with the bank's funds. The bank's cash was kept at the Mint, except for 30,000 ducats to meet payments. The bank was obligated to accept any deposit of 50 ducats or more offered in good and current money, and the cash was always to remain available at the request of depositors. Transfers could not be made without the creditor or his due proxy; credits and debits had to be made simultaneously. The governor was to present the bank's balance sheet to the Senate once a year. After three years, the bank was to be liquidated, and the governor held responsible for the full satisfaction of creditors, under pains of confiscation of his estate and banishment. After the liquidation a new bank would open and a different governor would be chosen; creditors could opt to carry forward their balances in the new bank (unclaimed balances were deposited at the Mint after three years). The expenses of the bank were met from tax revenues, in particular a tax on bankers' fees (Lattes 1869, 109–116, 160–62).

There are important and interesting differences between the statutes of 1584 and 1587. The first bank of 1584 was a fully public bank: all officers were appointed by the Senate for renewable 2-year terms (except the cashier, who had to wait out as long as he had served before serving again), and operated under the daily supervision of three regulators. The senior officers (cashier, head clerks) were required to post bonds and subject to penalties for specific misdeeds, but no one had overall liability for any losses to the Bank. Conversely, rules on the management were more detailed, and in some ways stricter: only coin could be accepted in deposit, bank entries were given full legal value as if they had been produced by a notary, and bank credit could not be seized even for debts to the city. The statute even specified that sums should be written in Roman numerals. Finally, the Senate pledged never to take any money from the bank.

The 1587 bank was called "public," but the Senate had shifted the liability, since the governor who was personally liable for all losses. As a stopgap, the bank was liquidated every three years, so that losses might be uncovered before they had become larger than the governor's bond or personal assets.[10] The prohibition on accepting uncoined metal was absent as was the legal privilege against seizure. In some ways, the Banco di Rialto was a privileged, and highly regulated, private bank: as the preamble stated, it took up an offer to found a private bank, but shaped it so that it could "fulfill the certain need but without the risk of ruin" because its management would not be driven by private gain.

The first governor was chosen in June 1587; the bank proved successful since he soon requested permission to open a second ledger, and his first report to the Senate a year later showed a balance of 546,082 ducats, the equivalent of 1.5m Dutch guilders.[11] In 1593 the cash balance required to be kept at the bank was reduced by a third, suggesting that withdrawals were less than expected. The bank's balance reached 705,889 ducats by 1594 and 950,440 ducats by 1597. Supervision tightened in 1593 when the bank was required to balance its books every month, but the resulting closures proved too onerous and the term was soon changed to three months. The only serious evidence of mischief arose when the fourth governor was forced to resign six months after his appointment, in January 1597, and a special commission appointed to audit his accounts; after which the term of the governor was shortened to one year.

No legal tender status was initially given to bank balances. This development occurred several years later, in 1593, ostensibly in response to the common problem that bills of exchange were not paid in cash but by assignment of another debt, so that creditors had to "pass through fifteen or twenty hands" before being paid, and on the terms of the debtor. Assignment of debts was strongly forbidden, and a few weeks later settlement of bills of exchange through the bank became mandatory (14 Dec 1593). The requirement was successfully implemented, judging by one surviving figure: from 24 May to 9 Aug 1603 exchange settlement reached the sum of 2,978,098 ducats, representing according to an official 4/5 of the volume in Venice (Tucci 1981, 244).

As we have seen, the creation of the Banco di Rialto coincided with a serious monetary crisis, reluctantly solved by debasing the main silver coin. From the start, the bank's unit of account was the silver ducato of 1561, which bore on its obverse the value of 6.2L and had therefore a lira associated with

[10]Private banks, authorized again in 1587, were required to liquidate every six years.

[11]The exchange rate with Amsterdam in 1609 was 2.65 guilders for one ducat di banco (Denzel 2010, 83).

it. The new ducato of 1588, or ducatone, was about 20% lighter in content, and also bore a face value of 6.2L: this lira came to be known as the *lira corrente*, while the lira pegged to the old ducato was the *lira di zecca*: as a result, the bank's unit of account immediately acquired an agio of 20% over current money.

Monetary problems persisted nevertheless, since in 1593 (on the same day that bill settlement was restricted through the Banco) the legal value of the zecchino was raised to 10L. Tucci (1981, 241) sees a connection, and believes that the bank was also intended to improve the quality of the circulating coinage and ensure a uniform medium of exchange, an endeavor in which it briefly succeeded, because in 1590 the Senate required it to operate only in "valuta buona e di giusto peso." The requirement was later dropped and bad money was received as well as paid out, at intrinsic value, although it was reinstated in 1608. Tucci (1981, 242) sees a desire to remove bad coinage from circulation as the main reason behind the repeated attempts in the first decade of the 17th century to require settlement of all operations above 100 ducats in bank money, although Luzzatto (1934, 50) prefers to explain it as moves to shore up the value of bank money by requiring its use. The same author also sees evidence in 1607 of speculation in bank money, which the Senate tried to outlaw, but also of violation of the Bank's rules, since the Senate was moved to prohibit the Bank from accepting deposits (presumably at interest) and creating bank balances without any corresponding cash receipts.

The Banco del Giro (1619–1800)

The Banco del Giro,[12] founded in 1619 alongside the Banco di Rialto, was of a quite different nature: it was not intended as a deposit bank, but rather a way to make a government debt easily transferable and thus turn it into a means of payment. There were precedents for this mechanism: the Salt Office had provided transfer services for its creditors in the 15th century (Mueller 1997, 111), and from 1608 to 1614 the Grain Office, having bought a large quantity of grain from six merchants whom it couldn't pay, kept a register where the merchants could assign part of the 745,900 ducats they were owed to their own creditors. After a few years most of the debt had been repaid. The giro

[12]This section relied principally on Luzzatto (1934) and Tucci (1973).

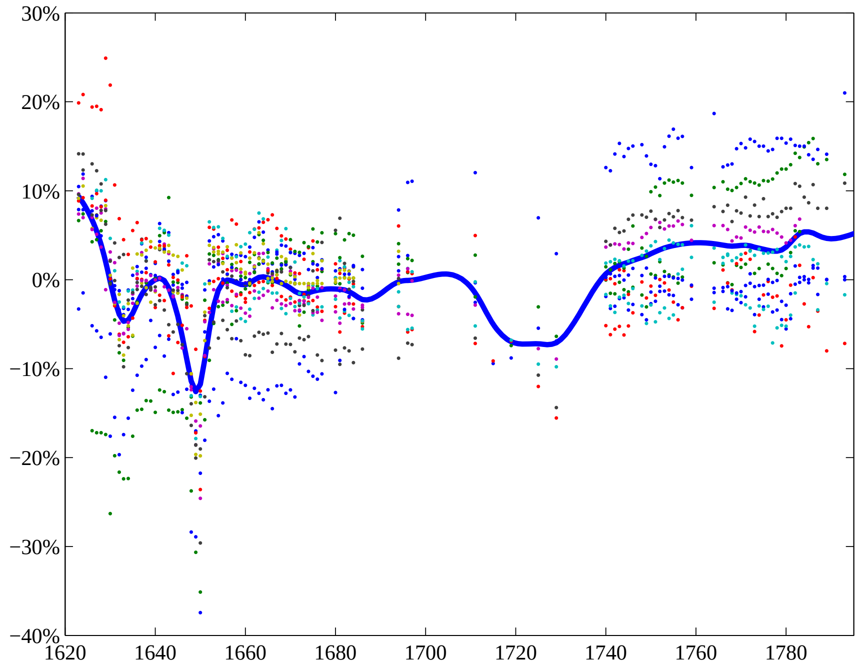

Figure 4: Venice Foreign exchange rates of Venice on various European cities. The thick line represents a common index. Source: Denzel (2010).

service might have continued but concerns about weak accounting controls led the Senate to wind it down, and the remaining liability was transferred to the Banco di Rialto, except credits of 10 ducats or less which were redeemed in cash: the existence of such small portions suggestive of the degree to which successive transfers had fragmented the original credits.

The example of the Grain Office was explicitly cited by the Banco del Giro's promoter, one Giovanni Vendramin who had delivered a large quantity of silver bullion and foreign coins to the mint, and offered to be paid part in gold, part in transferable credit (Soresina 1889). The Senate obliged, and the Banco del Giro was created, but as a temporary measure like its predecessor at the Grain Office. The Bank was run out of the State Mint; offices in the Bank were created and sold (Venice had instituted venality of offices in the 16th century). Vendramin's silver, once coined, served as a fund kept at the Mint to back the operations of the Giro, but the backing was not 100%: the Senate explicitly authorized the creation of 500,000 ducats' worth of balances to pay its creditors, and ordered monthly transfers of 10,000 ducats from the Mint to the Giro to repay. Six months later the Senate authorized another 200,000 ducats and, over time, increased the monthly transfers from the Mint to 80,000 ducats. Transfers from the Republic's magistrates to the Bank were recorded as debits and used to service creditors' requests for cash: in effect, as long as the monthly flow was sufficient to accommodate depositors' requests, the bank's liabilities remained convertible. This would remain the modus operandi until 1666: the State, considering the Bank's liabilities to be a form of public debt, increased the bank's liabilities to pay its debts to various creditors and adjusted the monthly flows of cash from the Mint to service the redemption requests. The Bank seemed to have some flexibility in the choice of coins to repay: Mandich (1957) infers from the variations in the agio on bank money, or *partita*, that it followed the silver scudo at first, then a coin of lower fineness, the lirone (and even briefly copper coinage), then from 1636 good silver and from 1645 gold coin. As long as redemption requests did not exceed the monthly inflows of cash the Giro balances could be deemed to be "convertible," but a careful balance needed to be struck. Through trial and error State officials came to the conclusion that the outstanding balance should not exceed 800,000 ducats. That level was first reached at the end of 1624, and balances kept rising to a peak of over 2.6m ducats in June 1630, during a period of warfare (war of Valtellina in 1625–26, Mantova in 1629–30) and plague (1630–31).

From 1625 the agio on bank balances began to fall, slowly at first and then precipitously in 1630 (Mandich 1957, 660–68).[13] A serious reform took place in 1630, with the appointment of three inspectors (Soresina 1889). Among other things they were to investigate those who devoted themselves to the trade of *valute e partite in banco* or bank balances. To curb this trade it was decided that no one could withdraw from the bank if he didn't have credit for at least three days prior, ruling out "day trading" in the partita market. The credits of officers and magistrates of the city were consolidated and netted against the public debt; for a limited time anyone was allowed to pay taxes and dues with bank credit; 100,000 ducats' worth of small change in copper was minted and distributed to members of the silk and wool trade who needed it, to repay the debt. Small retailers were prohibited from making payments in giro. In addition, various measures soaked up the Giro debt: deposits were opened at

[13]No series for the agio exists, but Figure 4 approximates it by taking the common component of all available foreign exchange quotations for Venice (Denzel 2010).

the Mint to receive bank credits and pay 7% interest, and proceeds from sales of life annuities at 14% were applied to the Giro.

This quickly brought down Giro balances to 1.4m ducats at the end of 1630, although they did not stabilize below 900,000 ducats until 1638. In the meantime, the agio climbed back to 14% in January 1631 and reached 22% in 1635. That same year saw the abandonment of the *moneta di zecca* as a separate unit of account: henceforth the government tried to maintain the bank money's agio at a stable 20% relative to current money (Mandich 1957, 673–75). At the same time, the Banco di Rialto was withering: after reaching a likely peak of 1.7m ducats in 1618, its balances declined to 0.2m ducats in 1630. The two banks had remained completely distinct, but the payment function of the Rialto had been overtaken by the Giro, and the former was shut down in 1638.

From the start balances at the Giro were legal tender for private debts, in payments of 100 ducats or more (Soresina 1889); and in 1629 they were made legal tender for public dues, initially with the Senate's consent but as a normal practice later on for up to half of the tax amount. From 1638 there were pressures from the public use coins for the purchase of bank balances and the Board of Trade (*cinque savi alla Mercanzia*) was favorably inclined, as was the manager of the Giro, who thought that the agio had risen too high (Luzzatto 1934, 61). But the Senate proved reluctant, and only made limited offers to purchase silver through the Mint. Only in 1643, when the agio reached 25%, was it resolved to allow anyone to bring gold and silver coin to the Mint and receive credit in the Bank (Mandich 1957, 645).

A second crisis soon erupted in 1648, and convertibility was de facto suspended, with the agio falling to -3%. This was the period of the war of Candia (1645–69) against the Ottoman Empire, and Giro balances grew again to a peak of 1.7m ducats in June 1650, but new tax revenues were assigned to the Giro and by the end of 1651 balances were down again to 925,000 ducats, where they would remain for more than a decade.

The expansion of the Giro led the State to enlarge its legal usage; in 1651 it was made the sole tender for all commercial payments (including bills of exchange) above 50 ducats on pain of nullity, and any debtor could repay debts of 50 ducats and above. This law was never enforced and was immediately considered tacitly repealed; in 1725 and 1749 it was again contemplated but rejected for fear of disturbing trade (Tucci 1973, 367). An idea of velocity at the time is given by the fact that, in 1650 when balances were around 1.7m ducats, 5 or 6m ducats were transferred every week (Mandich 1957, 646).

In 1666 the State was ready to resume convertibility, and did so by establishing a *Cassa* where cash could be exchanged for deposits and conversely at no cost, although the Bank retained discretion on which coins it accepted and paid out, in order to maintain an appropriate mix of coins in its reserves (see Tucci 1973, 427–36 for details on the Giro's specie management in the later years). The State also renewed the requirement to settle bills of exchange through the Giro, but exempted domestic bills of exchange; it also required tax payments to be made through the bank. The deposits could not be mortgaged and were exempt from seizure.

This resumption of convertibility, however, was accompanied by a debasement (Balestrieri 1969, 71): a new silver ducato (soon called *ducatello*) was coined and assigned a legal value of 6.2L, as the ducato of 1561 and the ducatone of 1588. The bank money continued to have an agio of 20%, but relative to the new ducatello instead of the ducatone. Since the ducatello contained 30% less silver than the ducatone, the bank balances were in effect devalued by the same amount.

The war of Morea (1684–99) occasioned brief difficulties as the Giro's cash balances were nearly depleted in 1702, although no suspension ensued. The next major crisis was occasioned by another war with the Ottoman Empire (1714–18): payments were suspended in 1714 and the agio fell to -7% by 1718. After the war ended, temporary measures were used to reduce the agio, among which the *stagnazione*, contracts by which private individuals agreed to keep their balances inactive ("stagnant") for a number of years during which they earned interest. Several such operations succeeded in bringing down the agio, mostly through announcement effects; but the gains, which helped the State in its purchases of goods and services with bank money, proved short-lived, and only fiscal revenues brought in over time stabilized the agio (Tucci 1973, 383–87).

The Cassa was reopened in 1739 with more or less the same constitution as before. The bank's unit of account was not devalued, however, relative to the ducatello, and so maintained its silver content through the crisis. The Giro continued to function uneventfully for the rest of the century, with a reserve ratio above 50% most of the time, and as high as 95% in 1796. Depositors' statements of balances, called *fede*, were not transferable, and proposals to make them circulate or issue paper liabilities were rejected in 1721 and again in 1784. Surviving documents from its last years provide some information on account-holders: numbering around 500, they were mostly merchants, and total balances fluctuated between 1.5 and 3m ducats (Tucci 1973, 409–426).

The French invasion of 1797 brought the end of the Republic. The Bank did not reopen after its quarterly closure in January 1798, and resumed partial payments only in August 1799. The Bank was found to be a large creditor of the city, but the new Austrian authorities refused to assume the city's debts. The Bank stopped payment in October 1800. When Venice became part of the kingdom of Italy in 1805 the new government assumed the debt and the Bank's creditors were repaid in government bonds (Soresina 1889).

3 Naples

The case of Naples is interesting because it provides a counterpoint to the experiences described above (Demarco 2000a,b, Balletta 2009). Naples never had a single, publicly sponsored banking institution. Confronted with the same failures of private banks as Venice, it used the same methods at first (bond monies, obligation to pay depositors within six days, prohibition on endorsements in 1580), but the solution that emerged was different. From 1584 to 1597, the Spanish viceroy in Naples authorized seven charitable institutions to open public banks, that is, receive deposits from anyone. The institutions were hospitals, confraternities, or charitable Lombard facilities (*monte di pietà*). What they had in common, in contrast with private bankers, were permanent existence, strict and open governance (sometimes under the tutelage of the State), and a certain conservative bias in management. What distinguished them from each other was mostly their geographical location: together they covered the city of Naples. The purpose of undertaking banking operations was to find new sources of revenues to finance their charitable activities. An eighth bank, founded in 1661, was distinct in that it was created by the administrators of the wheat tax; it became the bank of the court and administration.

For two centuries the eight banks together provided the banking services that one found in Genoa or Venice, namely holding deposits and paying through transfers on their books. However, they also innovated by introducing the *fede di credito*. This was originally a receipt or certificate of deposit notarized by the bank and given to the depositor as evidence of his deposit (say, for judicial purposes); later it turned into a negotiable instrument which the depositor could endorse to another person: the latter could obtain payment from the bank without further involvement of the original depositor. These notes apparently enjoyed widespread circulation.

They were not narrow banks, but were nevertheless very conservative, remaining well above 50% reserves in the aggregate nearly at all times. They made some loans against collateral and also invested in government debt and government tax farms. Inevitably they encountered difficulties, notably in 1622 when a monetary reform reduced by a factor of three the value of their reserves, and another reform in 1689–91. Yet only one of the eight banks failed, in 1702, and the deposits were taken over by the other banks under heavy pressure from the government. During the Napoleonic era the banks were merged and ultimately became the Banco di Napoli.

4 Catalonia

The public banks of Catalonia appeared in the 15th century, in a country that possessed a long tradition of private banking.[14] As elsewhere, banking arose from money changing but soon combined two key features of banking: deposit-taking and merchant-banking, in other words demandable liabilities and risky (and illiquid) assets. The role of bankers in providing means of payment is recognized by a law of 1284 which makes book entries sufficient proof of payment.

Regulation of private banking, on the model of other crafts, arose toward the end of the 13th century and involved ex-ante measures, such as the requirement to post a substantial bond in order to become a banker, as well as ex-post measures making the banker personally liable for all his book entries and providing various punishments in case of bankruptcy.

The Taula de Canvi (1401)

The municipalities of the crown of Aragon had acquired substantial financial autonomy as well as responsibilities during the 14th century. By 1400, Barcelona

[14]This section is based on Usher (1934), Sánchez Sarto (1934), and Riu (1979, 149–64).

was confronted with a heavy debt burden and widespread failures of private banks. The foundation of the *Taula de Canvi* (exchange bank) of Barcelona in January 1401 was intended to address these two problems, by giving the city a reliable provider of banking services and by drawing deposits away from the private sector in order to finance it short-term debt more cheaply than with annuities Ortí Gost (2007).

The management was appointed by the city for fixed terms and paid fixed salaries. The main business of the bank was to serve as the fiscal agent of the city (and, from 1413, the Generalitat of Catalonia), and provide loans to the city. In principle it was not supposed to lend to anyone else, but overdrafts were apparently pervasive. It received deposits of money and jewelry, and may also have issued long-term debt (annuities). To attract depositors the City provided a blanket guarantee, but this quickly proved insufficient and within a few months the Bank received a monopoly on certain types of deposits required by law, such as those of executors and guardians, dowries and property of minors, sums in dispute, etc: essentially, all conditioned deposits (that is, deposits which could be withdrawn only in specified circumstances). Among its activities were manual exchange (exchange of coins) and payments by transfer (Sayous 1936).

The city continued to confer advantages to the Taula, notably a monopoly on clearance of bills of exchange from 1446 to 1499, motivated by a desire to regulate the prices of foreign exchange and encourage minting. Also, from 1468 deposits were protected from attachment or seizure, even "those of a traitor"; the City, however, retained the right to seize the funds of its debtors. Nevertheless, the competition for deposits with the private sector led to difficult relations with bankers, and the city used its regulatory powers to its own advantage, restricting the number of banking licenses in 1437 or prohibiting bankers from having accounts at the Taula, after it had become a convenient place for inter-bank settlements. This prohibition was repeatedly repealed and renewed down to the 17th century. Private bankers were subject to increasingly stringent regulation in the mid-15th century. In 1444 deposits were declared to be payable within 24 hours in cash, and bankers were forbidden from extending credit on bills of exchange (Usher 1943, 243).

The deposits were irregular in that the bank was not obliged to return the same coins but "tantundem eiusdem generis" (as many of the same kind), so that deposits were legally closer to the loan contract than the strict deposit contract. As such the deposits could not pay interest (as opposed to deposits in private banks). At the same time, credits became new means of payments or bank money, reimbursable or transferable orally (per dita) or in writing (per pòlissa). The bank was thus a bank of deposit, transfer, and credit (Passola 1999).

The earliest preserved balance sheet from 1433 shows cash on hand of L105,781 for a total balance sheet of about L358,000. Only 15% of the other assets were loans to the city, leading Usher (1943, 333) to conclude: "overdrafts [were] on such a scale that one must presume that the ordinances were deliberately and systematically ignored." On the liabilities, only a third of deposits were demandable, the rest being conditioned deposits. There were 1,460 depositors from all over Catalonia, but mostly from Barcelona (population of about 35,000 at the time). Of the 1,494 accounts 134 were overdrawn. The size of deposits ranged mostly between L2 and L150, although a single account, that of Pere Ribalta, represented 28% of the total. Accounts rarely remained open for long and withdrawals were common. Funds could be transferred to non-depositors who then withdrew the cash.

The vicissitudes of the Taula are closely connected to city finances. Soon after its start, in 1404, the Taula helped refund the debt and provided a short-term loan of L50,000 (about 12% of the total debt). When the city imposed on itself strict budgetary controls in 1412 by assigning specific revenues to specific expenditures, it delegated monitoring and enforcement to the Taula. It was also decided to limit the size of loans that it could make to the city: the executive could only borrow up to L8000 at a time, larger loans requiring a formal vote of the city council and a new tax to service the loan. By 1435 the debt had been halved and the city's budget balanced.

The Taula was also given a role in enforcing monetary laws. It was obligated to abide official tariffs for coins and accept coins of the realm at the legal rates. It could also accept foreign coins if they were tariffed, and other coins by weight only. Difficulties arose in 1453, when the crown of Aragon devalued the common silver coin, the croat, from 15d to 18d. After long debates the city decided to revalue the deposits by 13.3%, somewhat less than the 20% increase in face value of the croat; however, the rate on the gold florin was increased in line with the croat.

A severe crisis occurred during Barcelona's rebellion against the crown of Aragon from 1462 to 1473. To help the war effort the Taula issued annuities and lent extensively to the city. It also started to offer interest on deposits, up to 15%, but this proved insufficient. In 1463 severe legal restrictions were enacted to support the Taula: private banking was prohibited and all payments larger than 15s were required to be made in the Taula. Nevertheless by 1466 a premium on specie relative to bank balances had emerged (reaching at least 15% in 1467) and payments were suspended. In 1468 the Taula was reorganized. Existing deposits were given an option to convert into annuities or remain as a means of payment by transfer but inconvertible until such time as profits allowed for redemption, a process that took decades. New accounts were opened but backed fully by cash deposits, and private banking was allowed again. The Taula was prohibited from lending to the city, a restriction that was observed until the 17th century.

The Taula continued to operate, even after the creation of a Banco de Barcelona in 1609 to handle clipped coinage (their respective roles were defined in 1620) and a suspension of payments in 1641 (during the war with Castile). It was only absorbed by the Bank of Spain in 1853.

The Banch de la Ciutat (1609)

In the late years of the 16th century the medium of exchange in Catalonia deteriorated: there were complaints of light-weight, clipped, and counterfeit coins circulating. The problems were probably caused or exacerbated by the developing copper inflation in nearby Castile. Bankers were accused of charging a premium when withdrawals were demanded in good coin, thereby raising prices. To remedy the situation the City decided to found a new bank, the *Banc de la Ciutat* or bank of the City, in 1609. In contrast with the Bank of Deposit, the new institution, clearly designed to be an temporary extension of the former, could accept any sort of coin at the discretion of the cashier. Its purpose was apparently to allow the limited use of inferior coinage by the general public (although private bankers were prohibited from having accounts in 1614). The new bank was well received, and after 1615 there were no private bankers left in Barcelona.

In a repeat of earlier events, Catalonia revolted against the king of Spain in 1640. There followed a period of rapid inflation as the coinage was debased (prices rose by a factor of six over ten years), and the City used its two banks to finance its expenditures, in addition to floating loans. both banks suspended payments partially in 1641 and completely in 1650. After Barcelona fell to the king of Spain in 1652, the two banks were reorganized and separated, the city having no account at the Banc. New accounts were created into which existing balances could be converted at 3% of face value. In 1656 further arrangements were made to convert old accounts into annuities at rates roughly indexed to the price level at the time the credits arose. Small depositors were treated more leniently, and for a while so were some privileged depositors such as ecclesiastical institutions and trusts. Finally in 1663 the whole funded debt was reorganized, with further haircuts imposed on annuity-holders.

The War of Spanish Succession marked the final chapter: Catalonia sided with archduke Charles of Austria against the king of Spain. Once again the Taula and the Banc were forced to suspend payments, in 1706. After the capitulation of Barcelona, the Banc was placed under the control of the military authorities and reorganized into a "rigidly administered giro bank" (Usher 1943, 502) with no ties whatsoever to the city. In 1769 there was a partial repudiation of the debt created in 1640 and 1714 by the conversion of frozen deposits. From 1780 the government used the banks again to finance expenditures, bringing them to suspension by 1812. The banks were slowly wound down during the 19th century and finally closed in 1853.

Other municipal banks in Catalonia and Aragon

Other similar institutions appeared in Catalonia. Valencia set up a deposit bank in 1408 which was closed down in 1416 because of mismanagement. A new one was opened in 1519, refounded in 1649 and liquidated in 1719 (Carreres Zacarés 1957, Mayordomo García-Chicote 2002). It was a deposit bank and served as fiscal agent of the city, in particular servicing the public debt. Other 15th century examples (Passola 1999) include Perpiñán (1404), Vic (1413), Tarragona (1420), and Girona (1438); 16th century examples include

Majorca (1507), and Cervera (1599).

5 The Dutch Republic

Amsterdam (1609–1820)

The Bank of Amsterdam (*Amsterdamsche Wisselbank*) was founded in 1609. The original conception of the bank was as a conservatively designed "exchange bank" –a ledger-money bank backed principally by coin–following the example of Venice's Banco di Rialto. Through a series of innovations, however, the Bank of Amsterdam was ultimately able to achieve a greater degree of success than its Venetian predecessor. Almost until its demise in 1795, the bank was widely admired and served as an inspiration for public banks in other cities.[15] The Bank of Amsterdam never issued notes, but by limiting its depositors' withdrawal rights, was able to create a highly liquid, quasi-fiat asset in the form of its ledger money.

Differently from the Venetian case, the chief impetus for the founding of the bank was not dissatisfaction with private banks but the poor state of circulating coinage, and consequent uncertainty regarding settlement of bills of exchange (Van Dillen 1964c). Bills were denominated in guilders (*gulden*), also called florins. The guilder coin had been produced under Charles V's mint ordinance of 1543 but by the time of the bank's founding was a ghost currency, long vanished from circulation. Prior to the founding of the bank, settlement of bills commonly occurred through private intermediaries known as cashiers,[16] or less satisfactorily, by assignment (endorsement) of a bill drawn on a third party. Contemporary writings complain that bills were endorsed many times over for this purpose.

Coin circulated in bewildering variety. The loose political structure of the Dutch Republic allowed for 35 quasi-independent domestic mints, and the Republic's mint ordinances assigned official values to almost 1000 different

[15] Adam Smith, for example, gives the Bank of Amsterdam a highly favorable review in the 1776 *Wealth of Nations.*

[16] Cashiers (*kassiers*) accepted and paid out coins for local transactions. They could also effect settlement through giro transfers. Cashiers were a legally distinct profession from moneychangers (*wisselars*), although in practice the activities of the two groups often overlapped. Both moneychangers and cashiers were widely blamed for the poor quality of circulating coin.

types of coin, foreign and domestic (Dehing and ‘t Hart 1997). Ongoing debasement meant that the silver content of a “guilder” was dropping by about one percent annually, with most of the profit accruing to the least scrupulous mint owners (Polak 1998a,b). This profit was to no small extent extracted from creditors (bill beneficiaries) in the Amsterdam bill market (Quinn and Roberds 2009), who sought a remedy through the creation of the bank.

The initial charter of the bank[17] did the following (Van Dillen 1964c):

1. require all bills of exchange over 600 guilders to be payable through the bank;[18]

2. outlaw private cashiers;

3. make deposits in the bank not attachable by creditors;

4. allow recognized coins to be deposited in the bank at value prescribed by the Republic’s mint ordinance; others to be credited at metallic value (sent to a mint);

5. make deposits redeemable on demand, but allow the bank to recover costs by charging fees for withdrawals. Fees varied by coin and were capped at 2.5 percent; in practice they averaged about 1.5 percent.

Provisions (1)-(3) were clearly aimed at creating a privileged status and hence a market demand for bank deposits. Although most early records of the bank have been lost, indirect evidence suggests that these provisions were successful. Within two years of its founding, 1.4 million guilders’ worth of metal flowed into in the bank, this despite the considerable fees charged by the bank for coin withdrawals (Quinn and Roberds 2009). The bank’s monopoly

[17]The bank was a perpetual, public institution, although legally separate from the city. Governance was in the hands of three commissioners, who were typically current or former members of the city council (‘t Hart 2009). Profits from the bank’s operations were returned to the city.

[18]Literally, “ter Bank gerescontreert ofte betaelt moeten worden.” This is usually interpreted as requiring settlement of bills through giro transfers. Because the early ledgers of the bank have been lost, there is no surviving direct evidence that this was the case. Van Dillen (1964c) reports that his examination of the ledgers of a similar exchange bank in Middelburg indicate that giro settlement was in fact used from the beginning of that bank’s existence; it seems reasonable to assume the same practice prevailed in Amsterdam. The Middelburg ledgers were unfortunately destroyed in the Second World War.

on bill settlement was, however, never complete and private cashiers were soon (1621) allowed back in business.

Chartered as a "100 percent reserves" institution, the bank quickly began lending, to the East India Company (starting in 1615) and the city treasury (1624), as well as to a number of other politically privileged parties. Lending by the bank continued despite its official prohibition. The bank's loans/total asset ratio shot up to 60 percent during the 1620s but then quickly fell back to less than 20 percent (Quinn and Roberds 2010, 26). In contrast with exchange banks in some other cities, the Bank of Amsterdam did not extend credit through a Lombard window [19].

The advent of the bank slowed, but did not halt the pace of debasement. The situation took a turn for the worse when the Republic's 1641 mint ordinance recognized an "invading" coin from the southern Netherlands, the *patagon*, as having the same value (2.5 guilders) as a popular domestic coin, the *rijksdaalder*, despite the latter having about 4 percent greater silver content than the former. This put the bank on the losing end of coin-to-coin arbitrages. The improvised solution was for the bank to apply a discount or " haircut" to deposited patagons, so that these were credited at only 2.4 guilders on the books of the bank. This move had the unintended consequence of creating a de facto second unit of account, the *bank guilder*, as opposed to the *current guilder*, the unit of account for money outside the bank. The haircut applied to patagons caused bank money to be valued at a premium or agio of about 4 percent above current money.

The system of dual units of account was formalized by the mint ordinance of 1659 which assigned separate values to large coins, in current and bank money respectively (Van Dillen 1964c). Bills of exchange drawn from outside the Republic continued to be denominated and settled in bank guilders, while local bills were primarily denominated in current guilders and settled through private cashiers. The cashiers also operated a daily market where bank money could be exchanged for current money for a small commission (1/4 percent or less).

[19] Lombard credit was traditionally available through a separate institution, the Lending Bank (*Bank van Leening*). Surviving evidence suggests that the Bank of Amsterdam provided some limited support to the Lending Bank, peaking at 200,000 guilders in 1616 and diminishing quickly thereafter (Van Dillen 1964c). In the eighteenth century, Amsterdam created other institutions for credit provision, which are discussed later in this section.

A 1683 reform sharply reduced the costs of trading in bank money. Following the suggestion of an Amsterdam merchant, the bank began giving out a new type of receipt against each deposit of coin (Van Dillen 1921). The receipt, which was negotiable, entitled its bearer to reclaim the specific deposited coin within six months' time, at a minimal charge— 1/2 percent for gold coin and 1/4 for silver.[20] No receipts were given for existing deposits. Under this system, it was now cheaper to redeem a receipt than to exercise the right to withdraw a deposit in the traditional fashion. Depositors not holding a receipt could purchase one, so the right to withdrawal became unused and at some unknown point (probably 1685) was quietly abolished (Van Dillen 1964a). Bank money thus lost its inherent redeemability and took on a quasi-fiat character.

The lowering of redemption fees greatly increased the flow of money into and out of bank accounts, the turnover of bank money, and the profitability of the bank. During this period the Bank also began a practice of regular, seasonal lending (*anticipatiepenningen*) to the East India Company. Virtually all of the bank's profit from these operations was quietly transferred to the city, leaving the bank with little or no capital reserve (Quinn and Roberds 2010). Despite this back-door fiscal exploitation, the metallic reserves were generally ample over this time period, and averaged 82 percent of deposits over the entire period of the bank's existence (Dehing and 't Hart 1997, 49).

An extensive set of records is available from 1666 and these show that the bank engaged in frequent and profitable open market operations. At first these were probably trades in silver bullion, despite restrictions on such activity in the bank's charter. Later on, vault records indicate that the favored instrument for such transactions was current money. These operations apparently served to stabilize fluctuations in the stock of bank money.

The Republic's 1694 coinage reform ushered in a period of remarkable stability. Outlying mints came to accept Amsterdam's monetary hegemony, and curtailed their production of debased coin. The guilder coin was successfully reintroduced, but curiously remained ineligible for deposit in the bank: the

[20] I.e., a receipt was an American call option on the deposited coin. Receipts were almost always redeemed, so in practice they functioned more like repurchase agreements than options. By structuring the receipt as an option rather than evidence of a debt, however, the bank was able to secure its priority as a creditor, and hence offer loans against coin at very low rates with little or no haircut (Mees 1838). Through the use of receipts, the Bank seems to have also avoided political disputes over priority as occurred in Basel (discussed in a subsequent section).

dominant unit of account remained the guilder as defined by entries in the bank's ledgers. Confidence in the bank guilder was such that during the first half of the eighteenth century, the market agio rarely ventured outside its statutory range of 4–5 percent (Figure 5) Towards the end of the eighteenth century, however, the bank was impacted by two serious financial crises. The first of these, in late 1763, resulted from a collapse in the market for acceptance loans following the failure of a major merchant bank, Gebroeders de Neufville (Schnabel and Shin 2004). The second panic, in late 1772 and early 1773, saw the failure of an even larger merchant bank, George Clifford and Sons, setting off another wave of payment suspensions and failures (Koudijs and Voth 2011).

The bank withstood these crises, but was forced to implement emergency measures in both cases. In August 1763, the bank widened the range of assets eligible for deposit to include unminted silver bullion—a commodity in excess supply due to large shipments of recently demonetized Prussian wartime coinage. Resulting deposits of bullion were relatively small in aggregate (1.5 million guilders or about 5 percent of total deposits) but were critical to maintaining the liquidity of several large merchant banks (Quinn and Roberds 2012). The 1772–73 crisis led to the creation by the City of a new, open-access loan facility, the "Fund for the Maintenance of the Public Credit," legally distinct from but wholly funded by the Bank. The impact on the Bank's balance sheet was again quantitatively small (a half million guilders) and the Fund was wound up by October 1773. However a precedent had been set for the expansion of the Bank's lending operations.

These operations greatly increased during the Fourth Anglo-Dutch War (1780–84). The bank abandoned its traditional conservatism and extended large credits to the East India Company, to provincial governments, and to a newly formed municipal loan facility (*Stadsbeleeningkamer*). Metal deposits were withdrawn from the bank, and soon the customary agio on bank money could no longer be maintained. In 1790 the bank tried to unilaterally impose an 9 percent depreciation of bank money, causing the agio to fall below zero and forcing a recapitalization of the bank the following year. A near-total collapse followed soon thereafter, with the French invasion of 1795. The Bank of Amsterdam was superseded by De Nederlandsche Bank in 1814, and was liquidated in 1820 (Van Dillen 1964b).

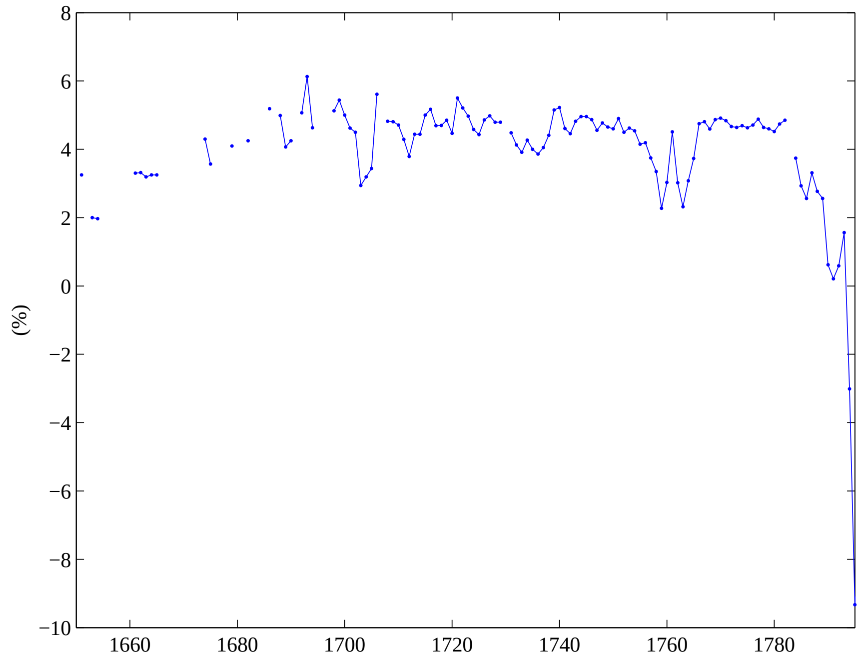

Figure 5: Agio on Amsterdam Wisselbank balances, 1650–1800. Sources: Denzel (2010, 58).

Other Dutch exchange banks (1616–1812)

The popularity of the Bank of Amsterdam inspired the founding of similar exchange banks in other cities of the Dutch Republic: Middelburg (1616), Delft (1621), and Rotterdam (1635). Initially these institutions operated as close copies of the Amsterdam bank (Mees 1838, Sneller 1938a). The motive for the founding seems to have been much the same, and the success of the Amsterdam institution moved the outlying cities to closely follow its example. Foreign merchants, the English Merchant Adventurers especially, also encouraged this development (Van Dillen 1925). As in Amsterdam, the chartering legislation of the banks required bills payable in the respective cities to be settled through the local exchange bank. This rule appears to have been enforced less vigorously in the provinces than in Amsterdam; in 1720 the city council of Rotterdam found it necessary to pass an ordinance reiterating this restriction (Sneller 1938c).

With the arrival of the patagon and the subsequent emergence of dual units of account, the smaller Dutch exchange banks embarked on different path from the Bank of Amsterdam. Specifically, in the outlying banks, depositors were allowed to maintain separate accounts in bank money and current money. As noted previously, the former was used principally for settlement of bills drawn abroad and the latter for domestic transactions, particularly bills drawn on Amsterdam. Bank money in the accounts of the outlying banks was usually valued at the going market agio in Amsterdam. There is no evidence that the outlying banks abolished the right to withdrawal of deposits, as occurred in Amsterdam following introduction of the receipt system in 1683. This right could not be honored in all circumstances, however, as cash ratios of the outlying banks were distinctly lower than in Amsterdam.[21] Illiquid loans forced lengthy shutdowns at both Middelburg and Rotterdam following the French invasion of 1672 (Mees 1838).

By operating in both current and bank money, the outlying exchange banks came to function essentially as state-sponsored cashiers for their respective merchant communities. Over the course of the eighteenth century, two developments worked to undermine this functionality. The first was the stabilization of Dutch domestic coinage in the wake of the 1694 mint ordinance. This reduced fluctuations in the value of current money, so that domestic bills increasingly were drawn in current rather than bank money. The second was the loss of trust in the Amsterdam bank guilder after 1780, so that foreign bills also came to be written in current money terms. Sneller (1938c) examined samples of protested bills in the Rotterdam notarial records, and found that by 1763–70, the great majority of these were payable in current money.

As bank money became increasingly less used as a unit of account, the rationale for the exchange banks evaporated. Merchants could just as well settle through a private cashier or with coin. The Rotterdam bank moved to a current money basis after 1795 and was dissolved in 1812 (Sneller 1938b). The Middelburg bank collapsed in 1794 with the French invasion. In 1805 it was resurrected in diminished form, operating only a current money basis and

[21] E.g., the cash ratio of the Middelburg bank averaged over its lifetime was 54 percent as compared to 82 percent for the Bank of Amsterdam (Dehing and ‘t Hart 1997, 49).

having no monopoly of settlement (Mees 1838).

6 Early German Municipal Banks (15th - 17th centuries)

Municipal exchange banks (*Stadtwechsel*) arose in a number of German cities during the fifteenth and sixteenth centuries: examples cited by Günther (1932) include Erfurt, Wismar, Bremen, Lübeck, Frankfurt, Basel, Konstanz, Augsburg, Strasbourg, Cologne, and Merseburg. Throughout Germany, right to exchange money was bound to coinage rights. By tradition such rights were reserved for religious and secular authorities, but in practice coinage and exchange activities were often carried out by *Hausgenossenschaften*, hereditary societies often associated with guilds. With the rise of commerce, cities sought to exercise increased control over the local money supply. The 1402 mint ordinance of King Ruprecht III encouraged cities to better regulate exchange, but this law may have only served to recognize the inroads the cities had already made onto the turf of the *Hausgenossen* (Günther 1932, 15).

The initial forays of cities into banking were often quite modest. In 1402 Frankfurt created a municipal bank with fourteen employees and an initial capital of 900 florins. The bank existed only for the duration of the autumn fair. Its principal function and the main source of its revenue was the weighing of coin to be used during the fair. The success of this first enterprise led to the founding of a second municipal bank, a three-year joint venture between the city of Frankfurt and a married couple, the Palmstorffers (Günther 1932, 29).

Such joint ventures were hardly unusual: Basel initiated its *Stadtwechsel* in 1491 by taking an equity position with a local *Hausgenosse* (Hallauer 1904, 40–41). Rights to operate a municipal bank could also be contracted out to private parties (*verpachtet*) without equity participation by the city, or an exchange bank could be operated as a "pure" municipal entity staffed with employees. In most cities the *Stadtwechsel* operated alongside private money changers, as monopolies of either the public or private variety were not desired by the merchant community.

The stated reason for the founding of a municipal banks was always to maintain the quality of coinage within the city. The city council of Konstanz voiced a fear that allowing poor quality coins into the city markets would lead to disruptions in the grain supply. The charter of the Basel city council stated that "our municipal bank is being founded to benefit the public good." In granting coinage (and hence exchange) rights to the city of Breslau in 1470, a royal decree proclaimed "that such profit and benefit [of the bank] will accrue to the entire city and not any single person" (Günther 1932, 17).

Importation of some higher value "foreign" coins, especially gold coins, was allowed but it was generally forbidden to circulate such coins within the city. Otherwise, anyone bringing foreign coins into the city was supposed to exchange these, at metallic value, at a municipal bank or licensed private money changer. Foreign coins then had to be sent to the city mint. Even minor deviations from these rules were subject to severe punishments. Both public and private banks were bound to follow these rules, but the presence of a public bank was thought to improve the honesty of the private enterprises.

Another important motive for the founding of municipal banks was the view of the Church on interest. Payment of interest was less frowned upon when it sprang from the exercise of civic authority. A factor behind this view was the Church's desire to earn income on accumulated wealth.

Moneychanging was the mainstay of the municipal banks' business, but over time their business model came to more closely resemble modern banks. Although relatively few ledgers have been preserved, the practice of giro payment seems to have gradually taken hold. Günther (1932, 75) cites an early (1421) Lübeck court case where a wine shipment had been paid for by a transfer of 70 marks on the books of a local money changer who subsequently absconded. The wine merchant sued the purchaser but lost his court case, as his written receipt of the transfer was taken as evidence that he considered it to be valid payment. The 1551–53 ledgers of an Augsburg municipal banker, Stadwechseler Mair, contain numerous examples of giro payments (Günther 1932, 76–77). Municipal banks also dealt in bills of exchange, but these were lightly used as compared with places such as Flanders and Italy. Bills were usually drawn on other German cities and they functioned more as a means of transferring value rather than as credit instruments.

In addition to transaction deposits (*depositum regulare*) municipal banks also offered interest-bearing deposits (*depositum irregulare*). These were popular among all classes of society, although interest rates were generally low, five percent or less. In some cases laws compelled the deposit of orphans' funds into a municipal bank. Foundations and religious orders were encouraged to do the same. A side benefit of depositing monies at a municipal bank was that they were often guaranteed to be free from attachment by creditors. Laws to this effect were passed as early as 1397 in Frankfurt and Strasbourg (Günther 1932, 64). There were also deposits from the cities themselves, which served to provide working capital to the banks. Such deposits bore a higher interest rate than what was available to private depositors.

Over time the banks expanded their lending activities, as well. The most common type of loan was a Lombard loan against the metallic value of gold or silver collateral. The popularity of such loans is attested to by various attempts to regulate their interest rates, e.g., to a maximum of five percent (a 1559 Imperial Edict) or a more realistic ten percent (1376 city ordinance in Ulm) (Günther 1932, 70). These loans bore almost no credit risk, as haircuts were liberally applied, and municipal banks often enjoyed a right to prompt liquidation of collateral and priority over other creditors. In 1691, resentful private lenders in Basel succeeded in overturning laws guaranteeing the priority of the *Stadtwechsel* (Hallauer 1904, 63) banks. This change was quickly seen as endangering interest payments to depositors, and was rescinded a year later.

Banks also made other types of loans. In Basel, unsecured loans could be obtained, though only with the express permission of the borrower's wife (Hallauer 1904, 55). The Augsburg ledgers of Stadtwechseler Mair indicate that overdrafts were commonly allowed for in the accounts of prominent local merchants, e.g., the Welsers and Fuggers (Günther 1932, 70). The Basel municipal banks also extended loans against bills of exchange, where their guarantee of priority brought them into even sharper conflict with the local merchant community (Hallauer 1904, 65).

Inevitably, loans were extended to the municipal banks' sponsoring cities. The Mair ledgers show numerous, uncollateralized loans to the Augsburg Tax Office and to the City Building Superintendent (Günther 1932, 68). The financing activities of the Basel banks were even more wide-ranging, with loans to the City Salt Office, the Finance Office, and Municipal Stables, among others (Hallauer 1904, 54). There were limits, however. Günther (1932, 73) finds occasional examples of loans to foreign sovereigns, but that in general municipal banks shied away from international lending.

7 Hamburg (1619–1875)

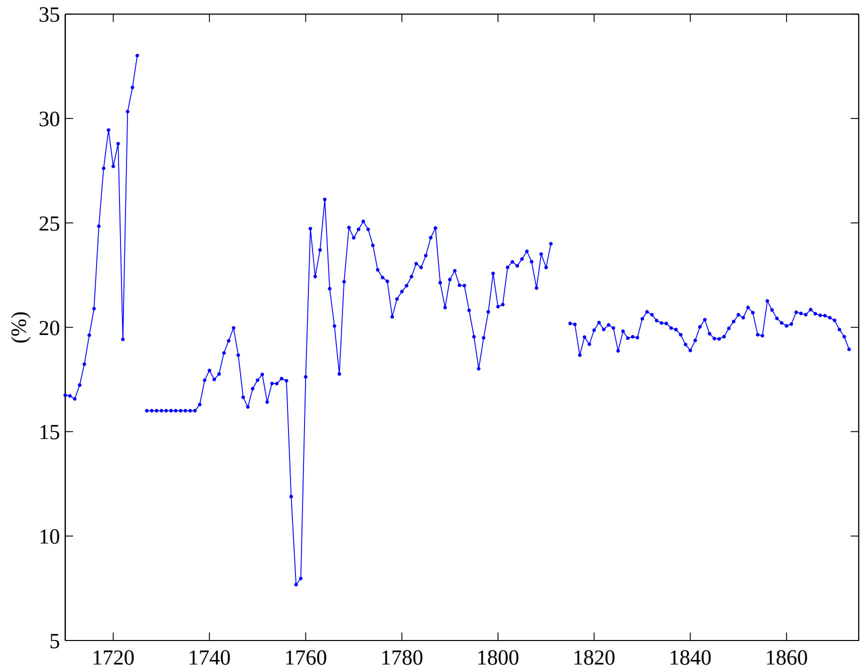

Figure 6: Agio on Hamburg bank money, 1710–1873 (annual averages). Source: Denzel (2010, 192).

Problems with circulating coinage in early seventeenth-century Hamburg were, if anything, worse than in Amsterdam, this being the era of rampant debasement throughout Germany. The destructive practice of competitive debasement culminated in the infamous *Kipper- und Wipperzeit* of 1619–23, during which prices increased as much as tenfold in some areas (Schnabel and Shin 2006). The foreign merchant community in Hamburg was impressed by the monetary stabilization achieved by the Bank of Amsterdam, and advocated the chartering of a similar institution. Distrust of banks was widespread among the native population, however, and the Bank of Hamburg (*Hamburger Bank*) was founded in 1619 only after long and contentious debate (Sieveking 1934b).

For the first century and a half of its existence, the Hamburg institution operated much as a smaller and somewhat less stable version of its "older sister" in Amsterdam. The fortunes of the Bank of Hamburg began to improve with a 1770 reform, and, unlike its Amsterdam sibling, it was able to successfully weather the stresses of the Napoleonic period. With minimal modifications to its original design, it continued to thrive up until the German Unification in 1871.

The chartering legislation of the Bank of Hamburg closely followed that of its Amsterdam model. Bills were required to be payable through the bank, and funds in the bank were made not attachable by creditors, with exceptions in cases of bankruptcy. The bank had an obligation to "pay out passable money without excuse," i.e., to redeem bank deposits on demand, but in practice the bank retained flexibility in terms of which coins it chose to pay out. Bank funds could also be used to settle obligations other than those arising from the acceptance of a bill, subject to prior agreement by creditor and debtor (Levy von Halle 1891).

Unlike in Amsterdam, the founders of the Bank of Hamburg envisioned an explicit credit role for the bank. The bank was formally split into two entities, an exchange bank (*Kaufmannskassa*) and a lending bank (*Lehnbank*). Private parties could borrow against a wide range of collateral: gold and silver coin and jewelry, gems, durable goods, municipal securities, and in one case an estate near Leipzig (Sieveking 1934b, 129). Loans were limited to 75 percent of the estimated value of the collateral (Levy von Halle 1891, 4). The bulk of the bank's lending went to the municipal treasury (*Kämmerei*), however, which used loans from the bank as a way of smoothing tax revenues. Finally, the bank was given the job of maintaining a store of grain for the city.

Despite this somewhat confusing initial structure, the bank proved popular with merchants. By 1621, over 500,000 marks had flowed into the Kaufmannskassa (Sieveking 1934b, 128) and by 1655, deposits were almost 1.9 million marks (Sieveking 1934b, 130). Prices for bills drawn in or on Hamburg came to be quoted in "marks banko," i.e., bank money (Schneider et al. 1991). The dominance of bank money for Hamburg transactions is confirmed by Amend-Traut's (2009, 302) examination of a sample of actual seventeenth- and eighteenth-century bills from disputes at the Imperial Court in Frankfurt.

The Hamburg bank experienced its first serious crisis in 1672, following the French invasion of the Netherlands. Expansive lending and heavy cash demands forced the bank to close its doors in May 1672, and it did not reopen until June of the following year. Revisions of the bank charter followed in

1710 and 1719; the most important change was to restrict eligible collateral for loans to gold, silver, and copper (Sieveking 1934b).

As in Amsterdam, bank money in Hamburg circulated at a premium over current money (Figure 6). As current money continued to depreciate for much of the seventeenth and eighteenth centuries, this agio tended to be both large and unstable. By 1718 the "disagio" on current money had risen to 34 percent (Schneider et al. 1991). Pressure from merchants led to the creation of a "current money bank" in 1726, temporarily stabilizing the disagio at 16 percent, but the current money bank had to be closed in 1737 following an influx of low-quality coins from Denmark, which threatened its liquidity (Sieveking 1934b, 145).

The period of the Seven Years' War was a time of instability for the Bank. Liquidity pressures forced the bank to close again in 1755. The bank was not fully reopened until 1761, and this was only possible after the bank curtailed loans against metal and called in existing loans (Sieveking 1934b, 140). Following the 1763 panic (originating in Amsterdam but affecting many merchants in Hamburg), lending practices were again liberalized, ultimately leading to a partial closure (suspension of withdrawals) of the bank from 1766 until 1768 (Levy von Halle 1891, 6).

Beginning in 1770 the bank attempted to address the instability of the agio by making silver bullion rather than coin the basis for deposits (Sieveking 1934b, 150). The city council reluctantly agreed to this, and then only after the bank offered a two-million-mark loan on favorable terms. Under its new policy, the bank stood ready to buy at 27.625 marks/ mark fine silver and sell at 27.75 marks/ mark fine, prices only slightly above the original 1619 value of bank money (25–27 marks/ mark fine, depending on the coin). This form of "virtual coin" proved extremely popular with merchants, so much so that in 1790 the bank ended its use of coin in favor of silver bullion. Money in bank ledgers became known as the "pure silver currency" (*Reinsilberwährung*). Deposits and turnover at the bank increased sharply with the decline of the Bank of Amsterdam in the 1790s.

The bank was closed briefly during the Napoleonic Wars but resumed business soon afterwards. The success of the Bank of England prompted calls for the Hamburg bank to begin discounting bills and issuing notes. Proposals to this effect were floated in 1799 and 1845, but were rejected out of fear that banknotes would lead to inflation and financial instability (Soetbeer 1855).

The only substantial policy change during this period occurred during the 1847–48 downturn, when the bank initiated a facility to make emergency loans against coin rather than bullion. This was the exact reverse of the Bank of Amsterdam's 1763 intervention, which monetized bullion rather than coin.

Confidence in the bank was tested during the panic of 1857. As in the 1763 Amsterdam crisis, the proximate cause of the panic was a loss of confidence in bills issued under acceptance credit schemes. After trying a number of largely ineffective measures, in December 1857 the city set up an emergency municipal discount facility. The latter was funded by a loan of 10 million marks from the Austrian National Bank, arriving in the city in highly visible fashion on the famous silver train or *Silberzug* (Soetbeer 1867, 36). Market confidence was quickly restored, funds flowed into the Bank of Hamburg, and the Austrian loan was fully repaid with 6 percent interest by the end of 1858 (Wirth 1890, 403).

The 1857 experience left the bank intact, but weakened political support for the traditional "exchange bank" central banking model. Nonetheless the bank remained in existence for another fifteen years. Only following the Unification of 1871 did the final transformation take place: deposits were converted to Prussian currency (gold thaler) units in 1873 (Levy von Halle 1891, 62–70) and the bank was liquidated in December 1875 (Levy von Halle 1891, 80–81).

An enduring legacy of the Hamburger Bank was was its giro payment system, which served as a model for the nationwide giro system introduced by the Reichsbank (central bank of the German Empire) in 1876, and in turn for similar payment systems in other countries (Levy von Halle 1891, 78–79).

8 Nuremberg (1621–1836)

The Public Bank of Nuremberg (*Nürnberger Banco Publico*) was founded by the city of Nuremberg in 1621.[22] The Bank was founded in an attempt to exclude the debased coinage of the *Kipper- und Wipperzeit* (1619–23) from circulating within the city. At that time, Nuremberg merchants had extensive trading relationships with their counterparts in the "banking cities" of Amsterdam, Hamburg, and Venice, so the founding of a municipal exchange bank was

[22] This section presents a summary of the recent monograph by Denzel (2012).

widely viewed as a reasonable solution to the problem of payment in debased coinage.

The initial design of the bank closely followed the Amsterdam model. Merchants were to deposit full-weight coins in the exchange bank, and commercial obligations were to be discharged through giro transfer. The Public Bank was not allowed to extend credit, but was to finance itself by charging a 0.1% fee on each giro transfer. Legal compulsions to pay in bank money (known collectively as the *Bancozwang*) were more extreme than in other banking cities. The bank's charter required *all* debts in excess of 200 guilders/ 100 Reichsthalers (not just bills) to be payable exclusively through the Public Bank, and made any payments outside the bank subject to a fine equal to ten percent of the payment in question. Assignment of bills of exchange was limited to a single endorsement. Finally, an additional incentive for use of bank money was provided in 1622, when the city council imposed the death penalty for anyone caught trading in debased coinage (White 2012, 13).

Due in part to the severity of these ordinances, and in part to the general distaste for debased coinage, the Public Bank enjoyed an initial run of success. Deposits by the public (the *Hauptkasse*) sometimes reached 600,000 guilders in 1622 and 1623 (Denzel 2012, 119). However, the popularity of the bank was soon undermined by two factors. The first was a 1623 monetary reform agreed to by neighboring states (Franconia, Swabia, and Bavaria) that effectively ended the inflation of the Kipper and Wipper period, making the use of bank money less attractive relative to coin (which did not carry transfer fees). The second was the ongoing exploitation of the bank by the Nuremberg city council, which had succumbed to the temptation to borrow funds from the bank "according to its best judgement." Fiscal demands on the city increased sharply after it agreed to pay war contributions to Sweden in 1631, and by 1634 the debt of the city to the bank had risen to the level of deposits at the bank, now totaling only 85,000 guilders (Denzel 2012, 122). The reduction in deposits and loss of transaction fees caused the bank to be unable to pay its expenses, and it was forced to reorganize.

In 1635 the city came up with a plan to repay its debt to the bank in relatively short order–in 55 weekly installments–and some deposits flowed back in. The bank was unable to regain the degree of trust it had enjoyed in its early days, however. Deposits generally remained under 200,000 guilders (Denzel 2012, 130–2), and fell further after a revised 1654 bank ordinance allowed some commercial payments to be made outside the bank. After 1660, renewed pressure from coinage debasements in neighboring states led to a further contraction of deposits, as heavy coin was increasingly worth more outside the bank than inside. A 1675 ordinance sought to address this problem by limiting the convertibility of bank balances, prohibiting bank payments to foreigners, and specifying that withdrawals (when allowed) could only be made in the lightest available types of coin. The ordinance was ineffective, and subsequent years saw a continued outflow of bank balances and increasingly widespread evasion of the *Bancozwang*. In the meantime much of Nuremberg's bill business moved to the nearby city of Augsburg.

Ultimately the Public Bank (unlike its more successful contemporaries in Amsterdam and Hamburg) was unable to maintain a firm connection between its ledger-money and full-weight silver coins. After convertibility restrictions were eased in 1682, depositors rushed to withdraw heavy coin, causing balances to contract further (to 26,000 guilders) and plunging the bank into an existential crisis. In a bid to recover its business, the bank after 1691 allowed for current-money payments in its accounts, and from 1695 most accounts were kept in current money. Transaction fees were halved to 0.05% for all but Jewish depositors, and restrictions on the type of coin that could be deposited were steadily liberalized. This led to a partial recovery in bank balances, to 150,000 guilders by 1700, but by 1725 the bank fell into increasing disuse.

In 1765 the city adopted a new, more stable coinage standard, based on the coins of the 1753 Austria-Bavaria monetary treaty. Paralelling the experience of the smaller Dutch cities, the ensuing stability of current money made payment through the bank largely superfluous. The bank continued to see some use from existing depositors, however, and it was not liquidated until 1831.

9 Conclusion

The banks surveyed in this chapter were founded between the early fifteenth and the mid-seventeenth century. A number of characteristics distinguish them from those surveyed in the next chapter. These "first-generation" public banks were created in city-states (for the Italian, Dutch, and German banks) or municipalities with strong autonomy (the Catalonian banks, which withered after the loss of that autonomy in 1714). There were almost all owned by the sponsoring city, Genoa's bank being owned by the association of state creditors. Their liabilities were essentially book entries, and many (but not all) were required to maintain full backing in metal.

The motivations for their creation varied. One goal was to provide a stable means of payment to remedy coinage disorders (Genoa, Amsterdam, Hamburg) or private sector banking weaknesses (Venice). The emergence and general use of "banco" units of account in these cities attests their broad success, but that required active management and a long learning process. The best example remains Amsterdam's success in maintaining the stable value of what had become a fiduciary currency.

Another motivation was to make government debt more liquid (Barcelona, Venice). Even when public finance was not clearly the motivation, the course of time and the inevitable occurrences of wartime emergencies often compelled the banks to lend to their owners. Success in surviving such pressures varied, and recovery was often a drawn-out process; Amsterdam avoided them altogether for a long period of time.

Most of these early banks survived long enough to co-exist with the public banks created after 1650. This date is nevertheless an appropriate break-point for this chapter because (as we will see) the next generation of banks presented substantial differences.

Early Public Banks II: Banks of Issue

10 Sweden (1657-)

The early history of public banks in Sweden is unusual in at least two respects.[23]

The first is that one of Sweden's early public banks, the *Sveriges Riksbank*, survives today as a central bank, in fact the oldest central bank presently in existence. The second is the importance of circulating banknotes, which already by the mid-eighteenth century became an essential if not predominant component of the Swedish monetary environment.

Plausible explanations for the widespread use of banknotes are not hard to find. One hypothesis is that for much of the period under consideration, Sweden made copper, an abundant local resource, the basis of its coinage standard (in particular, for the years 1643–65, 1675–81, 1709–16, and 1719–45; see Edvinsson (2010c, 43–44). The weight of copper coins made them unwieldy for most commercial transactions, increasing the appeal of notes as a medium of exchange. A second hypothesis is that frequent shifts in monetary standards created confusion about the valuation of coinage, leading to the emergence of multiple units of account (in particular, Sweden experimented with a silver standard during 1665–74, 1681–1709, and 1777–1809). Fluctuations in the price of coinage may have again increased the attractiveness of notes as transactions medium. A final hypothesis is that during our period of study, Sweden experienced three episodes of significant inflation and subsequent intervals during which metallic standards were suspended (1716–19, 1745–77, 1809–34). In other words, by the early nineteenth century, Sweden had ample experience with fiat money regimes. This may have led to some greater familiarity with and acceptance of notes than in other countries at the time.

The history of Swedish central banking begins in 1657, when a banking charter was granted to a proprietor named Johan Palmstruch, in return for a pledge to send half the bank's profits to the crown. The design of Palmstruch's bank, the *Stockholms Banco*, was supposedly derived from the examples of the public banks in Amsterdam and Hamburg. As was the case with many other contemporary public banks, the Stockholms Banco was formally divided into two institutions, an exchange bank and a lending bank. From the beginning,

[23]This section is based exclusively on English-language sources, primarily the classic study by Heckscher (1934), augmented by the recent monograph of Fregert (2012), which as of this writing is available only in draft form. Data on Swedish coinage and exchange rates are from Edvinsson (2010a,c,b).

however, the exchange bank saw relatively little use, as Palmstruch's main interest was in the profits that could be had through operations of the lending bank.

Credits from the lending bank were not granted as bank balances, but in the innovative form of banknotes (*Kreditivsedlar*), bearer instruments that were pre-printed in round denominations and payable on demand. The sources do not mention that these notes enjoyed any legal privileges, but they did enjoy an initial run of success, perhaps due to the impracticality of the prevalent copper standard. By 1664, however, the bank had become overextended and was closed when it could no longer redeem its notes.

In 1668 a new, publicly owned bank was chartered, the Bank of the Parliament (*Riksens Ständers Bank*). Fearing the bank's exploitation by the crown, the new bank was operated by a governing board appointed by the Parliament. After the experience with Stockholms Banco, new bank was prohibited from note issue. Formally, the Bank of the Parliament retained the dual structure of an exchange bank and a lending bank. As with the Stockholms Banco, however, the exchange bank was of secondary importance, and the main activity of the new bank was lending. Separate accounts were maintained for deposits in copper and silver coins, meaning that Sweden's 1675 return to a copper standard had no major impact on the bank's operations.

The bulk of the bank's assets consisted of loans to the private sector (Fregert 2012, 25). Loans were of indefinite maturity, at interest rates that could vary between six to eight percent, and these were automatically rolled over every six months at the discretion of the borrower. The main form of acceptable collateral was agricultural land, which in practice meant that most borrowers were members of the nobility. Deposits were renewed every six months at the discretion of the depositor. Deposits at the exchange bank did not bear interest, but deposits at the lending bank bore interest at rates between four and five percent.

The maturity mismatch inherent in these arrangements left the bank open to liquidity and credit risks. These risks were amplified by the fact that the bank had been endowed with no capital, and that, contrary to its charter, the bank used deposits at the exchange bank to fund the lending bank. Moreover, the bank could not control its risk exposures by varying the interest rates on deposits or loans. Consequently, the bank often resorted to placing restrictions on deposit inflows and outflows. During 1683–85 and 1691–99, lack of profitable lending opportunities caused the bank to be closed for new private deposits. Monetary instability during this period was also increased by the 1681 shift back to a silver standard.

Beginning in 1701 the bank began to issue banknotes, in the form of "transport notes" or *Transportsedlar* (Edvinsson 2010b, 179), despite legal prohibitions on this activity. At first the notes could only be transferred via endorsement, but were later treated as bearer instruments. The transport notes do not appear to have had any privileged legal status, at least not initially; they however were redeemable on demand in copper coin. The notes were apparently little used at first.

The fiscal demands of the Great Nordic War (1700–18) caused the bank to venture into the realm of government finance (Fregert 2012, 25). From 1700 to 1709, the bank's lending to the government caused its deposits to approximately double, from 4.6 million dsm (dollars silver money) to 9 million dsm (Heckscher 1934, 195).[24] Faced with a drain on its metal reserves, the bank suspended withdrawals of private deposits in 1710. The government reintroduced the copper standard in 1709, but suspended it again from 1716 to 1719. Other than bank deposits, the main form of money in use during the latter period was token copper coins.

From 1720 to 1740, the bank attempted to repair its balance sheet through a number of defensive strategies. The lending bank was closed to new loans, and deposits remained inconvertible, although interest was paid in metal (copper). Transport notes became increasingly popular after 1726, when they were allowed for tax payments in all public offices. Convertibility of deposits was restored about 1735 (Fregert 2012, 37).

The year 1740 saw the outbreak of war with Russia, which was largely financed via the issue of transport notes. By 1743 the outstanding stock of notes hit 9.9 million dsm versus 5.5 dsm in 1740. The first consequences of this inflationary policy were relatively benign: a silver drain and a 25 percent depreciation of Swedish money against the silver-based currencies of Amsterdam and Hamburg. By 1745, however, a copper drain was in full progress and the bank was forced to suspend convertibility of deposits and

[24]Monetary figures cited for Sweden before 1777 can be confusing due to the existence of multiple units of account. Following Heckscher (1934), figures for this period are given in "dollars silver money" (*daler silvermynt*, abbreviated dsm). This is a unit of account that does not necessarily correspond to the actual value of silver coin in circulation.

notes. Circulating money was reduced to banknotes and token copper coinage.

Inflationary pressures on the bank only increased following suspension, and peaked during the Seven Years' War (1757–63). In addition to financing the government's activities, the bank was expected to continue providing mortgage credit on generous terms, on instructions from Parliament. In 1754 it even reduced the interest rate on mortgages from six to four percent (Fregert 2012, 41), perhaps the first documented episode of a central bank fueling a real estate bubble. Note issue by the bank peaked at 45 million dsm in 1762 (Heckscher 1934, 197). Not surprisingly, this was a profitable period for the bank, due to the interest spread between loans extended by the bank and their primary source of funding, non-interest bearing notes. By 1763 the bank had accumulated 22 million dsm capital through retained earnings (Fregert 2012, 35).

The ongoing paper-money inflation caused a collapse in the external value of Swedish money. In 1736, one Swedish dollar silver money would buy one mark (banco) at the Bank of Hamburg; by 1762, it took 2.4 dsm to buy a Hamburg mark banco.[25] It is known that for much of this period, the Bank of the Parliament attempted to smooth fluctuations in the exchange rate via open market operations. These operations were contracted out to groups of private merchants (*Växelkontor*). The private merchants were funded in part through their own borrowing, and in part through interest-free loans made by the Bank of the Parliament. Unfortunately no quantitative record of this activity has been preserved.

The conclusion of the Seven Years' War gave rise to policies designed to contract the bank's balance sheet. The first of these came in 1762 with a halt to new loans and the imposition of a 4 percent per year amortization requirement for both government and private credits. In 1765 this was followed by the development of a covert plan to gradually (over a five year period) restore the currency to its prewar parity with the Hamburger mark banco, to be accomplished through open market purchases of notes. The plan was supposed to be carried out in utmost secrecy, but the public soon got wind of it, and began hoarding transport notes in expectation of their appreciation. The result was a sudden, massive deflation: from 1766 to 1768, the exchange

[25] Exchange rates cited by Edvinsson (2010c, 281) are marks copper money against reichsthaler banco. These are converted at 1 dsm = 12 marks copper money and one reichsthaler banco = 3 marks banco.

rate of the Swedish dollar silver money appreciated from 2 dsm/ Hamburg mark banco to 1.2 dsm/ Hamburg mark banco (Edvinsson 2010a, 282). Over the same two-year period, Heckscher (1934, 182) estimates that the general level of domestic prices contracted by about fifty percent.

After King Gustav III seized power from the Parliament in 1772, the decision was made to stabilize the value of the Swedish currency at a lower value than prewar parity. More open market operations were undertaken, this time by one of the bank's officers, Samuel Söderling, who was authorized to trade for the bank on his own account (Fregert 2012, 46). Söderling eventually succeeded in stabilizing the value of a dollar silver money to a level of 1.94 Hamburger marks banco (Edvinsson 2010a, 282). In 1777, a monetary reform restored the silver standard and introduced a new, single unit of account, the *Riksdaler*, which was now equal to six dollars silver money at the official rate. The bank's transport notes (originally payable in copper) were made payable in silver at a rate corresponding to 1.94 dsm/ Hamburger mark banco, a devaluation of almost fifty percent relative to their prewar "par" value.

The new regime also required the bank to write off its holdings of government debt, a move that eliminated virtually all of the bank's capital. The bank responded by halting new loans to the private sector, requiring mortgages to be amortized at a rate of two percent annually, and contracting the stock of notes in circulation. These policies were to be kept in place until the bank's metallic reserve had reached 75 percent of the value of notes outstanding (Fregert 2012, 52–53).

War with Russia in 1788–90 led to renewed demands on the bank to finance the government's military expenditures. When the bank resisted, Parliament responded by creating a parallel currency, "treasury notes" (*Riksgäldssedlar*). These new notes were issued by a governmental agency created specifically for the purpose of inflationary finance. Treasury notes were inconvertible from the beginning, but as they were accepted for tax payments, they soon displaced the bank's transport notes in circulation (Fregert 2012, 52–55). Contrary to the intent of the 1777 reform, the flood of treasury notes led to the emergence of a parallel unit of account, the "treasury dollar" (*Riksdaler riksgäld*), which applied to transactions in treasury notes, as opposed to the "bank dollar" (*Riksdaler banco*), which applied to transactions in bank money and specie. The bank dollar traded at a premium over the inconvertible treasury dollar. By 1800, over 18 million (treasury) dollars in treasury notes had been issued, as compared to the remain stock of approximately one million (bank) dollars of notes issued by the bank. At the same time, agio on the bank dollar reached 50 percent (Edvinsson 2010b, 187).

In 1803 the government attempted another monetary reform. The bulk of the treasury notes were made convertible to bank notes at an official ratio of 1.5 to 1. To enable the bank to maintain convertibility, the Swedish government sold off its colony in Pomerania and used the proceeds to augment the capital of the bank. However, progress towards monetary stability came to a halt with the resumption of war with Russia in 1808. Called upon once again to help finance the war effort, the bank responded this time with the issue of almost 15 million (bank) dollars in new notes. Convertibility was suspended in 1809, leading to the emergence of three parallel units of account: the specie dollar (applied to silver coins), the bank dollar (applied to the now inconvertible bank money), and the treasury dollar (applied to the treasury notes remaining in circulation); see Edvinsson (2010b, 187).

The weak state of government finances at the conclusion of the Napoleonic era meant that a definitive monetary reform was not possible until 1834. This reform reestablished the silver standard and the Riksdaler as the sole unit of account. The bank's notes were declared convertible to silver at $\frac{3}{8}$ of their face value, while the outstanding treasury notes were made convertible at $\frac{1}{4}$ of their face value. This regime remained in place until Sweden's transition to the gold standard in 1873. The bank received its current name, *Sveriges Riksbank*, following a change in government in 1865 (Fregert 2012, 7).

11 England to 1821

An examination of the first few decades of the Bank's history, when compared to the other institutions reviewed in this chapter. cannot but evoke a sense of wonder and puzzlement.[26] As is well known, the Bank after a century became the paragon of a central bank, a model envied everywhere and imitated in many places. Its beginnings were far from auspicious and its survival, let alone its success, becomes mysterious when one manages to forget its later history.

The Bank was founded in precarious circumstances. The English government had just undergone a momentous revolution, with the forcible expulsion

[26] This section mostly follows Clapham (1945).

of the legitimate ruler James II by an invading force led by his nephew and son-in-law William of Orange at the behest of a faction of Parliament. A perfectly illegal convention bestowed on William and his consort the crown of England in exchange for a contract, the Bill of Rights, placing a number of restrictions on the executive's powers. England and its new government was immediately involved in a European-wide conflict with the Netherlands and the German Empire against France, which conflict included military attempts at restoring James II on his throne. This government was soon forced to seek funding for an expensive conflict and met great difficulties. The foundation of the Bank took the form of a large loan of £1.2m, in exchange for which the Crown granted an annuity at 8% and a banking license to the incorporated shareholders.

The bank could not trade anything except bills of exchange, bullion, and goods pawned with it; it could lend to the crown with parliamentary consent. It received deposits and either kept accounts or issued receipts or bearer notes; it also issued sealed bills bearing 3% or 4.5% interest accruing daily, which circulated for large payments to the Treasury or in place of inland bills. With time, the use of sealed bills gradually ceased, and the main liabilities of the Bank were its bearer notes and deposits.

The wartime circumstances made the first years of the Bank particularly difficult. Aside from the initial loan, the Bank was immediately pressed by the government to provide further assistance, for example in providing foreign exchange for the payment of troops in Flanders. The great recoinage of 1695, in which the Bank was not directly involved, put pressure on its bearer notes, as the lack of circulating coinage induced heavy demands for conversion of the notes into coin. By May 1696 the Bank was forced to suspend payments, and the notes went at a discount that reached 17% by November of that year. To replenish reserves the Bank did not pay any dividend and made a capital call on its shareholders. The following year, the government again made demands on the Bank. It asked for a variant of the operation that started the Bank, namely a conversion of heavily-discounted existing Exchequer tallies (medium-term government bonds) into capital of the Bank, on which the government promised the same 8% rate. In exchange, the Bank bargained for an extension of the charter by another four years, a promise by Parliament not to charter another Bank, and the protection of its notes from forgery with the same penalties as for the royal coinage. Another government request was for help in circulating a new form of bearer liabilities payable on demand, the Exchequer bills, issued by the government itself in small and large-denominations and bearing interest; a request which the Bank's shareholders initially refused to meet.

The end of the war in 1697 ended the pressure on the Bank for a few years. When England went to war again in 1702 the Treasury was more adept at raising funds on its own and placed fewer demands on the Bank, who nevertheless was induced to circulate the Exchequer bills in 1708 and a few years later set up a fund that would stand ready to buy them at par. The approaching expiration of the charter required negotiations over renewal, setting a pattern that would continue throughout the 18th century at 21-year intervals (Broz and Grossman 2004). Amid some polemical writing questioning the Bank's usefulness the Bank and the government would negotiate in private; a settlement would be promptly passed through Parliament with little discussion, whereby the Bank received an extension and the government received in exchange a cheap loan. Occasionally an opposition politician might query whether the government had sufficiently extracted from the Bank's franchise value. Importantly the charter renewal in 1709 included a monopoly on note issue, specifically the prohibition (in England and Wales) on all other corporations or partnerships of more than six from issuing bank notes. This monopoly would remain unaltered until 1826.

The War of Spanish Succession left Britain with a heavy burden of long-term debt and unfunded short-term debt. Walpole proceeded to take advantage of falling interest rates to refinance or lower the interest cost on what portion of the debt he could, including the Bank's loan. The South Sea Company's proposal in 1720 was to allow the government to refinance the unredeemable debt by offering a conversion into rapidly-rising stock rather than cash, thereby inducing the bondholders with the promise of capital gains. The operation failed spectacularly, and the Bank of England survived the episode unscathed, but not for want of trying to get involved. In early 1720 it felt compelled to compete with the South Sea company for the privilege of attempting this debt conversion, but had the good fortune to lose out. Aside from imprudently lending on the security of its shares (which led to a brief suspension of discounting) the Bank remained mostly aloof from the bubble of 1720, resisting pressures to assist the South Sea company when the speculation unraveled. In the aftermath a plan to ingraft South Sea stock (like the tallies of 1697) was considered but dropped, instead the Bank was able to do the same thing but on its own terms by issuing stock to buy a little over 10% of the South Sea stock (effectively a form of government debt).

The Bank increased its holdings of long-term government debt again in 1728–29 and 1746 to replace Exchequer bills in its portfolio; it also accepted reductions in interest in 1717, 1727, 1742 (through an interest-free loan) and 1750, roughly in step with like reductions on publicly held debt. Other than in these operations, the Bank's relations with the government had ceased to involve funding of long-term debt; rather, the Bank was the government's bank, holding the deposits of various treasurers and officials, "circulating" the government's short-term debt, and handling the service of the debt. The rest of the 18th century was relatively uneventful; the liquidity crises of 1763 (originating in Hamburg), 1772, 1783, and 1793 were handled defensively by rationing discounts rather than changing the discount rate, but otherwise mark the first instances of a lender-of-last-resort behavior (Lovell 1957).

In effect the government issued claims (Exchequer bills, which were theoretically backed by tax revenues, and navy and supply bills which weren't) that it knew the Bank would honor. The volume of these claims typically increased during wartime and fell once the floating debt was converted to long-term debt. This arrangement was strained after 1793 as the government's demands grew rapidly. In 1796 France's paper currency collapsed and precious metal flowed with the subsequent remonetization; the subsequent drain on the Bank of England's reserves forced a suspension of convertibility of the Bank's notes in February 1797. The emergency measure, approved after the fact by Parliament, was initially temporary but within months it was extended for the duration of the ongoing war. The peace of Amiens in 1802 was too short-lived to allow a resumption of payments, and the so-called Restriction was extended until six months after the ratification of a definitive treaty of peace.

The role of the Bank of England in wartime finance was rather subtle, giving the government "critical flexibility in short-term finance and debt management" (Bordo and White 1991, 311). The Bank of England's principal business had always been turning the government's short-term debt into a circulating medium of exchange, and it continued to do so, only freed from the constraint of maintaining its gold value. Quantitatively this role was not large: public debt held by the Bank of England (all of it short-term) never amounted to more than 5% of the total public debt, and remained around half of outstanding short-term debt during the period of suspension, if anything less than what it had been in the late 18th century. Likewise, the share of public securities in the Bank of England's portfolio was if anything smaller during suspension, albeit never less than 40%. Nor did seigniorage play much of a role in government finance, since a large part of it accrued to the Bank's shareholders as profits. The Restriction did allow an increase of the Bank's balance sheet by a factor of 2.5 at its peak in 1814. Two distinct factors account for this growth: the Bank felt duty-bound to purchase government debt to support the war effort, but it also continued to discount private securities as before, regulating the demand not by the discount rate (which remained at the 5% legal ceiling) but by discretionary rationing. Both factors were at play. Indeed, the first of the two peaks of balance-sheet expansion in August 1810 is due to the Bank's accommodation of a commercial expansion while the second in August 1814 is due to war finance.

The money supply expanded substantially as a result. The Bank's note circulation peaked at £28m in 1814, more than the gold coined during the recoinage of 1773–79. In addition, the Bank was allowed to issue notes in smaller denominations (£1 and 2, the equivalent of the gold guinea), which reached a third of the Bank's circulation. Country banks (not subject to the Bank's monopoly on note-issue) also contributed to the increase in paper-money, possibly as much as the Bank itself. At the same time the currency depreciated, whether measured by foreign exchange rates, the domestic price of gold bullion, or overall prices. Although the currency was never declared legal tender outright, an act passed in 1811 (51 Geo III c. 127) made it illegal in Great Britain to exchange notes for coin at a premium or coin for notes at a discount. The following year penalties of imprisonment were added, Bank of England notes were declared "good payment" for any court-ordered payment, and the provisions were extended to Ireland (52 Geo III c. 50). Under these provisions, which remained in force for the duration of the Restriction, a creditor was not forced to accept notes (that would have made them legal tender) but he was deprived of the means to collect anything else. Bank of England notes were explicitly made legal tender in England in 1834 (3 & 4 Will IV c. 98).

Restriction and the Bank of England's policy were suspected by many of being at the root of this depreciation, with some believing that the Bank's management utterly failed to understand how management of an effectively fiduciary currency differed from a convertible one. However many other factors, such as war expenditures on the order of 15% of GDP (mostly abroad) and lasting disruptions to trade could be cited by the Bank and its defenders. Parliament's inquiry into the high price of bullion in 1810 created a forum for this debate and marked an important moment in the history of economic thought, but it did not alter much the Bank's conduct. The Bank's directors probably understood the situation better than their evasive answers to Parliament suggested, and while aware of the relation between note issue and depreciation treated the Restriction period as one long emergency, both commercial and national (Duffy 1982).

The "definitive treaty of peace" that was to end the Restriction was signed in June 1815 at the Vienna Congress. During the commercial downturn that followed the end of hostilities and the reopening of European trade, the Bank shrank its balance sheet and built up its cash reserves, partly in preparation of a resumption of payments and perhaps wary to avoid an embarrassing monetary expansion as in 1810. Government, however, was stymied by Parliament's refusal to extend the wartime income tax and needed several years to redeem its debt to the Bank. Progressively, small notes were replaced by the newly issued gold sovereign (now sole legal tender) and the Bank's notes finally became convertible on demand in May 1821. The United Kingdom was now on a gold standard with a still-private but increasingly regulated bank of issue whose transformation into a central bank would continue for decades.

12 France

John Law's Bank (1716–20)

John Law's bank was founded not long after, and partly inspired by, the Bank of England, but its fate was very different.[27] Law, an itinerant Scotsman who had been proposing banking schemes throughout Europe (in England probably, in Scotland, and in Piedmont), arrived in Paris in late 1713. The War of Spanish Succession was coming to an end (France and Great Britain were at peace but fighting against the German Emperor continued into 1714). The war had led France to a partial default on its long-term debt in 1710–13 and several

[27]Classic references include Faure (1977), Neal (1990), Murphy (1997); see also Velde (2007, 2008a,b).

failed attempts at circulating government-backed notes. With the peace the government faced large amounts of unfunded short-term debt, exhausted fiscal revenues, and an economic slump due in part to revaluations of the metallic currency. Law was introduced to the duke of Orléans, Louis XIV's nephew, who put him in touch with government officials. Law's bank proposal was being considered when the King died. The duke became Regent and supported the proposal but had to submit it to the regency council. Law's proposed State-owned bank was intended to replace the specie remitted in payment of taxes with notes, the bank serving as the government's fiscal agent. The notes were to be backed, at least initially, with the specie, although the ultimate goal was to improve credit conditions and increase the money supply. The proposal was rejected by the regency council in October 1715 as premature. The government turned instead to drastic measures to stabilize the financial situation, including a devaluation and conversion of the floating debt into 4% bonds without redemption date. A few months later, in May 1716, Law was instead granted a charter to open a purely private bank, the *Banque générale*.

The bank was presented as a way to reduce the outstanding floating debt. It was set up as a shareholding company: shares were issued in exchange for the 4% bonds. Thus, in contrast to the Bank of England which was designed to attract new capital in the middle of a war, the Banque was created to enhance the value of a small proportion (3%) of existing bonds. It otherwise closely followed the model of the Bank of England. The bank's assets and liabilities were restricted, like the Bank of England's. On the asset side, it could only hold bills of exchange and commercial bills, coin and bullion. On the liabilities side, aside from shares it could only issue demandable notes and sight deposits. It was specifically prohibited from trading merchandise or selling insurance, and from issuing bonds.

The bank's only advantage was the ability to issue bearer notes, because it was specifically excluded from a prohibition on letters and bills payable to bearer issued in the same month. In the following two years, the bank prospered in part with the help of the government, which made the bank's notes redeemable on demand at the offices of tax collectors and receivers throughout France, and later made them legal tender in payment of taxes. Tax collection was at the time in private hands: the government in effect made the Bank's notes into bills drawable not only on the Bank in Paris but on any of a large number of private bankers; at the same time, the government accepted the notes in discharge of the tax receivers' obligations. Finally all tax collectors and receivers were required to use the bank's notes, thus achieving Law's original plan.

The notes had the interesting feature that they were denominated and payable on demand in silver coins of a specific weight, rather than in units of account. It was at the time fairly common for the government to change the specie equivalent of the unit of account, either by changing the value of an existing coin or by issuing a new coin. At first sight this gave the note-holders limited protection against monetary manipulations, but only to a limited extent as became apparent in May 1718 when the silver coin worth 5 livres was demonetized and replaced with a new coin containing 20% less silver and worth 6 livres. The mint took the old coins at their nominal value of 5 livres in the purchase of new coins, but the government instructed the mint to redeem the notes in new coins at a 20% premium, in effect waving part of the seigniorage tax for note-holders. This not only boosted the demand for notes instead of specie; it also supported the notion that denominating the notes in units of account (imaginary money) would be a better protection.

Law also moved the bank toward his original model by bringing it formally under government control. By mid-1718 the king of France owned 90% of the shares, and in December 1718 the nationalization of the bank was announced, all shares having been bought at par value. The bank became the *Banque royale* and its profits turned over to the royal treasury. Interestingly bank's deposits were given the privilege from seizure that was common in other European banks.

At that point the Bank had been a marked success: its notes were generally accepted at par and the institution had improved credit conditions and facilitated payments throughout France and abroad. The note circulation in early 1719, around 40 million livres, was about the same size as the Bank of England's. During the next two years the Bank would open branches in twenty French cities.

The political situation had also changed. The Regent had progressively asserted his power and changed his cabinet in January 1718. Law's influence was becoming stronger, particularly in matters of public finance and monetary policy. The devaluation of May 1718 provoked a strong response from the courts, to which the Regent reacted forcefully. At the same time a war broke out with Spain, in which France was allied with Great Britain to enforce the terms of the peace treaties of 1713–14. The Regent needed to finance this war (which was concluded fairly quickly) and he had the authority to implement what Law proposed.

During the year 1719 events unfolded quickly. The bank started issuing notes denominated in units of account in January, and ceased to issue notes denominated in coin in April, citing lack of demand. It also issued smaller denominations, down to 10 livres (about half of a pound sterling). At the same time the legal status of notes changed: a series of laws deprived gold and silver of legal tender and even of any monetary use for all but small amounts, while notes became the sole monetary instrument. By early 1720 the note issue had increased by a factor of ten and a new monetary system was in place, with silver pieces for small transactions and paper for everything else; the possession of gold and silver above a certain amount was illegal and (as would happen in the United States in 1934) all precious metal had to be exchanged for paper. At that point, however, the bank had become part of a much larger scheme.

In 1717 Law had founded a trading company, the Company of the West, to develop the colony of Louisiana. It was not a shell company or one based on extremely dubious prospects like the British South Sea Company. Louisiana was a secure French possession with vast potential, but no one had managed to turn a profit from it in 40 years. The subscription for the Company was on the same model but on a much larger scale, and it languished for a long time until the Company secure other sources of revenues through a sequence of take-overs. The fact that many monopolies were farmed out or owned by poorly performing companies allowed Law to outbid or take over a number of more lucrative activities: tobacco, trade with North and West Africa, with the East Indies, the mints, and finally (in August 1719) the collection of all direct and indirect taxes. in late August 1719, the Company now called The Indies Company launched its biggest venture: refinancing the whole national debt at 3%. Here Law was imitating the South Sea company, which had refinanced part of the British national debt, but on a much grander scale. The company obviously didn't have the cash to lend, but it financed the venture as it had its previous acquisitions, with shares. The summer of 1719 had seen surging prices for the Indies Company's shares, and the high market price allowed Law to offer bondholders an enticingly high nominal price for their bonds. The key weakness of the plan was that Law's offer came in the form of options: subscribers paid by installments, which they could decline to pursue (the national debt was callable, but on cash only - an exchange of bonds for shares could not be compulsory). To induce the bondholders to complete the exchange, Law needed to guarantee high returns on the shares.

This he did with the Bank, which he controlled and merged in February 1720 with the Indies Company. By that time he had become minister of finances and controlled all levers of government. His company collected all tax revenues in France, from which he deducted the interest the by the State on the refinanced national debt. The former bondholders were now owners of the residual tax revenues. profiting from any increase over the fixed promised payment to the State: in effect, they were now shareholders in the French State. But to maintain the high value of shares, he pegged their value in banknotes. The pegged price was too high and shareholders massively converted their holdings into freshly printed notes. Inflation and exchange rate depreciation ensued, threatening the whole edifice.

In May 1720 Law made a fateful decision: to reduce the nominal mass of money, he decided to reduce the face value of notes. Panic followed, with a run on the Bank. Law was dismissed from his position as minister, but effectively reinstated after a few days as no one else could propose an alternative. From June to September 1720 fought to rescue his System. The only hope was to reduce the monetary mass: to that effect he reversed the debt conversion, restored gold and silver coinage, and sold Company bonds and shares. Another outlet for notes were bank balances: taking inspiration from the Bank of Amsterdam, he made the use of ledger money mandatory for foreign exchange and large transactions. The efforts were unavailing, and the notes continued to lose value against gold; repeated changes of the valuation in livres of coinage failed to stem the decline. During the last months of 1720 the notes were progressively demonetized.

With the Indies Company was insolvent and the Treasury depleted, Law was asked to leave France in mid-December 1720. The Indies Company was deprived of all its fiscal activities and the prior system of private tax collectors and farmers was restored. What was to be done with the liabilities of the Indies Company (which included the Bank)? The option of letting it go bankrupt was rejected; it was put into receivership, from which it emerged again with its commercial privileges in 1725. Its liabilities other than equity (notes, bonds, bank accounts) were taken over by the State and converted into government bonds. The notes were widely held (over 500,000 claims were submitted) in part because their legal tender status had allowed many debtors to repay longstanding debts. An attempt was made, at enormous cost, to mitigate the distributional effects of the paper's depreciation by adjusting the claims depending on the manner in which the claimants had acquired the paper that they submitted for conversion. By 1726 public finances were in balance and the metallic currency was restored on a standard that stayed unchanged for decades. No bank was chartered for the next half-century.

The Caisse d'Escompte (1776–93)

The *Caisse d'Escompte*, or Discounting Bank established in 1776, was not the first entity of that name.[28] It seems that, between 1727 and 1759, the French Indies Company ran some kind of discounting operation, although little is known about it. A company with the same name existed from 1767 to 1769, but under complete government control and providing the same services as the "Court Banker" (short-term loans and foreign exchange operations funded through short-term bills).

The Bank of 1776 was created under the following circumstances. The Seven Years War, concluded in 1763, had left government finance in chaos. The government restored order from 1770 to 1774 through a combination of tax increases, conversion of floating debt into long-term debt, and imposed reduction on annuities. When the economist Turgot was appointed finance minister by the new king in 1774, the budget was close to balance but the weight of the debt was still heavy. The belief that the Paris capital market would benefit from a note-issuing bank and the consequent fall in interest rates would allow cheaper funding of the government debt convinced Turgot to accept the proposal brought to him by Isaac Panchaud, a banker born in London of Genevan father and Dutch mother, and Thomas Sutton, an Irish émigré who had served as shareholders' representative in the Indies Company.

The link to the Indies Company is significant. One consequence of the last war had been the expulsion of France from India and North America, depriving the Indies Company of much of its revenues. While its survival was debated in 1769, Panchaud proposed turning it into a bank, but the government decided in

[28]This section follows Laffon-Ladébat (1807), Bigo (1927),Lüthy (1959–1961, 2:420–63).

the end to take over the company's assets and convert the shares into perpetual annuities.

The new bank, authorized by a decree of March 1776, was a technically a limited partnership but ownership was vested in bearer shares. It held no privilege or monopoly; on the contrary, the decree listed what it could and could not do. It could only issue demandable liabilities, it could not engage in merchandise trade or insurance, and its activities were limited to bullion trade, discounting of securities, and serving as cashier for individuals without fee. The ability to issue notes was implicit.[29] On paper, the company was largely independent: the definition of the securities eligible for discounting was entirely to the management, itself chosen by the shareholders. The decree, however, put a ceiling on the discount rate of 4%, later raised to 4.5% in wartime; this constraint was partly remedied by adjusting the maturity of eligible securities.

The roster of the first directors (mostly foreign bankers recently established in Paris) suggests that, initially at least, the bank financed long-distance trade which, through the demise of the Indies Company, was now open to competition. With the onset of war with Britain in 1778 and the advent of the banker Necker to the finance ministry, the bank became a bankers' bank, its board enlarged to include the major banking houses of Paris. Necker himself supported the bank by requiring tax collectors to accept its notes, and by depositing government funds with the bank. The bank increasingly discounted government paper, thus supporting the banking houses that were placing the huge loans issued to finance the war. After Necker's fall in 1781 the board began to include financiers (tax collectors and treasurers of the state).

Over the course of its short life, the bank became increasingly entangled with the government. At its foundation the government had requested two thirds of the initial capital as an immediate loan, described as a form of bond money. But as capital was subscribed slowly at first, the requirement was lifted a few months later. A second episode occurred in September 1783, after a change of finance minister. The incoming official asked for a secret loan from the bank. Word got out and note redemption increased, but the bank held very little coin, most of its cash was in the form of bullion waiting to be minted. The government was asked to pay back the loan: instead it offered the bank power to suspend convertibility. The bank hurriedly declined and

[29] There was no regulation of the denomination of notes. From 1784 they ranged from 200 to 10,000 livres, roughly £8 to 400.

published its balance sheet. The incompetent finance minister soon lost his position, convertibility was maintained, and a general assembly of shareholders reformed the by-laws, providing for a retention of earnings above a certain level, an issue of new shares, and mandating a cover ratio between 1/4 and 1/3: if the ratio fell before the upper limit, discounting was to be slowed, and halted if it fell to the lower limit.

The autonomy of the bank came into question again in January 1785, after the shares of the bank had become the object of much speculation, and the fixing of the next dividend became contentious. The government decreed that dividends should be based on the current semester's profits, and also voided all futures contracts. The finance minister wrote a sternly worded letter to the bank, reserving for himself the right to supervise the bank's activities, and claiming that the bank's credit depended on that supervision. Mirabeau and others published a pamphlet to justify this position, arguing that the bank belonged to the shareholders but, as a socially useful institution, it had no right to bankrupt itself.

The next few years were prosperous, but the State's inability to increase the primary surplus led to mounting financial difficulties. In 1787 the government requested a sizeable loan from the bank. August 1788 the government stopped paying its obligations and authorized the bank to pay its notes from its portfolio of bills, a power it had not requested and avoided using as much as possible. As the Revolution began, loans from the bank were the only resource of the State. In the fall of 1789 Necker, returned as finance minister, proposed to turn it into a national bank. The National Assembly faced a dilemma: a bank too closely tied to the State would have little credit and no usefulness. A bank too independent would enjoy good credit but acquire too much power. To escape the dilemma, the assembly availed itself of another resource, nationalized church lands, to back a new currency issued by the State.

In July 1790 the bank was fully reimbursed by the State and resumed full payment on its notes, albeit in the new currency. But its return to private life did not last; the outbreak of the war in 1792 perturbed business completely and the radicalization of the Revolution led to the closure of the bank in August 1793.

There is, however, a striking continuity. After the revolution's paper currency collapsed in hyperinflation in June 1796, a private bank emerged, the *Caisse des comptes courants*, founded in November 1796 with similar activities and some of the same personnel, among both shareholders and employees. Created as a partnership with unlimited liability, its brief life was marked by the disappearance of its director general in 1798, which led to a crisis of confidence and limitation on redemption. The establishment was dissolved and recreated with a smaller capital base, and its operations remained limited in scope; discounts were rationed and restricted to one-month paper. After Bonaparte's coup in November 1800 a broad coalition of major bankers, including shareholders of the Caisse, organizes the foundation of the Banque de France in February 1800 with the full support of the new regime, and quickly merge with the Caisse (Marion 1934, Leclercq 2010). The Caisse d'Escompte can thus be seen as the grandparent of the Banque de France (Plessis 1989, 1014).

13 Vienna (1703–1818)

Austria's first attempt to found a public bank came in 1703 with the chartering of the *Banco del Giro* under Emperor Leopold I.[30] The chief motivation was the poor state of Austrian public finance. Pressure on the treasury (*Hofkammer*) increased with the outbreak of the War of Spanish Succession in 1701. The debt of the state was trading at 60 percent of face value and many payments were in arrears. To finance its military operations, Austria turned to private bankers such as Samuel Oppenheimer in Vienna. Fiscal pressures became acute in 1703 with the death of Oppenheimer and subsequent collapse of his firm (Fuchs 1998, 24).

As with its Venetian namesake, the envisioned role of the Banco del Giro was to increase the value of government debt by increasing its liquidity. The bank was to take over management of the debt from the treasury, as well as take deposits from private parties. To encourage use of the bank, deposits were given many advantages, including freedom from taxation and attachment, with some exceptions. As with other giro banks, there was a legal requirement for Viennese merchants to settle bills through the bank.

This initial attempt at a public bank was not successful. The bank assumed some debt from the treasury and in return was promised dedicated revenues from the state, but these promises did not inspire market confidence. Instead

[30] This section draws from (Bidermann 1859) unless otherwise noted.

there arose a widespread suspicion that the bank was simply being used as a device to delay payment to some creditors while favoring others, Oppenheimer's counterparties in particular. When the promised state revenues did not materialize, the leaders of the bank resigned, resulting in closure of the bank in 1705.

The bank was then resurrected as the Viennese Municipal Bank (*Wiener Stadtbank*). The concept of the new bank was essentially the same as that of the Banco del Giro, only the ownership was turned over to the city, which enjoyed a higher market reputation than did the Austrian state. To reinforce the impression of independence, the bank was housed in the Vienna city hall. There was a nominally independent management board, headed however by two "co-directors" with close connections to the crown. The legal requirement to settle through the bank was removed, although funds in bank accounts continued to enjoy special privileges (e.g., freedom from attachment). A key aspect of the agreement between the city and the state was that for every 100 florins of debt to be taken over by the Municipal Bank, the state would provide a stream of dedicated "rents" of at least 10 florins. In return, the bank was to amortize the debt over a 15 year period, paying an interest rate that was officially capped at five percent. In practice the rents provided were highly variable and often of questionable quality: tolls, taxes on a cattle market, "tolerance monies" paid by the Viennese Jewish community, seigniorage rights, and income from various industrial enterprises.

In addition to taking over certain state debts, the Municipal Bank was also required to take over the outstanding debt of the Banco del Giro, which by 1706 was trading at less than 40 percent of par. Despite this burden, the Municipal Bank initially proved able to make more regular payments to creditors than had either the treasury or the Banco del Giro. Private deposits flowed into the Municipal Bank, partly due to its apparent reliability and perceived independence, but also due to offered interest rates as high as nine percent, in violation of the bank's charter (Fuchs 1998, 49–51). Most of these were time deposits, which allowed for predictable liquidity demands. However, the bank remained under pressure to generate income sufficient to cover its scheduled interest payments, as well as to amortize the existing stock of debt over the promised fifteen-year horizon. In 1708 the bank, with the agreement of the treasury, forced many of its creditors to accept a three-year prolongation, in return for a one-percent increase in the interest rate (Fuchs 1998, 54). Reflecting perhaps an absence of alternative investment opportunities, private depositors were not too upset by this development, and deposits continued to flow in.

The biggest threat to the bank's existence was the ongoing hostility of the imperial treasury, which resented the intrusion of a municipal institution into state finances. In 1714 the treasury persuaded emperor Karl VI to charter a rival public bank, the Universal Bank (*Universal-Bankalität*) that was designed to accomplish many of the same functions as the Municipal Bank, while remaining under direct state control (Fuchs 1998, 120). The Universal Bank could not attract deposits, however, and quickly suffered the same fate as had the earlier Banco del Giro. It was de facto liquidated in 1720, leaving 25 million florins in obligations to be taken over by the Municipal Bank (Fuchs 1998, 71). Because they lacked the customary ten percent revenue cover, these additional debts weighed heavily on the Municipal Bank, even after aggressive rescheduling.

Unfavorable rumors about the Municipal Bank circulated in 1723, 1727, and 1733, leading to the withdrawal of some deposits. Thanks to its assumption of the Universal Bank's obligations and to a general pattern of fiscal exploitation, the Municipal Bank was confronted with an increasingly unsustainable debt load. By 1733, the level of underfunded obligations had reached 27 million florins and the bank was essentially operating as a Ponzi scheme, with interest payments and required amortizations apparently being funded from new deposits and from secret, high-interest loans obtained from private moneylenders.[31]

The Municipal Bank did not collapse, however, and it continued to meet its obligations. Moreover, the bank was successful in its broad mission of reducing the average interest rates on state debt, from a range of 12–20 percent before the bank's inception, to a 6–8 percent range afterwards (Fuchs 1998, 133). The bank's reputation with the public was such that it was allowed to continue to operate, despite entrenched resentment by the treasury and by other elements of the imperial government. From 1759, however, the bank was drawn ever closer to the state through a succession of organizational changes. Any pretense of independence had vanished by 1782 when the bank was formally merged into the treasury (Fuchs 1998, 108–9).

[31]Surviving records are incomplete, but Fuchs (1998, 90) estimates that from 1721 through 1748, the municipal bank assumed a total of 77 million florins in debt, against an average annual income of 2.5–3 million florins.

Responding to the financial demands of the Seven Years' War (1756–63), the Municipal Bank experimented with its first issue of banknotes (*Bancozettel*) in 1762. The amount of the first emission, fully backed by coin, was a relatively modest 12 million florins.[32] To calm fears of possible inflation, the amount of the issue was announced to the public in advance. The notes did not have legal tender status but had certain advantageous features: they could be used to pay up to one-half of tax obligations at face value, and could be used to purchase interest-bearing obligations of the Municipal Bank at a favorable price. Through these channels, the notes were retired relatively quickly and were almost entirely out of circulation by 1770. The retired notes were burned in a public ceremony, in an attempt to further assuage public fears of a paper money inflation. Unfortunately, these fears were to be borne out in subsequent events.

The success of the Municipal Bank's initial note issue led to further experimentation. In 1770 and 1785 there were two more relatively modest and uncontroversial emissions of 12 million and 20 million florins, respectively. The rate of money creation accelerated sharply, however, with the outbreak of the Napoleonic Wars, and by 1796 the stock of banknotes outstanding had reached 44 million florins (Raudnitz 1917, 9). Demand for the ever-increasing stock of banknotes was reinforced by decrees, in 1797 and 1800, giving the banknotes legal tender status in all public and private transactions (Raudnitz 1917, 19–26). The ability to exchange notes for coin was limited and then abolished.

In the meantime, Austria's financing needs increased as a result of numerous military setbacks. Throughout much of the Napoleonic period, virtually all of the state's budget was financed through the emission of *Bancozettel*, most other sources of revenue having been exhausted. By 1811, the stock of circulating banknotes had reached 1 billion florins (Raudnitz 1917, 86), implying an average annual rate of increase of 23.6 percent over a 15-year period. The only effective restraints on monetary creation seem to have been technological ones. The inflationary wave generated by the *Bancozettel* swept all forms of coinage from circulation: gold, silver, and eventually even copper. An absence of money for everyday transactions necessitated the printing of large numbers of small-denomination banknotes, as well as the minting of new, token copper

[32]As compared to a total war cost of 260 million florins, 21 million florins of which was financed by the Municipal Bank (Fuchs 1998, 114).

coinage with a lower metal content relative to its nominal value (Raudnitz 1917, 47–48). Banknote production was hampered by a need to keep printing facilities out of the reach of Napoleon's armies, necessitating a move at first to Pest (Hungary) and later to Oradea (in modern-day Romania).

By 1810, Austria's monetary situation had reached a crisis state. The public had come to believe that the Municipal Bank's notes would never be redeemed at anything close to face value, and the *Bancozettel* traded at a discount of 85–90 percent relative to prewar silver coins known as *Konventionsmünzen* (Schneider et al. 1991, 254). In early 1811, the government attempted the first of a series of monetary reforms. A decree required all outstanding *Bancozettel* to be exchanged at one-fifth of their face value for "redemption certificates" (*Einlösungsscheine*). The latter were to constitute a new monetary unit, the "Viennese currency" (*Wiener Währung*) the stock of which would eventually be amortized through tax revenues (Raudnitz 1917, 86–87). The basic idea behind the reform was to reduce the future redemption burden for the *Bancozettel* to what treasury officials viewed as a more realistic level. This did little to improve the reputation of the notes with the public, and contemporary accounts invariably refer to the 1811 devaluation as a " national bankruptcy."

Ultimately even this extreme devaluation could not restore confidence. Efforts at redemption of the Viennese currency had to be abandoned in 1813 with the resumption of military campaigns against Napoleon. Over 400 million florins in new notes were issued between 1813 and 1816 (Raudnitz 1917, 106), bringing the total outstanding to 678 million florins by 1816, despite the 80 percent writeoff achieved by the 1811 devaluation. The government again promised that the notes would eventually be amortized through tax revenues, and the post-1813 notes were optimistically termed "anticipation certificates" (*Antizipationsscheine*).

The conclusion of the Napoleonic Wars allowed for the creation of a new state-controlled (though privately capitalized) bank, the " Privileged Austrian National Bank" (*Privilegierte Österreichische Nationalbank*) in 1816. The first task of the National Bank was to attempt yet another monetary reform, this one intended to permanently retire the Viennese currency circulating as redemption certificates and anticipation certificates. To this end, in July 1816 the National Bank offered to purchase all outstanding Viennese currency with its own obligations, in fixed proportions of two-sevenths of the proffered amount in banknotes and five-sevenths in interest-bearing bonds. The National

Bank's notes, unlike those of the depreciated Viennese currency, were to be redeemable in *Konventionsmünzen*. Simultaneously, the legal tender status of the Viennese currency (and indeed all forms of paper money) was abolished (Raudnitz 1917, 148).

Initially things did not go well for the National Bank. The government had underestimated the public's distaste for the Viennese currency, and the military had to be called out to control the long lines forming in front of the bank. Redeemability of the National Bank's notes had to be suspended indefinitely. The National Bank then began a program of open market purchases of Viennese currency, which lasted through early 1817 (Raudnitz 1917, 167). Additional quantities of Viennese currency were then absorbed by the offering of time deposits and through the issue of additional equity shares in the National Bank. By early 1820, approximately one-third of the Viennese currency had been removed from circulation and its market price had stabilized at 20 percent of a florin, the official level of the 1811 devaluation. The National Bank was able to resume redemption of its notes later that year (Raudnitz 1917, 201).

The Viennese Municipal Bank was formally abolished in 1818 (Fuchs 1998, 118), but its notes continued to circulate to some extent. By 1830, however, the great majority of these (about 620 million florins, or 91 percent of the total outstanding in 1816) had been redeemed by the National Bank in *Konventionsmünzen* or the equivalent (Raudnitz 1917, 254).

14 Prussia (1765–1847)

Berlin offers an interesting case history in the development of public banks. A state bank operating in Berlin, the *Königliche Hauptbank* (Royal Main Bank) was initially modeled on the Bank of Hamburg, but was completely ineffective in this role. Over time it transformed itself into a more successful institution, first into a a state-sponsored savings bank, and later on a note-issuing bank on the English model.[33]

Frederick the Great's (1712–86) interest in forming a public bank was awakened by the success of the Bank of England (founded 1694), whose operation demonstrated that a public bank could be compatible with monarchical rule. Frederick believed that a public bank could help ensure a stable currency, while

[33] This section is drawn from Niebuhr (1854) unless otherwise noted.

simultaneously providing the state with a ready source of profit. The instability of the Bank of Hamburg around this time (mid-18th century) reinforced Frederick's desire to form a separate bank that would be under his control (Sieveking 1934b).

A number of designs were considered. In 1753 Prussian finance minister Graumann proposed combining an exchange bank, a lending bank, and a note-issuing bank into one institution. An even more ambitious plan was floated in 1764 by the Italian financier Gian Antonio de Calzabigi, one of Frederick's financial advisors. Salzabigi proposed to merge a note-issuing bank with a state insurance company and official trading monopolies. In the end, Frederick opted for a more cautious and modest design: following the Hamburg example, the state bank would not issue notes, but would combine exchange (giro) and lending operations.

The Royal Main Bank began operations in June 1765 with a 400,000 thaler capital from the Prussian state. The bank was chartered as a state agency under nominally independent management. As with other exchange banks, all bills drawn on Berlin were now required to be payable through the bank. The lending bank was split into two parts: a discount window that granted credits against short-term paper (and a few other instruments), and a Lombard facility which was to grant loans against nonperishable goods. Branches of the Lombard facility were to operate throughout Prussia.

The bank in its initial conception suffered from a serious design flaw, which was the decision to tie the value of bank money to Prussian gold coinage (Friedrich d'Or), in an attempt to shore up the market value of the latter. This meant that bank funds had from the beginning an uncertain value against the more widely circulating silver current money. This was in direct contradiction to the central idea of successful exchange banks, to provide merchants with the means to settle in a stable unit of account.

The management of the Royal Main Bank was also plagued by corruption. The bank's capital was quickly dissipated in loans to insiders and to the State Tobacco Monopoly, where many of the insiders had financial interests. Payments had to be suspended in October 1765 and there were no new deposits. These circumstances led to a reorganization of the bank in 1766.

The new charter of the bank restricted its discounting activity to endorsed bills, but also moved the bank in the direction of the English model, by allowing for the issue of a limited quantity of banknotes. These were guaranteed to be accepted at "par" (at a fixed agio above current money) at all state institutions. The new charter confidently proclaimed that the reconstituted bank would " promote the circulation of money, support trade through credit advances, and prevent usury."

Despite this show of confidence, the reconstituted bank was managed in a conservative fashion. A trial emission of 200,000 thalers of notes was circulated in late 1766 and early 1767. Frederick's distrust of the bank's management was such that it was at first not allowed to buy or sell precious metal; this task was delegated to a Dutch banker, Phillipp Clement, who was commissioned to trade for the bank in Hamburg and Amsterdam. Clement's activity proved unprofitable, however, and the bank was soon unable to redeem its notes. In 1767 the relationship with Clement was dissolved and the bank shored up its liquidity position by borrowing from the State Lottery and the Fund for Disabled Veterans. Redemptions of notes resumed in January 1768.

Eventually, the credibility of the bank was restored and its business picked up. Additional notes were issued, but more importantly there was a strong inflow of funds from private and state sources, including the Royal War Funds, which from 1770 were deposited at the Bank. Additional branches were opened throughout Prussia.

The character of the bank also evolved. Instead of acting primarily as a giro or note issuing institution, it evolved into a type of savings bank; most of its liabilities were interest-bearing deposits. Simultaneously the bank became seen less and less as a quasi-independent operation, and more and more as simply another branch of government. In addition to its commercial lending, the bank ventured into loans to various governmental entities and loans against long-term mortgages. Its liabilities remained essentially "sight" (redeemable within one week), however, with the resulting maturity mismatch creating the potential for illiquidity and insolvency.

The risks of the bank's business model became apparent with the outbreak of the Napoleonic Wars. During the latter phase of this period (1806–13) economic activity ground to a halt in the wake of Prussian military setbacks; many deposits were withdrawn and mortgage payments were interrupted. Over much of this period, the Main Bank's role as a central bank was taken over by a rival state-controlled institution, the Royal Maritime Enterprise (*Königliche Seehandlung*).

The Maritime Enterprise had been founded by Frederick the Great in

1772, to manage certain trade monopolies and to extend credit to fledgling industries. The bulk of the initial capital for the Maritime Enterprise was provided by the *Landschaft* (credit cooperative) of the Province of Brandenburg. Additionally, some "shares" (functionally more like preferred stock) were sold to the public, with a 5 percent dividend guaranteed by the Brandenburg *Landschaft* (Schleutker 1920, 7); additional guarantees of interest and principal were later provided (Schleutker 1920, 32). Fiscal demands brought on by the Napoleonic Wars led the Maritime Enterprise into the business of government finance. Additional shares were issued, which were used to purchase government obligations. The Enterprise's balance sheet ballooned from about 3 million thalers in 1795 to over 20 million in 1805 (Schleutker 1920, 39). Because of their attached gurarantees, shares issued by the Enterprise remained quite popular with domestic investors.

Fiscal pressures became acute with the military losses of 1806 and subsequent demands by France for war reparations. This led to an emergency issue of circulating banknotes ("treasury certificates" or *Tresorscheine*). Interestingly, the government chose to issue these not through the treasury or through the Main Bank, but under the auspices of the Enterprise, which was perceived as the strongest credit of the three. The February 1806 edict authorizing the issue of the certificates promised that the government would exchange them on demand for the equivalent value in silver money, and required private parties to do the same (Schleutker 1920, 99). In practice both provisions proved untenable: convertibility of the certificates was quickly abandoned and the certificates traded at substantial discounts. Schwarz (1904, 8) puts the size of the initial issue of certificates at 5 million thalers, and by mid-1808, the market value of these had fallen to 23 percent of par (Conrad et al. 1901, 30). From this low point, gradual improvement in Prussia's fiscal outlook led to a recovery of the market value of certificates, to 90 percent of par by 1810 (Conrad et al. 1901, 30). However, additional issues in 1812 (one million thalers) and 1813 (eight million thalers) led to another collapse in the certificates' market values, to 24 percent by mid-1813 (Conrad et al. 1901, 30).

Extensive monetary reforms were enacted at the conclusion of the Napoleonic Wars. One third of the Main Bank's assets, 7 1/2 million thalers of mostly mortgages, had to be completely written off. Bank operations resumed in 1817, and the balance sheet was slowly repaired through profits obtained through resumption of lending activity. Earlier banknote issues continued to circulate, but to safeguard the bank's fragile reputation, new issues of notes were limited to "bank cash certificates" (*Bankkassenscheine*) that were fully backed by coin or precious metal (Lichter 1999, 26). Convertibility of the Maritime Enterprise's treasury certificates was resumed in 1818 (Conrad et al. 1901, 30), and beginning in 1824 the treasury certificates were retired from circulation and replaced by another type of fully backed note, known as "cash orders" or *Kassenanweisungen* (Schwarz 1904, 41). This effectively marked the end of the Maritime Enterprise's involvement in central banking activity.

In 1847 the Royal Main Bank was restructured as a national institution, the Royal Prussian Bank (*Königlich-Preussische Bank*). The new bank was recapitalized partly by the state, but principally through the public offering of 10 million thalers of stock shares, although control of the bank remained in the hands of the Crown (Lichter 1999, 100). Banknote issue expanded with a limited emission of 12 million thalers, gradually rising to 20 million by 1855. In 1856 the bank gained the freedom to issue unlimited amounts of banknotes, subject to requirements to maintain convertibility and one-third metal backing. The use of " foreign" banknotes (those from neighboring German states) was simultaneously outlawed, and the note circulation of the bank increased to 60 million thalers by 1857. A major beneficiary of this expansion was the Prussian treasury, whose bonds constituted the bulk of the backing assets (Lichter 1999, 179–81). In 1876 the Royal Prussian Bank was merged into the Reichsbank.

15 Conclusion

Comparisons across time and space

Before offering some final remarks, we provide some quantitative comparisons for some of the banks we surveyed in Tables 1 and 2, as well as Figures 7 and 8. The dates at which the banks are compared in the tables and the common currency were dictated by data availability. The size of first-generation banks is measured by balance sheet, while second-generation banks are compared by their note circulation and deposits. To facilitate comparisons over long periods of time estimates of city populations were used to compute per capita balances in Table 1.

Figure 7 shows that, after 1640, the Bank of Amsterdam was clearly in a league of its own, not only being quite larger but also growing until the early 18th century, while Hamburg and Venice remained remarkably similar in size to the end, stable but not growing. The size of the Neapolitan banks is striking: far from a negligible phenomenon, these banks were collectively as large if not larger than Amsterdam (admittedly, the population of Naples was several times larger).

Figure 8 covers two distinct periods, the eighteenth century and the wars of 1792–1815. The first period shows the steady rise of the Bank of England after 1720 when it breaks away from the Bank of Amsterdam. The second period allows a comparison of Austria and England: the note circulation (in real terms) is similar, but as we saw the price consequences were very different. Noteworthy is the Caisse d'Escompte: its success, far from negligible in comparison with a much more advanced Bank of England, was cut short by the Revolution. Its successor the Banque de France remained comparatively modest in its early years, but played no role in public finance.

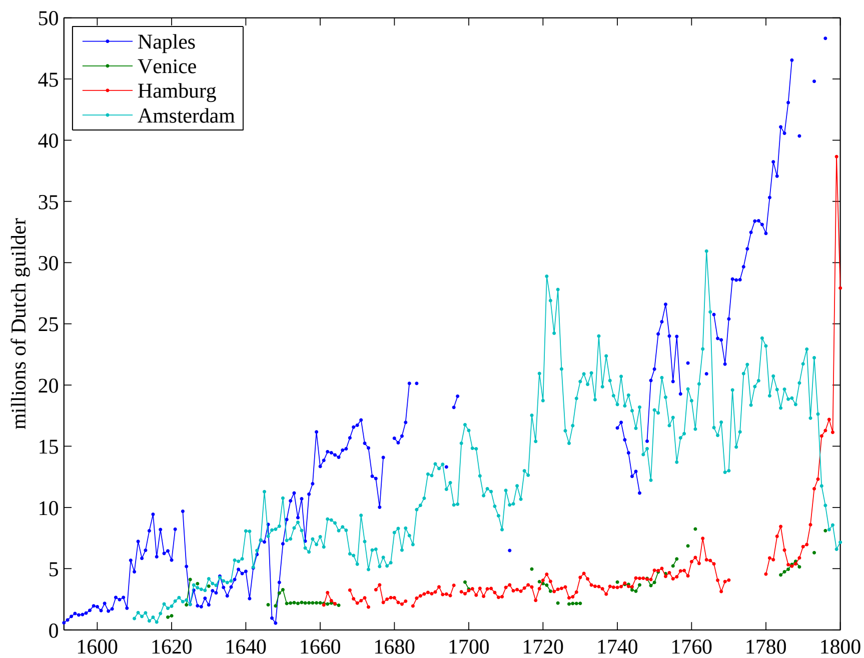

Figure 7: Bank balances of various banks, converted at Dutch guilder at current exchange rates (1591–1800). Sources: see Table 1.

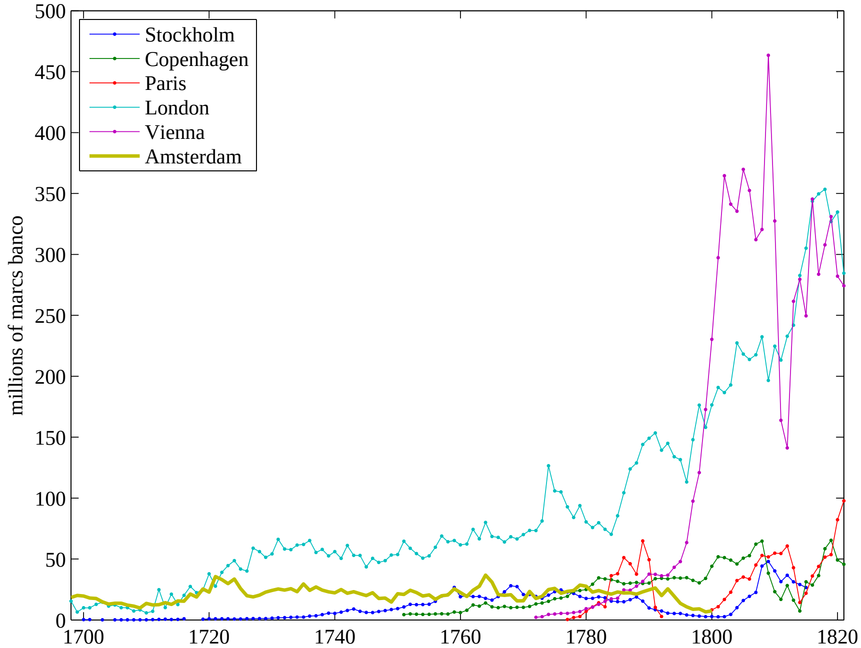

Figure 8: Note circulation of various banks, converted into Hamburg marcs banco at current exchange rates (1700–1821). The balance sheet of the Amsterdam Wisselbank is plotted for comparison purposes. Paris consists of the Caisse d'Escompte (1776–93) and the Banque de France (from 1800). Sources: UK Parliament (1832, App. 74–6) (England) and the sources cited in Table 2.

Banks and Governments

The banks surveyed in this chapter are distinguished not only by their date of birth (after 1650) but also by one of their liabilities and by the political nature of their sponsoring entities.

The note-issuing banks were all founded in monarchies, and observers at the time wondered whether public banks could survive outside of a republic. The nature of the monarchical regimes varied, as did the form of ownership. Sweden's bank was owned by parliament in a regime that oscillated between absolutist and parliamentary tendencies. Law's bank was initially private but was soon bought by the king; by contrast, the Caisse d'Escompte was purely private and, during its brief existence, managed to maintain an arms' length relation with the government to whom it owed no privilege. Government attempts at meddling with the bank's management were ultimately successful with its successor, the Banque de France, which was also privately owned but

	year	'000 ducats	ducats/cap
Barcelona	1433	477	13
Naples	1597	611	2
Venice	1597	950	6
Genoa, c. oro	1586	179	3
Hamburg	1621	339	8
Amsterdam	1631	1,646	30
Nuremberg	1631	462	11
Venice	1631	1,462	15
Naples	1631	1,450	5
Venice	1666	876	6
Genoa, c. moneta corrente	1675	967	15
Amsterdam	1675	2,731	13
Naples	1675	5,147	17
Venice	1721	1,722	12
Genoa, c. banco	1721	7,531	116
Amsterdam	1721	13,610	68
Naples	1721	4,298	14
London	1719	46,545	72

Table 1: Balance sheets of various public banks. The amounts are converted to Venetian ducats (a gold coin containing about 3.5g) at current exchange rates taken from Spufford (1986, 145) and Denzel (2010). The figure for London excludes the exchequer bills circulated by the Bank. Sources: Balletta (2009, 286–9) (Naples); Tucci (1973, 370) (Venice); (Sieveking 1934a, 29,33) (Genoa); Sieveking (1934b, 131-2, 139-41, 152-3, 156) (Hamburg); Van Dillen (1934a, 117–23) (Amsterdam); Bank of England archives General Ledger 6, f. 665, ADM7/8 (kindly communicated by Stephen Quinn); Bairoch et al. (1988) (population).

included government appointees in its management. In Austria the Venetian model of a city bank was implanted in a quite different context and under the pressures of the monarchy the bank was reduced to administering the state's fiat currency. The Neapolitan banks, surveyed in the first chapter, are interesting because they flourished in a monarchy, albeit one ruled from afar by the Spanish monarch until 1713.

The relation between bank and government is not only a matter of direct control but also of the balance sheet. The Bank of England was a private institution in an increasingly parliamentary monarchy, but it had to bargain for renewals of its charter with the government, and a cosy relationship evolved in which the bank primarily served held public assets, in return for sizeable

	Deposits	Notes
	'000 M banco	
Caisse d'Escompte, Paris	3,435	52,703
Bank of England	30,649	128,869
Wisselbank, Amsterdam	21,166	–
Wisselbank, Hamburg	6,716	–
Banco del Giro, Venice	5,535	–
Wiener Stadtbank, Vienna	–	27,605
Bank of Stockholm	4,926	18,748

Table 2: Deposits and note issue of various banks in 1788. The amounts are converted to marcs banco of Hamburg at current exchange rates. Sources: Hauer (1848, 209–10) (Vienna), Laffon-Ladébat (1807) (Paris), Clapham (1945, 1:297) (London) and the sources cited in Table 1.

profits (notably during the period of Restriction). Conversely, the French banks held virtually no government debt, but were capable of providing emergency assistance.

Money and the Law

A key tool to give the banks' liabilities an advantage over existing assets was the ability to bestow legal privileges. One of the most common privileges was the exemption of bank balances from seizure, sometimes with limitations. Another important tool was the requirement to settle foreign exchange transactions through the bank. The motivation for this requirement in Venice seems to have been a concern with the lack of final payment among private bankers, but Amsterdam and other states were quick to confer this privilege on their banks. Finally, legal tender was an important component. The finality of a payment with bank balances was a feature of private medieval banking which it seemed natural to extend to the first public banks, but as the public banks' liabilities progressively became the anchor for new units of account they became a natural legal tender.

Evolution

The structure of pre-Napoleonic public banks was marked by a great deal of experimentation. The top prize for ingenuity undoubtedly goes to Genoa (Section 1), where equity-like shares in the public debt (luoghi) were already functioning as money by the mid-fifteenth century. Less innovative, but ultimately more popular were the seventeenth-century "exchange banks" of places such as Amsterdam and Hamburg (Sections 5 and 7) that sought to replace unreliable coinage with book-entry money, with the latter largely backed by metal.

The eighteenth and early nineteenth centuries saw many attempts to replicate the success of the exchange banks, with institutions that were principally backed by government obligations. The design of the Bank of England retained the core of the Genoese innovation, but the Bank was funded through bearer debt rather than the unwieldy luoghi. This feat of financial engineering brought with it the new solvency concerns, but these were handled through a combination of convertibility and monopoly privilege (Section 11). Similar experiments with note issue were tried in other countries.

The upheavals of the Napoleonic Era posed great difficulties for the early public banks. During this period virtually all municipal banks succumbed to either wartime fiscal exploitation or postwar political irrelevance. A conspicuous exception was the Bank of Hamburg, which successfully resumed operations after 1814 but was later absorbed into the Reichsbank.[34] In countries such as Austria, Prussia, and Sweden, finance of military operations resulted in significant inflations, and ultimately in either liquidation or extensive reorganization of those countries' banks. The exceptional case of England, which experienced only mild wartime inflation despite heavy banknote issue, is ironically the best remembered. The Bank of England's success at dealing with the temptations posed by banknote issue provided evident proof that a (largely) fiscally backed money was not only possible, but practicable.

Thus, we see that by 1814 the structure of the (still privately owned) Bank

[34]The city itself, as a political entity, fared better than Amsterdam, Genoa, or Venice. It survived a brief incorporation into the French empire to emerge as a full-fledged member of the German Bund, equal in international law to Prussia and Austria. In contrast Genoa became part of the kingdom of Piedmont and Venice an Austrian possession, while Amsterdam was under the rule of the authoritarian king Willem I. The Neapolitan banks survived unscathed and were later merged into the Banco di Napoli.

of England contained many of the essential components of modern central banks. As should be clear from our survey, however, that by this time the Bank was itself the outcome of more than 400 years of institutional evolution. From the fifteenth to the nineteenth century, the idea of a public bank had developed from that of a narrowly specialized facility in a commercial city, to that of an essential component of a nation's financial architecture. This evolution was matched by a parallel shift in the popular conception of money, from something that was tangibly bound to precious metal, to something more abstract in nature, if still connected to metal in some fashion. In the words of one eighteenth-century observer (Broggia 1743, 2849):

> Imaginary money is necessary in all states, for two essential reasons: one is to avoid the decrease in intrinsic content of specie, which, for all private and public reasons, reasons of state and reasons of commerce, must never be touched; the other is to maintain private contracts in a fair and immutable system.

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